LispWorks® for the Windows® Operating System

Editor User Guide

Version 5.1
Contents

1 Introduction  1
   Using the editor within LispWorks  2

2 General Concepts  5
   Window layout  5
   Buffer locations  7
   Modes  8
   Text handling concepts  8
   Executing commands  9
   Basic editing commands  11

3 Command Reference  15
   Aborting commands and processes  16
   Executing commands  16
   Help  17
   Prefix arguments  22
   File handling  23
   Movement  34
   Marks and regions  40
   Locations  44
   Deleting and killing text  45
   Inserting text  49
   Delete Selection  52
   Undoing  52
Contents

Case conversion 53
Transposition 55
Overwriting 56
Indentation 57
Filling 60
Buffers 64
Windows 67
Pages 69
Searching and replacing 72
Registers 84
Modes 85
Abbreviations 89
Keyboard macros 95
Echo area operations 97
Editor variables 100
Recursive editing 101
Key bindings 102
Running shell commands from the editor 103
Buffers, windows and the mouse 106
Miscellaneous 108

4 Editing Lisp Programs 109
Automatic entry into lisp mode 110
Syntax coloring 110
Functions and definitions 111
Forms 126
Lists 129
Comments 130
Parentheses 132
Documentation 133
Evaluation and compilation 135
Removing definitions 143

5 Emulation 145
Using Microsoft Windows editor emulation 145
Key bindings 146
Replacing the current selection 147
6 Advanced Features 149

Customizing default key bindings 150
Customizing Lisp indentation 152
Programming the editor 152
Editor source code 177

Glossary 179

Index 189
Contents
1

Introduction

The LispWorks editor is built in the spirit of Emacs. As a matter of policy, the key bindings and the behavior of the LispWorks editor are designed to be as close as possible to the standard key bindings and behavior of GNU Emacs.

For users more familiar with Microsoft Windows keys, an alternate keys and behaviour model is provided. This manual however, generally documents the Emacs model.

The LispWorks editor has the following features:

- It is a screen editor. This means that text is displayed by the screenful, with a screen normally displaying the text which is currently being edited.
- It is a real-time editor. This means that modifications made to text are shown immediately, and any commands issued are executed likewise.
- An on-line help facility is provided, which allows the user quick and easy access to command and variable definitions. Various levels of help are provided, depending on the type of information the user currently possesses.
- It is customizable. The editor can be customized both for the duration of an editing session, and on a more permanent basis.
- A range of commands are provided to facilitate the editing of Lisp programs.
The editor is itself written in Lisp.

1.1 Using the editor within LispWorks

The LispWorks editor is fully integrated into the LispWorks programming environment. If you don’t currently have an Editor (check the Windows menu), start one by choosing Tools > Editor.

To produce a menu bar on each tool in LispWorks for Windows, choose Tools > Global Preferences... and adjust the configuration.

There are a number of editor operations which are only available in Listener windows (for example, operations using the command history). These operations are covered in the Common LispWorks User Guide.

1.1.1 About this manual

The Editor User Guide is divided into chapters, as follows:

Chapter 2, “General Concepts”, provides a brief overview of terms and concepts which the user should be familiar with before progressing to the rest of the manual. The section ‘Basic editing commands’ provides a brief description of commands necessary to edit a file from start to finish. If you are already familiar with Emacs, you should be familiar with most of the information contained in this chapter.

Chapter 3, “Command Reference”, contains full details of most of the editor commands. Details of editor variables are also provided where necessary. Not included in this chapter are commands used to facilitate the editing of Lisp programs.

Chapter 4, “Editing Lisp Programs”, contains full details of editor commands (and variables where necessary) to allow for easier editing of Lisp programs.

Chapter 5, “Emulation”, describes use of Microsoft Windows style key bindings rather than Emacs style.

Chapter 6, “Advanced Features”, provides information on customizing and programming the editor. The features described in this chapter allow permanent changes to be made to the editor.
A “Glossary” is also included to provide a quick and easy reference to editor terms and concepts.

Each editor command, variable and function is fully described once in a relevant section (for example, the command **Save File** is described in “File handling” on page 12). It is often worthwhile reading the introductory text at the start of the section, as some useful information is often provided there. The descriptions all follow the same layout convention which should be self-explanatory.

Command description layouts include the name of the command, the default Emacs binding, details of optional arguments required by the associated defining function (if any) and the mode in which the command can be run (if not global).
1 Introduction
General Concepts

There are a number of terms used throughout this manual which the user should be familiar with. Definitions of these terms are provided in this chapter, along with a section containing just enough information to be able to edit a document from start to finish.

This chapter is not designed to provide precise details of commands. For these see the relevant sections in the following chapters.

2.1 Window layout

2.1.1 Windows and panes

When the editor is called up an editor window is created and displayed (for those already familiar with Emacs running on a tty terminal, note that in this context a window is an object used by the window manager to display data, and not a term used to describe a portion of the editor display). The largest area of the editor window is taken up by an editor pane. Each window contains a single pane and therefore the term window is used throughout this manual as being synonymous with pane, unless more clarification is required.

Initially only one editor window is displayed. The corresponding editor pane is either blank (ready for text to be entered) or contains text from a file to be
The editor window displays text using the font associated with the editor pane.

### 2.1.2 Files and buffers

It is not technically correct to say that a window displays the contents of a file, rather that each window displays the contents of a buffer. A buffer is an object that contains data from the point of view of the editor, whereas a file contains data from the point of view of the operating system. A buffer is a temporary storage area used by the editor to hold the contents of a file while the process of editing is taking place. When editing has finished the contents of the buffer can then be written to the appropriate file. When the user exits from the editor, no information concerning buffers or windows is saved.

A buffer is often displayed in its own window, although it is also possible for many buffers to be associated with a single window, and for a single buffer to be displayed in more than one window.

In most cases, there is one buffer for each file that is accessed, but sometimes there is more than one buffer for a single file. There are also some buffers (such as the Echo Area, which is used to communicate with the user) that are not necessarily associated with any file.

### 2.1.3 The mode line

At the bottom of each editor window is a mode line that provides information concerning the buffer which that window is displaying. The contents of the mode line are as follows:

- "LATIN-1" or "SJIS" or "UNICODE", or other encoding name, indicating the encoding of any file associated with the buffer.
- "----" or "**---" or "---%%-": the first indicates that the buffer is unchanged since it was last saved; the second that it has been changed; and the third that it is read only.
- the name of the buffer (the name of a buffer originating from a file is usually the same as the name of that file).
- the package of the current buffer written within braces.
2.2 Buffer locations

- a major mode (such as Fundamental or Lisp). An buffer always operates in a single major mode.
- a minor mode (such as Abbrev or Auto-Fill). If no minor mode is in operation then this element is omitted from the mode line. An editor can operate in any number of minor modes.
- a character position indicator. This value indicates the position in the buffer of the first character displayed in the pane, expressed as a percentage of the total number of characters in the buffer. A value of 10 would indicate that the first character in the pane is 10% of the way through the buffer.
- a buffer position indicator. This value indicates the percentage of the buffer that is currently displayed, and is separated from the character position indicator by a +. A value of 20 would indicate that a total of 20% of the buffer is currently shown.
- the pathname with which the buffer is associated.

2.2 Buffer locations

2.2.1 Points

A point is a location in a buffer where editor commands take effect. The current point is generally the location between the character indicated by the cursor and the previous character (that is, it actually lies between two characters). Many types of commands (that is, moving, inserting, deleting) operate with respect to the current point, and indeed move that point.

Each buffer has a current point associated with it. A buffer that is not being displayed remembers where its current point is and returns the user to that point when the buffer is redisplayed.

If the same buffer is being displayed in more than one window, there is a point associated with the buffer for each window. These points are independent of each other.
2.2.2 Marks
The location of a point can be saved for later reference by setting a *mark*. Marks may either be set explicitly or as side effects of commands. More than one mark may be associated with a single buffer and saved in what is known as a *mark ring*. As for points, the positions of marks in a buffer are remembered even if that buffer is not currently being displayed.

2.2.3 Regions
A *region* is the area of text between the mark and the current point. Many editor commands affect only a specified region.

2.3 Modes
Each buffer can be in two kinds of *mode*: a *major mode*, such as Lisp mode, or Fundamental mode (which is the ordinary text processing mode); and a *minor mode*, such as Abbrev mode or Auto-Fill mode. A buffer always has precisely one major mode associated with it, but minor modes are optional. Any number of minor modes can be associated with a buffer.

The major modes govern how certain commands behave. For example, the concept of indentation is radically different in Lisp mode and in Fundamental mode. When a file is loaded into a new buffer, the default mode of that buffer is determined by the file name. For example, a buffer into which a file name that has a `.lisp` suffix is loaded defaults to Lisp mode.

The minor modes determine whether or not certain actions take place. For example, when Auto-Fill mode is on lines are automatically broken at the right hand margin, as the text is being typed, when the line length exceeds a pre-defined limit. Normally the newline has to be entered manually at the end of each line.

2.4 Text handling concepts

2.4.1 Words

A *word* is defined as a continuous string of alphanumeric characters. These are the letters A-Z, a-z, numbers 0-9, and the Latin-1 alphanumeric characters). In
most modes, any character which is not alphanumeric is treated as a word delimiter.

### 2.4.2 Sentences

A sentence begins wherever a paragraph or previous sentence ends. The end of a sentence is defined as consisting of a sentence terminating character followed by two spaces or a newline. Two spaces are required to prevent abbreviations (such as Mr.) from being taken as the end of a sentence. Such abbreviations at the end of a line are taken as the end of a sentence. There may also be any number of closing delimiter characters between the sentence terminating character and the spaces or newline.

Sentence terminating characters include: . ? !

Closing delimiter characters include: ) ] > / | " '

### 2.4.3 Paragraphs

A paragraph is defined as the text within two paragraph delimiters. A blank line constitutes a paragraph delimiter. The following characters at the beginning of a line are also paragraph delimiters:

Space Tab @ - ‘)

### 2.5 Executing commands

#### 2.5.1 Keys — Ctrl and Alt

Editor commands are initiated by one or more key sequences. A single key sequence usually involves holding down one of two specially defined modifier keys, while at the same time pressing another key which is usually a character key.

The two modifier keys referred to are the Control (Ctrl) key and the Meta key which is usually Alt.

When using Emacs emulation on a keyboard without an Alt key, the Escape (Esc) key can be used instead. Note that Esc must be typed before pressing the required character key, and not held down.
When using Microsoft Windows editor emulation, the Alt key cannot be used as Meta, and Esc is the cancel gesture, so LispWorks provides an alternate gesture to access editor commands: Ctrl+M. For example, to invoke the command Find Source for Dspec, type

\texttt{Ctrl+M X Find Source for Dspec}

and press Return.

To continue the search, type Ctrl+M ,.

An example of a single key sequence command is Ctrl+A which moves the current point to the start of the line. This command is issued by holding down the Control key while at the same time pressing A.

Some key sequences may require more than one key sequence. For example, the key sequence to save the current buffer to a file is Ctrl+X Ctrl+S. Another multi-key sequence is Ctrl+X S which saves all buffers to their relevant files. Note that in this case you do not press the Control key while pressing S.

A few commands require both the Ctrl and Alt key to be held down while pressing the character key. Alt+Ctrl+L, used to select the previous buffer displayed, is one such command. If the Esc or Ctrl+M key is being used in place of the Alt key, then this key should be pressed before the Ctrl+L part of the key sequence.

### 2.5.2 Two ways to execute commands

The key sequences used to execute commands, as described in the previous section, are only one way to execute an editor command. As a general rule, editor commands that are used frequently should involve as few key strokes as possible to allow for fast editing. The key sequences described above are quick and easy shortcuts for invoking commands.

Most editor commands can also be invoked explicitly by using their full names. For example, in the previous section we met the keystroke Ctrl+A which moves the current point to the beginning of the line. This keystroke is called a key binding and is a shortcut for executing the command Beginning of Line. To execute this command by name you must type Alt+X followed by the full command name (Alt+X itself is only a key binding for the command Extended Command).
Even though there may seem like a lot of typing to issue the extended version of a command, it is not generally necessary to type in the whole of a command to be executed. The Tab key can be used to complete a partially typed in extended command. The editor extends the command name as far as possible when Tab is used, and if the user is not sure of the rest of the command name, then pressing Tab again provides a list of possible completions. The command can then be selected from this list.

The most commonly used editor commands have a default binding associated with them.

### 2.5.3 Prefix arguments

Editor commands can be supplied with an integer argument which sometimes alters the effect of that command. In most cases it means the at the command is repeated that many times. This argument is known as a prefix argument as it is supplied before the command to which it is to be applied. Prefix arguments sometimes have no effect on a command.

### 2.6 Basic editing commands

This section contains just enough information to allow you to load a file into the editor, edit that file as required, and then save that file. It is designed to give you enough information to get by and no more.

Only the default bindings are provided. The commands introduced are grouped together as they are in the more detailed command references and under the same headings (except for “Killing and Yanking” on page 13). For further information on the commands described below and other related commands, see the relevant sections in Chapter 3, Command Reference.

#### 2.6.1 Aborting commands and processes

See “Aborting commands and processes” on page 16

- **Ctrl+G** Abort the current command which may either be running or just partially typed in. Use Esc in Microsoft Windows editor emulation.
2.6.2 File handling

See “File handling” on page 23.

Ctrl+X Ctrl+F file
Load file into a buffer ready for editing. If the name of a non-existent file is given, then an empty buffer is created in to which text can be inserted. Only when a save is done will the file be created.

Ctrl+X Ctrl+S Save the contents of the current buffer to the associated file. If there is no associated file, one is created with the same name as the buffer.

2.6.3 Inserting text

See “Inserting text” on page 49

Text which is typed in at the keyboard is automatically inserted to the left of the cursor.

To insert a newline press Return.

2.6.4 Movement

See “Movement” on page 34.

Ctrl+F Move the cursor forward one character.
Ctrl+B Move the cursor backward one character.
Ctrl+N Move the cursor down one line.
Ctrl+P Move the cursor up one line.

The above commands can also be executed using the arrow keys.

Ctrl+A Move the cursor to the beginning of the line.
Ctrl+E Move the cursor to the end of the line.
Ctrl+V Scroll one screen forward.
Alt+V Scroll one screen backward.
2.6 Basic editing commands

Alt+Shift+-  Move to the beginning of the buffer.
Alt+Shift++  Move to the end of the buffer.

2.6.5 Deleting and killing text
See “Deleting and killing text” on page 45.

Delete       Delete the character to the left of the cursor.
Ctrl+D       Delete the current character.
Ctrl+K       Kill text from the cursor to the end of the line. To delete a whole line (that is, text and newline), type Ctrl+K twice at the start of the line.

2.6.6 Undoing
See “Undoing” on page 52.

Ctrl+Shift+-  Undo the previous command. If Ctrl+Shift+- is typed repeatedly, previously executed commands are undone in a "last executed, first undone" order.

2.6.7 Killing and Yanking
The commands given below are used to copy areas of text and insert them at some other point in the buffer. Note that there is no corresponding "Cut and paste" section in the command references, so direct cross references have been included with each command.

When cutting and pasting, the first thing to do is to copy the region of text to be moved. This is done by taking the cursor to the beginning of the piece of text to be copied and pressing Ctrl+Space to set a mark, and then taking the cursor to the end of the text and pressing Ctrl+W. This kills the region between the current point and the mark but keeps a copy of the killed text. This copy can then be inserted anywhere in the buffer by putting the cursor at the required position and then pressing Ctrl+Y to insert the copied text.

If the original text is to be copied but not killed, use the command Alt+W instead of Ctrl+W. This copies the text ready for insertion, but does not delete it.
2 General Concepts

**Ctrl+Space**  Set a mark for a region. See “Marks and regions” on page 40.

**Ctrl+W**  Kill the region between the mark and current point, and save a copy of that region. See “Deleting and killing text” on page 45.

**Alt+W**  Copy the region between the mark and the current point. See “Deleting and killing text” on page 45.

**Ctrl+Y**  Insert (yank) a copied region before the current point. See “Inserting text” on page 49.

### 2.6.8 Help

See “Help” on page 17.

**Ctrl+H A string**  List all commands whose name contains `string`.

**Ctrl+H D command**  Describe `command`, where `command` is the full command name.

**Ctrl+H K key**  Describe the command bound to `key`. 
This chapter contains full details of most of the editor commands. Details of related editor variables have also been included alongside commands, where appropriate. Not included in this chapter, are commands used to facilitate the editing of Lisp programs. See Chapter 4, *Editing Lisp Programs*.

Commands are grouped according to functionality as follows:

- “Aborting commands and processes”
- “Executing commands”
- “Help”
- “Prefix arguments”
- “File handling”
- “Movement”
- “Marks and regions”
- “Deleting and killing text”
- “Inserting text”
- “Undoing”
- “Case conversion”
3 Command Reference

- “Transposition”
- “Overwriting”
- “Indentation”
- “Filling”

3.1 Aborting commands and processes

Key Sequence

Ctrl+G
Aborts the current command. Ctrl+G (or Esc in Microsoft Windows editor emulation) can either be used to abandon a command which has been partially typed in, or to abort the command which is currently running.

Note that, unlike most of the keys described in this manual, this cannot be changed via editor:bind-key. Instead, use editor:set-interrupt-keys if you wish to change this.

Key Sequence

Ctrl+Break
Breaks the current process.

Note that the Process Browser, documented in the Common LispWorks User Guide can be used to break any specified process.

3.2 Executing commands

Some commands (usually those used most frequently) are bound to key combinations or key sequences, which means that fewer keystrokes are necessary to execute these commands. Other commands must be invoked explicitly, using Extended Command.

It is also possible to execute shell commands from within the editor. See “Running shell commands from the editor” on page 103.

Extended Command

Editor Command

Alt+x
3.3 Help

Allows the user to type in a command explicitly. Any editor command can be invoked in this way, and this is the usual method of invoking a command that is not bound to any key sequence. Any prefix argument is passed to the command that is invoked.

It is not generally necessary to type in the whole of a command to be executed. Completion (using Tab) can be used after the first part of the command has been typed.

3.3 Help

The editor provides a number of on-line help facilities, covering a range of areas.

There is one main help command, accessed by Help (Ctrl+H), with many options to give you a wide range of help on editor commands, variables and functions.

There are also further help commands which provide information on Lisp symbols (see “Documentation” on page 133).

3.3.1 The help command

Help

Options: See below
Key sequence: Ctrl+H option

Provides on-line help. Depending on what information the user has and the type of information required, one of the following options should be selected after invoking the Help command. In most cases a Help command plus option can also be invoked by an extended editor command.

A brief summary of the help options is given directly below, with more detailed information following.

`?` Display a list of help options.

`q` or `n` Quit help.
a string  Display a list of commands whose names contain \textit{string}.

b  Display a list of key bindings and associated commands.

c key  Display the command to which key is bound.

d command  Describe the editor \textit{command}.

\texttt{Ctrl+D command}  Bring up the on-line version of this manual for \textit{command}.

g object  Invoke the appropriate describe \textit{object} command.

k key  Describe the command to which \textit{key} is bound.

\texttt{Ctrl+K key}  Bring up the on-line version of this manual for \textit{key}.

l  describe the last 60 keys typed.

v variable  Describe \textit{variable} and show its current value.

\texttt{Ctrl+V variable}  Bring up the on-line version of this manual for \textit{variable}.

w command  Display the key sequence to which \textit{command} is bound.

\textbf{Apropos Command}  \textit{Editor Command}

Arguments: \textit{string}

Key sequence: \texttt{Ctrl+H A string}

Displays a list of editor commands, variables, and attributes whose names contain \textit{string}, in a Help window.

Editor command, variable and attribute names tend to follow patterns which becomes apparent as you look through this manual. For example, commands which perform operations on files tend to contain the string \textit{file}, that is, \texttt{Find File, Save File, Print File} and so forth.
Use this form of help when you know what you would like to do, but do not know a specific command to do it.

**What Command**

*Editor Command*

Arguments: *key*

Key sequence: Ctrl+H C *key*

Displays the command to which *key* is bound. For a more detailed description of *key* use the command **Describe Key**.

Use this form of help when you know a default binding but want to know the command name.

*Note:* this command is also available via the menu command **Help > Editing > Key to Command**.

**Describe Command**

*Editor Command*

Arguments: *command*

Key sequence: Ctrl+H D *command*

Describes the editor command *command*. Full documentation of that command is printed in a Help window.

Use this form of help when you know a command name and require full details of that command.

**Document Command**

*Editor Command*

Arguments: *command*

Key sequence: Ctrl+H Ctrl+D *command*

Brings up the on-line version of this manual at the entry for *command*.

The documentation in the on-line manual differs from the editor on-line help (as produced by **Describe Command**), but provides similar information. If you are used to the layout and definitions provided in this manual then use this help command instead of Ctrl+H D.
Generic Describe Editor Command

Arguments: object
Key sequence: Ctrl+H G object

Describes object, where object may take the value command, key, attribute or variable.

If object is command, key or variable then the command Describe Command, Describe Key or Describe Editor Variable is invoked respectively.

There is no corresponding describe command if the object is attribute. Attributes are things such as word delimiters, Lisp syntax and parse field separators. If you are not sure of the attributes documented remember that you can press Tab to display a completion list.

Describe Key Editor Command

Arguments: key
Key sequence: Ctrl+H K key

Describes the command to which key is bound. Full documentation of that command is printed in a Help window.

Use this form of help when you know a default binding and require the command name plus full details of that command.

Document Key Editor Command

Arguments: key
Key sequence: Ctrl+H Ctrl+K key

Brings up the on-line version of this manual at the entry for key.

The documentation in the on-line manual differs slightly from the editor on-line help but usually provides you with the same amount of information. If you are used to the layout and definitions provided in this manual then use this help command instead of Describe Key.
3.3 Help

**What Lossage**  
*Editor Command*

Arguments: None  
Key sequence: Ctrl+H L  
Displays the last 60 keys typed.

**Describe Editor Variable**  
*Editor Command*

Arguments: variable  
Key sequence: Ctrl+H V variable  
Describes variable and prints its current value in a Help window.

Use this form of help when you know a variable name and require a description of that variable and/or its current value.

**Document Variable**  
*Editor Command*

Arguments: variable  
Key sequence: Ctrl+H Ctrl+V variable  
Brings up the on-line version of this manual at the entry for variable.

The documentation in the on-line manual differs slightly from the editor on-line help but usually provides you with the same amount of information. If you are used to the layout and definitions provided in this manual then use this help command instead of Describe Editor Variable.

**Where Is**  
*Editor Command*

Arguments: command  
Key sequence: Ctrl+H W command  
Displays the key sequence to which command is bound.

Use this form of help if you know a command name and wish to find the bindings for that command. If no binding exists then a message to this effect is returned.

**Note:** this command is also available via the menu command Help > Editing > Command to Key.
Describe Bindings  
**Editor Command**

Arguments: None  
Key sequence: **Ctrl+H B**

Displays a list of key bindings and associated commands in a Help window. First the major mode bindings for the current buffer, then the global bindings, are printed.

3.4 Prefix arguments

Editor Commands can be supplied with an integer argument which, in many cases, indicates how many times a command is to be executed. This argument is known as a *prefix argument* as it is supplied before the command to which it is to be applied.

A prefix argument applied to some commands has a special meaning. Documentation to this effect is provided with the command definitions where appropriate in this manual. In most other cases the prefix argument repeats the command a certain number of times, or has no effect.

A prefix argument can be supplied to a command by first using the command **Set Prefix Argument** (Ctrl+U) followed by an integer. Negative prefix arguments are allowed. A prefix argument between 0 and 9 can also be supplied using **Alt+digit**.

**Set Prefix Argument**  
**Editor Command**

Arguments: [integer]  
Key sequence: **Ctrl+U [integer]**

Provides a prefix argument which, for many commands, indicates the command is to be invoked *integer* times. The required integer should be input and the command to which it applies invoked without an intervening carriage return.

If no integer is given, the prefix argument defaults to the value of **Prefix-Argument-Default**.

If **Set Prefix Argument** is invoked more than once before a command, the prefix arguments associated with each invocation are multiplied.
together and the command to which the prefix arguments are to be applied is repeated this number of times. For example, if you typed in Ctrl+U Ctrl+U 2 before a command, then that command would be repeated 8 times.

**Prefix-Argument-Default**

*Editor Variable*

Default value: 4

The default value for the prefix argument if no integer is provided for **Set Prefix Argument**.

**None**

*Key Sequence*

Key sequence: Alt+<0–9>

Provides a prefix argument in a similar fashion to **Set Prefix Argument**, except that only integers from 0 to 9 can be used (unless the key bindings are changed).

**Negative Argument**

*Editor Command*

Arguments: None
Key sequence: None

Negates the current prefix argument. If there is currently no prefix argument then it is set to -1.

There is rarely any need for explicit use of this command. Negative prefix arguments can be entered directly with **Set Prefix Argument** by typing a - before the integer.

### 3.5 File handling

This section contains details of commands used for file handling.

The first section provides details on commands used to copy the contents of a file into a buffer for editing, while the second deals with copying the contents of buffers to files.
You may at some point have seen file names either enclosed in # characters or followed by a ~ character. These files are created by the editor as backups for the file named. The third section deals with periodic backups (producing file names enclosed in #) and the fourth with backups on file saving (producing files followed by ~).

There are many file handling commands which cannot be pigeon-holed so neatly and these are found in the section “Miscellaneous file operations” on page 32. Commands use to print, insert, delete and rename files are covered here, along with many others.

### 3.5.1 Finding files

#### Find File

**Editor Command**

Arguments: *pathname*

Key sequence: None

```lisp
(editor:find-file-command) p &optional pathname
```

Finds a new buffer with the same name as *pathname* (where *pathname* is the name of the file to be found, including its directory relative to the current directory), creating it if necessary, and inserts the contents of the file into the buffer. The contents of the buffer are displayed in an editor pane and may then be edited.

The file is initially read in the external format (encoding) given by the editor variable `Input-Format-Default`. If the value of this is `nil`, `cl:open` chooses the external format to use. The external format is remembered for subsequent reading and writing of the buffer, and its name is displayed in the mode line.

If the file is already being visited a new buffer is not created, but the buffer already containing the contents of that file is displayed instead.

If a file with the specified name does not exist, an empty buffer with that file name is created for editing purposes, but the new file is not created until the appropriate save file command is issued.

If there is no prefix argument, a new Editor window is created for the file. With any prefix argument, the file is shown in the current window.
Another version of this command is **Wfind File** which is usually used for finding files.

**Wfind File**  
*Editor Command*

Arguments: *pathname*

Key sequence: Ctrl+X Ctrl+F *pathname*

**editor:wfind-file-command**  
*p &optional* *pathname*

Calls **Find File** with a prefix argument (that is, the new file is opened in the existing window).

**Visit File**  
*Editor Command*

Arguments: *pathname*

Key sequence: None

**editor:visit-file-command**  
*p &optional* *pathname* *buffer*

Does the same as **Find Alternate File**, and then sets the buffer to be writable.

**Find Alternate File**  
*Editor Command*

Arguments: *pathname*

Key sequence: Ctrl+X Ctrl+V *pathname*

**editor:find-alternate-file-command**  
*p &optional* *pathname* *buffer*

Does the same as **Find File** with a prefix argument, but kills the current buffer and replaces it with the newly created buffer containing the file requested. If the contents of the buffer to be killed have been modified, the user is asked if the changes are to be saved to file.

The argument *buffer* is the buffer in which the contents of the file are to be displayed. *buffer* defaults to the current buffer.

The prefix argument is ignored.
Input-Format-Default

The default external format used by Find File, Wfind File and Visit File for reading files into buffers.

If the buffer already has an external format (either it has previously been read from a file, or Set External Format has been used to specify an external format) then Input-Format-Default is ignored. If the value is nil and the buffer does not have an external format, cl:open chooses the external format to use.

The value should be nil or an external format specification. See the Lisp-Works User Guide for a description of these and of how cl:open chooses an external format.

If you have specified an input encoding via the Editor tool’s Preferences dialog, then Input-Format-Default is initialized to that value on startup.

3.5.2 Saving files

Save File

Arguments: None
Key sequence: Ctrl+X Ctrl+S

editor:save-file-command p &optional buffer

Saves the contents of the current buffer to the associated file. If there is no associated file, one is created with the same name as the buffer, and written in the same encoding as specified by the editor variable Output-Format-Default, or as defaulted by open if this is nil.

The argument buffer is the buffer to be saved in its associated file. The default is the current buffer.

Save All Files

Arguments: None
Key sequence: Ctrl+X S
Without a prefix argument, a Save Selected Buffers window is displayed asking whether each modified buffer is to be saved. If a buffer has no associated file it is ignored, even if it is modified. The selected buffers are saved.

With a non-nil prefix argument, no such dialog is displayed and all buffers that need saving are saved.

**Write File**

*Editor Command*

Arguments: *pathname*

Key sequence: `Ctrl+X Ctrl+W` *pathname*

`editor:write-file-command p &optional pathname buffer`

Writes the contents of the current buffer to the file defined by *pathname*. If the file already exists, it is overwritten. If the file does not exist, it is created. The buffer then becomes associated with the new file.

The argument *buffer* is the name of the buffer whose contents are to be written. The default is the current buffer.

**Write Region**

*Editor Command*

Arguments: *pathname*

Key sequence: None

`editor:write-region-command p &optional pathname`

Writes the region between the mark and the current point to the file defined by *pathname*. If the file already exists, it is overwritten. If the file does not exist, it is created.

**Append to File**

*Editor Command*

Arguments: *pathname*

Key sequence: None

Appends the region between the mark and the current point to the file defined by *pathname*. If the file does not exist, it is created.
Backup File  
**Editor Command**

Arguments: *pathname*

Key sequence: None

Writes the contents of the current buffer to the file defined by *pathname*. If the file already exists, it is overwritten. If it does not exist, it is created.

In contrast with **Write File**, no change is made concerning the file associated with the current buffer as this command is only intended to be used to write the contents of the current buffer to a backup file.

Save All Files and Exit  
**Editor Command**

Arguments: None

Key sequence: Ctrl+X Ctrl+C

A **Save Selected Buffers** dialog is displayed asking whether each modified buffer is to be saved. If a buffer has no associated file it is ignored, even if it is modified (this operates just like **Save All Files**). When all the required buffers have been saved LispWorks exits, prompting for confirmation first.

Add-Newline-at-EOF-on-Writing-File  
**Editor Variable**

Default value: :ask-user

If the value of this variable is t, a newline is automatically added to the end of any file that lacks one when the file is being saved. If its value is nil, no newline is added in this way.

