

A Minimal Introduction to emacs

(Only what you'll need to know for this workshop)

December 11-12, 2013.

What is emacs?

- open source, extendable, customizable text editor
- cross platform: versions for mac, windows, linux
- originally released more than 30 yrs ago, still under active development
- widely used in computer science community
- much more than a simple text editor or ide for ADMB

emacs - the one stop shop

- extremely powerful text editing capabilities
 - ▶ cutting and inserting blocks
 - ▶ global search and replace - plain text and regular expressions
- extensions and add-in for just about anything:
 - ▶ virtually any computer language
 - ▶ presentations (like this one)
 - ▶ spell checker
 - ▶ calendars and agenda's
 - ▶ news reader and e-mail client
 - ▶ html browser
 - ▶ etc, etc, etc,

emacs - the one stop shop (cont'd)

- excellent support for:
 - ▶ admb - (Arni Magnusson's excellent admb-ide package)
 - ▶ R - (ESS - emacs speaks statistics)
 - ▶ \LaTeX - (built in)
 - ▶ git - (magit)

Idiosyncrasies

- not for everyone
- does have some odd behaviour that can frustrate new users
- especially `Ctrl-c` and `Ctrl-x`
 - ▶ 'copy' and 'cut' in most applications
 - ▶ keyboard prefixes in emacs
- can be changed (Options -> Use CUA keys)
 - ▶ not recommended - `Ctrl-c` and `Ctrl-x` used by so many packages
 - ▶ persistence pays off

Keyboard Short-cuts

- interaction with emacs keyboard centric
- most commands can be or are associated with key strokes
- M- -> meta key (Alt on most keyboards)
- C- -> control key
- keystrokes are often combined

C-x f	->	open file
C-x s	->	save file
C-x k	->	close current file
C-x C-c	->	close emacs

Buffers

- main containers in emacs
- when you open a file, it's contents are displayed in a buffer
- start R within emacs, it creates an interactive buffer that contains the R prompt
- compile and run admb programs, the output is captured in a buffer
- multiple buffers can be open at once
- mini-buffer
 - ▶ small one-line buffer at the bottom of emacs interface
 - ▶ sending commands to emacs (M-x)
 - ▶ displaying messages from emacs (e.g. - try C-x s)

Modes

- modes give emacs incredible flexibility
- different modes impart different behavior
- one major mode per buffer*
 - ▶ basic functionality
- multiple minor modes per buffer
- mode information presented in mode line located at bottom buffer

Major Modes

major mode automatically determined by file extension

file extension	major mode
*.tpl	ADMB
*.dat	perl
*.r	ESS[S]
*.tex	LaTeX
*.html	HTML
*.rnw	LaTeX OR ESS[S]

- try some and see.

Minor Modes

minor modes provide additional functionality

file extension	major mode	minor modes
*.tpl	ADMB	hl-p yas
*.dat	perl	AC yas
*.r	ESS[S]	AC hl-p yas ElDoc
*.tex	LaTeX	hl-p yas
*.html	HTML	yas
*.rnw	LaTeX	hl-p yas Noweb NWFL
*.rnw	ESS[S]	AC hl-p yas ElDoc Noweb NWFL

minor modes used throughout workshop

yas	yasnippet
AC	auto complete
hl-p	highlight parentheses

Standard emacs shortcuts

Basics

C-w	cut
M-w	copy
C-y	paste (yank)
C-x _	undo
C-x f	open buffer
C-x k	close buffer
C-x s	save buffer
C-x w	save_as

Buffer Navigation

C-x 1	one window
C-x 2	split horizontally
C-x 3	split vertically
C-x o	other buffer
C-x b	switch to buffer
C-x C-b	buffer list

Other Handy Shortcuts

Some Others

<code>C-h m</code>	describe mode - shows all key bindings for a mode
<code>C-h t</code>	emacs tutorial - tedious but highly recommended
<code>C-g</code>	cancel
<code>M-q</code>	wrap text
<code>C-s</code>	search forward
<code>C-r</code>	search in reverse
<code>M-%</code>	search and replace
<code>C-M-%</code>	search and replace using regular expressions
<code>C-SPC</code>	set/unset point

