**GNU Emacs**
**Quick Reference Guide**
**for CS61B**

Bullets (•) mark a suggested starting set of commands. Daggers (†) denote key bindings that are not standard in GNU Emacs. *ARG* denotes the prefix numeric argument (entered with `C-u` or `M-`*digit*).

# Cursor motion.

| | |
|---|---|
| `C-f` | Forward character.• |
| `M-f` | Forward word.• |
| `C-e` | Forward to end of line.• |
| `C-b` | Backward character.• |
| `M-b` | Backward word.• |
| `C-a` | Backward to start of line.• |
| `M-e` | Forward sentence. |
| `M-[` | Forward paragraph. |
| `M-a` | Backward sentence. |
| `M-]` | Backward paragraph. |
| | |
| `C-n` | Next line.• |
| `C-p` | Previous line.• |
| `M-<` | Beginning of buffer.• |
| `M->` | End of buffer.• |
| `C-v` | Scroll text up one screen (or *ARG* lines).• |
| `M-v` | Scroll text down (or *ARG* lines).• |
| `M-g` | Go to line number *ARG*.† |
| `M-x what-line` | Display line number. |
| `C-M-v` | Scroll other window up one screen (or *ARG* lines). |

# Marking regions of text

| | |
|---|---|
| `C-@` | Set mark at point.• |
| `C-x C-x` | Exchange mark and point.• |
| `C-SPC` | Same as `C-@`. |
| `M-@` | Set mark after end of next word. |
| `M-h` | Set mark and point around current paragraph. |
| `C-x h` | Set mark and point around current buffer. |

# Deletion and yanking

| | |
|---|---|
| `DEL` | Delete character before cursor.• |
| `M-DEL` | Delete word before cursor and add to kill buffer.• |
| `C-d` | Delete character at cursor.• |
| `M-d` | Delete word at and after cursor and add to kill buffer.• |
| `C-k` | Delete to end of line and add to kill buffer.• |
| `M-W` | Delete current region, and add to kill buffer.†• |
| `M-\` | Delete surrounding blanks and tabs. |
| `M-SPC` | Delete all but one surrounding blank. |
| `C-x C-o` | Delete all but one surrounding blank line. |
| `C-M-w` | Cause next command, if a kill, to append to previous kill buffer, instead of new one. |
| | |
| `C-y` | Insert text from kill buffer at point.• |
| `C-u C-y` | Insert text from kill buffer at point without moving point. |
| `M-y` | Replace preceding `C-y` text with next most recent kill buffer. |
| `M-w` | Copy region to kill buffer, no deletion. |

# Indentation

| | |
|---|---|
| `TAB` | Indent according to mode.• |
| `LF` | Same as RET TAB. |
| `M-;` | Indent and start comment. |
| `M-LF` | Continue comment on next line. |
| `C-x TAB` | Indent region rigidly by *ARG*. |
| `C-M-\` | Indent region according to mode.• |

# Search

| | |
|---|---|
| `C-s` | Search forward.• |
| `C-s C-s` | Same as `C-s` with last string.• |
| `C-r` | Search backward.• |
| `C-r C-r` | Same as `C-r` with last string.• |
| `C-u C-s` | Search forward for regular expression. |
| `M-x occur` | Display lines matching a regular expression. |
| `M-x grep` | Display results of UNIX `grep` utility. |
| `M-x count-matches` | |

The following subcommands are valid during a search.

| | |
|---|---|
| `RET` | End search.• |
| `DEL` | Undo effect of last search character typed.• |
| `C-g` | Abort search.• |
| `C-s` | Search for next match forward.• |
| `C-r` | Search for next match backward.• |
| `C-q` | Quote next character. |
| `C-w` | Extend search string with next word. |
| `LFD` | Extend search string with rest of line. |

## Replacement

| | |
|---|---|
| M-q | Query replace.•† |
| M-Q | Query replace regular expression.† |
| M-x delete-matching-lines | |
| M-x delete-non-matching-lines | |

During a query-replacement, the following are valid responses to prompts.

| | |
|---|---|
| SPC | Make replacement and go to next.• |
| DEL | Skip replacement and go to next.• |
| RET | End replacement.• |
| ! | Replace all remaining instances without asking.• |
| C-r | Enter recursive edit; return with C-M-c. |