Its default value is :ask-user, so the user is prompted about adding the newline when necessary.

Output-Format-Default  
**Editor Variable**

The default external format used for writing buffers to files.

If the buffer already has an external format (either it has been read from a file, or **Set External Format** has been used to specify an external format) then **Output-Format-Default** is ignored. If the value is nil and the buffer
does not have an external format, `cl:open` chooses the external format to use.

The value should be `nil` or an external format specification. See the *LispWorks User Guide* for a description of these and of how `cl:open` chooses an external format.

If you have specified an output encoding via the Editor tool’s Preferences dialog, then `Output-Format-Default` is initialized to that value on startup. The default value of `Output-Format-Default` is `nil`.

**Set External Format**  
*Editor Command*

Arguments: `buffer`

Key sequence: None

Prompts for an external format specification, providing a default which is the buffer’s current external format if set, or the value of `Output-Format-Default`. Sets the buffer’s external format, so that this is used for subsequent file writing and reading.

If a non-`nil` prefix argument is supplied, the buffer’s external format is set to the value of `Output-Format-Default` without prompting.

See the *LispWorks User Guide* for a description of external format specifications.

### 3.5.3 Auto-saving files

The auto-save feature allows for periodic backups of the file associated with the current buffer. These backups are only made if auto-save is switched on.

This feature is useful if the LispWorks editor is killed in some way (for example, in the case of a system crash or accidental killing of the editor process) before a file is explicitly saved. If automatic backups are being made, the state of a file when it was last auto-saved can subsequently be recovered.

By default, automatic backups are made both after a predefined number of key strokes, and also after a predefined amount of time has elapsed.
By default, auto-saved files are in the same directory as the original file, with the name of the backup being the name of the original file enclosed within # characters.

**Toggle Auto Save**  
*Editor Command*

Arguments: None  
Key sequence: None

Switches auto-save on if it is currently off, and off if it is currently on.

With a positive prefix argument, auto-save is switched on. With a negative or zero prefix argument, auto-save is switched off. Using prefix arguments with **Toggle Auto Save** disregards the current state of auto-save.

**Auto Save Toggle** is a synonym for **Toggle Auto Save**.

**Auto-Save-Filename-Pattern**  
*Editor Variable*

Default value: "~A#~A#"

This control string is used with the Common Lisp `format` function to create the filename of the auto-save file. `Format` is called with two arguments, the first being the directory namestring and the second being the file namestring of the pathname associated with the buffer.

By default the auto-save file is created in the same directory as the file for which it is a backup, and it has the same name with surrounding # characters.

**Auto-Save-Key-Count-Threshold**  
*Editor Variable*

Default value: 256

Determines the number of destructive/modifying keystrokes that automatically trigger an auto-save of a buffer. If the value is `nil`, this feature is turned off.
### 3.5 File handling

**Auto-Save-Checkpoint-Frequency**  
*Editor Variable*  

Default value: 300  

Determines the time interval (in seconds) after which all modified buffers are auto-saved. If the value is zero or negative, this feature is turned off.

#### 3.5.4 Backing-up files on saving

When a file is explicitly saved in the editor, a backup is automatically made by writing the old contents of the file to a backup before saving the new version of the file. The backup file appears in the same directory as the original file, its name being the same as that file followed by a ~ character.

**Backups-Wanted**  
*Editor Variable*  

Default value: t  

If the value of this variable is t, backups are automatically made on file saving. If its value is nil, no backups are made.

**Backup-Filename-Suffix**  
*Editor Variable*  

Default value: #\~  

This variable contains the character used as a suffix for backup files. By default, this is the tilde (~) character.

**Backup-Filename-Pattern**  
*Editor Variable*  

Default value: "~A~A~A"  

This control string is used with the Common Lisp `format` function to create the filename of the backup file. `format` is called with three arguments, the first being the directory name-string and the second being the file name-string of the pathname associated with the buffer. The third is the value of the editor variable `backup-filename-suffix`.  

The backup file is created in the same directory as the file for which it is a backup, and it has the same name, followed by the `backup-filename-suffix`.  

Note that the backup-suffix can be changed functionally as well as by interactive means. For example, the following code changes the suffix to the @ character:

\[
\text{(setq (editor:variable-value 'editor::backup-filename-suffix :current nil) #\@)}
\]

3.5.5 Miscellaneous file operations

**Print File**  
*Editor Command*  
Arguments: file  
Key sequence: None  

**Revert Buffer**  
*Editor Command*  
Arguments: None  
Key sequence: None  
If the current buffer is associated with a file, its contents revert to the state when it was last saved. If the buffer is not associated with a file, it is not possible for a previous state to be recovered.

If auto-save is on for the current buffer, the version of the file that is recovered is either that derived by means of an automatic save or by means of an explicit save, whichever is the most recent. If auto-save is off, the buffer reverts to its state when last explicitly saved.

If the buffer has been modified and the value of the variable `Revert-Buffer-Confirm` is `t` then `Revert Buffer` asks for confirmation before reverting to a previous state.

Any prefix argument forces `Revert Buffer` to use the last explicitly saved version.
3.5 File handling

Revert-Buffer-Confirm

Editor Variable

Default value: t

When the command Revert Buffer is invoked, if the value of this variable is t and the buffer has been modified then confirmation is asked for before the revert operation is performed. If its value is nil, no confirmation is asked for.

Process File Options

Editor Command

Arguments: None
Key sequence: None

The attribute line at the top of the file is reprocessed, as if the file had just been read from disk. If no major mode is specified in the attribute line, the type of the file is used to determine the major mode. See “Modes” on page 85.

Insert File

Editor Command

Arguments: pathname
Key sequence: Ctrl+X I pathname

editor:insert-file-command p &optional pathname buffer

Inserts the file defined by pathname into the current buffer at the current point.

The argument buffer is the buffer in which the file is to be inserted.

Delete File

Editor Command

Arguments: pathname
Key sequence: None

Deletes the file defined by pathname. The user is asked for confirmation before the file is deleted.
Delete File and Kill Buffer

**Editor Command**

Arguments: buffer  
Key sequence: None

`editor:delete-file-and-kill-buffer-command`  
&optional buffer

After confirmation from the user, this deletes the file associated with buffer and then kills the buffer.

Rename File

**Editor Command**

Arguments: file new-file-name  
Key sequence: None

Changes the name of file to new-file-name.

If you are currently editing the file to be renamed, the buffer remains unaltered, retaining the name associated with the old file even after renaming has taken place. If you then save the current buffer, it is saved to a file with the name of the buffer, that is, to a file with the old name.

3.6 Movement

This section gives details of commands used to move the current point (indicated by the cursor) around the buffer.

The use of prefix arguments with this set of commands can be very useful, as they allow you to get where you want to go faster. In general, using a negative prefix argument repeats these commands a certain number of times in the opposite logical direction. For example, the command `Ctrl+U 10 Ctrl+B` moves the cursor 10 characters backwards, but the command `Ctrl+U -10 Ctrl+B` moves the cursor 10 characters forward.

Some movement commands may behave slightly differently in different modes as delimiter characters may vary.

Forward Character

**Editor Command**

Arguments: None  
Key sequence: `Ctrl+F` or Right Arrow on some keyboards
3.6 Movement

Moves the current point forward one character.

**Backward Character**  
*Editor Command*  
Arguments: None  
Key sequence: **Ctrl+B** or Left Arrow on some keyboards  
Moves the current point backward one character.

**Forward Word**  
*Editor Command*  
Arguments: None  
Key sequence: **Alt+F**  
Moves the current point forward one word.

**Backward Word**  
*Editor Command*  
Arguments: None  
Key sequence: **Alt+B**  
Moves the current point backward one word.

**Beginning of Line**  
*Editor Command*  
Arguments: None  
Key sequence: **Ctrl+A**  
Moves the current point to the beginning of the current line.

**End of Line**  
*Editor Command*  
Arguments: None  
Key sequence: **Ctrl+E**  
Moves the current point to the end of the current line.
Next Line

Editor Command

Arguments: None
Key sequence: Ctrl+N or Down Arrow on some keyboards

Moves the current point down one line. If that would be after the end of the line, the current point is moved to the end of the line instead.

Previous Line

Editor Command

Arguments: None
Key sequence: Ctrl+P or Up Arrow on some keyboards

Moves the current point up one line. If that would be after the end of the line, the current point is moved to the end of the line instead.

Goto Line

Editor Command

Arguments: number
Key sequence: None

Moves to the line numbered number.

What Line

Editor Command

Arguments: None.
Key sequence: None

Prints in the Echo Area the line number of the current point.

Forward Sentence

Editor Command

Arguments: None
Key sequence: Alt+E

Moves the current point to the end of the current sentence. If the current point is already at the end of a sentence, it is moved to the end of the next sentence.
3.6 Movement

Backward Sentence

Arguments: None
Key sequence: Alt+A

Moves the current point to the start of the current sentence. If the current point is already at the start of a sentence, it is moved to the beginning of the previous sentence.

Forward Paragraph

Arguments: None
Key sequence: Alt+

Moves the current point to the end of the current paragraph. If the current point is already at the end of a paragraph, then it is moved to the end of the next paragraph.

Backward Paragraph

Arguments: None
Key sequence: Alt+[.

Moves the current point to the start of the current paragraph. If the current point is already at the start of a paragraph, then it is moved to the beginning of the previous paragraph.

Scroll Window Down

Arguments: None
Key sequence: Ctrl+V

Changes the text that is being displayed to be one screenful forward, minus Scroll-Overlap. If the current point is no longer included in the new text, it is moved to the start of the line nearest to the centre of the window.
A prefix argument causes the current screen to be scrolled up the number of lines specified and that number of new lines are shown at the bottom of the window.

*Window* is the name of the window to be scrolled. The default is the current window.

**Scroll Window Up**

*Editor Command*

Arguments: None

Key sequence: `Alt+V`

```
editor:scroll-window-up-command p &optional window
```

Changes the text that is being displayed to be one screenful back, minus *Scroll-Overlap*. If the current point is no longer included in the new text, it is moved to the start of the line nearest to the centre of the window.

A prefix argument causes the current screen to be scrolled down the number of lines specified and that number of new lines are shown at the top of the window.

The argument *window* is the name of the window to be scrolled. The default is the current window.

**Scroll-Overlap**

*Editor Variable*

Default value: 2

Determines the number of lines of overlap when *Scroll Window Down* and *Scroll Window Up* are used with no prefix argument.

**Line to Top of Window**

*Editor Command*

Arguments: None

Key sequence: None

Moves the current line to the top of the window.
3.6 Movement

**Top of Window**

*Editor Command*

Arguments: None  
Key sequence: None

Moves the current point to the start of the first line currently displayed in the window.

**Bottom of Window**

*Editor Command*

Arguments: None  
Key sequence: None

Moves the current point to the start of the last line that is currently displayed in the window.

**Move to Window Line**

*Editor Command*

Arguments: None  
Key sequence: Alt+Shift+R

Without a prefix argument, moves the current point to the start of the center line in the window.

With a positive (negative) integer prefix argument $p$, moves the point to the start of the $p$th line from the top (bottom) of the window.

**Beginning of Buffer**

*Editor Command*

Arguments: None  
Key sequence: Alt+Shift+<

Moves the current point to the beginning of the current buffer.

**End of Buffer**

*Editor Command*

Arguments: None  
Key sequence: Alt+Shift+>

Moves the current point to the end of the current buffer.
Skip Whitespace Editor Command

Arguments: None
Key sequence: None
Skips to the next non-whitespace character if the current character is a whitespace character (for example, Space, Tab or newline).

What Cursor Position Editor Command

Arguments: None
Key sequence: Ctrl+X =
Displays in the echo area the character under the point and the column of the point. Also available via the function:


Where Is Point Editor Command

Arguments: None
Key sequence: None
Displays in the echo area the position of the current point in terms of characters in the buffer, as a fraction of current point position over total buffer length.

Goto Point Editor Command

Arguments: point
Key sequence: None
Moves the current point to point, where point is a character position in the current buffer.

3.7 Marks and regions

The first part of this section gives details of commands associated with marking, while the second provides details of a few commands whose area is limited to a region. Other region specific commands are available but are dealt with in more
appropriate sections of this manual. For example, *Write Region* is dealt with under the “File handling” on page 23 as it involves writing a region to a file.

Details of marks are kept in a mark ring so that previously defined marks can be accessed. The mark ring works like a stack, in that marks are pushed onto the ring and can only be popped off on a “last in first out” basis. Each buffer has its own mark ring.

Note that marks may also be set by using the mouse—see “Buffers, windows and the mouse” on page 106—but also note that a region must be defined *either* by using the mouse *or* by using editor key sequences, as the region may become unset if a combination of the two is used. For example, using *Ctrl+Space* to set a mark and then using the mouse to go to the start of the required region unsets the mark.

3.7.1 Marks

**Set Mark**

*Editor Command*

Arguments: None

Key sequence: *Ctrl+Space* or Middle Mouse Button

Sets the mark to the current point, in effect, pushing the current point on to the top of the mark ring.

With a prefix argument equal to the value of the *Prefix-Argument-Default*, *Pop and Goto Mark* is invoked.

With a prefix argument equal to the square of the *Prefix-Argument-Default* (achieved by typing *Ctrl+U Ctrl+U* before invoking *Set Mark*), the mark is deleted from the mark ring, and the next point on the mark ring then becomes the mark, but the current point is not moved.

**Pop and Goto Mark**

*Editor Command*

Arguments: None

Key sequence: None

Moves the current point to the mark without saving the current point on the mark ring (in contrast with *Exchange Point and Mark*). After the cur-
rent point has been moved to the mark, this mark is deleted from the mark ring. Successive invocations of this command clear the mark ring.

**Pop Mark**  
*Editor Command*  
Arguments: None  
Key sequence: **Alt+Ctrl+Space**  
Pops the top mark from the mark ring, de-activating the current region.

**Exchange Point and Mark**  
*Editor Command*  
Arguments: None  
Key sequence: **Ctrl+X Ctrl+X**  

```
editor:exchange-point-and-mark-command p &optional buffer
```

Sets the mark to the current point and moves the current point to the previous mark. This command can therefore be used to examine the extent of the current region.

The argument *buffer* is the buffer in which to exchange the point and mark. The default value is the current buffer.

**Mark Sentence**  
*Editor Command*  
Arguments: None  
Key sequence: None  
Puts the mark at the end of the current sentence and the current point at the start of the current sentence. The sentence thereby becomes the current region. If the current point is initially located between two sentences then the mark and current point are placed around the next sentence.

**Mark Paragraph**  
*Editor Command*  
Arguments: None  
Key sequence: **Alt+H**
3.7 Marks and regions

Puts the mark at the end of the current paragraph and the current point at the start of the current paragraph. The paragraph thereby becomes the current region. If the current point is initially located between two paragraphs, then the mark and current point are placed around the next paragraph.

**Mark Whole Buffer**

*Editor Command*

Arguments: None
Key sequence: Ctrl+X H

Sets the mark at the end of the current buffer and the current point at the beginning of the current buffer. The current region is thereby set as the whole of the buffer.

A non-nil prefix argument causes the mark to be set as the start of the buffer and the current point at the end.

### 3.7.2 Regions

**Count Words Region**

*Editor Command*

Arguments: None
Key sequence: None

Displays a count of the total number of words in the region between the current point and the mark.

**Count Lines Region**

*Editor Command*

Arguments: None
Key sequence: None

Displays a count of the total number of lines in the region between the current point and the mark.

**Region-Query-Size**

*Editor Variable*

Default value: 60
If the region between the current point and the mark contains more than \texttt{Region-Query-Size} lines, then any destructive operation on the region prompts the user for confirmation before being executed.

\textbf{Print Region} \hspace{1cm} \textit{Editor Command}

Arguments: None  
Key sequence: None

Prints the current region, using \texttt{capi:print-text}. See the \textit{LispWorks CAPI Reference Manual} for details of this function.

\textbf{3.8 Locations}

A location is the position of the current point in a buffer at some time in the past. Locations are recorded automatically by the editor for most commands that take you to a different buffer or where you might lose your place within the current buffer (for example, \texttt{Beginning of Buffer}). They are designed to be a more comprehensive form of the mark ring (see \texttt{Pop} and \texttt{Goto Mark}), but without the interaction with the selected region.

\textbf{Go Back} \hspace{1cm} \textit{Editor Command}

Arguments: None  
Key sequence: \texttt{Ctrl}+X C

Takes you back to the most recently recorded location. If a prefix argument \texttt{count} is supplied, it takes you back \texttt{count} locations in the location history. If \texttt{count} is negative, it takes you forward again \texttt{count} locations in the history, provided that no more locations have been recorded since you last went back.

\textbf{Select Go Back} \hspace{1cm} \textit{Editor Command}

Arguments: None  
Key sequence: \texttt{Ctrl}+X M

Takes you back to a previously recorded location, which you select from a list.
Any prefix argument is ignored.

3.9 Deleting and killing text

There are two ways of removing text: deletion, after which the deleted text is not recoverable (except with the \texttt{Undo} command); and killing, which appends the deleted text to the kill ring, so that it may be recovered using the \texttt{Un-Kill} and \texttt{Rotate Kill Ring} commands. The first section contains details of commands to delete text, and the second details of commands to kill text.

Note that, if Delete Selection Mode is active, then any currently selected text is deleted when text is entered. See ‘Delete Selection’ on page 3-52 for details.

The use of prefix arguments with this set of commands can be very useful. In general, using a negative prefix argument repeats these commands a certain number of times in the opposite logical direction. For example, the key sequence \texttt{Ctrl+U 10 Alt+D} deletes 10 words after the current point, but the key sequence \texttt{Ctrl+U -10 Alt+D} deletes 10 words \textit{before} the current point.

3.9.1 Deleting Text

Delete Next Character \hspace{1cm} \textit{Editor Command}

Arguments: None
Key sequence: \texttt{Ctrl+D}

Deletes the character immediately after the current point.

Delete Previous Character \hspace{1cm} \textit{Editor Command}

Arguments: None
Key sequence: \texttt{Delete}

Deletes the character immediately before the current point.

Delete Previous Character Expanding Tabs \hspace{1cm} \textit{Editor Command}

Arguments: None
Key sequence: None
Deletes the character immediately before the current point, but if the previous character is a \texttt{Tab}, then this is expanded into the equivalent number of spaces, so that the apparent space is reduced by one.

A prefix argument deletes the required number of characters, but if any of them are tabs, the equivalent spaces are inserted before the deletion continues.

**Delete Horizontal Space** \hspace{1cm} \textit{Editor Command}

- Arguments: None
- Key sequence: \texttt{Alt+\textbackslash}

Deletes all spaces on the line surrounding the current point.

**Just One Space** \hspace{1cm} \textit{Editor Command}

- Arguments: None
- Key sequence: \texttt{Alt+Space}

Deletes all space on the current line surrounding the current point and then inserts a single space. If there was initially no space around the current point, a single space is inserted.

**Delete Blank Lines** \hspace{1cm} \textit{Editor Command}

- Arguments: None
- Key sequence: \texttt{Ctrl+X Ctrl+O}

If the current point is on a blank line, all surrounding blank lines are deleted, leaving just one. If the current point is on a non-blank line, all following blank lines up to the next non-blank line are deleted.

**Delete Region** \hspace{1cm} \textit{Editor Command}

- Arguments: None
- Key sequence: None

Delete the current region. Also available via \texttt{editor:delete-region-command}. 
3.9 Deleting and killing text

Clear Listener

Editor Command

Arguments: None
Key sequence: None

Deletes the text in a Listener, leaving you with a prompt. Undo information is not retained, although you are warned about this before confirming the command.

This command is useful if the Listener session has grown very large.

Clear Output

Editor Command

Arguments: None
Key sequence: None

Deletes the text in the Output tab of a Listener or Editor tool, or an Output Browser. Undo information is discarded without warning.

This command is useful if the output has grown very large.

3.9.2 Killing text

Most of these commands result in text being pushed onto the kill ring so that it can be recovered. There is only one kill ring for all buffers so that text can be copied from one buffer to another.

Normally each kill command pushes a new block of text onto the kill ring. However, if more than one kill command is issued sequentially, and the text being killed was next to the previously killed text, they form a single entry in the kill ring (exceptions being Kill Region and Save Region).

Append Next Kill is different in that affects where a subsequent killed text is stored in the kill ring, but does not itself modify the kill ring.

Kill Next Word

Editor Command

Arguments: None
Key sequence: Alt+D

Kills the rest of the word after the current point. If the current point is between two words, then the next word is killed.
3 Command Reference

**Kill Previous Word**  
*Editor Command*

Arguments: None  
Key sequence: **Alt+Backspace**

Kills the rest of the word before the current point. If the current point is between two words, then the previous word is killed.

**Kill Line**  
*Editor Command*

Arguments: None  
Key sequence: **Ctrl+K**

Kills the characters from the current point up to the end of the current line. If the line is empty then the line is deleted.

**Backward Kill Line**  
*Editor Command*

Arguments: None  
Key sequence: None

Kills the characters from the current point to the beginning of the line. If the current point is already at the beginning of the line, the current line is joined to the previous line, with any trailing space on the previous line killed.

**Forward Kill Sentence**  
*Editor Command*

Arguments: None  
Key sequence: **Alt+K**

Kills the text starting from the current point up to the end of the sentence. If the current point is between two sentences, then the whole of the next sentence is killed.

**Backward Kill Sentence**  
*Editor Command*

Arguments: None  
Key sequence: **Ctrl+X Backspace**
3.10 Inserting text

Kills the text starting from the current point up to the beginning of the sentence. If the current point is between two sentences, then the whole of the previous sentence is killed.

**Kill Region**  
*Editor Command*

Arguments: None  
Key sequence: **Ctrl+W**  
Kills the region between the current point and the mark.

**Save Region**  
*Editor Command*

Arguments: None  
Key sequence: **Alt+W**  
Pushes the region between the current point and the mark onto the kill ring without deleting it from the buffer. Text saved in this way can therefore be inserted elsewhere without first being killed.

**Append Next Kill**  
*Editor Command*

Arguments: None  
Key sequence: **Alt+Ctrl+W**  
If the next command entered kills any text then this text will be appended to the existing kill text instead of being pushed separately onto the kill ring.

3.10 Inserting text

This section contains details of commands used to insert text from the kill ring—see “Deleting and killing text” on page 45—and various other commands used to insert text and lines into the buffer.

**Un-Kill**  
*Editor Command*

Arguments: None  
Key sequence: **Ctrl+Y**
Selects (yanks) the top item in the kill ring (which represents the last piece of text that was killed with a kill command or saved with `Save Region`) and inserts it before the current point. The current point is left at the end of the inserted text, and the mark is automatically set to the beginning of the inserted text.

A prefix argument (`Ctrl+U number`) causes the item at position `number` in the ring to be inserted. The order of items on the ring remains unaltered.

### Rotate Kill Ring

*Editor Command*

- **Arguments:** None
- **Key sequence:** `Alt+Y`

Replaces the text that has just been un-killed with the item that is next on the kill ring. It is therefore possible to recover text other than that which was most recently killed by typing `Ctrl+Y` followed by `Alt+Y` the required number of times. If `Un-Kill` was not the previous command, an error is signalled.

Note that the ring is only rotated and no items are actually deleted from the ring using this command.

A prefix argument causes the kill ring to be rotated the appropriate number of times before the top item is selected.

### New Line

*Editor Command*

- **Arguments:** None
- **Key sequence:** `Return`

Opens a new line before the current point. If the current point is at the start of a line, an empty line is inserted above it. If the current point is in the middle of a line, that line is split. The current point always becomes located on the second of the two lines.

A prefix argument causes the appropriate number of lines to be inserted before the current point.
Open Line

**Editor Command**

Arguments: None
Key sequence: Ctrl+O

Opens a new line after the current point. If the current point is at the start of a line, an empty line is inserted above it. If the current point is in the middle of a line, that line is split. The current point always becomes located on the first of the two lines.

A prefix argument causes the appropriate number of lines to be inserted after the current point.

Quoted Insert

**Editor Command**

Arguments: args
Key sequence: Ctrl+Q &rest args

Quoted Insert is a versatile command allowing you to enter characters which are not accessible directly on your keyboard.

A single argument key is inserted into the text literally. This can be used to enter control keys (such as Ctrl+L) into a buffer as a text string. Note that Ctrl is represented by ^ and Meta by ^1.

You may input a character by entering its Octal Unicode code: press Return to indicate the end of the code. For example enter

`Ctrl+Q 4 3 Return`

to input #.

Self Insert

**Editor Command**

Arguments: None
Key sequence: key

`editor:self-insert-command p &optional char`

This is the basic command used for inserting each character that is typed. The character to be inserted is char. There is no need for the user to use this command explicitly.
Dynamic Completion  
**Editor Command**

Arguments: None  
Key sequence: Alt+/

Tries to complete the current word, by looking backwards for a word that starts with the same characters as have already been typed. Repeated use of this command makes the search skip to successively previous instances of words beginning with these characters. A prefix argument causes the search to progress forwards rather than backwards. If the buffer is in Lisp mode then completion occurs for Lisp symbols as well as words.

Expand File Name  
**Editor Command**

Arguments: None  
Key sequence: Alt+Tab

Expands the file name at the current point. Issuing this command twice in succession brings up a list of possible completions in a popup window.

3.11 Delete Selection

When in Delete Selection Mode, commands that insert text into the buffer first delete any selected text. Delete Selection Mode is a global editor setting. It is off by default with Emacs keys, and is on by default when using Microsoft Windows editor emulation.

Delete Selection Mode  
**Editor Command**

Arguments: None  
Key Sequence: None

Toggles Delete Selection Mode, switching it on if it is currently off, and off if it is currently on.

3.12 Undoing

Commands that modify the text in a buffer can be undone, so that the text reverts to its state before the command was invoked, using undo. Details of
modifying commands are kept in an undo ring so that previous commands can be undone. The undo ring works like a stack, in that commands are pushed onto the ring and can only be popped off on a "last in first out" basis.

Un-Kill can also be used to replace text that has inadvertently been deleted.

**Undo**

*Editor Command*

Arguments: None  
Key sequence: **Ctrl+Shift+\_**  

Undoes the last command. If typed repeatedly, the most recent commands in the editing session are successively undone.

**Undo-Ring-Size**

*Editor Variable*

Default value: 100  

The number of items in the undo ring.

### 3.13 Case conversion

This section provides details of the commands which allow case conversions on both single words and regions of text. The three general types of case conversion are converting words to uppercase, converting words to lowercase and converting the first letter of words to uppercase.

**Lowercase Word**

*Editor Command*

Arguments: None  
Key sequence: **Alt+L**  

Converts the current word to lowercase, starting from the current point. If the current point is between two words, then the next word is converted.  

A negative prefix argument converts the appropriate number of words before the current point to lowercase, but leaves the current point where it was.
Uppercase Word

Arguments: None
Key sequence: Alt+U

Converts the current word to uppercase, starting from the current point. If the current point is between two words, then the next word is converted.

A negative prefix argument converts the appropriate number of words before the current point to uppercase, but leaves the current point where it was.

Capitalize Word

Arguments: None
Key sequence: Alt+C

Converts the current word to lowercase, capitalizing the first character. If the current point is inside a word, the character immediately after the current point is capitalized.

A negative prefix argument capitalizes the appropriate number of words before the current point, but leaves the point where it was.

Lowercase Region

Arguments: None
Key sequence: Ctrl+X Ctrl+L

Converts all the characters in the region between the current point and the mark to lowercase.

Uppercase Region

Arguments: None
Key sequence: Ctrl+X Ctrl+U

Converts all the characters in the region between the current point and the mark to uppercase.
3.14 Transposition

This section gives details of commands used to transpose characters, words, lines and regions.

**Capitalize Region**

*Editor Command*

- **Arguments:** None
- **Key sequence:** None
- Converts all the words in the region between the mark and the current point to lowercase, capitalizing the first character of each word.

**3.14 Transposition**

**Transpose Characters**

*Editor Command*

- **Arguments:** None
- **Key sequence:** Ctrl+T
- Transposes the current character with the previous character, and then moves the current point forwards one character.

If this command is issued when the current point is at the end of a line, the two characters to the left of the cursor are transposed.

A positive prefix argument causes the character before the current point to be shifted forwards the required number of places. A negative prefix argument has a similar effect but shifts the character backwards. In both cases the current point remains located after the character which has been moved.

**Transpose Words**

*Editor Command*

- **Arguments:** None
- **Key sequence:** Alt+T
- Transposes the current word with the next word, and then moves the current point forward one word. If the current point is initially located between two words, then the previous word is moved over the next word.

A positive prefix argument causes the current or previous word to be shifted forwards the required number of words. A negative prefix argu-
ment has a similar effect but shifts the word backwards. In both cases the current point remains located after the word which has been moved.

**Transpose Lines**

*Editor Command*

Arguments: None

Key sequence: \texttt{Ctrl+X Ctrl+T}

Transposes the current line with the previous line, and then moves the current point forward one line.

A positive prefix argument causes the previous line to be shifted forwards the required number of lines. A negative prefix argument has a similar effect but shifts the line backwards. In both cases the current point remains located after the line which has been moved.

A prefix argument of zero transposes the current line and the line containing the mark.

**Transpose Regions**

*Editor Command*

Arguments: None

Key sequence: None

Transposes two regions. One region is delineated by the current point and the mark. The other region is delineated by the next two points on the mark ring. To use this command it is necessary to use \texttt{Set Mark} at the beginning and end of one region and at the beginning of the other region, and then move the current point to the end of the second region.

### 3.15 Overwriting

In the default mode of operation, each character that is typed is inserted into the text, with the existing characters being shifted as appropriate. In overwrite mode, each character that is typed deletes an existing character in the text.

When in overwrite mode, a character can be inserted without deleting an existing character by preceding it with \texttt{Ctrl+Q}. 
3.16 Indentation

Overwrite Mode

Editor Command

Arguments: None
Key sequence: Insert

Switches overwrite mode on if it is currently off, and off if it is currently on.

With a positive prefix argument, overwrite mode is turned on. With a zero or negative prefix argument it is turned off. Using prefix arguments with Overwrite Mode disregards the current state of the mode.

Self Overwrite

Editor Command

Arguments: None
Key sequence: key

If the current point is in the middle of a line, the next character (that is, the character that is highlighted by the cursor) is replaced with the last character typed. If the current point is at the end of a line, the new character is inserted without removing any other character.

A prefix argument causes the new character to overwrite the relevant number of characters.

This is the command that is invoked when each character is typed in overwrite mode. There is no need for users to invoke this command explicitly.