Customization

- emacs is configured with .emacs file in your HOME directory and (normally) contents of ~/.emacs.d directory
- 'dot' files and directories may be hidden by default
- special configurations have been provided for workshop
- ~/workshop/emacs.bat starts emacs with specific configuration file
- (review ~/workshop/.emacs file)

custom global shortcuts

These custom shortcuts have been provided in the configuration file for this workshop

Custom Shortcuts

F3	refresh file from disk
M-x now	insert time-stamp at point
C-c z	copy full path
M-\	swap slashes
C-x C-r	open recent files
C->	insert string rectangle
C-x r k	kill string rectangle

IsPELL

- workshop configuration provides spell checker for emacs using aspell.exe
- checks selected region or whole buffer
- better than most 'canned' spell checkers
- configured to skip R-code in knitr documents

Basic ispell usage

M-x ispell	<return>	start ispell
	<space>	to skip selected word
	[#]	to select suggestion
a		accept for this session
i		insert into personal dictionary
?		for more options

Yasnippet

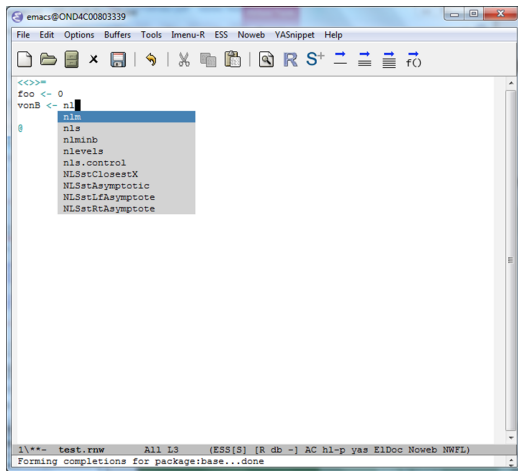
- 'yet another snippet extension'

(<https://github.com/capitaomorte/yasnippet>)

- inserts mode/context specific snippets
- hundreds of snippets on the web
- relatively simple to write custom snippets
 - `~yasnipet/snippet-development.html`
- snippets for R, \LaTeX , `sweave` / `knitr`, `admb` provided in workshop configuration
- try it

autocomplete

- minor mode that provides context specific options for word or command at point
- pop-up menu
 - ▶ arrows to navigate
 - ▶ return to select



ADMB-ide

- emacs extension for AD model builder
- default installation is aggressive
- workshop configuration associates admb mode with tpl files

some useful ADMB key bindings

F8	->	tpl2cpp - compile - link
F9	->	run model
C-c C-a	->	admb-run-args
C-c C-e	->	admb-cor
C-c C-p	->	admb-par
C-c TAB	->	admb-pin
C-c C-r	->	admb-rep

- in a *.tpl file type C-h m to see them all

ESS

- emacs extension for working with statistical applications
- ESS - acronym for *E*macs *S*peaks *S*tatistics
- support for R, S, SAS, Stata, jags

Helpful ESS key bindings

<code>_</code>	<code>-></code>	underscore automatically inserts ' <code><-</code> '
<code>C-c C-b</code>	<code>-></code>	ess-eval-buffer
<code>C-c C-f</code>	<code>-></code>	ess-eval-function
<code>C-c C-j</code>	<code>-></code>	ess-eval-line
<code>C-c C-l</code>	<code>-></code>	ess-load-file
<code>C-c C-n</code>	<code>-></code>	ess-eval-line-and-step
<code>C-c C-r</code>	<code>-></code>	ess-eval-region

- in a *.r file type `C-h m` to see them all

Knitr/Sweave

- ess supports both knitr and sweave
- automatically available in *.rnw files
 - ▶ (*.rmd and *.rhtml files too)

knitr/sweave key bindings

M-r -> knit

M-s -> sweave

M-P -> generate from tex file pdf

- NOTE - uppercase 'P' to generate pdf

Addition Resources and Further Reading

- emacs manuals:
<http://www.gnu.org/software/emacs/manual/>
- emacs-fu: <http://emacs-fu.blogspot.ca/>
- Xah emacs: <http://ergoemacs.org/emacs/emacs.html>

Recap