## Regular expressions

| | |
|---|---|
| . | Match any character.• |
| ^ | Match at start of line.• |
| $ | Match at end of line.• |
| [...] | Match any character in the '...'.• |
| [^...] | Match any character except those in '...'.• |
| * | Match 0 or more of pattern to left.• |
| + | Match 1 or more of pattern to left. |
| ? | Match 0 or 1 of pattern to left. |
| \$c$ | Quotes $c$, except for the following. |
| \b | Match at beginning or end of word. |
| \B | Match except at beginning or end of word. |
| \\| | Match either pattern to left or right. |
| \(...\) | Grouping. |
| \$n$ | Match copy of whatever matched $n^{\text{th}}$ group. |

## Miscellaneous editing

| | |
|---|---|
| C-o | Insert newline after cursor. |
| C-t | Transpose characters. |
| M-t | Transpose words. |
| C-x C-t | Transpose lines. |
| M-u | Convert whole word to upper case. |
| M-l | Convert whole word to lower case. |
| M-c | Capitalize word. |

## Files

| | |
|---|---|
| C-x C-f | Find file; load if needed.• |
| C-x 4 C-f | Find file in other window.• |
| C-x C-s | Save file.• |
| C-x C-w | Write to explicitly-named file. |
| C-x i | Insert file at cursor. |
| M-x recover-file | Recover file after disaster from auto-save file. |
| M-x revert-buffer | Throw away changes to buffer and restore from file. |

## Buffers and windows

| | |
|---|---|
| C-x o | Put cursor in other window.• |
| C-x 1 | Grow current window to full screen.• |
| C-x 2 | Split current window vertically.• |
| C-x b | Put named buffer in window.• |
| C-x 0 | Remove current window. |
| C-x 3 | Split current window horizontally. |
| C-x C-b | List all buffers. |
| C-x k | Delete buffer. |

## Shells

| | |
|---|---|
| M-x shell | Run UNIX shell in a buffer.• |
| M-\| | Execute single shell command on region. With *ARG*, replaces region. |

Commands active in shell buffers:

| | |
|---|---|
| RET | Send current line to shell.• |
| TAB | Complete preceding file name.• |
| C-c C-c | Send interrupt to shell.• |
| C-c C-u | Erase current input line.• |
| C-c C-z | Send stop signal to shell.• |
| C-c C-d | Send EOF to shell. |

## Compilation, debugging, and tags

| | |
|---|---|
| M-x compile | Execute command (by default, make) asynchronously.• |
| C-x ` | Position to next error or next line found by M-x grep command.• |
| M-x kill-compiler | Stop active compile. |

`M-x visit-tags-table` Specify file containing tags produced by `etags`.•
`M-.` Display source for given tag.•
`C-u M-.` Find next alternate definition for last tag.•
`C-x 4 .` Display source for tag in other window.
`M-x tags-search`
`M-x tags-query-replace` Look for pattern in all files named in tags table.
`M-x tags-apropos` Display matching tags.

`M-x gdb` Run GNU debugger on file.
`M-x gjdb` Run Java debugger on class.

Commands valid in `gdb` and `gjdb` modes.

`C-c C-s` Step.•
`C-c C-n` Next.•
`C-c <` Up stack.•
`C-c >` Down stack.•
`C-c C-r` Finish.•
`C-x SPC` In any source file, sets a break point.•
`C-c C-i` Stepi (gdb only).

# Help and documentation

`M-x manual-entry` UNIX man page for given topic.
`C-h a` Look up names of matching commands.•
`C-h b` Display key bindings.•
`C-h f` Help for `M-x` function.•
`C-h C-h` Help for `C-h`.•
`C-h i` Run info browser.•
`C-h k` Help for key.•
`C-h m` Help for current mode.
`C-h t` Tutorial.
`C-h w` Key containing function.

Inside an *info* buffer (result of `C-h i`), the following are defined.

`m` Select menu item.•
`l` Go to last-visited node.•
`?` Get help for browser.•
`u` Go to node's parent.•
`n` Go to next node in sequence.•
`q` Leave browser.•
`.` Go to top of node.
`d` Go to top-level node.

# Mouse commands

Left, middle, and right buttons are `LB`, `MB`, and `RB`.
`LB` Put cursor at mouse. Dragging marks region.
`MB` Paste text from window-system cut buffer at mouse.
`RB` Extend region to pointer and copy into cut and kill buffers. Clicking twice deletes region.
`C-LB` Select a buffer.