Overwrite Delete Previous Character

Editor Command

Arguments: None
Key sequence: None

Replaces the previous character with space, except that tabs and newlines are deleted.

3.16 Indentation

This section contains details of commands used to indent text. Indentation is usually achieved by inserting tab or space characters into the text so as to indent that text a predefined number of spaces.
The effect of the editor indentation commands depends on the major mode of the buffer. Where relevant, the command details given below provide information on how they operate in Text mode and Lisp mode. The operation of commands in Fundamental mode is generally the same as that of Text mode.

**Indent**  
*Editor Command*

Arguments: None  
Key sequence: $\text{Tab}$

In Text mode, $\text{Spaces-For-Tab}$ #\Space characters are inserted. A prefix argument causes this to occur at the start of the appropriate number of lines (starting from the current line).

In Lisp mode, the current line is indented according to the structure of the current Lisp form. A prefix argument $p$ causes $p$ lines to be indented according to Lisp syntax.

See $\text{editor:*indent-with-tabs*}$ for control over the insertion of #\Tab characters by this and other indentation commands.

**Spaces-For-Tab**  
*Editor Variable*

Default value: 8  
Determines the width of the whitespace used for tabs.

**Indent Region**  
*Editor Command*

Arguments: None  
Key sequence: $\text{Alt+Ctrl+\}$

Indents all the text in the region between the mark and the current point.  
In Text mode a block of whitespace, which is $\text{Spaces-For-Tab}$ wide, is inserted at the start of each line within the region.

In Lisp mode the text is indented according to the syntax of the Lisp form.

In both cases, a prefix argument causes any existing indentation to be deleted and replaced with a block of whitespace of the appropriate width.
3.16 Indentation

### Indent Rigidly

*Editor Command*

Arguments: None  
Key sequence: `Ctrl+X Tab` or `Ctrl+X Ctrl+I`

Indents each line in the region between the current point and the mark by a block of whitespace which is `Spaces-For-Tab` wide. Any existing whitespace at the beginning of the lines is retained.

A positive prefix argument causes the lines to be indented by the appropriate number of spaces, in addition to their existing space. A negative prefix argument causes the lines to be shifted to the left by the appropriate number of spaces. Where necessary, tabs are converted to spaces.

### Delete Indentation

*Editor Command*

Arguments: None  
Key sequence: `Alt+Shift+^`

Joins the current line with the previous one, deleting all whitespace at the beginning of the current line and at the end of the previous line. The deleted whitespace is normally replaced with a single space. However, if the deleted whitespace is at the beginning of a line, or immediately after a `,` or immediately before a `)`, then the whitespace is merely deleted without any characters being inserted. If the preceding character is a sentence terminator, then two spaces are left instead of one.

A prefix argument causes the following line to be joined with the current line.

### Back to Indentation

*Editor Command*

Arguments: None  
Key sequence: `Alt+M`

Moves the current point to the first character in the current line that is not a whitespace character.
3 Command Reference

**Indent New Line**

*Editor Command*

Arguments: None
Key sequence: None

Moves everything to the right of the current point to a new line and indents it. Any whitespace before the current point is deleted. If there is a **Fill-Prefix**, this is inserted at the start of the new line instead.

A prefix argument causes the current point to be moved down the appropriate number of lines and indented.

**Quote Tab**

*Editor Command*

Arguments: None
Key sequence: None

Inserts a **Tab** character.

A prefix argument causes the appropriate number of tab characters to be inserted.

### 3.17 Filling

Filling involves re-formatting text so that each line extends as far to the right as possible without any words being broken or any text extending past the **Fill-Column**.

The first section deals with general commands used to fill text, while the second section provides information on Auto-Fill mode and related commands.

#### 3.17.1 Fill commands

**Fill Paragraph**

*Editor Command*

Arguments: None
Key sequence: `Alt+Q`

Fills the current paragraph. If the current point is located between two paragraphs, the next paragraph is filled.
A prefix argument causes the current fill operation to use that value, rather than the value of \texttt{Fill-Column}.

\textbf{Fill Region} \hspace{1cm} \textit{Editor Command}

Arguments: None  
Key sequence: \texttt{Alt+G}  
Fills the region from the current point to the mark.  
A prefix argument causes the current fill operation to use that value, rather than the value of \texttt{Fill-Column}.

\textbf{Fill-Column} \hspace{1cm} \textit{Editor Variable}

Default value: 79  
Determines the column at which text in the current buffer is forced on to a new line.

\textbf{Set Fill Column} \hspace{1cm} \textit{Editor Command}

Arguments: None  
Key sequence: \texttt{Ctrl+X F}  
Sets the value of \texttt{Fill-Column}, for the current buffer, as the column of the current point.  
A prefix argument causes \texttt{Fill-Column} to be set at the required value.

\textbf{Fill-Prefix} \hspace{1cm} \textit{Editor Variable}

Default value: \texttt{nil}  
Defines a string which is excluded when each line of the current buffer is re-formatted using the filling commands. For example, if the \texttt{Fill-Prefix} is set to \\
\texttt{;;}, then these characters at the start of a line is skipped over when the text is re-formatted, so it is possible to re-format Lisp comments. If the \texttt{Fill-Prefix} is \texttt{nil}, no characters are excluded when text is filled.
If a **Fill-Prefix** is defined, any line that does not begin with the **Fill-Prefix** is considered to begin a new paragraph. Therefore, any re-formatting of comments in Lisp code does not intrude outside the commented lines.

**Set Fill Prefix**

*Editor Command*

Arguments: None  
Key sequence: `Ctrl+X` .  

Sets the **Fill-Prefix** of the current buffer to be the text from the beginning of the current line up to the current point. The **Fill-Prefix** may be set to `nil` by using this command with the current point at the start of a line.

**Center Line**

*Editor Command*

Arguments: None  
Key sequence: None  

Centers the current line with reference to the current value of **Fill-Column**.

A prefix argument causes the current line to be centered with reference to the required width.

### 3.17.2 Auto-fill mode

In the default mode of operation, no filling of text takes place unless specified by using one of the commands described above. A result of this is that the user has to press `Return` at the end of each line typed to simulate filling. In Auto-Fill mode lines are broken between words at the right margin automatically as the text is being typed. Each line is broken when a space is inserted, and the text that extends past the right margin is put on the next line. The right hand margin is determined by the editor variable **Fill-Column**.
3.17 Filling

**Auto Fill Mode**

*Editor Command*

Arguments: None  
Key sequence: None  

Switches auto-fill mode on if it is currently off, and off if it is currently on.  
With a positive prefix argument, auto-fill mode is switched on. With a negative or zero prefix argument, it is switched off. Using prefix arguments with **Auto Fill Mode** disregards the current state of the mode.

**Auto Fill Space**

*Editor Command*

Arguments: None  
Key sequence: **Space**  
Mode: Auto-Fill  

Inserts a space and breaks the line between two words if the line extends beyond the right margin. A fill prefix is automatically added at the beginning of the new line if the value of **Fill-Prefix** is non-nil.  
When **Space** is bound to this command in Auto-Fill mode, this key no longer invokes **Self Insert**.  
A positive prefix argument causes the required number of spaces to be inserted but no line break. A prefix argument of zero causes a line break, if necessary, but no spaces are inserted.

**Auto Fill Linefeed**

*Editor Command*

Arguments: None  
Key sequence: **Linefeed**  
Mode: Auto-Fill  

Inserts a **Linefeed** and a **Fill-Prefix** (if one exists).

**Auto Fill Return**

*Editor Command*

Arguments: None  
Key sequence: **Return**  
Mode: Auto-Fill
The current line is broken, between two words if necessary, with no Space being inserted. This is equivalent to Auto Fill Space with a zero prefix argument, but followed by a newline.

### 3.18 Buffers

This section contains details of commands used to manipulate buffers.

**Select Buffer**

*Editor Command*

**Arguments:** buffer-name

**Key sequence:** Ctrl+X B buffer-name

Displays a buffer called buffer-name in the current window. If no buffer name is provided, the last buffer accessed in the current window is displayed. If the buffer that is selected is already being displayed in another window, any modifications to that buffer are shown simultaneously in both windows.

**Select Buffer Other Window**

*Editor Command*

**Arguments:** buffer-name

**Key sequence:** None

Displays a buffer called buffer-name in a new window. If no buffer name is provided, the last buffer displayed in the current window is selected. If the buffer that is selected is already being displayed in another window, any modifications to that buffer are shown simultaneously in both windows.

**Select Previous Buffer**

*Editor Command*

**Arguments:** None

**Key sequence:** Alt+Ctrl+L

Displays the last buffer accessed in a new window. If the buffer that is selected is already being displayed in another window, any modifications to that buffer are shown simultaneously in both windows.
A prefix argument causes the appropriately numbered buffer, from the top of the buffer history, to be selected.

**Circulate Buffers**

*Editor Command*

Arguments: None

Key sequence: Alt+Ctrl+Shift+L

Move through the buffer history, selecting the successive previous buffers.

**Kill Buffer**

*Editor Command*

Arguments: buffer-name

Key sequence: Ctrl+X K buffer-name

`editor:kill-buffer-command p &optional buffer-name`

Deletes a buffer called buffer-name. If no buffer name is provided, the current buffer is deleted. If the buffer that is selected for deletion has been modified then confirmation is asked for before deletion takes place.

**List Buffers**

*Editor Command*

Arguments: None

Key sequence: Ctrl+X Ctrl+B

Displays a list of all the existing buffers in the Buffers window in the Editor tool. Information is given on the name of the buffer, its mode, whether it has been modified or not, the pathname of any file it is associated with, and its size.

A buffer can be selected by clicking the left mouse button on the buffer name. The buttons on the toolbar can then be used to modify the selected buffer.

**Create Buffer**

*Editor Command*

Arguments: buffer-name

Key sequence: None
editor:create-buffer-command \p \optional buffer-name

Creates a buffer called \textit{buffer-name}. If no buffer name is provided then the current buffer is selected. If a buffer with the specified name already exists then this becomes the current buffer instead, and no new buffer is created.

\textbf{New Buffer} \quad \textit{Editor Command}

- Arguments: None
- Key sequence: None

Creates a new unnamed buffer. The buffer is in Lisp mode.

\textbf{Insert Buffer} \quad \textit{Editor Command}

- Arguments: \textit{buffer-name}
- Key sequence: None

Inserts the contents of a buffer called \textit{buffer-name} at the current point. If no buffer name is provided, the contents of the last buffer displayed in the current window are inserted.

\textbf{Rename Buffer} \quad \textit{Editor Command}

- Arguments: \textit{new-name}
- Key sequence: None

Changes the name of the current buffer to \textit{new-name}.

\textbf{Print Buffer} \quad \textit{Editor Command}

- Arguments: None
- Key sequence: None

Prints the current buffer, using \texttt{capi:print-text}. See the \textit{LispWorks CAPI Reference Manual} for details of this function.
3.19 Windows

**Toggle Buffer Read-Only**  
*Editor Command*

- **Arguments:** None
- **Key sequence:** `Ctrl+X Ctrl+Q`

Makes the current buffer read only, so that no modification to its contents are allowed. If it is already read only, this restriction is removed.

**Check Buffer Modified**  
*Editor Command*

- **Arguments:** None
- **Key sequence:** `Ctrl+X Shift+~`

Checks whether the current buffer is modified or not.

**Buffer Not Modified**  
*Editor Command*

- **Arguments:** None
- **Key sequence:** `Alt+Shift+~`

```
(editor::buffer-not-modified-command p &optional buffer)
```

Makes the current buffer not modified.

The argument `buffer` is the name of the buffer to be un-modified. The default is the current buffer.

### 3.19 Windows

This section contains details of commands used to manipulate windows. A window ring is used to hold details of all windows currently open.

**New Window**  
*Editor Command*

- **Arguments:** None
- **Key sequence:** `Ctrl+X 2`

Creates a new window and makes it the current window. Initially, the new window displays the same buffer as the current one.
Next Window

Editor Command

Arguments: None
Key sequence: None

Changes the current window to be the next window in the window ring, and the current buffer to be the buffer that is displayed in that window.

Next Ordinary Window

Editor Command

Arguments: None
Key sequence: Ctrl+X 0

Changes the current window to be the next ordinary editor window, thus avoiding the need to cycle through other window types (for example, Listeners and Debuggers).

Previous Window

Editor Command

Arguments: None
Key sequence: None

Changes the current window to be the previous window visited, and the current buffer to be the buffer that is displayed in that window.

Delete Window

Editor Command

Arguments: None
Key sequence: Ctrl+X 0

Deletes the current window. The previous window becomes the current window.

Delete Next Window

Editor Command

Arguments: None
Key sequence: Ctrl+X 1

Deletes the next window in the window ring.
**Scroll Next Window Down**

*Editor Command*

Arguments: None  
Key sequence: None  

The next window in the window ring is scrolled down.  
A prefix argument causes the appropriately numbered window, from the top of the window ring, to be scrolled.

**Scroll Next Window Up**

*Editor Command*

Arguments: None  
Key sequence: None  

The next window in the window ring is scrolled up.  
A prefix argument causes the appropriately numbered window, from the top of the window ring, to be scrolled.

**Refresh Screen**

*Editor Command*

Arguments: None  
Key sequence: \texttt{Ctrl+L}

Moves the current line to the center of the current window, and then re-displays all the text in all the windows.  
A prefix argument of 0 causes the current line to become located at the top of the window. A positive prefix argument causes the current line to become located the appropriate number of lines from the top of the window. A negative prefix argument causes the current line to become located the appropriate number of lines from the bottom of the window.

**3.20 Pages**

Files are sometimes thought of as being divided into pages. For example, when a file is printed on a printer, it is divided into pages so that each page appears on a fresh piece of paper. The ASCII key sequence \texttt{Ctrl+L} constitutes a page delimiter (as it starts a new page on most line printers). A page is the region between
two page delimiters. A page delimiter can be inserted into text being edited by
using the editor command **Quoted Insert** (that is, type in **Ctrl+Q Ctrl+L**).

**Previous Page**

*Editor Command*

Arguments: None

Key sequence: **Ctrl+X [**

Moves the current point to the start of the current page.

A prefix argument causes the current point to be moved backwards the
appropriate number of pages.

**Next Page**

*Editor Command*

Arguments: None

Key sequence: **Ctrl+X ]**

Moves the current point to the start of the next page.

A prefix argument causes the current point to be moved forwards the
appropriate number of pages.

**Goto Page**

*Editor Command*

Arguments: None

Key sequence: None

Moves the current point to the start of the next page.

A positive prefix argument causes the current point to be moved to the
appropriate page starting from the beginning of the buffer. A negative pre-
fix argument causes the current point to be moved back the appropriate
number of pages from the current location. A prefix argument of zero
causes the user to be prompted for a string, and the current point is moved
to the next page with that string contained in the page title.
Mark Page  
*Editor Command*

Arguments: None  
Key sequence: **Ctrl+X Ctrl+P**

Puts the mark at the end of the current page and the current point at the start of the current page. The page thereby becomes the current region.

A prefix argument marks the page which is the appropriate number of pages on from the current one.

Count Lines Page  
*Editor Command*

Arguments: None  
Key sequence: **Ctrl+X L**

Displays the number of lines in the current page and the location of the current point within the page.

A prefix argument displays the total number of lines in the current buffer and the location of the current point within the buffer (so that page delimiters are ignored).

View Page Directory  
*Editor Command*

Arguments: None  
Key sequence: None

Displays a list of the first non-blank line after each page delimiter.

Insert Page Directory  
*Editor Command*

Arguments: None  
Key sequence: None

Inserts a listing of the first non-blank line after each page delimiter at the start of the buffer, moving the current point to the end of this list. The location of the start of this list is pushed onto the mark ring.

A prefix argument causes the page directory to be inserted at the current point.
3.21 Searching and replacing

This section is divided into three parts. The first two provide details of commands used for searching. These commands are, on the whole, non-modifying and non-destructive, and merely search for strings and patterns. The third part provides details of commands used for replacing a string or pattern.

3.21.1 Searching

Most of the search commands perform straightforward searches, but there are two useful commands (Incremental Search and Reverse Incremental Search) which perform incremental searches. This means that the search is started as soon as the first character is typed.

Incremental Search

Arguments: \textit{string}

Key sequence: \texttt{Ctrl+S string}

Searches forward, starting from the current point, for the search string that is input, beginning the search as soon as each character is typed in. When a match is found for the search string, the current point is moved to the end of the matched string. If the search string is not found between the current point and the end of the buffer, an error is signalled.

The search can be controlled by entering one of the following key sequences at any time during the search.

\begin{itemize}
  \item \texttt{Ctrl+S} If the search string is empty, repeats the last incremental search, otherwise repeats a forward search for the current search string. If the search string cannot be found, starts the search from the beginning of the buffer (wrap-around search).
  \item \texttt{Ctrl+R} Changes to a backward (reverse) search.
  \item \texttt{Delete} Cancels the last character typed.
  \item \texttt{Ctrl+Q} Quotes the next character typed.
\end{itemize}
3.21 Searching and replacing

Ctrl+W
Adds the next word under the cursor to the search string.

Alt+Ctrl+Y
Adds the next form under the cursor to the search string.

Ctrl+Y
Adds the remainder of the line under the cursor to the search string.

Alt+Y
Adds the current kill string to the search string.

Esc
If the search string is empty, invokes a non-incremental search, otherwise exits the search, leaving the current point at the last find.

Ctrl+G
Aborts the search, returning the current point to its original location.
If the search string cannot be found, cancels the last character typed (equivalent to Delete).

Return
Exits the search, leaving the current point at the last find.

Reverse Incremental Search

Arguments: string
Key sequence: Ctrl+R string

Searches backward, starting from the current point, for the search string that is input, beginning the search as soon as each character is provided. When a match is found for the search string, the current point is moved to the start of the matched string. If the search string is not found between the current point and the beginning of the buffer, an error is signalled.

The search can be controlled by entering one of the following key sequences at any time during the search.

Ctrl+R
If the search string is empty, repeats the last incremental search, otherwise repeats a backward search for the current search string.
If the search string cannot be found, starts the search from the end of the buffer (wrap-around search).

**Ctrl+S**  Changes to a forward search.

**Delete**  Cancels the last character typed.

**Esc**  If the search string is empty, invokes a non-incremental search, otherwise exits the search, leaving the current point at the last find.

**Ctrl+G**  Aborts the search, returning the current point to its original location.

If the search string cannot be found, cancels the last character typed (equivalent to **Delete**).

**Ctrl+Q**  Quotes the next character typed.

**Forward Search**  

*Editor Command*

Arguments: *string*

Key sequence: **Ctrl+S Esc**  *string*

```
editor:forward-search-command p &optional string the-point
```

The default for *the-point* is the current point.

Searches forwards from *the-point* for *string*. When a match is found, *the-point* is moved to the end of the matched string. In contrast with **Incremental Search**, the search string must be terminated with a carriage return before any searching is done. If an empty string is provided, the last search is repeated.

**Backward Search**  

*Editor Command*

Arguments: *string*

Key sequence: None

```
editor:reverse-search-command p &optional string the-point
```
The default for *the-point* is the current point.

Searches backwards from *the-point* for *string*. When a match is found, *the-point* is moved to the start of the matched string. In contrast with **Reverse Incremental Search**, the search string must be terminated with a carriage return before any searching is done. If an empty string is provided, the last search is repeated.

**Reverse Search** is a synonym for **Backward Search**.

### List Matching Lines

**Editor Command**

**Arguments:** *string*

**Key sequence:** None

```
editor:list-matching-lines-command p &optional string
```

Lists all lines after the current point that contain *string*, in a Matches window.

A prefix argument causes the appropriate number of lines before and after each matching line to be listed also.

### Delete Matching Lines

**Editor Command**

**Arguments:** *string*

**Key sequence:** None

```
editor:delete-matching-lines-command p &optional string
```

Deletes all lines after the current point that match *string*.

### Delete Non-Matching Lines

**Editor Command**

**Arguments:** *string*

**Key sequence:** None

```
editor:delete-non-matching-lines-command p &optional string
```

Deletes all lines after the current point that do not match *string*. 
Search All Buffers

**Editor Command**

Arguments: `string`

Key sequence: None

Searches all the buffers for `string`. If only one buffer contains `string`, it becomes the current one, with the cursor positioned at the start of the string. If more than one buffer contains the string, a popup window displays a list of those buffers. A buffer may then be selected from this list.

Directory Search

**Editor Command**

Arguments: `directory string`

Key sequence: None

Searches files in `directory` for `string`. The current working directory is offered as a default for `directory`.

By default only files with suffix `.lisp`, `.lsp`, `.c` or `.h` are searched. A non-nil prefix argument causes all files to be searched, except for those ending with one of the strings in the list `system:*ignorable-file-suffixes*`.

Use the key sequence `Alt+`, to find subsequent definitions of the search string.

Search Files

**Editor Command**

Arguments: `search-string directory`

Key sequence: `Ctrl+X *`

Searches for a string in a directory using a Search Files tool.

The command prompts for `search-string` and `directory` and then raises a Search Files tool. The configuration of the Search Files tool controls which files in the directory are searched. If the search string is not empty, it starts searching automatically, unless a prefix argument is given.

See the *Common LispWorks User Guide* for a description of the Search Files tool.
3.21 Searching and replacing

Search Files Matching Patterns

Arguments: search-string directory patterns
Key sequence: Ctrl+X &

Searches for a string in files under a directory with names matching given patterns, using a Search Files tool.

The command prompts for search-string, directory and patterns, and raises a Search Files tool in Roots and Patterns mode. If the search string is not empty, it starts searching automatically, unless a prefix argument is given.

defaults to {*.lisp,*.lsp,*.c,*.h}.

See the Common LispWorks User Guide for a description of the Search Files tool.

System Search

Arguments: system string
Key sequence: None

Searches the files of system for string.

Matches are shown in editor buffers consecutively. Use the key sequence Alt+, to find subsequent definitions of the search string.

Search System

Arguments: search-string system
Key sequence: None

Prompts for search-string and system and then raises a Search Files tool in System Search mode, which displays the search results and allows you to visit the files.

See the Common LispWorks User Guide for a description of the Search Files tool.
Default-Search-Kind

Editor Variable

Default value: \texttt{string-insensitive}

Defines the default method of searching. By default, all searching (including regexp searching) ignores case. If you want searching to be case-sensitive, the value of this variable should be set to \texttt{string-sensitive} using \texttt{Set Variable}.

It is also possible to search a set of files programatically using the \texttt{search-files} function:

\begin{description}
\item[search-files] \texttt{Function}
\item[Summary] Search all the files in a list for a string.
\item[Package] \texttt{editor}
\item[Signature] \texttt{search-files \&key string files generator \=> nil}
\item[Arguments]
\begin{description}
\item[string] A string to search for (prompted if not given)
\item[files] A list of pathnames of files to search
\item[generator] A function to generate the files if none are given
\end{description}
\item[Values] \texttt{search-files} returns \texttt{nil}.
\item[Description] \texttt{search-files} searches all the files in the list for a given string. If a match is found the file is loaded into a buffer with the cursor on the occurrence. \texttt{Alt+-}, makes the search continue until the next occurrence.
\item[Example] CL-USER 91 > (editor:search-files \\
\hspace{1cm} :files '(".login" ".cshrc") \\
\hspace{1cm} :string "alias")
\end{description}
3.21 Searching and replacing

3.21.2 Regular expression searching

A regular expression (regexp) allows the specification of the search string to include wild characters, repeated characters, ranges of characters, and alternatives. Strings which follow a specific pattern can be located, which makes regular expression searches very powerful.

The regular expression syntax used is similar to that of Emacs. In addition to ordinary characters, a regular expression can contain the following special characters to produce the search pattern:

- Matches any single character except a newline. For example, \(c.r\) matches any three character string starting with \(c\) and ending with \(r\).
- Matches the previous regexp any number of times (including 0 times). For example, \(ca*r\) matches strings beginning with \(c\) and ending with \(r\), with any number of \(a\)'s in-between.
  - An empty regexp followed by \(*\) matches an empty part of the input. By extension, \(^*\) will match exactly what \(^\) matches.
- Matches the previous regexp any number of times, but at least once. For example, \(ca+r\) matches strings beginning with \(c\) and ending with \(r\), with at least one \(a\) in-between. An empty regexp followed by \(\d\) matches an empty part of the input.
- Matches the previous regexp either 0 or 1 times. For example, \(ca?r\) matches either the string \(cr\) or \(car\), and nothing else. An empty regexp followed by \(?\) matches an empty part of the input.
- Matches the next regexp as long as it is at the beginning of a line. For example, \(^foo\) matches the string \(foo\) as long as it is at the beginning of a line.
$  
Matches the previous regexp as long as it is at the end of a line. For example, `foo$` matches the string `foo` as long as it is at the end of a line.

`[ ]`  
Contains a character set to be used for matching, where the other special characters mentioned do not apply. The empty string is automatically part of the character set. For example, `[a.b]` matches either `a` or `b` or the empty string. The regexp `c[ad]*r` matches strings beginning with `c` and ending with `r`, with any number of `a`'s and `d`'s in-between. The characters `-` and `^` have special meanings inside character sets. `^-` defines a range and `^` defines a complement character set. For example, `[a-d]` matches any character in the range `a` to `d` inclusive. `[^ab]` matches any character except `a` or `b`.

`\`  
Quotes the special characters. For example, `\*` matches the character `*` (that is, `*` has lost its special meaning).

`\|`  
Specifies an alternative. For example, `ab\|cd` matches either `ab` or `cd`.

`\{, \}`  
Provides a grouping construct. For example, `ab\{(cd|ef)\}` matches either `abcd` or `abef`.

### Regexp Forward Search

**Editor Command**

**Arguments:** `string`

**Key sequence:** `Alt+Ctrl+S string`

**editor:regexp-forward-search-command** *optional* `string* the-point* limit`

Performs a forward search for `string` using regular expressions. The search pattern must be terminated with a carriage return before any searching is done. If an empty string is provided, the last regexp search is repeated.
3.21 Searching and replacing

The argument *the-point* specifies the position from which the search is to start. The default is the current point. *limit* specifies a limiting point in the buffer for the search. The default is the end of the buffer.

**Regexp Reverse Search** *Editor Command*

Arguments: *string*

Key sequence: `Alt+Ctrl+R string`

`editor:regexp-reverse-search-command p &optional string the-point limit`

Performs a backward search for *string* using regular expressions. The search pattern must be terminated with a carriage return before any searching is done. If an empty string is provided, the last regexp search is repeated.

The argument *the-point* specifies the position from which the search is to start. The default is one position before the current point. *limit* specifies a limiting point in the buffer for the search. The default is the current point.

**Count Occurrences** *Editor Command*

Arguments: None

Default binding: None

`editor:count-occurrences-command p &optional regexp`

Counts the number of regular expression matches for the string *regexp* between the current point and the end of the buffer.

*Count Matches* is a synonym for *Count Occurrences*.

### 3.21.3 Replacement

**Replace String** *Editor Command*

Arguments: *target replacement*

Key sequence: None

`editor:replace-string-command p &optional target replacement`
Replaces all occurrences of target string by replacement string, starting from the current point.

**Query Replace**  
*Editor Command*

Arguments: target replacement  
Key sequence: Alt+Shift+% target replacement

Replaces occurrences of target string by replacement string, starting from the current point, but only after querying the user. Each time target is found, an action must be indicated from the keyboard.

Whenever replacement is substituted for target, case may be preserved, depending on the value of the editor variable Case-Replace.

The following key sequences are used to control Query Replace:

- **Space or y** Replace target by replacement and move to the next occurrence of target.
- **Delete** Skip target without replacing it and move to the next occurrence of target.
- **.** Replace target by replacement and then exit.
- **!** Replace all subsequent occurrences of target by replacement without prompting.
- **Ctrl+R** Enter recursive edit. This allows the current occurrence of target to be edited. When this editing is completed, Exit Recursive Edit should be invoked. The next instance of target is then found.
- **Esc** Quit from Query Replace with no further replacements.

**Directory Query Replace**  
*Editor Command*

Arguments: directory target replacement  
Key sequence: None
Replaces occurrences of `target` string by `replacement` string for each file with the suffix `.lisp` or `.lsp` in `directory`, but only after querying the user. The current working directory is offered as a default for `directory`. A non-nil prefix argument causes all files to be searched, except for those ending with one of the strings in the list `system:*ignorable-file-suffices*`. Each time `target` is found, an action must be indicated from the keyboard. For details of possible actions see `Query Replace`.

**System Query Replace**

*Editor Command*

Arguments: `system target replacement`

Key sequence: None

Replaces occurrences of `target` string by `replacement` string, for each file in `system`, but only after querying the user. Each time `target` is found, an action must be indicated from the keyboard. For details of possible actions see `Query Replace`.

**Case-Replace**

*Editor Variable*

Default value: `t`

If the value of this variable is `t`, `Replace String` and `Query Replace` try to preserve case when doing replacements. If its value is `nil`, the case of the replacement string is as defined by the user.

**Replace Regexp**

*Editor Command*

Arguments: `target replacement`

Key sequence: None

`editor:replace-regexp-command p &optional target replacement`

Replaces all matches of `target` regular expression by `replacement` string, starting from the current point.

See “Regular expression searching” for a description of regular expressions.
Query Replace Regexp

Arguments: target replacement
Key sequence: None

Replaces matches of target regular expression by replacement string, starting from the current point, but only after querying the user. Each time target is matched, an action must be indicated from the keyboard.

See “Regular expression searching” for a description of regular expressions, and Query Replace for the keyboard gestures available.

3.22 Registers

Locations and regions can be saved in registers. Each register has a name, and reference to a previously saved register is by means of its name. The name of a register, which consists of a single character, is case-insensitive.

Point to Register

Arguments: name
Key sequence: Ctrl+X / name

Saves the location of the current point in a register called name, where name is a single character.

Save Position is a synonym for Point to Register.

Jump to Register

Arguments: name
Key sequence: Ctrl+X J name

Moves the current point to a location previously saved in the register called name.

Jump to Saved Position and Register to Point are both synonyms for Jump to Register.
3.23 Modes

**Kill Register**
*Editor Command*

Arguments: *name*
Key sequence: None
Kills the register called *name*.

**List Registers**
*Editor Command*

Arguments: None
Key sequence: None
Lists all existing registers.

**Copy to Register**
*Editor Command*

Arguments: *name*
Key sequence: *Ctrl+X X name*
Saves the region between the mark and the current point to the register called *name*.

*Put Register* is a synonym for *Copy to Register*.

**Insert Register**
*Editor Command*

Arguments: *name*
Key sequence: *Ctrl+X G name*
Copies the region from the register called *name* to the current point.

*Get Register* is a synonym for *Insert Register*.

### 3.23 Modes

A buffer can be in two kinds of mode at once: *major* and *minor*. The following two sections give a description of each, along with details of some commands which alter the modes.

In most cases, the current buffer can be put in a certain mode using the mode name as an Editor Command.
3.23.1 Major modes

The major modes govern how certain commands behave and how text is displayed. Major modes adapt a few editor commands so that their use is more appropriate to the text being edited. Some movement commands are affected by the major mode, as word, sentence, and paragraph delimiters vary with the mode. Indentation commands are very much affected by the major mode. See ‘Indentation’ on page 3-57.

Major modes available in the LispWorks editor are as follows:

- **Fundamental mode.** Commands behave in their most general manner, default values being used throughout where appropriate.

- **Text mode.** Used for editing straight text and is automatically loaded if the file name ends in `.txt`, `.text` or `.tx`.

- **Lisp mode.** Used for editing Lisp programs and is automatically loaded if the file name ends in `.lisp`, `.lsp`, `.lispworks`, `.slisp`, `.l`, `.mcl` or `.cl`.

- **Shell mode.** Used for running interactive shells.

The major mode of most buffers may be altered explicitly by using the commands described below.

By default, Lisp mode is the major mode whenever you edit a file with type `lisp` (as with several other file types). If you have Lisp source code in files with another file type `foo`, put a form like this in your `.lispworks` file, adding your file extension to the default set:

```lisp
(editor:define-file-type-hook
 ("lispworks" "lisp" "slisp" "l" "lsp" "mcl" "cl" "foo")
 (buffer type)
 (declare (ignore type))
 (setf (editor:buffer-major-mode buffer) "Lisp"))
```

### Fundamental Mode

**Editor Command**

**Arguments:** None

**Key sequence:** None

Puts the current buffer into Fundamental mode.
3.23 Modes

Text Mode

Arguments: None
Key sequence: None

Puts the current buffer into Text mode.

Lisp Mode

Arguments: None
Key sequence: None

Puts the current buffer into Lisp mode. Notice how syntax coloring is used for Lisp symbols. Also the balanced parentheses delimiting a Lisp form at or immediately preceding the cursor are highlighted, by default in green.

3.23.2 Minor modes

The minor modes determine whether or not certain actions take place. Buffers may be in any number of minor modes. No command details are given here as they are covered in other sections of the manuals.

Minor modes available in the LispWorks editor are as follows:

- **Overwrite mode.** Each character that is typed overwrites an existing character in the text—see “Overwriting” on page 56.
- **Auto Fill mode.** Lines are broken between words at the right hand margin automatically, so there is no need to type `Return` at the end of each line—see “Filling” on page 60.
- **Abbrev mode.** Allows abbreviation definitions to be expanded automatically—see “Abbreviations” on page 89.
- **Execute mode.** Used by the Listener to make history commands available (see the Common LispWorks User Guide).

3.23.3 Defining modes

New modes can be defined using the `defmode` macro.
defmode

Function

Summary
Defines new editor modes.

Package
editor

Signature
\texttt{defmode} name &key setup-function syntax-table key-bindings no-redefine vars cleanup-function major-p transparent-p precedence => \texttt{nil}

Arguments
- \textit{name} A string containing the name of the mode being defined.
- \textit{setup-function} Name of function which sets up a buffer in this mode.
- \textit{key-bindings} A quoted list of key-binding directions.
- \textit{no-redefine} If \texttt{t}, the mode cannot be re-defined. The default value is \texttt{nil}.
- \textit{vars} A quoted list of Editor variables and values.
- \textit{aliases} A quoted list of synonyms for \textit{name}.
- \textit{cleanup-function} Called upon exit from a buffer in this mode.
- \textit{major-p} If \texttt{t}, the mode is defined as major, otherwise minor. The default value is \texttt{nil}.

Values
\texttt{defmode} returns \texttt{nil}.

Description
This function defines an Editor mode called \textit{name}. By default, any mode defined is a minor one—specification of major-mode status is made by supplying \texttt{t} to the \textit{major-p} argument.

\texttt{defmode} is essentially for the purposes of mode specification—not all of the essential definitions required to establish a new Editor mode are made in a \texttt{defmode} call. In the example, below, other required calls are shown.

Key-bindings can be defined by supplying a quoted list of bindings, where a binding is a list containing as a first element
the (string) name of the Editor command being bound, and as the second, the key binding description (see Chapter 6, “Advanced Features”, for example key-bindings).

The state of Editor variables can be changed in the definition of a mode. These are supplied as a quoted list of dotted pairs, where the first element of the pair is the (symbol) name of the editor variable to be changed, and the second is the new value.

Example

Let us define a minor mode, **Foo**. **Foo** has a set-up function, called `setup-foo-mode`. All files with suffix `.foo` invoke **Foo**-mode.

Here is the `defmode` form:

```lisp
(editor:defmode "Foo" :setup-function 'setup-foo-mode)
```

The next piece of code makes `.foo` files invoke **Foo**-mode:

```lisp
(editor:define-file-type-hook ("foo") (buffer type)
  (declare (ignore type))
  (setf (editor:buffer-minor-mode buffer "Foo") t))
```

The next form defines the set-up function:

```lisp
(defun setup-foo-mode (buffer)
  (setf (editor:buffer-major-mode buffer) "Lisp")
  (let ((pathname (editor:buffer-pathname buffer)))
    (unless (and pathname
                  (probe-file pathname))
      (editor:insert-string
        (editor:buffer-point buffer)
        #.(format nil ";;; -*- mode :foo -*-~2%(in-package "CL-USER")~2%"))))
)
```

Now, any files loaded into the Editor with the suffix `.foo` invoke the **Foo** minor mode.

### 3.24 Abbreviations

Abbreviations (**abbrevs**) can be defined by the user, such that if an abbreviation is typed at the keyboard followed by a word terminating character (such as **Space** or `,`), the expansion is found and used to replace the abbreviation. Typing can thereby be saved for frequently used words or sequences of characters.
There are two kinds of abbreviations: *global abbreviations*, which are expanded in all major modes; and *mode abbreviations*, which are expanded only in defined major modes.

Abbreviations (both global and mode) are only expanded automatically when *Abbrev mode* (a minor mode) is on. The default is for abbrev mode to be off.

All abbreviations that are defined can be saved in a file and reloaded during later editor sessions.

**Abbrev Mode**

*Editor Command*

Arguments: None  
Key sequence: None

Switches abbrev mode on if it is currently off, and off if it is currently on. Only when in abbrev mode are abbreviations automatically expanded.

**Add Mode Word Abbrev**

*Editor Command*

Arguments: *abbrev*  
Key sequence: Ctrl+X Ctrl+A *abbrev*

Defines a mode abbreviation for the word before the current point.

A positive prefix argument defines an abbreviation for the appropriate number of words before the current point. A zero prefix argument defines an abbreviation for all the text in the region between the mark and the current point. A negative prefix argument deletes an abbreviation.

**Inverse Add Mode Word Abbrev**

*Editor Command*

Arguments: *expansion*  
Key sequence: Ctrl+X Ctrl+H *expansion*

Defines the word before the current point as a mode abbreviation for *expansion*. 
3.24 Abbreviations

Add Global Word Abbrev

**Editor Command**

Arguments: `abbrev`
Key sequence: `Ctrl+X + abbrev`

Defines a global abbreviation for the word before the current point.

A positive prefix argument defines an abbreviation for the appropriate number of words before the current point. A zero prefix argument defines an abbreviation for all the text in the region between the mark and the current point. A negative prefix argument deletes an abbreviation.

Inverse Add Global Word Abbrev

**Editor Command**

Arguments: `expansion`
Key sequence: `Ctrl+X - expansion`

Defines the word before the current point as a global abbreviation for `expansion`.

Make Word Abbrev

**Editor Command**

Arguments: `abbrev expansion mode`
Key sequence: None

`editor:make-word-abbrev-command p &optional abbrev expansion mode`

Defines an abbreviation for `expansion` without reference to the current point. The default value for `mode` is global.

Abbrev Expand Only

**Editor Command**

Arguments: None
Key sequence: None

Expands the word before the current point into its abbreviation definition (if it has one). If the buffer is currently in abbrev mode then this is done automatically on meeting a word defining an abbreviation.
**Word Abbrev Prefix Point**  
*Editor Command*

Arguments: None  
Key sequence: Alt+’

Allows the prefix before the current point to be attached to the following abbreviation. For example, if the abbreviation `valn` is bound to `valuation`, typing `re` followed by Alt+’, followed by `valn`, results in the expansion `revaluation`.

**Unexpand Last Word**  
*Editor Command*

Arguments: None  
Key sequence: None  

Undoes the last abbreviation expansion. If this command is typed twice in succession, the previous abbreviation is restored.

**Delete Mode Word Abbrev**  
*Editor Command*

Arguments: `abbrev`  
Key sequence: None

```
(editor:delete-mode-word-abbrev-command p optional abbrev mode)
```

Deletes a mode abbreviation for the current mode. A prefix argument causes all abbreviations defined in the current mode to be deleted.

The argument `mode` is the name of the mode for which the deletion is to be applied. The default is the current mode.

**Delete Global Word Abbrev**  
*Editor Command*

Arguments: `abbrev`  
Key sequence: None

```
(editor:delete-global-word-abbrev-command p optional abbrev)
```

Deletes a global abbreviation. A prefix argument causes all global abbreviations currently defined to be deleted.
#### Delete All Word Abbrevs

*Editor Command*

Arguments: None

Key sequence: None

Deletes all currently defined abbreviations, both global and mode.

#### List Word Abbrevs

*Editor Command*

Arguments: None

Key sequence: None

Displays a list of all the currently defined abbreviations in an Abbrev window.

#### Word Abbrev Apropos

*Editor Command*

Arguments: `search-string`

Key sequence: None

`editor:word-abbrev-apropos-command p &optional search-string`

Displays a list of all the currently defined abbreviations which contain `search-string` in their abbreviation definition or mode. The list is displayed in an Abbrev window.

#### Edit Word Abbrevs

*Editor Command*

Arguments: None

Key sequence: None

Allows recursive editing of currently defined abbreviations. The abbreviation definitions are displayed in an Edit Word Abbrevs buffer, from where they can be added to, modified, or removed. This buffer can then either be saved to an abbreviations file, or *Define Word Abbrevs* can be used to define any added or modified abbreviations in the buffer. When editing is complete, *Exit Recursive Edit* should be invoked.
Write Word Abbrev File

**Editor Command**

**Arguments:** filename

**Key sequence:** None

```
editor:write-word-abbrev-file-command p &optional filename
```

Saves the currently defined abbreviations to `filename`. If no file name is provided, the default file name defined by the editor variable `Abbrev-Pathname-Defaults` is used.

Append to Word Abbrev File

**Editor Command**

**Arguments:** filename

**Key sequence:** None

```
editor:append-to-word-abbrev-file-command p &optional filename
```

Appends all abbreviations that have been defined or redefined since the last save to `filename`. If no file name is provided, the default file name defined by the editor variable `Abbrev-Pathname-Defaults` is used.

Abbrev-Pathname-Defaults

**Editor Variable**

**Default value:** abbrev.defns

Defines the default file name for saving the abbreviations that have been defined in the current buffer.

Read Word Abbrev File

**Editor Command**

**Arguments:** filename

**Key sequence:** None

```
editor:read-word-abbrev-file-command p &optional filename
```

Reads previously defined abbreviations from `filename`. The format of each abbreviation must be that used by `Write Word Abbrev File` and `Insert Word Abbrevs`. 
3.25  Keyboard macros

Insert Word Abbrevs  

*Editor Command*

Arguments: None  
Key sequence: None

Inserts into the current buffer, at the current point, a list of all currently defined abbreviations. This is similar to *Write Word Abbrev File*, except that the abbreviations are written into the current buffer rather than a file.

Define Word Abbrevs  

*Editor Command*

Arguments: None  
Key sequence: None

Defines abbreviations from the definition list in the current buffer. The format of each abbreviation must be that used by *Write Word Abbrev File* and *Insert Word Abbrevs*.

3.25  Keyboard macros

Keyboard macros enable a sequence of commands to be turned into a single operation. For example, if it is found that a particular sequence of commands is to be repeated a large number of times, they can be turned into a keyboard macro, which may then be repeated the required number of times by using Prefix Arguments.

Note that keyboard macros are only available for use during the current editing session.

Define Keyboard Macro  

*Editor Command*

Arguments: None  
Key sequence: Ctrl+X Shift+{

Begins the definition of a new keyboard macro. All the commands that are subsequently invoked are executed and at the same time combined into the newly defined macro. Any text typed into the buffer is also included in the macro. The definition is ended with *End Keyboard Macro*, and the sequence of commands can then be repeated with *Last Keyboard Macro*. 
End Keyboard Macro

*Editor Command*

Arguments: None
Key sequence: \texttt{Ctrl+X Shift+)}

Ends the definition of a keyboard macro.

Last Keyboard Macro

*Editor Command*

Arguments: None
Key sequence: \texttt{Ctrl+X E}

Executes the last keyboard macro defined. A prefix argument causes the macro to be executed the required number of times.

Name Keyboard Macro

*Editor Command*

Arguments: \texttt{name}
Key sequence: None

\texttt{editor:name-keyboard-macro-command p &optional \textit{name}}

Makes the last defined keyboard macro into a command called \textit{name} that can subsequently be invoked by means of \texttt{Extended Command}.

Keyboard Macro Query

*Editor Command*

Arguments: \texttt{action}
Key sequence: \texttt{Ctrl+X Q \textit{action}}

During the execution of a keyboard macro, this command prompts for an action. It is therefore possible to control the execution of keyboard macros while they are running, to a small extent.

The following actions can be used to control the current macro execution.

- **Space** Continue with this iteration of the keyboard macro and then proceed to the next.
- **Delete** Skip over the remainder of this iteration of the keyboard macro and proceed to the next.
- **Escape** Exit from this keyboard macro immediately.
3.26 Echo area operations

There are a range of editor commands which operate only on the Echo Area (that is, the buffer where the user types in commands).

Although in many cases the key bindings have a similar effect to the bindings used in ordinary buffers, this is just for the convenience of the user. In fact the commands that are invoked are different.

3.26.1 Completing commands

Many of the commands used in the Editor are long, in the knowledge that the user can use completion commands in the Echo Area, and so rarely has to type a whole command name. Details of these completion commands are given below.

**Complete Input**

*Editor Command*

Arguments: None
Key sequence: `Tab`

Completes the text in the Echo Area as far as possible, thereby saving the user from having to type in the whole of a long file name or command. Use `Tab Tab` to produce a popup list of all possible completions.

**Complete Field**

*Editor Command*

Arguments: None
Key sequence: `Space`

Completes the current part of the text in the Echo Area. So, for a command that involves two or more words, if Complete Field is used when part of the first word has been entered, an attempt is made to complete just that word.

**Confirm Parse**

*Editor Command*

Arguments: None
Key sequence: `Return`
Terminates an entry in the Echo Area. The Editor then tries to parse the entry. If \texttt{Return} is typed in the Echo Area when nothing is being parsed, or the entry is erroneous, an error is signalled.

\textbf{Help on Parse} \quad \textit{Editor Command}

- Arguments: None
- Key sequences: ?, Help, F1
- Displays a popup list of all possible completions of the text in the echo area.

\subsection*{3.26.2 Repeating echo area commands}

The Echo Area commands are recorded in a history ring so that they can be easily repeated. Details of these commands are given below.

\textbf{Previous Parse} \quad \textit{Editor Command}

- Arguments: None
- Key sequence: \texttt{Alt+P}
- Moves to the previous command in the Echo Area history ring. If the current input is not empty and the contents are different from what is on the top of the ring, then this input is pushed onto the top of the ring before the new input is inserted.

\textbf{Next Parse} \quad \textit{Editor Command}

- Arguments: None
- Key sequence: \texttt{Alt+N}
- Moves to the next most recent command in the Echo Area history ring. If the current input is not empty and the contents are different from what is on the top of the ring, then this input is pushed onto the top of the ring before the new input is inserted.
3.26 Echo area operations

3.26.3 Movement in the echo area

Echo Area Backward Character  
Editor Command
Arguments: None  
Key sequence: Ctrl+B  
Moves the cursor back one position (without moving into the prompt).

Echo Area Backward Word  
Editor Command
Arguments: None  
Key sequence: Alt+B  
Moves the cursor back one word (without moving into the prompt).

Beginning Of Parse  
Editor Command
Arguments: None  
Key sequence: Alt+<  
Moves the cursor to the location immediately after the prompt in the Echo Area.

Beginning Of Parse or Line  
Editor Command
Arguments: None  
Key sequence: Ctrl+A  
Moves the cursor to the location at the start of the current line in multi-line input, or to the location immediately after the prompt in the Echo Area.

3.26.4 Deleting and inserting text in the echo area

Echo Area Delete Previous Character  
Editor Command
Arguments: None  
Key sequence: Delete
Deletes the previous character entered in the Echo Area.

**Echo Area Kill Previous Word**  
*Editor Command*  
Arguments: None  
Key sequence: **Alt+Delete**  
Kills the previous word entered in the Echo Area.

**Kill Parse**  
*Editor Command*  
Arguments: None  
Key sequence: **Ctrl+C Ctrl+U**  
Kills the whole of the input so far entered in the Echo Area.

**Insert Parse Default**  
*Editor Command*  
Arguments: None  
Key sequence: **Ctrl+C Ctrl+P**  
Inserts the default value for the parse in progress at the location of the cursor. It is thereby possible to edit the default. Simply typing **Return** selects the default without any editing.

**Return Default**  
*Editor Command*  
Arguments: None  
Key sequence: **Ctrl+C Ctrl+R**  
Uses the default value for the parse in progress. This is the same as issuing the command **Insert Parse Default** and then pressing **Return** immediately.

### 3.27 Editor variables

Editor variables are parameters which affect the way that certain commands operate. Descriptions of editor variables are provided alongside the relevant command details in this manual.
3.28 Recursive editing

Show Variable

Editor Command

Arguments: `variable`
Key sequence: None
 Indicates the value of `variable`.

Set Variable

Editor Command

Arguments: `variable value`
Key sequence: None
Allows the user to change the value of `variable`.

3.28 Recursive editing

Recursive editing occurs when you are allowed to edit text while an editor command is executing. The mode line of the recursively edited buffer is enclosed in square brackets. For example, when using the command `Query Replace`, the `Ctrl+R` option can be used to edit the current instance of the target string (that is, enter a recursive edit). Details of commands used to exit a recursive edit are given below.

Exit Recursive Edit

Editor Command

Argument: None
Key sequence: `Alt+Ctrl+Z`
Exits a level of recursive edit, returning to the original command. An error is signalled if not in a recursive edit.

Abort Recursive Edit

Editor Command

Argument: None
Key sequence: `Ctrl+]`
Aborts a level of recursive edit, quitting the unfinished command immediately. An error is signalled if not in a recursive edit.
3.29 Key bindings

The commands for modifying key bindings that are described below are designed to be invoked explicitly during each session with the Editor. If the user wishes to create key bindings which are set up every session, the function `editor:bind-key` should be used—see “Customizing default key bindings” on page 150.

### Bind Key

*Editor Command*

**Argument:** command key-sequence bind-type

**Key sequence:** None

Binds `command` (full command names must be used) to `key-sequence`. After entering `command`, enter the keys of `key-sequence` and press return.

*bind-type* can be either buffer, global or mode. If a *bind-type* of buffer or mode is selected, the name of the buffer or mode required must then be entered. When a *bind-type* of buffer is selected, the current buffer is offered as a default. The default value for *bind-type* is "Global".

Unless a bind type of global is selected, the scope of the new key binding is restricted as specified. Generally, most key bindings are global. Note that the Echo Area is defined as a mode, and some commands (especially those involving completion) are restricted to the Echo Area.

### Bind String to Key

*Editor Command*

**Argument:** string key-sequence bind-type

**Key sequence:** None

Make `key-sequence` insert `string`.

After entering `string`, enter the keys of `key-sequence` and press return.

*bind-type* is interpreted as in Bind Key.
3.30  Running shell commands from the editor

Delete Key Binding  
Editor Command

Argument: key-sequence bind-type  
Key sequence: None

Removes a key binding, so that the key sequence no longer invokes any command. The argument bind-type can be either buffer, global or mode. If a bind-type of buffer or mode is selected, the name of the buffer or mode required must then be entered. The default value for bind-type is "Global".

It is necessary to enter the kind of binding, because a single key sequence may sometimes be bound differently in different buffers and modes.

Illegal  
Editor Command

Argument: None  
Key sequence: None

Signals an editor error with the message "Illegal command in the current mode" accompanied by a beep. It is sometimes useful to bind key sequences to this command, to ensure the key sequence is not otherwise bound.

Do Nothing  
Editor Command

Argument: None  
Key sequence: None

Does nothing. This is therefore similar to Illegal, except that there is no beep and no error message.

3.30  Running shell commands from the editor

The editor allows both single MS DOS commands to be executed and also provides a means of running a shell interactively.

Run Command  
Editor Command

Argument: command  
Key sequence: None
Executes the single shell command *command* in a Shell window. When the command terminates, the subprocess is closed down.

**Shell**

Argument: None  
Key sequence: None

Opens a Shell window which allows the user to run a shell interactively. The major mode of the buffer is Shell mode, and the minor mode is Execute mode so the history key bindings available in the Listener can also be used in the Shell window.

Whenever the working directory is changed within the shell, the editor attempts to keep track of these changes and update the default directory of the Shell buffer. When a shell command is issued beginning with a string matching one of the editor variables `Shell-cd-RegExp`, `Shell-pushd-RegExp` or `Shell-popd-RegExp`, the editor recognises this command as a change directory command and attempt to change the default directory of the Shell buffer accordingly. If you have your own aliases for any of the shell change directory commands, alter the value of the appropriate variable. For example, if the value of `Shell-cd-RegExp` is "cd" and the shell command `cd C:\temp` is issued, the next time the editor command *Wfind File* is issued, the default directory offered is `C:\temp`. If you find that the editor has not recognised a change directory command then the editor command *cd* may be used to change the default directory of the buffer.

**CD**

Arguments: *directory*  
Key sequence: None  
Mode: Shell

Changes the directory associated with the current buffer to *directory*. The current directory is offered as a default.
3.30 Running shell commands from the editor

**Shell-cd-RegExp**  
*Editor Variable*  
Default value: "cd"  
Mode: Shell  
A regular expression that matches the shell command to change the current working directory.

**Shell-pushd-RegExp**  
*Editor Variable*  
Default value: "pushd"  
Mode: Shell  
A regular expression that matches the shell command to push the current working directory onto the directory stack.

**Shell-popd-RegExp**  
*Editor Variable*  
Default value: "popd"  
Mode: Shell  
A regular expression that matches the shell command to pop the current working directory from the directory stack.

**Interrupt Shell Subjob**  
*Editor Command*  
Argument: None  
Key sequence: Ctrl+C Ctrl+C  
Mode: Shell  
Sends an interrupt signal to the subjob currently being run by the shell. This is equivalent to issuing the shell command Ctrl+C.  
**Note:** this command does not work on Windows.

**Stop Shell Subjob**  
*Editor Command*  
Argument: None  
Key sequence: Ctrl+C Ctrl+Z  
Mode: Shell
Sends a stop signal to the subjob currently being run by the shell. This is equivalent to issuing the shell command `Ctrl+Z`.

**Note:** this command does not work on Windows.

### Shell Send Eof

**Editor Command**

- **Argument:** None
- **Key sequence:** `Ctrl+C Ctrl+D`
- **Mode:** Shell

Sends an end-of-file character (`Ctrl+D`) to the shell, causing either the shell or its current subjob to finish.

**Note:** this command does not work on Windows.

### 3.31 Buffers, windows and the mouse

#### 3.31.1 Buffers and windows

You can transfer text between LispWorks Editor buffers and ordinary windows using the commands described below.

### Copy to Cut Buffer

**Editor Command**

- **Argument:** None
- **Key sequence:** None

Copies the current region to the Cut buffer. The contents of the buffer may then be pasted into a window using the standard method for pasting.

### Insert Cut Buffer

**Editor Command**

- **Argument:** None
- **Key sequence:** None

Inserts the contents of the Cut buffer at the current point. You can put text from a window into the Cut buffer using the standard method for cutting text (usually by holding the left mouse button while dragging the mouse).
3.31 Buffers, windows and the mouse

3.31.2 Actions involving the mouse

The functions to which the mouse buttons are bound are not true Editor Commands. As such, the bindings cannot be changed. Details of mouse button actions are given below.

Note that marks may also be set by using editor key sequences—see “Marks and regions” on page 40—but also note that a region must be defined either by using the mouse or by using editor key sequences, as the region may become unset if a combination of the two is used. For example, using Ctrl+Space to set a mark and then using the mouse to go to the start of the required region unsets the mark.

**left-button**

Moves the current point to the position of the mouse pointer.

**shift-left-button**

In Emacs emulation, this moves the current point to the location of the mouse pointer and sets the mark to be the end of the new current form or comment line.

**control-shift-left-button**

Invokes the Editor Command **Save Region**, saving the region between the current point and the mark at the top of the kill ring. If the last command was **control-shift-left-button**, the Editor Command **Kill Region** is invoked instead. This allows one click to save the region, and two clicks to save and kill it.

**middle-button**

If your mouse has a middle button, it pastes the current selection at the location of the mouse pointer.

**right-button**

Brings up a context menu, from which a number of useful commands can be invoked. The options include Cut, Copy, and Paste.

**shift-right-button**

Inserts the form or comment line at the location of the mouse pointer at the current point.
3.32 Miscellaneous

Report Bug  Editor Command

Argument: None
Key sequence: None

Opens a window containing the template for reporting bugs in LispWorks. This template can then be filled in and sent to Xanalys via the electronic mail system.

Report Manual Bug  Editor Command

Argument: None
Key sequence: None

Opens a window containing the template for reporting bugs in the LispWorks documentation. This template can then be filled in and sent to Xanalys via the electronic mail system.

Room  Editor Command

Argument: None
Key sequence: None

Displays information on the current status of the memory allocation for the host computer.
There are a whole set of editor commands designed to facilitate editing of Lisp programs. These commands are designed to understand the syntax of the Lisp language and therefore allow movement over Lisp constructs, indentation of code, operations on parentheses and definition searching. Lisp code can also be evaluated and compiled directly from the editor.

To use some of these commands the current buffer should be in Lisp mode. For more information about editor modes, see “Modes” on page 85.

Commands are grouped according to functionality as follows:

- “Functions and definitions”
- “Forms”
- “Lists”
- “Comments”
- “Parentheses”
- “Documentation”
- “Evaluation and compilation”
- “Removing definitions”
4.1 Automatic entry into lisp mode

Some source files begin with a line of this form

```lisp
;; -*- Mode: Common-Lisp; Author: m.mouse -*-
```
or this:

```lisp
;; -*- Mode: Lisp; Author: m.mouse -*-
```

A buffer is automatically set to be in Lisp mode when such a file is displayed. Alternatively, if you have files of Common Lisp code with extension other than .lisp, add the following code to your .lispworks file, substituting the extensions shown for your own. This ensures that Lisp mode is the major mode whenever a file with one of these extensions is viewed in the editor:

```lisp
(editor:define-file-type-hook
  ("lispworks" "lisp" "slisp" "el" "lsp" "mcl" "cl")
  (buffer type)
  (declare (ignore type))
  (setf (editor:buffer-major-mode buffer) "Lisp"))
```

Another way to make a Lisp mode buffer is the command New Buffer, and you can put an existing buffer into Lisp mode via the command Lisp Mode.

4.2 Syntax coloring

When in Lisp mode, the LispWorks editor provides automatic Lisp syntax coloring and parenthesis matching to assist the editing of Lisp programs.

You can ensure a buffer is in Lisp mode as described in “Automatic entry into lisp mode”.

To modify the colors used in Lisp mode syntax coloring, use the Styles tab of the Editor tool’s Preferences dialog as described in the Common LispWorks User Guide. Adjust the settings for the styles whose names begin with "Lisp".
4.3 Functions and definitions

4.3.1 Movement, marking and indentation

**Beginning of Defun Editor Command**

Argument: None  
Key sequence: Alt+Ctrl+A  
Moves the current point to the beginning of the current top-level form. A positive prefix argument p causes the point to be moved to the beginning of the form p forms back in the buffer.

**End of Defun Editor Command**

Argument: None  
Key sequence: Alt+Ctrl+E  
Moves the current point to the end of the current top-level form. A positive prefix argument p causes the point to be moved to the end of the form p forms forward in the buffer.

**Mark Defun Editor Command**

Argument: None  
Key sequence: Alt+Ctrl+H  
Puts the mark at the end of the current top-level form and the current point at the beginning of the form. The definition thereby becomes the current region. If the current point is initially located between two top-level forms, then the mark and current point are placed around the previous top-level form.

**Defindent Editor Command**

Argument: no-of-args  
Key sequence: None
Defines the number of arguments of the operator to be specially indented if they fall on a new line. The indent is defined for the operator name, for example `defun`.

`Defindent` affects the special argument indentation for all forms with that operator which you subsequently indent.

### 4.3.2 Definition searching

Definition searching involves taking a name for a function (or a macro, variable, editor command, and so on), and finding the actual definition of that function. This is particularly useful in large systems, where code may exist in a large number of source files.

Function definitions are found by using information provided either by LispWorks source recording or by a Tags file. If source records or Tags information have not been made available to LispWorks, then the following commands do not work. To make the information available to LispWorks, set the variable `dspec:*active-finders*` appropriately. See the *LispWorks Reference Manual* for details.

Source records are created if the variable `*record-source-files*` is true when definitions are compiled, evaluated or loaded. See the *LispWorks Reference Manual* for details.

Tag information is set up by the editor itself, and can be saved to a file for future use. For each file in a defined system, the tag file contains a relevant file name entry, followed by names and positions of each defining form in that file. Before tag searching can take place, there must exist a buffer containing the required tag information. You can specify a previously saved tag file as the current tag buffer, or you can create a new one using `Create Tags Buffer`. GNU Emacs tag files are fully compatible with LispWorks editor tag files.

### Find Source

**Editor Command**

Argument: `name`

Key sequence: `Alt+ . name`
Tries to find the source code for name. The symbol under the current point is offered as a default value for name. A prefix argument automatically causes this default value to be used.

If the source code for name is found, the file in which it is contained is displayed in a buffer. When there is more than one definition for name, Find Source finds the first definition, and Alt+, (Continue Tags Search) finds subsequent definitions.

Find Source searches for definitions according to the value of dspec:*active-finders*. You can control which source record information is searched, and the order in which these are searched, by setting this variable appropriately. See the LispWorks Reference Manual for details. There is an example setting for this variable in the configuration files supplied.

If dspec:*active-finders* contains the value :tags, Find Source prompts for the name of a tags file, and this is used for the current and subsequent searches.

The found source is displayed according to the value of editor:*source-found-action*. This depends on the buffer with the found definition being in Lisp mode. For information on how to ensure this for particular file types, see “Automatic entry into lisp mode” on page 110.

**Find Source for Dspec**

*Editor Command*

Argument: dspec
Key sequence: None

This command is similar to Find Source, but takes a definition spec dspec instead of a name as its argument.

For example, given a generic function foo of one argument, with methods specializing on classes bar and baz,

Find Source for Dspec foo

will find each method definition in turn (with the continuation via Alt+) whereas

Find Source for Dspec (method foo (bar))
finds only the definition of the method on \texttt{bar}.

\textbf{Find Command Definition} \hspace{1cm} \textit{Editor Command}

Argument: \textit{command}
Key sequence: None

This command is similar to \texttt{Find Source}, but takes the name of an editor command, and tries to find its source code.

Except in the Personal Edition, you can use this command to find the definitions of the predefined editor commands. See the \textit{LispWorks User Guide} chapter "Customization of LispWorks" for details.

\textbf{Edit Editor Command} \hspace{1cm} \textit{Editor Command}

Argument: \textit{command}
Key sequence: None

This is a synonym for \texttt{Find Command Definition}.

\textbf{View Source Search} \hspace{1cm} \textit{Editor Command}

Argument: \textit{function}
Key sequence: None

Shows the results of the latest source search (initiated by \texttt{Find Source} or \texttt{Find Source for Dspec} or \texttt{Find Command Definition}) in the Find Definitions view of the Editor. See the chapter on the Editor tool in the \textit{Common LispWorks User Guide} for more information about the Find Definitions view.

\textbf{List Definitions} \hspace{1cm} \textit{Editor Command}

Argument: \textit{name}
Key sequence: None

List the definitions for \textit{name}. The symbol under the current point is offered as a default value for \textit{name}. A prefix argument automatically causes this default value to be used.
4.3 Functions and definitions

This command searches for definitions and shows the results in the Find Definitions view of the Editor tool instead of finding the first definition. It does not set up the Alt+, action.

See the chapter on the Editor tool in the Common LispWorks User Guide for more information about the Find Definitions view.

**List Definitions For Dspec**

*Editor Command*

Argument: *dspec*

Key sequence: None

This command is similar to **List Definitions**, but takes a definition spec *dspec* instead of a name as its argument.

This command searches for definitions and shows the results in the Find Definitions view of the Editor tool instead of finding the first definition. This command does not set up the Alt+, action.

See the chapter on the Editor tool in the Common LispWorks User Guide for more information about the Find Definitions view.

**Create Tags Buffer**

*Editor Command*

Argument: None

Key sequence: None

Creates a buffer containing Tag search information, for all the .lisp files in the current directory. If you want to use this information at a later date then save this buffer to a file (preferably a file called TAGS in the current directory).

The format of the information contained in this buffer is compatible with that of GNU Emacs tags files.

A prefix argument causes the user to be prompted for the name of a file containing a list of files, to be used for constructing the tags table.

**Find Tag**

*Editor Command*

Key sequence: Alt+?
Tries to find the source code for a name containing a partial or complete match a supplied string by examining the Tags information indicated by the value of \texttt{dspec:*active-finders*}.

The text under the current point is offered as a default value for the string. If the source code for a match is found, the file in which it is contained is displayed. When there is more than one definition, \texttt{Find Tag} finds the first definition, and \texttt{Alt+, (Continue Tags Search)} finds subsequent definitions.

The found source is displayed according to the value of \texttt{editor:*source-found-action*}.

If there is no tags information indicated by the value of \texttt{dspec:*active-finders*}, \texttt{Find Tag} prompts for the name of a tags file. The default is a file called \texttt{TAGS} in the current directory. If there is no such file, you can create one using \texttt{Create Tags Buffer}. If you want to search a different directory, specify the name of a tags file in that directory.

See the chapter on the \texttt{DSPEC} package in the \textit{LispWorks Reference Manual} for information on how to use the \texttt{dspec:*active-finders*} variable to control how this command operates. There is an example setting for this variable in the configuration files supplied.

See also \texttt{Find Source}, \texttt{Find Source for Dspec} and \texttt{Create Tags Buffer}.

\textbf{Tags Search}

\textit{Editor Command}

Key sequence: None

Exhaustively searches each file mentioned in the Tags files indicated by the value of \texttt{dspec:*active-finders*} for a supplied string \texttt{string}. Note that this does not merely search for definitions, but for any occurrence of the string.

If \texttt{string} is found, it is displayed in a buffer containing the relevant file. When there is more than one definition, \texttt{Tags Search} finds the first definition, and \texttt{Alt+, (Continue Tags Search)} finds subsequent definitions.

If there is no Tags file on \texttt{dspec:*active-finders*}, \texttt{Tags Search} prompts for the name of a tags file. The default is a file called \texttt{TAGS} in the current directory.
directory. If there is no such file, you can create one using `Create Tags Buffer`. If you want to search a different directory, specify the name of a tags file in that directory.

**Continue Tags Search**

*Editor Command*

Argument: None
Key sequence: `Alt+,`

Searches for the next match in the current search. This command is only applicable if issued immediately after a `Find Source`, `Find Source for Dspec`, `Find Command Definition`, `Edit Callers`, `Edit Callees`, `Find Tag` or `Tags Search` command.

**Tags Query Replace**

*Editor Command*

Key sequence: None

Allows you to replace occurrences of a supplied string `target` by a second supplied string `replacement` in each Tags file indicated by the value of `dspec:*active-finders*`.

Each time `target` is found, an action must be specified from the keyboard. For details of the possible actions see `Query Replace`.

If there is no Tags file indicated by `dspec:*active-finders*`, `Tags Query Replace` prompts for the name of a tags file. The default is a file called `TAGS` in the current directory. If there is no such file, you can create one using `Create Tags Buffer`.

**Visit Tags File**

*Editor Command*

Key sequence: None

Prompts for a Tags file `file` and makes the source finding commands use it. This is done by modifying, if necessary, the value of `dspec:*active-finders*`.

If `file` is already in `dspec:*active-finders*`, this command does nothing.
If there are other Tags files indicated then Visit Tags File prompts for whether to add simply add file as the last element of dspec:*active-finders*, or to save the current value of dspec:*active-finders* and start a new list of active finders, setting dspec:*active-finders* to the new value (:internal file). In this case, the previous active finders list can be restored by the command Rotate Active Finders.

If the value :tags appears on the list dspec:*active-finders* then file replaces this value in the list.

If there is no tags information indicated then Visit Tags File simply adds file as the last element of dspec:*active-finders*.

**Rotate Active Finders**

Editor Command

Key sequence: Alt+Ctrl+.  
Rotates the active finders history, activating the least recent one. This modifies the value of dspec:*active-finders*.

The active finders history can have length greater than 1 if Visit Tags File started a new list of active finders, or if a buffer associated with a TAGS file on dspec:*active-finders* was killed.

Visit Other Tags File is a synonym for Rotate Active Finders.

**4.3.3 Tracing functions**

The commands described in this section use the Common Lisp trace facility. Note that you can switch tracing on and off using dspec:tracing-enabled-p - see the LispWorks Reference Manual for details of this.

**Trace Function**

Editor Command

Argument: function  
Key sequence: None

This command traces function. The symbol under the current point is offered as a default value for function. A prefix argument automatically causes this default value to be used.
4.3 Functions and definitions

**Trace Function Inside Definition**  
*Editor Command*

- **Argument:** `function`
- **Key sequence:** None

This command is like **Trace Function**, except that `function` is only traced within the definition that contains the cursor.

**Untrace Function**  
*Editor Command*

- **Argument:** `function`
- **Key sequence:** None

This command untraces `function`. The symbol under the current point is offered as a default value for `function`. A prefix argument automatically causes this default value to be used.

**Trace Definition**  
*Editor Command*

- **Argument:** None
- **Key sequence:** None

This command traces the function defined by the current top-level form.

**Trace Definition Inside Definition**  
*Editor Command*

- **Argument:** None
- **Key sequence:** None

This command is like **Trace Definition**, except that with a non-nil prefix argument, prompts for a symbol to trace. Also, it prompts for a symbol naming a second function, and traces the first only inside this.

**Untrace Definition**  
*Editor Command*

- **Argument:** None
- **Key sequence:** None

This command untraces the function defined by the current top-level form.
4 Editing Lisp Programs

**Break Function**

*Editor Command*

Argument: *function*

Key sequence: None

This command is like Trace Function but the trace is with :break t so that when *function* is entered, the debugger is entered.

**Break Function on Exit**

*Editor Command*

Argument: *function*

Key sequence: None

This command is like Trace Function but the trace is with :break-on-exit t so that when a called to *function* exits, the debugger is entered.

**Break Definition**

*Editor Command*

Argument: None

Key sequence: None

Like Trace Definition but the definition is traced with :break t.

**Break Definition on Exit**

*Editor Command*

Argument: None

Key sequence: None

Like Trace Definition but the definition is traced with :break-on-exit t.

4.3.4 Function callers and callees

The commands described in this section, require that LispWorks is producing cross-referencing information. This information is produced by turning source debugging on while compiling and loading the relevant definitions (see `toggle-source-debugging` in the *LispWorks Reference Manual*).
4.3 Functions and definitions

List Callers

Editor Command

Argument: \textit{dspec}
Key sequence: None

Produces a Function Call Browser window showing those functions that call the definition named by \textit{dspec}. The name of the current top-level definition is offered as a default value for \textit{dspec}. A prefix argument automatically causes this default value to be used.


List Callees

Editor Command

Argument: \textit{dspec}
Key sequence: None

Produces a Function Call Browser window showing those functions that are called by the definition named by \textit{dspec}. The name of the current top-level definition is offered as a default value for \textit{dspec}. A prefix argument automatically causes this default value to be used.


Show Paths To

Editor Command

Argument: \textit{dspec}
Key sequence: None

Produces a Function Call Browser window showing the callers of the definition named by \textit{dspec}. The name of the current top-level definition is offered as a default value for \textit{dspec}. A prefix argument automatically causes this default value to be used.

**Show Paths From**  
*Editor Command*

**Argument:** `dspec`

**Key sequence:** None

Produces a Function Call Browser window showing the function calls from the definition named by `dspec`. The name of the current top-level definition is offered as a default value for `dspec`. A prefix argument automatically causes this default value to be used.


**Edit Callers**  
*Editor Command*

**Argument:** `function`

**Key sequence:** None

Produces an Editor window showing the latest definition found for a function that calls `function`. The name of the current top-level definition is offered as a default value for `function`. A prefix argument automatically causes this default value to be used. The latest definitions of each of the other functions that call `function` are available via the [Continue Tags Search](#) command.

**Edit Callees**  
*Editor Command*

**Argument:** `function`

**Key sequence:** None

Produces an Editor window showing the latest definition found for a function called by `function`. The name of the current top-level definition is offered as a default value for `function`. A prefix argument automatically causes this default value to be used. The latest definitions of each of the other functions that are called by `function` are available via the [Continue Tags Search](#) command.
4.3 Functions and definitions

4.3.5 Completion

**Complete Symbol**

**Editor Command**

Argument: predicate

Key sequence: $\text{Alt}+\text{Ctrl}+I$

Attempts to complete the symbol before the current point. If the string to be completed is not unique, a list of possible completions is displayed.

If the Global Preference **Use in-place completion** is selected then the completions are displayed in a window which allows most keyboard gestures to be processed as ordinary editor input. This allows speedy reduction of the number of possible completions, while you can select the desired completion with Return, Up and Down.

If predicate is non-nil then only symbols which are bound or fbound are offered amongst the possible completions.

**Abbreviated Complete Symbol**

**Editor Command**

Argument: predicate

Key sequence: $\text{Alt}+I$

Attempts to complete the symbol abbreviation before the current point. If the string to be completed is not unique, a list of possible completions is displayed.

A symbol abbreviation is a sequence of words (sequences of alphanumeric characters) separated by connectors (sequences of non-alphanumeric, non-whitespace characters). Each word (connector) is a prefix of the corresponding word (connector) in the expansions. Thus if you complete the symbol abbreviation $w-o$ then `with-open-file` and `with-open-stream` are amongst the completions offered, assuming the COMMON-LISP package is visible.

If the Global Preference **Use in-place completion** is selected then the completions are displayed in a window which allows most keyboard gestures to be processed as ordinary editor input. This allows speedy reduction of
the number of possible completions, while you can select the desired completion with Return, Up and Down.

If predicate is non-nil then only symbols which are bound or fbound are offered amongst the possible completions.

4.3.6 Miscellaneous

Buffer Changed Definitions

Editor Command

Argument: None
Key sequence: None

Calculates which definitions that have been changed in the current buffer during the current LispWorks session, and displays these in the Changed Definitions tab of the Editor tool.

By default the reference point against which changes are calculated is the time when the file was last read into the buffer. A prefix argument equal to the value of Prefix-Argument-Default means the reference point is the last evaluation. A prefix argument of 1 means the reference point is the time the buffer was last saved to file.

Note: the most convenient to use this command is via the Editor tool. Switch it to the Changed Definitions tab, where you can specify the reference point for calculating the changes.

Function Arglist

Editor Command

Argument: function
Key sequence: Alt+= function

Prints the arguments expected by function in the Echo Area. The symbol under the current point is offered as a default value for function. A prefix argument automatically causes this default value to be used.

Note: example code showing how to use this command to display argument lists automatically is supplied with LispWorks, in the file examples/editor/commands/space-show-arglist.lisp
4.3 Functions and definitions

**Function Argument List**

**Editor Command**

Argument: `function`
Key sequence: `Ctrl+Shift+A function`

This command is similar to `Function Arglist`, except that the symbol at the head of the current form is offered as a default value for `function`, unless that symbol is a member of the list `editor:*find-likely-function-ignores*` in which case the second symbol in the form is offered as the default. A prefix argument automatically causes this default value to be used.

**Describe Class**

**Editor Command**

Argument: `class`
Key sequence: None

Displays a description of the class named by `class` in a Class Browser tool. The symbol under the current point is offered as a default value for `class`. A prefix argument automatically causes this default value to be used.

**Describe Generic Function**

**Editor Command**

Argument: `function`
Key sequence: None

Displays a description of `function` in a Generic Function Browser tool. The symbol under the current point is offered as a default value for `function`. A prefix argument automatically causes this default value to be used.

**Describe System**

**Editor Command**

Argument: `system`
Key sequence: None

Displays a description of the `defsystem`-defined system named by `system`. The symbol under the current point is offered as a default value for `system`. A prefix argument automatically causes this default value to be used.
4 Editing Lisp Programs

4.4 Forms

4.4.1 Movement, marking and indentation

Forward Form

Editor Command

Argument: None
Key sequence: Alt+Ctrl+F

Moves the current point to the end of the next form. A positive prefix argument causes the point to be moved the required number of forms forwards.

Backward Form

Editor Command

Argument: None
Key sequence: Alt+Ctrl+B

Moves the current point to the beginning of the previous form. A positive prefix argument causes the point to be moved the required number of forms backwards.

Mark Form

Editor Command

Argument: None
Key sequence: Alt+Ctrl+@

Puts the mark at the end of the current form. The current region is that area from the current point to the end of form. A positive prefix argument puts the mark at the end of the relevant form.

Indent Form

Editor Command

Argument: None
Key sequence: Alt+Ctrl+Q

If the current point is located at the beginning of a form, the whole form is indented in a manner that reflects the structure of the form. This command
can therefore be used to format a whole definition so that the structure of the definition is apparent.
See `editor:*indent-with-tabs*` for control over the insertion of \#\Tab characters by this and other indentation commands.

### 4.4.2 Killing forms

**Forward Kill Form**

*Editor Command*

- Argument: None
- Key sequence: `Alt+Ctrl+K`

Kills the text from the current point up to the end of the current form. A positive prefix argument causes the relevant number of forms to be killed forwards. A negative prefix argument causes the relevant number of forms to be killed backwards.

**Backward Kill Form**

*Editor Command*

- Argument: None
- Key sequence: `Alt+Ctrl+Backspace`

Kills the text from the current point up to the start of the current form. A positive prefix argument causes the relevant number of forms to be killed backwards. A negative prefix argument causes the relevant number of forms to be killed forwards.

**Kill Backward Up List**

*Editor Command*

- Argument: None
- Key sequence: None

Kills the form surrounding the current form. The cursor must be on the opening bracket of the current form. The entire affected area is pushed onto the kill-ring. A prefix argument causes the relevant number of surrounding lists to be removed.

For example, given the following code, with the cursor on the second open-bracket:
(print (do-some-work 1 2 3))

Kill Backward Up List would kill the outer form leaving this:

(do-some-work 1 2 3)

Also available through the function editor:kill-backward-up-list-command.

Extract List is a synonym for Kill Backward Up List.

4.4.3 Macro-expansion of forms

Macroexpand Form

*Editor Command*

Argument: None
Key sequence: Ctrl+Shift+M

Macro-expands the form after the current point. The output is sent to the Output window. A prefix argument causes the output to be displayed in the current buffer.

Walk Form

*Editor Command*

Argument: None
Key sequence: Alt+Shift+M

Produces a macroexpansion of the form after the current point. The output is sent to the Output window. A prefix argument causes the output to be displayed in the current buffer.

*Note:* Walk Form does not expand the Common Lisp macros cond, prog, prog* and multiple-value-bind, though it does expand their subforms.

4.4.4 Miscellaneous

Transpose Forms

*Editor Command*

Argument: None
Key sequence: Alt+Ctrl+T
4.5 Lists

4.5.1 Movement

**Forward List**

*Editor Command*

- Argument: None
- Key sequence: `Alt+Ctrl+N`

Moves the current point to the end of the current list. A positive prefix argument causes the point to be moved the required number of lists forwards.

**Backward List**

*Editor Command*

- Argument: None
- Key sequence: `Alt+Ctrl+P`

Moves the current point to the beginning of the current list. A positive prefix argument causes the point to be moved the required number of lists backwards.

**Forward Up List**

*Editor Command*

- Argument: None
- Key sequence: None

Moves the current point to the end of the current list by finding the first closing parenthesis that is not matched by an opening parenthesis after the current point.

Transposes the forms immediately preceding and following the current point. A zero prefix argument causes the forms at the current point and the current mark to be transposed. A positive prefix argument causes the form at or preceding the current point to be transposed with the form the relevant number of forms forward. A negative prefix argument causes the form at or preceding the current point to be transposed with the form the relevant number of forms backward.
4 Editing Lisp Programs

**Backward Up List**  
*Editor Command*

Argument: None  
Key sequence: Alt+Ctrl+U

Moves the current point to the beginning of the current list by finding the first opening parenthesis that is not matched by a closing parenthesis before the current point.

**Down List**  
*Editor Command*

Argument: None  
Key sequence: Alt+Ctrl+D

Moves the current point to a location down one level in the current list structure. A positive prefix argument causes the current point to be moved down the required number of levels.

4.6 Comments

**Set Comment Column**  
*Editor Command*

Argument: None  
Key sequence: Ctrl+X ;

Sets the comment column to the current column. A positive prefix argument causes the comment column to be set to the value of the prefix argument.

**Indent for Comment**  
*Editor Command*

Argument: None  
Key sequence: Alt+;

Creates a new comment or moves to the beginning of an existing comment, indenting it appropriately (see Set Comment Column).

If the current point is in a line already containing a comment, that comment is indented as appropriate, and the current point is moved to the beginning of the comment. An existing double semicolon comment is
aligned as for a line of code. An existing triple semicolon comment or a comment starting in column 0, is not moved.

A prefix argument causes comments on the next relevant number of lines to be indented. The current point is moved down the relevant number of lines.

If characters not associated with the comment extend past the comment column, a space is added before starting the comment.

### Up Comment Line

**Editor Command**

- Argument: None
- Key sequence: `Alt+P`
- Moves to the previous line and then performs an **Indent for Comment**.

### Down Comment Line

**Editor Command**

- Argument: None
- Key sequence: `Alt+N`
- Moves to the next line and then performs an **Indent for Comment**.

### Indent New Comment Line

**Editor Command**

- Argument: None
- Key sequence: `Alt+J` or `Alt+Newline`

Ends the current comment and starts a new comment on the next line, using the indentation and number of comment start characters from the previous line’s comment. If **Indent New Comment Line** is performed when the current point is not in a comment line, it simply acts as a **Return**.

### Kill Comment

**Editor Command**

- Argument: None
- Key sequence: `Alt+Ctrl+;`
Kills the comment on the current line and moves the current point to the next line. If there is no comment on the current line, the point is simply moved onto the next line. A prefix argument causes the comments on the relevant number of lines to be killed and the current point to be moved appropriately.

### 4.7 Parentheses

**Insert ()**  
*Editor Command*

Argument: None  
Key sequence: `Alt+Shift+`

Inserts a pair of parentheses, positioning the current point after the opening parenthesis. A positive prefix argument causes the parentheses to be placed around the appropriate number of following forms.

**Move Over )**  
*Editor Command*

Argument: None  
Key sequence: `Alt+Shift+)`

Inserts a new line after the next closing parenthesis, moving the current point to the new line. Any indentation preceding the closing parenthesis is deleted, and the new line is indented.

**Lisp Insert )**  
*Editor Command*

Argument: None  
Key sequence: )  
Mode: Lisp

Inserts a closing parenthesis and highlights the matching opening parenthesis, thereby allowing the user to examine the extent of the parentheses.
4.8 Documentation

Find Unbalanced Parentheses  
Editor Command

Argument: None  
Key sequence: None  
Moves the point to the end of the last properly matched form, thereby allowing you to easily identify any parentheses in your code which are unbalanced.

*Find Mismatch* is a synonym for *Find Unbalanced Parentheses*.

4.8 Documentation

Apropos  
Editor Command

Argument: *string*  
Key sequence: None  
Displays a Symbol Browser tool which lists symbols with symbol names matching *string*. The symbol name at the current point is offered as a default value for *string*.

By default *string* is matched against symbol names as a regular expression. A prefix argument causes a plain substring match to be used instead.


Describe Symbol  
Editor Command

Argument: *symbol*  
Key sequence: None  
Displays a description (that is, value, property list, package, and so on) of *symbol* in a Help window. The symbol under the current point is offered as a default value for *string*. A prefix argument automatically causes this default value to be used.
Function Documentation

Editor Command

Arguments: None
Key sequence: Ctrl+Shift+D

definition-documentation-command

Prompts for a symbol, which defaults to the symbol at the current point, and displays the HTML documentation for that symbol if it is found in the HTML manuals index pages.

On X11/Motif the prefix argument controls whether a new browser window is created. If the option "Reuse existing browser window" is on in the browser preferences, then the prefix argument causes the command to create a new browser window. If "Reuse existing browser window" is off in the browser preferences, then the prefix argument causes the command to reuse an existing browser window.

Show Documentation

Editor Command

Argument: name
Key sequence: Alt+Ctrl+Shift+A

Displays a Help window containing any documentation for the Lisp symbol name that is present in the Lisp image. This includes function lambda lists, and documentation strings accessible with cl:documentation, if any such documentation exists.

Show Documentation for Dspec

Editor Command

Argument: dspec
Key sequence: None

Displays any documentation in the Lisp image for the dspec dspec, as described for Show Documentation.

dspec is a symbol or list naming a definition, as described in the LispWorks User Guide.
4.9 Evaluation and compilation

The commands described below allow the user to evaluate (interpret) or compile Lisp code that exists as text in a buffer. In some cases, the code may be used to modify the performance of the Editor itself.

4.9.1 General Commands

Current-Package  
Editor Variable

Default value: \texttt{nil}  
If non-\texttt{nil}, defines the value of the current package.

Set Buffer Package  
Editor Command

Argument: \texttt{package}  
Key sequence: None

Set the package to be used by Lisp evaluation and compilation while in this buffer. Not to be used in the Listener, which uses the value of \texttt{*package*} instead.

Set Buffer Output  
Editor Command

Argument: \texttt{stream}  
Key sequence: None

Sets the output stream that evaluation results in the current buffer are sent to.

4.9.2 Evaluation commands

Evaluate Defun  
Editor Command

Argument: None  
Key sequence: \texttt{Alt+Ctrl+X}
4  Editing Lisp Programs

Evaluates the current top-level form. If the current point is between two forms, the previous form is evaluated.

If the form is a `defvar` form, then the command may first make the variable unbound, according to the value of `Evaluate-Defvar-Action`, and hence assign the new value. This is useful because, whilst `defvar` does not reassign the value of a bound variable, when editing a program it is likely that you do want the new value.

**Evaluate-Defvar-Action**

*Editor Variable*

Default value: `:reevaluate-and-warn`

This affects the behavior of **Evaluate Defun** and **Compile Defun** when they are invoked on a `defvar` form. The allowed values are:

- `:evaluate-and-warn`  
  Do not make the variable unbound before evaluating the form, and warn that it was not redefined.

- `:evaluate`  
  Do not make the variable unbound before evaluating the form, but do not warn that it was not redefined.

- `:reevaluate-and-warn`  
  Make the variable unbound before evaluating the form, and warn that it was therefore redefined.

- `:reevaluate`  
  Make the variable unbound before evaluating the form, but do not warn that it was therefore redefined.

**Reevaluate Defvar**

*Editor Command*

Argument: None  
Key sequence: None

Evaluates the current top-level form if it is a `defvar`. If the current point is between two forms, the previous form is evaluated. The form is treated as if the variable is not bound.

**Re-evaluate Defvar** is a synonym for **Reevaluate Defvar**.
4.9 Evaluation and compilation

**Evaluate Expression**  
*Editor Command*

Argument: *expression*

Key sequence: `Esc Esc expression Alt+Esc expression`

Evaluates *expression*. The expression to be evaluated is typed into the Echo Area and the result of the evaluation is displayed there also.

**Evaluate Last Form**  
*Editor Command*

Argument: None

Key sequence: `Ctrl+X Ctrl+E`

Evaluates the Lisp form preceding the current point.

Without a prefix argument, prints the result in the Echo Area. With a non-nil prefix argument, inserts the result into the current buffer.

**Evaluate Region**  
*Editor Command*

Argument: None

Key sequence: `Ctrl+Shift+E`

Evaluates the Lisp forms in the region between the current point and the mark.

**Evaluate Buffer**  
*Editor Command*

Argument: None

Key sequence: None

Evaluates the Lisp forms in the current buffer.

**Load File**  
*Editor Command*

Argument: *file*

Key sequence: None

Loads *file* into the current eval server, so that all Lisp forms in the file are evaluated.
4 Editing Lisp Programs

**Toggle Error Catch**

*Editor Command*

Argument: None  
Key sequence: None

Toggles error catching for expressions evaluated in the editor. By default, if there is an error in an expression evaluated in the editor, a Notifier window is opened which provides the user with a number of options, including debug, re-evaluation and aborting of the editor command. However, this behavior can be changed by using *Toggle Error Catch*, so that in the event of an error, the error message is printed in the Echo Area, and the user is given no restart or debug options.

**Evaluate Buffer Changed Definitions**

*Editor Command*

Argument: None  
Key sequence: None

Evaluates definitions that have been changed in the current buffer during the current LispWorks session (use *Buffer Changed Definitions* on page 124 to see which definitions have changed). A prefix argument equal to the value of *Prefix-Argument-Default* causes evaluation of definitions changed since last evaluated. A prefix argument of 1 causes evaluation of definitions changed since last saved.

**Evaluate Changed Definitions**

*Editor Command*

Argument: None  
Key sequence: None

Evaluates definitions in all Lisp buffers that have been changed during the current LispWorks session. The effect of prefixes is the same as for *Evaluate Buffer Changed Definitions*.

**Evaluate System Changed Definitions**

*Editor Command*

Argument: *system*  
Key sequence: None
Evaluates definitions that have been changed in system during the current LispWorks session.

4.9.3 Evaluation in Listener commands

Evaluate Defun In Listener

Argument: editp
Key sequence: None

This command works rather like Evaluate Defun in that it evaluates the current top-level form and handles defvar forms usefully. However, instead of doing the evaluation in the Editor window, it copies the form into a Listener window as if you had entered it there.

Normally the evaluation is done immediately, but if a prefix argument is given, the text is inserted into the Listener for you to edit before pressing Return to evaluate it.

An in-package form is inserted before the form when necessary, so this will change the current package in the Listener.

Evaluate Last Form In Listener

Argument: editp
Key sequence: None

This command works rather like Evaluate Last Form in that it evaluates the Lisp form preceding the current point. However, instead of doing the evaluation in the Editor window, it copies the form into a Listener window as if you had entered it there.

Normally the evaluation is done immediately, but if a prefix argument is given, the text is inserted into the Listener for you to edit before pressing Return to evaluate it.

An in-package form is inserted before the form when necessary, so this will change the current package in the Listener.
4 Editing Lisp Programs

Evaluate Region In Listener

Editor Command

Argument: \textit{editp}

Key sequence: None

This command works rather like \texttt{Evaluate Region} in that it evaluates the Lisp forms in the current region. However, instead of doing the evaluation in the Editor window, it copies the forms into a Listener window as if you had entered them there.

Normally the evaluation is done immediately, but if a prefix argument is given, the forms are inserted into the Listener for you to edit before pressing \texttt{Return} to evaluate them.

An \texttt{in-package} form is inserted before the forms when necessary, so this will change the current package in the Listener.

4.9.4 Compilation commands

Compile Defun

Editor Command

Argument: None

Key sequence: Ctrl+Shift+C

Compiles the current top-level form. If the current point is between two forms, the previous form is evaluated.

If the form is a \texttt{defvar} form, then the command may first make the variable unbound, according to the value of \texttt{Evaluate-Defvar-Action}, and hence assign the new value. This is useful because, whilst \texttt{defvar} does not reassign the value of a bound variable, when editing a program it is likely that you do want the new value.

Compile Region

Editor Command

Argument: None

Key sequence: Ctrl+Shift+R

Compiles the Lisp forms in the region between the current point and the mark.
4.9 Evaluation and compilation

**Compile File**

*Editor Command*

Argument: *file*

Key sequence: None

Compiles all Lisp forms in *file*.

No checking is done on write dates for the source and binary files, to see if the file needs to be compiled. Also, no checking is done to see if there is a buffer for the file that should first be saved.

**Compile Buffer**

*Editor Command*

Argument: None

Key sequence: `Ctrl+Shift+B`

Compiles and evaluates in turn each of the Lisp forms in the current buffer.

**Compile Buffer File**

*Editor Command*

Argument: None

Key sequence: None

Compiles the file in the current buffer if its associated binary file is older than the source file or does not exist. For a file with a `.lisp` suffix, the corresponding binary file has a `.fsl` suffix. When the binary file is up to date, the user is asked if the source should be compiled anyway. When `Compile-Buffer-File-Confirm` is non-nil, the user is always asked for confirmation, even when the date of the source file is later than that of the binary file.

A prefix argument causes the file to be compiled without checking the date or existence of the binary file.

**Compile-Buffer-File-Confirm**

*Editor Variable*

Default value: `t`
Determines whether `Compile Buffer File` should prompt for a compilation to proceed. If the value is non-nil, the user is always prompted for confirmation.

**Compile Buffer Changed Definitions**

*Editor Command*

- **Argument:** None
- **Key sequence:** None

Compiles definitions that have been changed in the current buffer during the current LispWorks session (use `Buffer Changed Definitions` on page 124 to see which definitions have changed). A prefix argument equal to the value of `Prefix-Argument-Default` causes compilation of definitions changed since last compiled. A prefix argument of 1 causes compilation of definitions changed since last saved.

**Compile Changed Definitions**

*Editor Command*

- **Argument:** None
- **Key sequence:** None

Compiles definitions in all Lisp buffers that have been changed during the current LispWorks session. The effect of prefixes is the same as for `Compile Buffer Changed Definitions`.

**Compile System**

*Editor Command*

- **Argument:** `system`
- **Key sequence:** None

Compiles all definitions in `system`.

**Compile System Changed Definitions**

*Editor Command*

- **Argument:** `system`
- **Key sequence:** None

Compiles definitions that have been changed in `system` during the current LispWorks session.
4.10 Removing definitions

Disassemble Definition

*Editor Command*

**Argument:** `definition`
**Key sequence:** None

Outputs assembly code for `definition` to the Output window, compiling it first if necessary. The name of the current top-level definition is offered as a default value for `definition`.

Edit Recognized Source

*Editor Command*

**Argument:** None
**Key sequence:** Ctrl+X ,

Edit the source of the next compiler message, warning or error. It should be used while viewing the Output window. Without a prefix argument, it searches forwards in the Output window until it finds text which it recognizes as a compiler message, warning or error, and then shows the source code associated with that message. With a prefix argument, it searches backwards.

4.10 Removing definitions

These commands allow the user to remove definitions from the running Lisp image. It uses Common Lisp functionality such as `fmakunbound`, `makunbound` and `remove-method` to undefine Lisp functions, variables, methods and so on.

**Note:** This does not mean deleting the source code.

4.10.1 Undefining one definition

Undefine

*Editor Command*

**Argument:** None
**Key sequence:** None

Without a prefix argument, this undefines the current top level definition. That is, the defining form around or preceding the current point.
With a non-nil prefix argument, this does not undefine the definition but instead inserts into the buffer a Lisp form which, if evaluated, would undefine the definition.

**Undefine Command**

*Editor Command*

Argument: None  
Key sequence: None  
Prompts for the name of an Editor command, and undefines that command.

### 4.10.2 Removing multiple definitions

**Undefine Buffer**

*Editor Command*

Argument: None  
Key sequence: None  
Undefines all the definitions in the current buffer.

**Undefine Region**

*Editor Command*

Argument: None  
Key sequence: None  
Undefines the definitions in the current region.
By default the LispWorks Editor emulates GNU Emacs. This is often unusable for programmers familiar only with Microsoft Windows keys and behavior: for instance, a selection is not deleted on input, and most of the commonly used keys differ.

The LispWorks editor can be switched to emulate the Microsoft Windows model instead of Emacs.

When using Microsoft Windows emulation the main differences are:

- An alternate set of key bindings for the commonly-used commands.
- The Alt key activates the menu bar, and does not act as Meta when used as the only modifier key.
- The abort gesture for the current editor command is Esc, not Ctrl+G.
- Inserted text replaces any currently selected text.
- The cursor is a vertical bar rather than a block.

### 5.1 Using Microsoft Windows editor emulation

To switch Microsoft Windows emulation on, use the Editor or Listener tools’ Preferences dialog. See the section "Configuring the editor emulation" in the *Common LispWorks User Guide* for details.
5.2 Key bindings

The key bindings for Microsoft Windows emulation are supplied in the Lisp-Works library file `config\msw-key-binds.lisp`. This file is loaded the first time that you use Microsoft Windows emulation, or on startup if your preference is stored.

5.2.1 Finding the keys

There are several ways to find the key for a given command, and the command on a given key:

- The files `msw-key-binds.lisp` and `selection-key-binds.lisp` show the default state, just like `key-binds.lisp` shows the Emacs bindings.
- The Editor command **Describe Bindings** shows all the current global key bindings.
- The Editor command **Describe Key** reports the command on a given key.
- The Editor command **Where Is** reports the key for a given command.
- Use the **Help > Editing** menu.

5.2.2 Modifying the Key Bindings

As in Emacs emulation, the key sequences to which individual commands are bound can be changed, and key bindings can be set up for commands which are not, by default, bound to any key sequences.

Interactive means of modifying key bindings are described in “Key bindings” on page 102. Key bindings can also be defined programmatically via `editor:bind-key` forms similar to those in `msw-key-binds.lisp`.

However, note that you must use `editor:set-interrupt-keys` if you wish to alter the abort gesture.

5.2.3 Accessing Emacs keys

When Microsoft Windows emulation is on, Emacs keys are still available via the prefix Ctrl+E. For example, to invoke the command **WFind File**, enter:

```
Ctrl+E Ctrl+X Ctrl+F
```
Note that you will not have `Alt` behaving as the `Meta` key. However, you can use `Ctrl+M` instead. For example, to run the command `Skip Whitespace`, enter:

```
Ctrl+M X Skip Whitespace
```

### 5.2.4 The Alt modifier and editor bindings

In Microsoft Windows emulation on Microsoft Windows, keystrokes with the `Alt` modifier key are used by the system to activate the menu bar. Therefore these keystrokes, for example `Alt+A` and `Alt+Ctrl+A` are not available to the editor.

Windows accelerators always take precedence over editor key bindings, so in Emacs emulation the `Alt` modifier key only acts as Meta though keystrokes with `Alt` if there is no accelerator which matches.

On Cocoa, the preference for the Meta key affects the operation of menu accelerators (shortcuts). If `Command` is used as Meta, then it will not be available for use as an accelerator.

### 5.3 Replacing the current selection

When using Microsoft Windows emulation, Delete Selection Mode is active so that selected text is deleted when you type or paste text. Also, `Delete` deletes the current selection.

**Note:** Delete Selection Mode can also be used independently of Microsoft Windows emulation. See “Delete Selection” on page 52 for details.

### 5.4 Emulation in Applications

If you include the LispWorks editor (via `capi:editor-pane` or its subclasses) in an application, then by default your interfaces will use Microsoft Windows emulation on Windows, Mac OS editor emulation on Cocoa, and Emacs emulation on Unix and Linux.

To override this behavior in your interface classes, define a method on `capi:interface-keys-style`. See the *LispWorks CAPI Reference Manual* for details.
To override this behavior in your delivered application, use the delivery keyword `editor-style`. See the LispWorks Delivery User Guide for details.
Advanced Features

The editor can be customized, both interactively and programmatically, to suit the users requirements.

The chapter “Command Reference” provides details of commands used to customize the editor for the duration of an editing session (see “Keyboard macros” on page 95, “Key bindings” on page 102, “Editor variables” on page 100). This chapter contains information on customizing the editor on a permanent basis.

There are a number of ways in which the editor may be customized:

- The key sequences to which individual commands are bound can be changed, and key bindings can be set up for commands which are not, by default, bound to any key sequences—see “Customizing default key bindings” on page 150.
- The indentation used for Lisp forms can be modified to suit the preferences of the user—see “Customizing Lisp indentation” on page 152.
- Additional editor commands can be created by combining existing commands and providing specified arguments for them—see “Programming the editor” on page 152.

Note that the default configuration files mentioned in this chapter were used when LispWorks was released by Xanalys. They are not read in when the system is run, so any modification to them will have no effect. If the user wishes to
modify the behavior of LispWorks in any of these areas, the modifying code should be included in the .lispworks file, or an image containing the modifications should be saved.

6.1 Customizing default key bindings

The key sequences to which individual commands are bound can be changed, and key bindings can be set up for commands which are not, by default, bound to any key sequences. Interactive means of modifying key bindings are described in “Key bindings” on page 102.

This section describes the editor function **bind-key**, which is used to establish bindings programmatically. If you want to alter your personal key bindings, put the modifying code in your .lispworks file.

The default Emacs key bindings can be found in the file config/key-binds.lisp in the LispWorks library directory. See “Key bindings” for details of the key binds files used in other editor emulations.

**editor:bind-key**

```lisp
editor:bind-key name key &optional kind where
```

Binds the command name to the key sequence or combination key.

kind can take the value :global, :mode, or :buffer.

The default for kind is :global, which makes the binding apply in all buffers and all modes, unless overridden by a mode-specific or buffer-specific binding.

If where is not supplied, the binding is for the current emulation. Otherwise where should be either :emacs or :pc, meaning that the binding is for Emacs emulation or Microsoft Windows emulation respectively.

**Note:** before the editor starts, the current emulation is :emacs. Therefore bind-key forms which do not specify where and which are evaluated before the editor starts (for example, in your initialization file) will apply to Emacs emulation only. Thus for example

```lisp
(bind-key "Command" "Control-Right")
```
6.1 Customizing default key bindings

When evaluated in your initialization file will establish an Emacs emulation binding. The same form when evaluated after editor startup will establish a binding in the current emulation: Emacs or Microsoft Windows emulation.

It is best to specify the intended emulation:

```
(editor:bind-key "Command" "Control-Right" :global :pc)
```

If kind is :buffer the binding applies only to a buffer which should be specified by the value of where.

If kind is :mode the binding applies only to a mode which should be specified by where.

If this function is called interactively via the command Bind Key, you will be prompted as necessary for the kind of binding, the buffer or the mode. The binding is for the current emulation. Tab completion may be used at any stage.

The following examples, which are used to implement some existing key bindings, illustrate how key sequences can be specified using `bind-key`.

```
(editor:bind-key "Forward Character" #\control-\f)
(editor:bind-key "Forward Word" #\meta-\f)
(editor:bind-key "Save File" '/'(#\control-\x #\control-\s))
(editor:bind-key "Regexp Forward Search" #\meta-control-\s)
(editor:bind-key "Complete Field" #\space :mode "Echo Area")
(editor:bind-key "Backward Character" "left")
(editor:bind-key "Forward Word" #("control-right"))
```

**editor:bind-string-to-key**

Function

```
editor:bind-string-to-key string key &optional kind where
```

Binds the text string string to the keyboard shortcut key without the need to create a command explicitly. Using key inserts string in the current buffer. The kind and where arguments are as for `editor:bind-key`.

**editor:set-interrupt-keys**

Function

```
editor:set-interrupt-keys keys &optional input-style
```
The key that aborts the current editor command is handled specially by the editor. If you wish to change the default (from Ctrl+G for Emacs) then you must use this function rather than editor:bind-key. See the file config\msw-key-binds.lisp for an example.

### 6.2 Customizing Lisp indentation

The indentation used for Lisp forms can be modified to suit the preferences of the user.

The default indentations can be found in the file config/indents.lisp in the LispWorks library directory. If you want to alter your personal Lisp indentation, put the modifying code in your .lispworks file.

**editor:setup-indent**

Function

**editor:setup-indent form-name no-of-args &optional standard special**

Modifies the indentation, in Lisp Mode, for the text following an instance of form-name. The arguments no-of-args, standard and special should all be integers. The first no-of-args forms following the form-name become indented special spaces if they are on a new line. All remaining forms within the scope of the form-name become indented standard spaces.

For example, the default indentation for if in Lisp code is established by:

```
(editor:setup-indent "if" 2 2 4)
```

This determines that the first 2 forms after the if (that is, the test and the then clauses) get indented 4 spaces relative to the if, and any further forms (here, just an else clause) are indented by 2 spaces.

### 6.3 Programming the editor

The editor functions described in this section can be combined and provided with arguments to create new commands. Existing editor commands can also be used in the creation of new commands (see editor:defcommand).

Note that all the code found in this chapter is included in the directory examples/editor in the directory defined by the variable *lispworks-directory*. 
6.3 Programming the editor

Note: code which modifies the contents of a `capi:editor-pane` (for example a displayed editor buffer) must be run only in the interface process of that pane.

The following sections describe editor functions that are not interactive editor commands.

### 6.3.1 Calling editor functions

All editor commands and some other editor functions expect to be called within a dynamic context that includes settings for the current buffer and current window. This happens automatically when using the editor interactively.

You can set up the context in a CAPI application by using the function `capi:call-editor` (see the *LispWorks CAPI Reference Manual*).

You can also use the following function to call editor commands and functions.

**editor:process-character**

`editor:process-character`  
`char`  
`window`

Processes `char` in a dynamic context where the current window is `window` and the current buffer is the buffer currently displayed in `window`.

The `char` can be one of the following:

- A string, naming an editor command to invoke.
- A list of the form `(function  .  args)`, which causes `function` to be called with `args`. The items in `args` are not evaluated.
- A function or symbol, which is called with `nil` as its argument (like a command function would be if there is no prefix argument).
- A character or `system:gesture-spec` object, which is treated as if it has been typed on the keyboard.

There is no return value. The processing may happen in another thread, so may not have competed before this function returns.
6.3.2 Defining commands

\textbf{defcommand}

\textit{Macro}

\textbf{Summary} \hspace{2cm} Defines new editor commands.

\textbf{Package} \hspace{1cm} \texttt{editor}

\textbf{Signature} \hspace{1cm} \texttt{defcommand name lambda-list command-doc function-doc &body forms => command-name}

\textbf{Arguments} \hspace{1cm} 

\texttt{name} \hspace{1cm} The name of the new editor command. See Description for more details.

\texttt{lambda-list} \hspace{1cm} The lambda list of the new command, which must have at least one argument.

\texttt{command-doc} \hspace{1cm} A string which gives a detailed description of the command.

\texttt{function-doc} \hspace{1cm} A string which gives a brief description of the command.

\texttt{forms} \hspace{1cm} The Lisp code for the command.

\textbf{Values} \hspace{1cm} \texttt{command-name} \hspace{1cm} The symbol naming the new command. This symbol is interned in the current package.

\textbf{Description} \hspace{1cm} This macro defines a new editor command \texttt{name} that can be invoked in the editor by means of \textbf{Extended Command}. The macro takes the specification of the command as supplied, and creates a new Lisp function \texttt{command-name} from it.

\textbf{Note}: Every editor command has an associated Lisp function named \texttt{command-command}. For example:

\begin{verbatim}
editor:self-insert-command p &optional char
\end{verbatim}

For every editor command documented in this manual, the associated \texttt{command-command} symbol is exported from the
editor package; and for every editor command created by user code, the associated command-command symbol is interned in the current package.

Existing editor commands can be used within the body of defcommand. To make use of an existing command, the command name should be hyphenated with a command suffix added. For example, the editor command Forward Character is referred to by forward-character-command. The syntax of a call to an existing command is the same as a call to a standard Lisp function. The first argument of all command definitions is the prefix argument, and this must therefore be included in any calls made to commands from defcommand, even when prefix arguments are ignored by the command. Some commands have additional optional arguments and details of these are provided in the command descriptions throughout this manual.

The name of the command must be a string, while the name of the associated function must be a symbol. There are two ways in which name can be supplied. Most simply, name is given as a string, and the string is taken to be the name of the editor command. The symbol the function needs as a name is computed from that string. Any spaces in the string are replaced with hyphens, and the quotes are discarded, but otherwise the symbol contains the same characters as the string.

If a specific function name, different to the one defcommand derives itself, is required, then this can be supplied explicitly, by passing a list as name. The first element of the list is the string used as the name of the command, while the last element is the symbol used to name the Lisp function.

The command-doc and function-doc variables may be empty strings if no documentation is available for them.

Example

The following code defines an editor command, Move Five, which moves the cursor forward in an editor buffer by five characters.
(editor:defcommand "Move Five" (p)
  "Moves the current point forward five characters."
  "Any prefix argument is ignored."
  "Moves five characters forward."
  (editor:forward-character-command 5))
=>
MOVE-FIVE-COMMAND

The first string gives the command’s name. This is the simple form of definition, where no explicit name for the Lisp function is given.

p is not used, and is there simply because the lambda-list must have at least one element.

The second string is the command documentation, while the third is the function documentation. After these, the Lisp code defines what the command actually does.

Use Alt+X Move Five to invoke the command.

This command changes all the text in a writable buffer to be uppercase:

(editor:defcommand "Uppercase Buffer" (p)
  "Uppercase the buffer contents"
  (declare (ignore p))
  (let* ((buffer (editor:current-buffer))
         (point (editor:buffer-point buffer))
         (start (editor:buffers-start buffer))
         (end (editor:buffers-end buffer))
         (editor:set-current-mark start)
         (editor:move-point point end)
         (editor:uppercase-region-command nil)))

6.3.3 Buffers

Each buffer that you manipulate interactively using editor commands is an object of type editor:buffer that can be used directly when programming the editor. Buffers contain an arbitrary number of editor:point objects, which are used when examining or modifying the text in a buffer (see “Points” on page 161).
6.3 Programming the editor

6.3.3.1 Buffer locking

Each buffer contains a lock that is used to prevent more than one thread from modifying the text, text properties or points within the buffer simultaneously. All of the exported editor functions (editor:insert-string, editor:move-point etc) claim this lock implicitly and are therefore atomic with respect to other such functions.

In situations where you want to make several changes as one atomic operation, use one of the macros editor:with-buffer-locked or editor:with-point-locked to lock the buffer for the duration of the operation. For example, if you want to delete the next character and replace it by a space:

```lisp
(editor:with-buffer-locked ((editor:current-buffer))
  (editor:delete-next-character-command nil)
  (editor:insert-character (editor:current-point) #\Space))
```

In addition, you sometimes want to examine the text in a buffer without changing it, but ensure that no other thread can modify it in the meantime. This can be achieved by locking the buffer using editor:with-buffer-locked or editor:with-point-locked and passing the for-modification argument as nil. For example, if you are computing the beginning and end of some portion of the text in a buffer and then performing some operation on that text, you may want to lock the buffer to ensure that no other threads can modify the text while you are processing it.

**editor:with-buffer-locked**

**Macro**

```lisp
editor:with-buffer-locked (buffer
  &key for-modification
  check-file-modification
  block-interrupts)
  &body body => values
```

Evaluates body while holding the lock in buffer. At most one thread can lock a buffer at a time and the macro waits until it can claim the lock.

If for-modification is non-nil (the default), the contents of buffer can be modified by body. If for-modification is nil, the contents of buffer cannot be modified until body returns and trying to do so from within body will sig-
nal an error. If the buffer is read-only and for-modification is non-nil, then an `editor:editor-error` is signalled.

The macro `editor:with-buffer-locked` can be used recursively, but if the outermost use passed nil as the value of for-modification, then inner uses cannot pass non-nil as the value of for-modification.

If check-file-modification is non-nil (the default) and the buffer is associated with a file and has not already been modified, then the modification time of the file is compared to the time that the file was last read. If the file is newer than the buffer, then the user is asked if they want to re-read the file into the buffer, and if they do then the file is re-read and the operations aborts. Otherwise, there is no check for the file being newer than the buffer.

If block-interrupts is non-nil, the body is evaluated with interrupts blocked. This is useful if the buffer may be modified by an interrupt function, or some interrupt function may end up waiting for another thread that may wait for the buffer lock, which would cause a deadlock. The default is not to block interrupts.

Note that using a non-nil value for block-interrupts is not the same as using the `without-interrupts` or `without-preemption` macros. It just stops the current thread from calling interrupt functions, so other threads might run while the body is being evaluated.

The values returned are those of body.

```
editor:with-point-locked

editor:with-point-locked (point &key for-modification check-file-modification block-interrupts errorp)
  &body body => values
```

Evaluates body while holding the lock in the buffer that is associated with point. In addition, the macro checks that point is valid and this check is atomic with respect to calls to the function `editor:delete-point`. The values of for-modification, check-file-modification and block-interrupts have the same meanings as for `editor:with-buffer-locked`. 
The value of `errorp` determines the behavior when `point` is not valid. If `errorp` is non-nil, an error is signaled, otherwise `nil` is returned without evaluating `body`. The point may be invalid because it does not reference any buffer (that is, it has been deleted), or because its buffer was changed by another thread while the current thread was attempting to lock the buffer.

The values returned are those of `body`, or `nil` when `errorp` is `nil` and `point` is not valid.

### 6.3.3.2 Buffer operations

- **editor:*buffer-list*  
  Variable  
  Contains a list of all the buffers in the editor.

- **editor:current-buffer  
  Function  
  `editor:current-buffer`  
  Returns the current buffer.

- **editor:buffers-name  
  Function  
  `editor:buffers-name buffer`  
  Returns the name of `buffer`.

- **editor:window-buffer  
  Function  
  `editor:window-buffer window`  
  Returns the buffer currently associated with `window`.

- **editor:buffers-start  
  Function  
  `editor:buffers-start buffer`  
  Returns the starting point of `buffer`. 
**editor:buffers-end**  
*Function*

`editor:buffers-end buffer`

Returns the end point of `buffer`.

**editor:buffer-point**  
*Function*

`editor:buffer-point buffer`

Returns the current point in `buffer`.

**editor:use-buffer**  
*Macro*

`editor:use-buffer buffer &body forms`

Makes `buffer` the current buffer during the evaluation of `forms`.

**editor:buffer-from-name**  
*Function*

`editor:buffer-from-name name`

Returns the buffer called `name` (which should be a string). If there is no buffer with that name, `nil` is returned.

**editor:make-buffer**  
*Function*

`editor:make-buffer name &key modes`

Creates a new buffer called `name`. The argument `modes` is a list of modes for the new buffer. The default value for `modes` is `Fundamental`. The newly-created buffer is returned.

**editor:goto-buffer**  
*Function*

`editor:goto-buffer buffer in-same-window`

Makes `buffer` the current buffer. If `buffer` is currently being shown in a window then the cursor is moved there. If `buffer` is not currently in a window and `in-same-window` is non-`nil` then it is shown in the current window, otherwise a new window is created for it.
6.3 Programming the editor

6.3.4 Points

Locations within a buffer are recorded as `editor:point` objects. Each point remembers a character position within the buffer and all of the editor functions that manipulate the text of a buffer locate the text using one or more point objects (sometimes the current point).

A point's `kind` controls what happens to the point when text in the buffer is inserted or deleted.

- **`:temporary`** points are for cases where you need read-only access to the buffer. They are like GNU Emacs "points". They have a lower overhead than the other kinds of point and do not need to be explicitly deleted, but do not use them in cases where you make a point, insert or delete text and then use the point again, since they do not move when the text is changed. Also, do not use them in cases where more than one thread can modify their buffer without locking the buffer first (see “Buffer locking” on page 157).

- **`:before-insert`** and **`:after-insert`** points are for cases where you need to make a point, insert or delete text and still use the point afterwards. They are like GNU Emacs "markers". The difference between these two kinds is what happens when text is inserted. For a point at position $n$ from the start of the buffer, inserting $\text{len}$ characters will leave the point at either position $n$ or $n + \text{len}$ according to the following table.

When text is deleted, `:before-insert` and `:after-insert` points are treated the same: points $\leq$ the start of the deletion remain unchanged, points $\geq$ the end of the deletion are moved with the text and points within the deleted region are automatically deleted and cannot be used again.

All points with kind other than `:temporary` are stored within the data structures of the editor buffer so they can be updated when the text changes. A point can be removed from the buffer by `editor:delete-point`, and point objects are also destroyed if their buffer is killed.

<table>
<thead>
<tr>
<th>kind</th>
<th>Insert at $&lt; n$</th>
<th>Insert at $= n$</th>
<th>Insert at $&gt; n$</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>:before-insert</code></td>
<td>$n + \text{len}$</td>
<td>$n$</td>
<td>$n + \text{len}$</td>
</tr>
<tr>
<td><code>:after-insert</code></td>
<td>$n + \text{len}$</td>
<td>$n + \text{len}$</td>
<td>$n$</td>
</tr>
</tbody>
</table>
editor:point-kind

editor:point-kind point

Returns the kind of the point, which is :temporary, :before-insert or :after-insert.

editor:current-point

editor:current-point

Returns the current point. See also editor:buffer-point.

editor:current-mark

editor:current-mark &optional pop-p no-error-p

Returns the current mark. If pop-p is t, the mark is popped off the point ring. If no mark is set and no-error-p is t, nil is returned; otherwise an error is signalled. The default for both of these optional arguments is nil.

editor:set-current-mark

editor:set-current-mark point

Sets the current mark to be point.

editor:point<

editor:point< point1 point2

Returns non-nil if point1 is before point2 in the buffer.

editor:point>

editor:point> point1 point2

Returns non-nil if point1 is after point2 in the buffer.
6.3 Programming the editor

**editor:copy-point**  
Function

editor:copy-point point &optional kind new-point

Makes and returns a copy of point. The argument kind can take the value :before, :after, or :temporary. If new-point is supplied, the copied point is bound to that as well as being returned.

**editor:delete-point**  
Function

editor:delete-point point

Deletes the point point.

This should be done to any non-temporary point which is no longer needed.

**editor:move-point**  
Function

editor:move-point point new-position

Moves point to new-position, which should itself be a point.

**editor:start-line-p**  
Function

editor:start-line-p point

Returns t if point is immediately before the first character in a line, and nil otherwise.

**editor:end-line-p**  
Function

editor:end-line-p point

Returns t if point is immediately after the last character in a line, and nil otherwise.

**editor:same-line-p**  
Function

editor:same-line-p point1 point2

Returns t if point1 and point2 are on the same line, and nil otherwise.
**editor:save-excursion**  
Macro

```lisp
editor:save-excursion &rest body
```

Saves the location of the point and the mark and restores them after completion of `body`. This restoration is accomplished even when there is an abnormal exit from `body`.

**editor:with-point**  
Macro

```lisp
editor:with-point point-bindings &rest body
```

`point-bindings` is a list of bindings, each of the form `(var point [kind])`. Each variable `var` is bound to a new point which is a copy of the point `point` though possibly with a different kind, if `kind` is supplied. If `kind` is not supplied, then the new point has `kind :temporary`.

The forms of `body` are evaluated within the scope of the point bindings, and then the points in each variable `var` are deleted, as if by `editor:delete-point`. Each point `var` is deleted even if there was an error when evaluating `body`.

The main reason for using `with-point` to create non-temporary points is to allow `body` to modify the buffer while keeping these points up to date for later use within `body`.

### 6.3.5 The echo area

**editor:message**  
Function

```lisp
editor:message string &rest args
```

A message is printed in the Echo Area. The argument `string` must be a string, which may contain formatting characters to be interpreted by `format`. The argument `args` consists of arguments to be printed within the string.

**editor:clear-echo-area**  
Function

```lisp
editor:clear-echo-area &optional string force
```
6.3 Programming the editor

Clears the Echo Area. The argument string is then printed in the Echo Area. If force is non-nil, the Echo Area is cleared immediately, with no delay. Otherwise, there may be a delay for the user to read any existing message.

6.3.6 Editor errors

Many editor commands and functions signal an error on failure (using editor:editor-error as described below). This causes the current operation to be aborted.

In many cases, the user will not want the operation to abort completely if one of the editor commands it uses is not successful. For example, the operation may involve a search, but some aspects of the operation should continue even if the search is not successful. To achieve this, the user can catch the editor:editor-error using a macro such as handler-case.

For example, one part of an application might involve moving forward 5 forms. If the current point cannot be moved forward five forms, generally the Editor would signal an error. However, this error can be caught. The following trivial example shows how a new message could be printed in this situation, replacing the system message.

```lisp
(editor:defcommand "Five Forms" (p)
  "Tries to move the current point forward five forms,
  printing out an appropriate message on failure."
  "Tries to move the current point forward five forms."
  (handler-case
    (editor:forward-form-command 5)
    (editor:editor-error (condition)
      (editor:message "could not move forward five"))))
```

**editor:editor-error**

*Function*

editor:editor-error string &rest args

Prints a message in the Echo Area, sounds a beep, and exits to the top level of LispWorks, aborting the current operation. The argument string must be a string, which may contain formatting characters to be interpreted by format. As with editor:message, args can consist of arguments to be printed within the string.
6 Advanced Features

6.3.7 Files

**editor:find-file-buffer**  
*Function*

**editor:find-file-buffer** *pathname* &optional *check-function*

Returns a buffer associated with the file *pathname*, reading the file into a new buffer if necessary. The second value returned is **T** if a new buffer is created, and **nil** otherwise. If the file already exists in a buffer, its consistency is first checked by means of *check-function*. If no value is supplied for *check-function*, **editor:check-disk-version-consistent** is used.

**editor:fast-save-all-buffers**  
*Function*

**editor:fast-save-all-buffers** &optional *ask*

Saves all modified buffers which are associated with a file. If *ask* is non-nil then confirmation is asked for before saving each buffer. If *ask* is not set, all buffers are saved without further prompting.

Unlike the editor command **Save All Files** this function can be run without any window interaction. It is thus suitable for use in code which does not intend to allow the user to leave any buffers unsaved, and from the console if it is necessary to save buffers without re-entering the full window system.

**editor:check-disk-version-consistent**  
*Function*

**editor:check-disk-version-consistent** *pathname* *buffer*

Checks that the date of the file *pathname* is not more recent than the last time *buffer* was saved. If *pathname* is more recent, the user is prompted on how to proceed. Returns **T** if there is no need to read the file from disk and **nil** if it should be read from disk.

**editor:buffer-pathname**  
*Function*

**editor:buffer-pathname** *buffer*
6.3 Programming the editor

Returns the pathname of the file associated with buffer. If no file is associated with buffer, nil is returned.

6.3.7.1 File encodings in the editor

An editor buffer ideally should have an appropriate external format (or encoding) set before you write it to a file. Otherwise an external format specified in the value of the editor variable Output-Format-Default is used. If the value of Output-Format-Default is not an external-format specifier, then the external format is chosen similarly to the way cl:open does it. By default this chosen external format will be the Windows code page on Microsoft Windows, and Latin-1 on other platforms.

When using the Editor tool, use Set External Format to set interactively the external format for the current buffer, or set the Editor File Encodings Output preference (which in turn sets the editor variable Output-Format-Default) to provide a global default value.

In an application which writes editor buffers to file, you can do this to set the external format of a given buffer:

```
(setf (editor:buffer-external-format buffer) ef-spec)
```

You can also set a global default external format for editor buffers:

```
(setf (editor:variable-value 'editor::output-format-default :global) ef-spec)
```

Then ef-spec will be used when a buffer itself does not have an external format.

6.3.7.2 Non base-char errors

If your buffer contains a cl:extended-char char then Latin-1 and other encodings which support only cl:base-char are not appropriate. Attempts to save the buffer using such external formats will signal an error ‘char is not of type BASE-CHAR’. Set the external format to one which includes char, or delete char from the buffer before saving.
6.3.7.3 Choosing the encoding to use

You may want a file which is Unicode UCS-2 encoded (external format :unicode), UTF-8 encoding (:utf) or a language-specific encoding such as :shift-jis or :gbk. Or you may want an Latin-1 encoded file, in which case you could pass :latin-1-safe.

6.3.8 Inserting text

editor:insert-string

Function

editor:insert-string point string &optional start end

Inserts string at point in the current buffer. The arguments start and end specify the indices within string of the substring to be inserted. The default values for start and end are 0 and (length string) respectively.

editor:kill-ring-string

Function

editor:kill-ring-string &optional index

Returns either the topmost string on the kill ring, or the nth-topmost string when index n is specified.

editor:points-to-string

Function

editor:points-to-string start end

Returns the string between the points start and end.

6.3.9 Indentation

editor:*indent-with-tabs*

Variable

Controls whether indentation commands such as Indent and Indent Form insert whitespace using #\Space or #\Tab characters when changing the indentation of a line.
The initial value is \texttt{nil}, meaning that only the \#\Space character is inserted.

A true value for \texttt{editor:*indent-with-tabs*} causes the indentation commands to insert \#\Tab characters according to the value of \texttt{Spaces-For-Tab} and then pad with \#\Space characters as needed.

\section*{6.3.10 Lisp}

\texttt{editor:*find-likely-function-ignores*}

\textit{Variable}

Contains a list of symbols likely to be found at the beginning of a form (such as \texttt{apply}, \texttt{funcall}, \texttt{defun}, \texttt{defmethod}, \texttt{defgeneric}).

\texttt{editor:*source-found-action*}

\textit{Variable}

This variable determines how definitions found by the commands \texttt{Find Source}, \texttt{Find Source for Dspec} and \texttt{Find Tag} are shown. The value should be a list of length 2.

The first element controls the positioning of the definition: when \texttt{t}, show it at the top of the editor window; when a non-negative fixnum, position it that many lines from the top; and when \texttt{nil}, position it at the center of the window.

The second element can be \texttt{:highlight}, meaning highlight the definition, or \texttt{nil}, meaning do not highlight it.

The initial value of \texttt{*source-found-action*} is \texttt{(nil :highlight)}.

\section*{6.3.11 Movement}

\texttt{editor:line-end}

\textit{Function}

\texttt{editor:line-end point}

Moves \texttt{point} to be located immediately before the next newline character, or the end of the buffer if there are no following newline characters.
**editor:line-start**

Function

**editor:line-start point**

Moves point to be located immediately after the previous newline character, or the start of the buffer if there are no previous newline characters.

**editor:character-offset**

Function

**editor:character-offset point n**

Moves point forward n characters. If n is negative, point moves back n characters.

**editor:word-offset**

Function

**editor:word-offset point n**

Moves point forward n words. If n is negative, point moves back n words.

**editor:line-offset**

Function

**editor:line-offset point n &optional to-offset**

Moves point n lines forward, to a location to-offset characters into the line. If n is negative, point moves back n lines. If to-offset is nil (its default value), an attempt is made to retain the current offset. An error is signalled if there are not n further lines in the buffer.

**editor:form-offset**

Function

**editor:form-offset point n &optional form depth**

Moves point forward n Lisp forms. If n is negative, point moves back n forms. If form is t (its default value) then atoms are counted as forms, otherwise they are ignored. Before point is moved forward n forms, it first jumps out depth levels. The default value for depth is 0.
6.3.12 Prompting the user

The following functions can be used to prompt for some kind of input, which is generally typed into the Echo Area.

The following key fields are common to a number of prompting functions.

- **:prompt**: Defines the prompt that is written in the Echo Area. Most prompting functions have a default prompt that is used if no value is supplied for :prompt.

- **:must-exist**: Specifies whether the value that is input by the user must be an existing value or not. If :must-exist is non-nil, the user is prompted again if a non-existent value is input.

- **:default**: Defines the default value that is selected if an empty string is input.

- **:default-string**: Specifies the string that may be edited by the user (with Insert Parse Default).

- **:help**: Provides a help message that is printed if the user types "?".

**editor:prompt-for-file Function**

```lisp
(editor:prompt-for-file &key prompt must-exist default default-string help)
```

Prompts for a file name, and returns a pathname. See above for an explanation of the keywords.

**editor:prompt-for-buffer Function**

```lisp
(editor:prompt-for-buffer &key prompt must-exist default default-string help)
```

Prompts for a buffer name, and returns the buffer. See above for an explanation of the keywords.

The default value of must-exist is t. If must-exist is nil and the buffer does not exist, it is created.
6 Advanced Features

editor:prompt-for-integer

Function

editor:prompt-for-integer &key prompt must-exist default help

Prompts for an integer. See above for an explanation of the keywords.

editor:prompt-for-string

Function

editor:prompt-for-string &key prompt default default-string clear-echo-area help

Prompts for a string. No checking is done on the input. The keyword clear-echo-area controls whether or not the echo area is cleared (that is, whether the text being replaced is visible or not). The default for this keyword is t. See above for an explanation of the remaining keywords.

editor:prompt-for-variable

Function

editor:prompt-for-variable &key must-exist prompt default default-string help

Prompts for an editor variable. See above for an explanation of the keywords. The default value of must-exist is t.

6.3.13 In-place completion

editor:complete-with-non-focus

Function

editor:complete-with-non-focus complete-func &key extract-func skip-func insert-func

Performs a non-focus completion at the editor current point.

complete-func should be a function designator with signature:

complete-func string &optional user-arg => result

string should be a string to complete. user-arg is the second return value of extract-func, if this is not nil. result should be a list of items to be displayed in the list panel of the non-focus window.

extract-func must be a function designator with signature
6.3 Programming the editor

\texttt{extract-func} \texttt{point} \Rightarrow \texttt{string}, \texttt{user-arg}

\texttt{point} should be a \texttt{Point} object

\texttt{extract-func} needs to move \texttt{point} to the beginning of the text that will be replaced if the user confirms. It should return two values: \texttt{string} is the string to complete, and \texttt{user-arg} can be any Lisp object. \texttt{string} is passed to the function \texttt{complete-func}, and if \texttt{user-arg} is non-\texttt{nil} it is also passed.

The default value of \texttt{extract-func} is a function which searches backwards until it finds a non-alphanumeric character, or the beginning of the buffer. It then moves its \texttt{point} argument forward to the next character. The function returns its first value \texttt{string} the string between this and the original location of the point, and it returns \texttt{nil} as the second value \texttt{user-arg}.

\texttt{skip-func}, if supplied, must be a function designator with signature

\texttt{skip-func} \texttt{point}

\texttt{point} should be a \texttt{Point} object

\texttt{point} will be used as the end of the region to replace by the completion. At the call to \texttt{skip-func}, the point is located at the same place as the point that was passed to \texttt{extract-func} (after it moved). \texttt{skip-func} needs to move \texttt{point} forward to the end of the text that should be replaced when the user wants to do the completion. If \texttt{skip-func} is not supplied, the end point is set to the current point.

\texttt{insert-func}, if supplied, must be a function designator with signature

\texttt{insert-func} \texttt{result} \texttt{string} \texttt{user-arg} \Rightarrow \texttt{string-to-use}

\texttt{result} is the item selected by the user, \texttt{string} is the original string that was returned by \texttt{extract-func}, and \texttt{user-arg} is the second value returned by \texttt{extract-func} (regardless of whether this value is \texttt{nil}). It must return a string, \texttt{string-to-use}, which is inserted as the the completion.

If \texttt{insert-func} is not supplied, the completion item is inserted. If it is not a string it is first converted by \texttt{prin1-to-string}.

When \texttt{editor:complete-with-non-focus} is called, it makes a copy of the current point and passes it to \texttt{extract-func}. It then copies this point and positions it either using \texttt{skip-func} or the current point. These two points define the text to be replaced. \texttt{editor:complete-with-non-focus} then
calls complete-func, and use the result to raise a non-focus window next to
the current point. The interaction of this window is as described in *Lisp-
Works CAPI User Guide*.

### 6.3.14 Variables

**editor:variable-value**

```lisp
(editor:variable-value 'editor::add-newline-at-eof-on-writing-file)
```

The value of variables may also be altered using this function. For exam-
ple, the code given below will allow buffers to be saved to file without any
prompt for a missing newline.

```lisp
(setf
  (editor:variable-value
    'editor::add-newline-at-eof-on-writing-file)
  nil)
```

**editor:variable-value-if-bound**

```lisp
(editor:variable-value-if-bound 'editor::add-newline-at-eof-on-writing-file)
```

Returns the value of the variable name. If the variable is not bound, nil is
returned. The argument kind can take the value :current, :global or :
mode. The default value of kind is :current. Note that where should be the
name of a buffer.
6.3 Programming the editor

6.3.15 Windows

**editor:current-window**

*Function*

**editor:current-window**

Returns the current window.

**editor:redisplay**

*Function*

**editor:redisplay**

Redisplays any window that appears to need it. In general, the contents of a window may not be redisplayed until there is an event to provoke it.

**Note:** `editor:redisplay` will update a modified editor buffer only when that buffer is the `editor:current-buffer`. Take care to call `editor:redisplay` in an appropriate context.

**editor:window-text-pane**

*Function*

**editor:window-text-pane** `window`

Returns the `capi:editor-pane` associated with an editor window.

6.3.16 Examples

6.3.16.1 Example 1

The following simple example creates a new editor command called **Current Line**.
6.3.16.2 Example 2

This example creates a new editor command called *Goto Line* which moves the current point to the specified line number.

```lisp
(editor:defcommand "Goto Line" (p)
  "Moves the current point to a specified line number. The number can either be supplied via the prefix argument, or, if this is nil, it is prompted for."  
  "Moves the current point to a specified line number."  
  (let ((line-number  
     (or p (editor:prompt-for-integer  
       :prompt "Line number: "  
       :help "Type in the number of the line to go to"))))  
    (editor:beginning-of-buffer-command nil)  
    (editor:next-line-command line-number)))
```

6.3.16.3 Example 3

The following example illustrates how text might be copied between buffers. First, *string* is set to all the text in *from-buf*. This text is then copied to the end of *to-buf*.

```lisp
(let* ((cpoint (editor:current-point))  
       (svpoint (editor:copy-point cpoint))  
       (count 0))  
  (editor:beginning-of-buffer-command nil)  
  (loop  
    (if (editor:point> cpoint svpoint)  
       (return))  
    (unless (editor:next-line-command nil)  
       (return))  
    (incf count))  
  (editor:move-point cpoint svpoint)  
  (editor:message "Current Line Number: ~S " count)))
```
(defun copy-string (from-buf to-buf)
  (let ((string (editor:points-to-string
                 (editor:buffers-start from-buf)
                 (editor:buffers-end from-buf))))
    (editor:insert-string (editor:buffers-end to-buf) string)))

To test this example, two buffers named t1 and t2 should be created. Then, to copy all the text from t1 to the end of t2:

(copy-string (editor:buffer-from-name "t1")
             (editor:buffer-from-name "t2"))

### 6.4 Editor source code

The section does not apply to LispWorks Personal Edition.

LispWorks comes with source code for the editor, which you can refer to when adding editor extensions.

#### 6.4.1 Contents

The directory `lib/5-1-0-0/src/editor/` contains most of the source files of the LispWorks editor. Some low-level source code is not distributed.

#### 6.4.2 Source location

To enable location of editor definitions by Find Source and related commands, configure LispWorks as described under "Finding source code" in the *LispWorks User Guide*.

#### 6.4.3 Guidelines for use of the editor source code

Some care is needed when working with the supplied editor source code, to ensure that you do not compromise the IDE or introduce a dependancy on a particular release of LispWorks.

In particular please note:

- The editor source code may not match the compiled code in the LispWorks image exactly, for example if editor patches have been loaded.
- Modifications to the EDITOR package definition are not allowed.
6  Advanced Features

- Redefining existing definitions is not recommended. It is better to define a new command to do what you want. If you find a bug or have a useful extension to an existing definition then please let us know.

- Do not rely on the expansion of exported macros.

- If you use any internal (that is, not exported) EDITOR symbols, please tell us, so we can consider how to support your requirements. In addition, some internal macros have been removed from the LispWorks image and these should not be used.
Glossary

Abbrev
An abbrev (abbreviation) is a user defined text string which, when typed into a buffer, may be expanded into another string using Abbrev Mode. Typing can therefore be saved by defining short strings to be expanded into frequently used longer words or phrases.
Abbrevs should not be confused with the abbreviated symbol completion implemented by the command Abbreviated Complete Symbol.

Abbrev Mode
Abbrev mode is a minor mode which allows abbrevs to be automatically expanded when typed into a buffer.

Auto-Fill Mode
Auto-fill mode is a minor mode which allows lines to be broken between words at the right margin automatically as the text is being typed. This means that Return does not have to be pressed at the end of each line to simulate filling.

Auto-Saving
Auto-saving is the automatic, periodic backing-up of the file associated with the current buffer.
Backup
When a file is explicitly saved in the editor, a backup is automatically made by writing the old contents of the file to a backup before saving the new version of the file. The name of the backup file is that of the original file followed by a ~ character.

Binding
A binding is made up of one or more key sequences. A command may have a default binding associated with it, which executes that command. Bindings provide a quick and easy way to execute commands.

Buffer
A buffer is a temporary storage area used by the editor to hold the contents of a file while the process of editing is taking place.

Case Conversion
Case conversion means changing the case of text from lower to upper case and vice versa.

Completion
Completion is the process of expanding a partial or abbreviated name into the full name. Completion can used for expanding symbols, editor command names, filenames and editor buffer names.

Control Key
The Control key (Ctrl) is used as part of many key sequences. Ctrl must be held down while pressing the required character key.

Ctrl Key
See Control Key.

Current
The adjective current is often used to describe a point, buffer, mark, paragraph, and similar regions of text, as being the text area or item on which relevant commands have an effect. For example, the current buffer is the buffer on which most editor commands operate.
Cursor
The cursor is the rectangle (in Emacs emulation) or vertical bar (in other emulations) seen in a buffer which indicates the position of the current point within that buffer.

Customization
Customization means making changes to the way the editor works. The editor can be customized both in the short and long term to suit the users requirements. Short term customization involves altering the way the editor works for the duration of an editing session by using standard editor commands, while long term customization involves programming the editor.

Default
A default is the value given to an argument if none is specified by the user.

Deleting
Deleting means removing text from the buffer without saving it. The alternative is *killing*.

Echo Area
The Echo Area is a buffer used to display and input editor information. Commands are typed into this buffer and editor produced messages are displayed here.

Emulation
The LispWorks Editor can behave like GNU Emacs, or like a typical editor on the Microsoft Windows platform. Keys, cursors, behavior with selected text and other functionality differs. We use the term Microsoft Windows Emulation to denote this alternate behavior.

Escape Key
The Escape key (**Esc**) has its own functionality but is mostly used in Emacs emulation in place of the **Alt** key when no such key exists on a keyboard. **Esc** must be typed *before* pressing the required character key.
Extended Command

Most editor commands can be invoked explicitly by using their full command names, preceded by the Alt+X key sequence. A command issued in such a way is known as an extended command.

Fill Prefix

The fill prefix is a string which is ignored when filling takes place. For example, if the fill prefix is ; ; , then these characters at the start of a line are skipped over when the text is re-formatted.

Filling

Filling involves re-formatting text so that each line extends as far to the right as possible without any words being broken or any text extending past a predefined right-hand column.

Global Abbrev

A global abbrev is an abbrev which can be expanded in all major modes.

History Ring

The history ring records Echo Area commands so that they can easily be repeated.

Incremental Search

An incremental search is a search which is started as soon as the first character of the search string is typed.

Indentation

Indentation is the blank space at the beginning of a line. Lisp, like many other programming languages, has conventions for the indentation of code to make it more readable. The editor is designed to facilitate such indentation.

Insertion

Insertion is the process of inputting text into a buffer.
Keyboard Macro

A keyboard macro allows a sequence of editor commands to be turned into a single operation. Keyboard macros are only available for the duration of an editing session.

Key Sequence

A key sequence is a sequence of characters used to issue, or partly issue, an editor command. A single key sequence usually involves holding down one of two specially defined modifier keys (that is Ctrl and Alt), while at the same time pressing another key.

Killing

Killing means removing text from a buffer and saving it in the kill ring, so that the text may be recovered at a later date. The alternative is deleting.

Kill Ring

The kill ring stores text which has been killed, so that it may be recovered at a later date. Text can be re-inserted into a buffer by yanking. There is only one kill ring for all buffers so that text can be copied from one buffer to another.

Major Mode

Major modes govern how certain commands behave. They adapt a few editor commands so that their use is more appropriate to the text being edited. For example, the concept of indentation is radically different in Lisp mode and Fundamental mode. Each buffer is associated with one major mode.

Mark

A mark stores the location of a point so that it may be used for reference at a later date. More than one mark may be associated with a single buffer and saved in a mark ring.
Mark Ring

The mark ring stores details of marks, so that previously defined marks can be accessed. The mark ring works like a stack, in that marks are pushed onto the ring and can only be popped off on a "last in first out" basis. Each buffer has its own mark ring.

Meta Key

On most PC keyboards this key is synonymous with the Alt key. However, there are many different types of keyboard, and the Meta key may not be marked with "Alt" or "Meta". It may be marked with a special character, such as a diamond, or it may be one of the function keys — try F11.

In Emacs emulation, Meta must be held down while pressing the required character key. As some keyboards do not have a Meta key, the Escape (Esc) key can be used in place of Meta.

On Cocoa, you can configure "Meta" by choosing Window > Window Preferences... > Emulation in the Editor or Listener tools.

Minor Mode

The minor modes determine whether or not certain actions take place. For example, when abbrev mode is on, abbrevs are automatically expanded when typed into a buffer. Buffers may possess any number of minor modes.

Mode

Each buffer has two modes associated with it: a major mode and a minor mode. A buffer must have one major mode, but can have zero or more minor modes associated with it. Major modes govern how certain commands behave, while minor modes determine whether or not certain actions take place.

Mode Abbrev

A mode abbrev is an abbrev which is expanded only in predefined major modes.
Mode Line

At the bottom of each buffer is a mode line that provides information concerning that buffer. The information displayed includes name of the buffer, major mode, minor mode and whether the buffer has been modified or not.

Newline

Newline is a whitespace character which terminates a line of text.

Overwrite Mode

Overwrite mode is a minor mode which causes each character typed to replace an existing character in the text.

Page

A page is the region of text between two page delimiters. The ASCII key sequence Ctrl+L constitutes a page delimiter (as it starts a new page on most line printers).

Pane

A pane is the largest portion of an editor window, used to display the contents of a buffer.

Paragraph

A paragraph is defined as the text within two paragraph delimiters. A blank line constitutes a paragraph delimiter. The following characters at the beginning of a line are also paragraph delimiters: Space Tab @ - '

Prefix Argument

A prefix argument is an argument supplied to a command which sometimes alters the effect of that command, but in most cases indicates how many times that command is to be executed. This argument is known as a prefix argument as it is supplied before the command to which it is to be applied. Prefix arguments sometimes have no effect on a command.
Point

A point is a location in a buffer where editor commands take effect. The current point is generally the location between the character indicated by the cursor and the previous character (that is, it actually lies between two characters). Many types of commands (moving, inserting, deleting) operate with respect to the current point, and indeed move that point.

Recursive Editing

Recursive editing occurs when you are allowed to edit text while an editor command is executing.

Region

A region is the area of text between the mark and the current point. Many editor commands affect only a specified region.

Register

Registers are named slots in which locations and regions can be saved for later use.

Regular Expression Searching

A regular expression (regexp) allows the specification of a search string to include wild characters, repeated characters, ranges of characters, and alternatives. Strings which follow a specific pattern can be located, which makes regular expression searches very powerful.

Replacing

Replacing means substituting one string for another.

Saving

Saving means copying the contents of a buffer to a file.

Scrolling

Scrolling means slightly shifting the text displayed in a pane either upwards or downwards, so that a different portion of the buffer is displayed.
Searching
Searching means moving the current point to the next occurrence of a specified string.

Sentence
A sentence begins wherever a paragraph or previous sentence ends. The end of a sentence is defined as consisting of a sentence terminating character followed by two spaces or a newline. The following characters are sentence terminating characters: . ? !

Tag File
A tag file is one which contains information on the location of Lisp function definitions in one or more files. For each file in a defined system, the tag file contains a relevant file name entry, followed by names and positions of each defining form in that file. This information is produced by the editor and is required for some definition searches.

Transposition
Transposition involves taking two units of text and swapping them round so that each occupies the others former position.

Undoing
Commands that modify text in a buffer can be undone, so that the text reverts to its state before the command was invoked.

Undo Ring
An undo ring is used to hold details of modifying commands so that they can be undone at a later date. The undo ring works like a stack, in that commands are pushed onto the ring and can only be popped off on a "last in first out" basis.

Variable (Editor)
Editor variables are parameters which affect the way that certain commands operate.
Whitespace

Whitespace is any consecutive run of the whitespace characters **Space**, **Tab** or **Newline**.

Window

A window is an object used by the window manager to display data. When the editor is called up, an editor window is created and displayed.

Window Ring

A window ring is used to hold details of all windows currently open.

Word

A word is a continuous string of alphanumeric characters (that is, the letters A–Z and numbers 0–9). In most modes, any character which is not alphanumeric is treated as a word delimiter.

Yanking

Yanking means inserting a previously killed item of text from the kill ring at a required location. This is often known as *pasting*. 
Symbols
# files 23
? Help on Parse 98
~ files 23, 31

A
Abbrev Expand Only 91
Abbrev Mode 90
abbrev mode 87, 90
Abbreviated Complete Symbol 123
abbreviation
add global 91
add global expansion 91
add mode 90
add mode expansion 90
append to file 94
delete all 93
delete global 92
delete mode 92
edit 93
teditor definition 89
expand 91
list 93
read from file 94
save to file 94
undo last expansion 92
abbreviation commands 89
Abbrev-Pathname-Defaults 94
Abort Recursive Edit 101
aborting editor commands 11, 16
aborting processes 11, 16
Add Global Word Abbrev 91
Add Mode Word Abbrev 90
Add-Newline-at-EOF-on-Writing-File 28
Alt key 9
Alt+{ Insert () 132
Alt+} Move Over ) 132
Alt+, Continue Tags Search 117
Alt+. Find Source 112
Alt+/ Dynamic Completion 52
Alt++; Indent for Comment 130
Alt++ Beginning of Buffer 39
Alt+++ Beginning Of Parse 99
Alt+= Function Arglist 124
Alt-> End of Buffer 39
Alt+? Find Tag 115
Alt+[ Backward Paragraph 37
Alt\ Delete Horizontal Space 46
Alt+] Forward Paragraph 37
Alt+- Word Abbrev Prefix Point 92
Alt+A Backward Sentence 37
Alt+B Backward Word 35
Alt+B Echo Area Backward Word 99
Alt+C Capitalize Word 54
Alt+Ctrl+.Rotate Active Finders 118
Alt+Ctrl++; Kill Comment 131
Alt+Ctrl+@ Mark Form 126
Alt+Ctrl+\ Indent Region 58
Alt+Ctrl+A Beginning of Defun 111
Alt+Ctrl+B Backward Form 126
Alt+Ctrl+D Down List 130
Alt+Ctrl+Delete Backward Kill Form 127
Alt+Ctrl+E End of Defun 111
Alt+Ctrl+F Forward Form 126
Alt+Ctrl+H Mark Defun 111
Append Next Kill 49
Append to File 27
Append to Word Abbrev File 94
Apropos 133
Apropos Command 18
argument
listing for function 124
prefix 22
attribute
description 20
listing with apropos 18
Auto Fill Linefeed 63
Auto Fill Mode 63
Auto Fill Return 63
Auto Fill Space 63
Auto Save Toggle 30
auto-fill mode 62, 87
auto-save file 29
Auto-Save-Checkpoint-Frequency 31
Auto-Save-Filename-Pattern 30
Auto-Save-Key-Count-Threshold 30

B

Back to Indentation 59
Backup File 28
backup file 28, 31
Backup-Filename-Pattern 31
Backup-Filename-Suffix 31
Backups-Wanted 31
Backward Character 35
Backward Form 126
Backward Kill Form 127
Backward Kill Line 48
Backward Kill Sentence 48
Backward List 129
Backward Paragraph 37
Backward Search 74
Backward Sentence 37
Backward Up List 130
Backward Word 35
base-char type 167
Beginning of Buffer 39
Beginning of Defun 111
Beginning of Line 35
Beginning Of Parse 99
Beginning of Parse or Line 99
Bind Key 102
Bind String to Key 102
binding
editor definition 10
binding keys 102
bind-key 150
Index

bind-string-to-key 151
Bottom of Window 39
Break Definition 120
Break Definition on Exit 120
Break Function 120
Break Function on Exit 120
breaking processes 16
buffer
  changed definitions in 124
  circulate 65
  compile 141
  compile changed definitions 142
  compile if necessary 141
  create 65
  editor definition 6
  evaluate 137
  evaluate changed definitions 138
  file options 33
  insert 66
  kill 34, 65
  list 65
  mark whole 43
  modified check 67
  move to beginning 39
  move to end 39
  new 66
  not modified 67
  read only 67
  rename 66
  revert 32
  save 26
  search all 76
  select 64
  select in other window 64
  select previous 64
  set package 135
buffer 156
Buffer Changed Definitions 124
buffer commands 64
buffer functions 156, 175
Buffer Not Modified 67
buffer-from-name 160
*buffer-list* 159
buffer-pathname 166
buffer-point 160
buffers and windows 106
buffers-end 160
buffers-start 159
bug
  reporting 108
button
  mouse bindings in editor 107

C
calling editor functions 153
Capitalize Region 55
Capitalize Word 54
case conversion commands 53
Case-Replace 83
CD 104
Center Line 62
character
  backward 35
  delete expanding tabs 45
  delete next 45
  delete previous 45
  forward 34
  insert with overwrite 57
  overwrite previous 57
  transposition 55
character-offset 170
Check Buffer Modified 67
check-disk-version-consistent 166
Circulate Buffers 65
class
describe 125
clear-echo-area 164
colors
  Lisp syntax 110
command
  abort 16
  completion 10, 16, 97
  description 19, 20
  execution 9, 16, 153
  history 21
  key sequence for 21
  key sequences 22
  listing with apropos 18
  repetition 11, 22
  shell 103
commands
  abbreviation 89
  aborting commands 11, 16
  aborting processes 11, 16
  buffer 64
  case conversion 53
  compilation 135, 140
  cut and paste 13
  deleting text 13, 45
  echo area 97
  editing Lisp programs 109
  editor variable 100
  evaluation 135, 139
  file handling 12, 23
  filling 60
| Help 14, 17 |
|------------------|------------------|------------------|------------------|------------------|
| Indentation 57 |
| Inserting text 12, 49 |
| Key binding 102 |
| Keyboard macro 95 |
| Killing text 13, 45 |
| Lisp comment 130 |
| Lisp documentation 133 |
| Lisp form 126 |
| Lisp function and definition 111 |
| Movement 12, 34 |
| Overwriting 56 |
| Pages 69 |
| Parentheses 132, 133 |
| Recursive editing 101 |
| Register 84 |
| Replacing 72 |
| Search 72 |
| Transposition 55 |
| Undoing 13, 52 |
| Window 67 |

| Comment  |
|------------------|------------------|------------------|------------------|------------------|
| Create 130 |
| Kill 131 |
| Move to 130 |
| Comment commands 130 |
| Compilation commands 135, 140 |
| Compilation messages  |
| Finding the source code 143 |
| Compile  |
| Buffer 141 |
| Buffer changed definitions 142 |
| Buffer if necessary 141 |
| Changed definitions 142 |
| File 141 |
| Form 140 |
| Region 140 |
| System 142 |
| System changed definitions 142 |
| Compile Buffer 141 |
| Compile Buffer Changed Definitions 142 |
| Compile Buffer File 141 |
| Compile Changed Definitions 142 |
| Compile Defun 140 |
| Compile File 141 |
| Compile Region 140 |
| Compile System 142 |
| Compile System Changed Definitions 142 |
| Complete Buffer-File-Confirm 141 |

| Complete Field 97 |
|------------------|------------------|------------------|------------------|------------------|
| Complete Input 97 |
| Complete Symbol 123, 126 |
| Complete-with-non-focus 172 |
| Completion  |
| Dynamic word 52 |
| In-place 172 |
| Of abbreviated symbols 123 |
| Of commands 10, 16, 97 |
| Of filenames 52 |
| Of symbols 123, 126 |
| Configuration files 146, 149 |
| Confirm Parse 97 |
| Continue Tags Search 117 |
| Control key 9 |
| Control keys  |
| Insert into buffer 51 |
| Copy to Cut Buffer 106 |
| Copy to Register 85 |
| Copy-point 163 |
| Count Lines Page 71 |
| Count Lines Region 43 |
| Count Matches 81 |
| Count Occurrences 81 |
| Count Words Region 43 |
| Create Buffer 65 |
| Create Tags Buffer 115 |
| Ctrl key 9 |
| Ctrl+J Abort Recursive Edit 101 |
| Ctrl+A Beginning of Line 35 |
| Ctrl+A Beginning Of Parse or Line 99 |
| Ctrl+B Backward Character 35 |
| Ctrl+B Echo Area Backward Character 99 |
| Ctrl+Break, break current process 16 |
| Ctrl+D Delete Next Character 45 |
| Ctrl+End of Line 35 |
| Ctrl+F Forward Character 34 |
| Ctrl+G, abort current command 16 |
| Ctrl+H A Apropos 14 |
| Ctrl+H A Apropos Command 18 |
| Ctrl+H B Describe Bindings 22 |
| Ctrl+H C What Command 19 |
| Ctrl+H Ctrl+D Document Command 19 |
| Ctrl+H Ctrl+K Document Key 20 |
| Ctrl+H Ctrl+V Document Variable 21 |
| Ctrl+H D Describe Command 14, 19 |
| Ctrl+H G Generic Describe 20 |
| Ctrl+H Help 17 |
| Ctrl+H K Describe Key 14, 20 |
| Ctrl+H L What Lossage 21 |
| Ctrl+H V Describe Editor Variable 21 |
Ctrl+H W Where Is 21
Ctrl+K Kill Line 48
Ctrl+L Refresh Screen 69
Ctrl+N Next Line 36
Ctrl+O Open Line 51
Ctrl+P Insert Parse Default 100
Ctrl+P Previous Line 36
Ctrl+Q Quoted Insert 51
Ctrl+R Return Default 100
Ctrl+R Reverse Incremental Search 73
Ctrl+S Esc Forward Search 74
Ctrl+S Incremental Search 72
Ctrl+Shift+_ Undo 13, 53
Ctrl+Shift+A Function Argument List 125
Ctrl+Shift+B Compile Buffer 141
Ctrl+Shift+C Compile Defun 140
Ctrl+Shift+D Function Documentation 134
Ctrl+Shift+R Compile Region 140
Ctrl+Space Set Mark 41
Ctrl+T Transpose Characters 55
Ctrl+V Scroll Window Down 37
Ctrl+X - Inverse Add Global Word Abbrev 91
Ctrl+X & Search Files Matching Patterns 77
Ctrl+X ( Define Keyboard Macro 95
Ctrl+X ) End Keyboard Macro 96
Ctrl+X * Search Files 76
Ctrl+X + Add Global Word Abbrev 91
Ctrl+X ; Set Fill Prefix 62
Ctrl+X / Point to Register 84
Ctrl+X ; 130
Ctrl+X [ Previous Page 70
Ctrl+X ] Next Page 70
Ctrl+X ~ Check Buffer Modified 67
Ctrl+X 0 Delete Window 68
Ctrl+X 1 Delete Next Window 68
Ctrl+X 2 New Window 67
Ctrl+X B Select Buffer 64
Ctrl+X C Go Back 44
Ctrl+X Ctrl+a Add Mode word Abbrev 90
Ctrl+X Ctrl+b List Buffers 65
Ctrl+X Ctrl+c Save All Files and Exit 28
Ctrl+X Ctrl+e Evaluate Last Form 137
Ctrl+X Ctrl+f Wfind File 25
Ctrl+X Ctrl+h Inverse Add Mode Word Abbrev 90
Ctrl+X Ctrl+i Indent Rigidly 59
Ctrl+X Ctrl+l Lowercase Region 54
Ctrl+X Ctrl+o Delete Blank Lines 46
Ctrl+X Ctrl+p Mark Page 71
Ctrl+X Ctrl+q Toggle Buffer Read-Only 67
Ctrl+X Ctrl+s Save File 26
Ctrl+X Ctrl+t Transpose Lines 56
Ctrl+X Ctrl+u Uppercase Region 54
Ctrl+X Ctrl+v Find Alternate File 25
Ctrl+X Ctrl+w Write File 27
Ctrl+X Ctrl+x Exchange Point and Mark 42
Ctrl+X Delete Backward Kill Sentence 48
Ctrl+X E Last Keyboard Macro 96
Ctrl+X F Set Fill Column 61
Ctrl+X G Insert Register 85
Ctrl+X H Mark Whole Buffer 43
Ctrl+X I Insert File 33
Ctrl+X J Jump to Register 84
Ctrl+X K Kill Buffer 65
Ctrl+X L Count Lines Page 71
Ctrl+X M Select Go Back 44
Ctrl+X O Next Ordinary Window 68
Ctrl+X O Next Window 68
Ctrl+X Q Keyboard Macro Query 96
Ctrl+X S Save All Files 26
Ctrl+X Tab Indent Rigidly 59
Ctrl+X X Copy to Register 85
Ctrl+Y Un-Kill 14, 49
Ctrl-C Ctrl-c Interrupt Shell Subjob 105
Ctrl-C Ctrl-d Shell Send Kof 106
Ctrl-C Ctrl-z Stop Shell Subjob 105
current point
editor definition 7
current-buffer 159
current-mark 162
Current-Package 135
current-point 162
current-window 175
customising
editor 149
denotation of Lisp forms 149, 152
key bindings 146, 149, 150
cut and paste commands 13
debugger
    using in editor 138
default
    binding 10
    external format 26, 28
    prefix argument 22, 23
Default-Search-Kind 78
defcommand macro 154
Defindent 111
Define Keyboard Macro 95
Define Word Abbrevs 95
definition
    break 120
    disassemble 143
    editing 111
    find 112
    find buffer changes 124
    searching for 112
    trace 119
    trace inside 119
    untrace 119
defmode function 88
Delete All Word Abbrevs 93
Delete Blank Lines 46
DELETE Delete Previous Character 45
DELETE Echo Area Delete Previous Character 99
Delete File 33
Delete File and Kill Buffer 34
Delete Global Word Abbrev 92
Delete Horizontal Space 46
Delete Indentation 59
Delete Key Binding 103
Delete Matching Lines 75
Delete Mode Word Abbrev 92
Delete Next Character 45
Delete Next Window 68
Delete Non-Matching Lines 75
Delete Previous Character 45
Delete Previous Character Expanding Tabs 45
Delete Region 46
Delete Selection Mode 52
Delete Window 68
delete-point 163
deleting text 45
deleting text commands 13, 45
deletion
    editor definition 45
    of selection 52
    of surrounding form 127
delimiter
    sentence 9
Describe Bindings 22
Describe Class 125
Describe Command 19
Describe Editor Variable 21
Describe Generic Function 125
Describe Key 20
Describe Symbol 133
Describe System 125
directory
    change 104
    query replace 82
    search 76
Directory Query Replace 82
Directory Search 76
Disassemble Definition 143
Do Nothing 103
Document Command 19
Document Key 20
Document Variable 21
documentation commands 133
Down Comment Line 131
Down List 130
dspec
    documentation 134
Dynamic Completion 52
E
echo area
    complete text 97
    completing commands in 97
    deleting and inserting text in 99
    editor definition 97
    help on parse 98
    movement in 99
    next command 98
    previous command 98
    prompting the user 171
    repeating commands in 98
    terminate entry 97
Echo Area Backward Character 99
Echo Area Backward Word 99
echo area commands 97
Echo Area Delete Previous Character 99
echo area functions 164, 175
Echo Area Kill Previous Word 100
Edit Callees 122
Edit Callers 122
Edit Editor Command 114
Edit Recognized Source 143
Edit Word Abbrevs 93
Index

editor 149
customising 149
delete-region-command 46
programming 152

editor commands
Abbrev Expand Only 91
Abbrev Mode 90
Abbreviated Complete Symbol 91
Alt+I 123
Abort Recursive Edit Ctrl+] 101
Add Global Word Abbrev Ctrl+X + 91
Add Mode Word Abbrev Ctrl+X
Alt+A 90
Append Next Kill Alt+Ctrl+W 49
Append to File 27
Append to Word Abbrev File 94
Apropos Command Ctrl+H A 18
Auto Fill Linefeed LINEFEED 63
Auto Fill Mode 63
Auto Fill Return RETURN 63
Auto Fill Space SPACE 63
Auto Save Toggle 30
Back to Indentation Alt+M 59
Backup File 28
Backward Character Ctrl+B 35
Backward Form Alt+Ctrl+B 126
Backward Kill Form Alt+Ctrl+Delete 127
Backward Kill Line 48
Backward Kill Sentence Ctrl+X
Delete 48
Backward List Alt+Ctrl+lP 129
Backward Paragraph Alt+| 37
Backward Search 74
Backward Sentence Alt+A 37
Backward Up List Alt+Ctrl+u 130
Backward Word Alt+B 35
Beginning of Buffer Alt+< 39
Beginning of Defun Alt+Ctrl+A 111
Beginning of Line Ctrl+A 35
Beginning Of Parse Alt+< 99
Beginning of Parse or Line Ctrl+A 99
Bind Key 102
Bottom of Window 39
Break Definition 120
Break Definition on Exit 120
Break Function 120
Break Function on Exit 120
Buffer Changed Definitions 124
Buffer Not Modified Alt+Shift+< 67

Capitalize Region 55
Capitalize Word Alt+c 54
CD 104
Center Line 62
Check Buffer Modified Ctrl+X ~ 67
Circulate Buffers Alt+Ctrl+Shift+tL 65
Compile Buffer Changed
Definitions 142
Compile Buffer File 141
Compile BufferCtrl+Shift+b 141
Compile Changed Definitions 142
Compile Defun Ctrl+Shift+c 140
Compile File 141
Compile Region Ctrl+Shift+r 140
Compile System 142
Compile System Changed
Definitions 142
Complete Field SPACE 97
Complete Input TAB 97
Complete Symbol Alt+Ctrl+l 123, 126
Confirm Parse RETURN 97
Continue Tags Search Alt+, 117
Copy to Cut Buffer 106
Copy to Register Ctrl+X X 85
Count Lines Page Ctrl+X L 71
Count Lines Region 43
Count Matches 81
Count Occurrences 81
Count Words Region 43
Create Buffer 65
Create Tags Buffer 115
Defindent 111
Define Keyboard Macro Ctrl+X ( 95
Define Word Abbrevs 95
Delete All Word Abbrevs 93
Delete Blank Lines Ctrl+X Ctrl+o 46
Delete File 33
Delete File and Kill Buffer 34
Delete Global Word Abbrev 92
Delete Horizontal Space Alt+c 46
Delete Indentation Alt+Shift+< 59
Delete Key Binding 103
Delete Matching Lines 75
Delete Mode Word Abbrev 92
Delete Next Character Ctrl+< 45
Delete Next Window Ctrl+X 1 68
Delete Non-Matching Lines 75
Delete Previous Character DELETE 45
Delete Previous Character Expanding Tabs 45
Delete Region 46
Delete Selection Mode 52
Index

Insert File Ctrl+X 33
Insert Page Directory 71
Insert Parse Default Ctrl+X Ctrl+P 100
Insert Register Ctrl+X G 85
Insert Word Abbrevs 95
Interrupt Shell Subjob Ctrl+C Ctrl+D 105
Inverse Add Global Word Abbrev Ctrl+X - 91
Inverse Add Mode Word Abbrev Ctrl+X Ctrl+H 90
Jump to Register Ctrl+X J 84
Jump to Saved Position 84
Just One Space Ctrl+Space 46
Keyboard Macro Query Ctrl+X Q 96
Kill Backward Up List 127
Kill Buffer Ctrl+X K 65
Kill Comment Alt+Ctrl+; 131
Kill Line Ctrl+K 48
Kill Next Word Alt+D 47
Kill Parse Ctrl+U 100
Kill Previous Word Alt+Delete 48
Kill Region Ctrl+R 49
Kill Register 85
Last Keyboard Macro Ctrl+X E 96
Line to Top of Window 38
Lisp Insert ( 132
Lisp Mode 87
List Buffers Ctrl+X Ctrl+B 65
List Callees 121
List Callers 121
List Definitions 114
List Definitions For Dspec 115
List Matching Lines 75
List Registers 85
List Word Abbrevs 93
Load File 137
Lowercase Region Ctrl+X Ctrl+L 54
Lowercase Word Alt+L 53
Macroexpand Form Alt+Shift+M 128
Make Word Abbrev 91
Mark Defun Alt+Ctrl+H 111
Mark Form Alt+Ctrl+G 126
Mark Page Ctrl+X Ctrl+P 71
Mark Paragraph Alt+R 42
Mark Sentence 42
Mark Whole Buffer Ctrl+X H 43
Move Over) Alt+ 132
Move to Window Line Alt+Shift+R 39
Name Keyboard Macro 96
Negative Argument 23
New Buffer 66
New Line RETURN 50
New Window Ctrl+X 2 67
Next Line Ctrl+N 36
Next Ordinary Window Ctrl+X 0 68
Next Page Ctrl+X 1 70
Next Parse Alt+N 98
Next Window Ctrl+X 0 68
Open Line Ctrl+O 51
Overwrite Delete Previous Character 57
Open New buffers Ctrl+X Ctrl+B 65
Open New Window Ctrl+X 2 67
Open New Window Ctrl+X 0 68
Open New Window Ctrl+X 1 70
Open Window Ctrl+X 0 68
Overwrite Delete Previous
Overwrite Mode 57
Point to Register Ctrl+X / 84
Pop and Goto Mark 41
Pop Mark Alt+Ctrl+Space 42
Previous Line Ctrl+P 96
Previous Page Ctrl+X } 70
Previous Parse Alt+P 98
Previous Window 68
Print File 32
Print Region 44
Process File Options 33
Put Register 85
Query Replace Alt+Shift+% 82
Query Replace Regexp 84
Quote Tab 60
Quoted Insert Ctrl+Q 51
Read Word Abbrev File 94
Re-evaluate Defvar 136
Reevaluate Defvar 136
Refresh Screen Ctrl+L 69
Regexp Forward Search Alt+Ctrl+S 80
Regexp Reverse Search Alt+Ctrl+R 81
Register to Point 84
Rename Buffer 66
Rename File 34
Replace Regexp 83
Replace String 81
Report Bug 108
Report Manual Bug 108
Return Default Ctrl+X H 100
Reverse Incremental Search Ctrl+R 73
Reverse Search 75
Revert Buffer 32
Revert-Buffer-Confirm 33
Room 108
Rotate Active Finders 118
Rotate Active Finders Alt+Ctrl+, 118
Rotate Kill Ring Alt+X 50
Run Command 103
Save All Files and Exit Ctrl+X Ctrl+C 28
Save All Files Ctrl+X S 26
Index

end-line-p 163
fast-save-all-buffers 166
find-file-buffer 166
form-offset 170
goto-buffer 160
insert-string 168
line-end 169
line-offset 170
line-start 170
make-buffer 160
message 164
move-point 163
point< 162
point> 162
point-kind 162
points-to-string 168
process-character 153
prompt-for-buffer 171
prompt-for-file 171
prompt-for-integer 172
prompt-for-string 172
prompt-for-variable 172
redisplay 175
same-line-p 163
set-current-markt 162
set-interrupt-keys 151
setup-indent 152
variable-value 174
variable-value-if-bound 174
window-buffer 159
window-text-pane 175
word-offset 170
derror macros
  save-excursion 164
  use-buffer 160
  with-buffer-locked 157
  with-point 164
  with-point-locked 157, 158
derror package 152
derror source code 177
derror types
  buffer 156
  point 161
derror variable 100
derror variables
  *buffer-list* 159
  *find-likely-function-ignores* 169
  *indent-with-tabs* 168
  *source-found-action* 169
Abbrev-Pathname-Defaults 94
Add-Newline-at-EOF-on-Writing-

File 28
Auto-Save-Checkpoint-Frequency 31
Auto-Save-Filename-Pattern 30
Auto-Save-Key-Count-Threshold 30
Backup-Filename-Pattern 31
Backup-Filename-Suffix 31
Backups-Wanted 31
Case-Replace 83
Compile-Buffer-File-Confirm 141
Current-Package 135
Default-Search-Kind 78
Fill-Column 61
Fill-Prefix 61
Input-Format-Default 26
Output-Format-Default 28
Prefix-Argument-Default 23
Region-Query-Size 43
Revert-Buffer-Confirm 33
Scroll-Overlap 38
Shell-cd-RegExp 105
Shell-pop-RegExp 105
Shell-push-RegExp 105
Spaces-For-Tab 58
Undo-Ring-Size 53
editor-error 165
encoding
default 26, 28
setting 29
End Keyboard Macro 96
End of Buffer 39
End of Defun 111
End of Line 35
end-line-p 163
error
catching evaluation 138
default 165
error functions 165
Escape key 9
Escape+Escape Evaluate Expression 137
evaluate
buffer 137
buffer changed definition 138
changed definitions 138
defvar 136
expression 137
file 137
form 135, 139
last form 137, 139
region 137, 140
system changed definitions 138
Evaluate Buffer 137
Index

Evaluate Buffer Changed Definitions 138
Evaluate Changed Definitions 138
Evaluate Defun 135
Evaluate Defun In Listener 139
Evaluate Expression 137
Evaluate Last Form 137
Evaluate Last Form In Listener 139
Evaluate Region 137
Evaluate Region In Listener 140
Evaluate System Changed Definitions 138
evaluation commands 135, 139
examples
  programming the editor 175
Exchange Point and Mark 42
execute mode 87
executing editor commands 9, 16
Exit Recursive Edit 101
Expand File Name 52
expression
  evaluate 137
Extended Command 10, 16
extended-char type 167
external format
  default 26, 28
  setting 29
external formats 167
Extract List 128

F
fast-save-all-buffers 166
file
  auto-saving 29
  backup 28, 31
  compile 141
  delete 33, 34
  editor definition 6
  evaluate 137
  expand name 52
  find alternate 25
  finding 24
  insert into buffer 33
  options for buffer 33
  print 32
  rename 34
  save 26, 28
  set external format 29
  write 27
file encodings 167
file functions 175
file handling commands 12, 23
filename completion 52
files
  search 76, 77
Fill Paragraph 60
Fill Region 61
Fill-Column 61
filling commands 60
Fill-Prefix 61
Find Alternate File 25
Find Command Definition 114
Find File 24
Find Mismatch 133
Find Source 112
Find Source for Dspec 113
Find Tag 115
Find Unbalanced Parentheses 133
find-file-buffer 166
finding editor source code 114
*find-likely-function-ignores* 169
form
  compile 140
  evaluate 135, 139
  evaluate last 137, 139
  indent 126
  kill backwards 127
  kill forwards 127
  macro-expand 128
  mark 126
  move to beginning 126
  move to end 126
  transposition 128
form commands 126
form-offset 170
Forward Character 34
Forward Form 126
Forward Kill Form 127
Forward Kill Sentence 48
Forward List 129
Forward Paragraph 37
Forward Search 74
Forward Sentence 36
Forward Up List 129
Forward Word 35
function
  argument list 124
  break 120
  describe generic 125
  documentation 134
  edit callees 122
  edit callers 122
  editing 111
  find definition 112
  indentation 111
Index

list callees 121, 122
list callers 121
mark 111
move to beginning 111
move to end 111
trace 118
trace inside 119
untrace 119
Function Arglist 124
Function Argument List 125
Function Documentation 134
functions
buffer 156, 175
calling 153
defmode 88
echo area 164, 175
editor error 165
editor, see editor functions
file 175
inserting text 168
Lisp editor 169
movement 169, 175
point 161
prompt 171
search-files 78
variable 174
window 175
Fundamental Mode 86
fundamental mode 86

G
Generic Describe 20
generic function
describe 125
Get Register 85
global abbreviation
editor definition 90
Go Back 44
Goto Line 36
Goto Page 70
Goto Point 40
goto-buffer 160

H
Help 17
help commands 14, 17
Help on Parse 98
history of commands 21
history ring 98

I
Illegal 103
Incremental Search 72
Indent 58
indent form 126
Indent for Comment 130
Indent Form 126
Indent New Comment Line 131
Indent New Line 60
Indent Region 58
Indent Rigidly 59
indentation
customising 149, 152
define for Lisp forms 111
define for Lisp functions 111
delete 59
move back to 59
indentation commands 57
indenting 168
*indent-with-tabs* 168
in-place completion 172
Input-Format-Default 26
Insert () 132
Insert Buffer 66
Insert Cut Buffer 106
Insert File 33
Insert Page Directory 71
Insert Parse Default 100
Insert Register 85
Insert Word Abbrevs 95
inserting text commands 12, 49
inserting text functions 168
insert-string 168
Interrupt Shell Subjob 105
Inverse Add Global Word Abbrev 91
Inverse Add Mode Word Abbrev 90

J
Jump to Register 84
Jump to Saved Position 84
Just One Space 46

K
key
Alt 9
command description 19
Control 9
description 20
Escape 9
key binding 102
Index

customising 146, 149, 150
key sequence
definition 9
for command 21
key sequences
for commands 22
keyboard macro
begin definition of 95
definition 95
end definition of 96
execute 96
name 96
keyboard macro commands 95
Keyboard Macro Query 96
Kill Backward Up List 127
Kill Buffer 65
Kill Comment 131
Kill Line 48
Kill Next Word 47
Kill Parse 100
Kill Previous Word 48
Kill Region 49
Kill Register 85
kill ring 45, 47, 49
rotate 50
killing
definition 45
killing text 47
killing text commands 13, 45

L
Last Keyboard Macro 96
line
beginning 35
centre 62
count for page 71
count for region 43
delete blank 46
delete matching 75
delete non-matching 75
end 35
goto 36
indent new 60
kill 48
kill backward 48
length 61
list matching 75
move to top of window 38
next 36
open new 50
previous 36
transposition 56

what line 36
line count 71
Line to Top of Window 38
line-end 169
LINEFEED Auto Fill Linefeed 63
line-offset 170
line-start 170
Lisp
definitions 109
Lisp comment commands 130
Lisp documentation commands 133
Lisp editor functions 169
Lisp form commands 126
Lisp Insert 132
Lisp list commands 129
Lisp Mode 87
Lisp mode 86
list
extract 127
kill backward up 127
move down one level 130
move to end 129
move to start 129, 130
List Buffers 65
List Callee 121
List Callers 121
list commands 129
List Definitions 114
List Definitions For Dspec 115
List Matching Lines 75
List Registers 85
List Word Abbrevs 93
Load File 137
locations 44
Lowercase Region 54
Lowercase Word 53

M
macro
definition 95
Macroexpand Form 128
macro-expansion 128
macros
defcommand 154
major mode
definition 8, 86
Make Word Abbrev 91
make-buffer 160
manual
on-line editor 19, 20, 21
mark
definition 8
Index

exchange with point 42
form 126
move current point to 41
paragraph 42
pop 42
sentence 42
set 41
See also locations
Mark Defun 111
Mark Form 126
Mark Page 71
Mark Paragraph 42
mark ring 41
Mark Sentence 42
Mark Whole Buffer 43
message 164
minor mode
editor definition 8, 87
mode
editor definition 8, 85
indentation in 57
mode abbreviation
editor definition 90
mode line
editor definition 6
modes
abbrev 87, 90
auto-fill 62, 87
execute 87
fundamental 86
Lisp 86
overwrite 57, 87
shell 86
text 86
mouse
editor bindings 107
Move Over ) 132
Move to Window Line 39
movement commands 12, 34
locations 44
movement functions 169, 175
move-point 163
MS windows keys
using 145

N
Name Keyboard Macro 96
Negative Argument 23
New Buffer 66
New Line 50
New Window 67
newline

adding to end of file 28
Next Line 36
Next Ordinary Window 68
Next Page 70
Next Parse 98
Next Window 68

O
Open Line 51
Output-Format-Default 28
Overwrite Delete Previous Character 57
Overwrite Mode 57
overwrite mode 57, 87
overwriting commands 56

P
package
editor 152
set 135
page
display first lines 71
goto 70
insert first lines into buffer 71
mark 71
next 70
previous 70
page commands 69
pane
editor definition 5
paragraph
backward 37
editor definition 9
fill 60
forward 37
mark 42
parentheses commands 132
pending delete 52
point
editor definition 7
exchange with mark 42
goto 40
move to window line 39
position of 40
save to register 84
where is 40
point 161
point behavior 161
point functions 161
point ring, see mark ring
Point to Register 84
Index

point< 162
point> 162
point-kind 162
points and text modification 161
points-to-string 168
Pop and Goto Mark 41
Pop Mark 42
prefix
  fill 61
prefix argument 11, 22
Prefix-Argument-Default 23
Previous Line 36
Previous Page 70
Previous Parse 98
Previous Window 68
print
  file 32
  region 44
Print File 32
Print Region 44
process
  breaking 16
Process File Options 33
process-character 153
programming the editor 152
calling functions 153
examples 175
prompt functions 171
prompt-for-buffer 171
prompt-for-file 171
prompt-for-integer 172
prompt-for-string 172
prompt-for-variable 172
Put Register 85

Q
Query Replace 82
query replace 82
directory 82
regexp 84
system 83
tags 117
Query Replace Regexp 84
Quote Tab 60
Quoted Insert 51

R
Read Word Abbrev File 94
recursive editing 101
redisplay 175
Re-evaluate Defvar 136
Reevaluate Defvar 136
Refresh Screen 69
regexp
  query replace 84
  replace 83
Regexp Forward Search 80
Regexp Reverse Search 81
region
  append 27
capitalize 55
delete 46
determining 42
determine 42
evaluate 137, 140
fill 61
global replace 85
indent 58
indent rigidly 59
kill 49
line count 43
lowercase 54
print 44
save 49
transposition 56
uppercase 54
word count 43
write 27
Region-Query-Size 43
register
  editor definition 84
global replace 85
kill 85
list 85
move to saved position 84
record position 85
save current point to 84
save position 85
register commands 84
Register to Point 84
regular expression 79
count occurrences of 81
regular expression search 79
Rename Buffer 66
Rename File 34
repeating a command 11, 22
replace
case sensitivity 83
query 82
regexp 83
string 81
Replace Regexp 83
Replace String 81
replacing 81
replacing commands 72
Report Bug 108
Report Manual Bug 108
RETURN Auto Fill Return 63
RETURN Confirm Parse 97
Return Default 100
RETURN New Line 50
Reverse Incremental Search 73
Reverse Search 75
Revert Buffer 32
ring
  history 98
  kill 45, 47, 49
  mark 41
  undo 52
  window 67
Room 108
Rotate Active Finders 118
Rotate Kill Ring 50
Run Command 103
S
  same-line-p 163
Save All Files 26
Save All Files and Exit 28
Save File 26
Save Position 84
Save Region 49
save-excursion 164
screen
  refresh 69
Scroll Next Window Down 69
Scroll Next Window Up 69
Scroll Window Down 37
Scroll Window Up 38
Scroll-Overlap 38
search
  all buffers 76
  backward 74
  case sensitivity 78
  directory 76
  files 76, 77
  forward 74
  incremental backward 73
  incremental forward 72
  regexp backward 81
  regexp forward 80
  regular expression 79
  system 77
Search All Buffers 76
Search Files 76
Search Files Matching Patterns 77
Search System 77
search-files function 78
searching 72
searching commands 72
Select Buffer 64
Select Buffer Other Window 64
Select Go Back 44
Select Previous Buffer 64
Self Insert 51
Self Overwrite 57
sentence
  backward 37
  delimiter 9
  editor definition 9
  forward 36
  kill backward 48
  kill forward 48
  mark 42
  terminator 9
Set Buffer Output 135
Set Buffer Package 135
Set Comment Column 130
Set External Format 29
Set Fill Column 61
Set Fill Prefix 62
Set Mark 41
Set Prefix Argument 22
Set Variable 101
set-current-mark 162
set-interrupt-keys 151
setup-indent 152
shell command
  from editor 103
  shell mode 86
Shell Send Eof 106
Shell-cd-RegExp 105
Shell-pop-RegExp 105
Shell-push-RegExp 105
Show Documentation 134
Show Documentation for Dspec 134
Show Paths From 122
Show Paths To 121
Show Variable 101
Skip Whitespace 40
source finding
  active finders list 118
dspec 113
  editor command 114
  editor definitions 177
  name 112
tags 115
  tags files 116, 117
source recording 112
*source-found-action* 169
space
  delete horizontal 46
  just one 46
SPACE Auto Fill Space 63
SPACE Complete Field 97
Spaces-For-Tab 58
start-line-p 163
Stop Shell Subjob 105
string
  count occurrences of 81
  insert 168
  replace 81
  search 72
symbol
  apropos 133
  browser 133
  completion 123, 126
  describe 133
Syntax coloring 110
system
  compile 142
  compile changed definitions 142
  describe 125
  evaluate changed definitions 138
  query replace 83
  search 77
System Query Replace 83
System Search 77
T
TAB
  for command completion 97
  for indentation 58
Tab
  for command completion 10, 16
  tab
    insert 60
    width 58
TAB Complete Input 97
TAB Indent 58
tag
  continue search 117
  create buffer 115
  editor definition 112
  find 115
  query replace 117
  search 116
  visit file 117
Tags Query Replace 117
Tags Search 116
temporary files 31
terminator
  sentence 9
text handling concepts 8
Text Mode 87
text mode 86
Toggle Auto Save 30
Toggle Buffer Read-Only 67
Toggle Error Catch 138
Tools menu
  Global Preferences 2
Top of Window 39
Trace Definition 119
Trace Definition Inside Definition 119
Trace Function 118
Trace Function Inside Definition 119
tracing functions 118
Transpose Characters 55
Transpose Forms 128
Transpose Lines 56
Transpose Regions 56
Transpose Words 55
transposition commands 55
U
Undefine 143
  undefine
    buffer 144
    command 144
    definition 143
    region 144
Undefine Buffer 144
Undefine Command 144
Undefine Region 144
Undo 53
  undoing editor commands 13, 52
  undo ring 52
    size 53
Undo-Ring-Size 53
Unexpand Last Word 92
Un-Kill 49
Untrace Definition 119
Untrace Function 119
Up Comment Line 131
Uppercase Region 54
Uppercase Word 54
use-buffer 160
Index

V
variable
  change value of 101
  description 20, 21
  editor 100
  listing with apropos 18
  show value of 101
  variable functions 174
  variables
    indenting 168
  variable-value 174
  variable-value-if-bound 174
View Page Directory 71
View Source Search 114
Visit File 25
Visit Other Tags File 118
Visit Tags File 117

W
Walk Form 128
Wfind File 25
What Command 19
What Cursor Position 40
What Line 36
What Lossage 21
Where Is 21
Where Is Point 40
whitespace
  skip 40
window
  delete 68
  delete next 68
  editor definition 5
  move line to top of 38
  move to bottom 39
  move to top 39
  new 67
  next 68
  previous 68
  scroll down 37
  scroll next down 69
  scroll next up 69
  scroll overlap 38
  scroll up 38
  window commands 67
  window functions 175
  window ring 67
window-buffer 159
windows
  and the Editor 106
  copy 106
  paste 106
  with-buffer-locked 157
  with-point 164
  with-point-locked 157, 158
word
  backward 35
  capitalize 54
  count for region 43
  dynamic completion 52
  editor definition 8
  forward 35
  kill next 47
  kill previous 48
  lowercase 53
  transposition 55
  uppercase 54
Word Abbrev Apropos 93
Word Abbrev Prefix Point 92
word-offset 170
Write File 27
Write Region 27
Write Word Abbrev File 94

Y
yank 49
Index