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# QFC Reproducible Research Workshop - Software Setup

December 11-12, 2013.

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## Installed Software

these set up instructions will:

- ❶ verify that you have working installations of the following software packages:
  - ▶ R (<http://www.r-project.org>)
  - ▶ ADMB (<http://admb-project.org/>)
  - ▶ L<sup>A</sup>T<sub>E</sub>X
    - ★ proTeXt (<http://www.tug.org/protext/>) or MiKTeX (<http://www.miktex.org/>) on windows
    - ★ MacTeX (<http://www.tug.org/mactex/>) on a mac
    - ★ Tex Live (<http://www.tug.org/texlive/>) on linux
  - ▶ git (<http://git-scm.com/>)
- ❷ Configure emacs and verify functionality

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## Set up

- a zip file has been provided that contains all of the configurations files and additional packages needed for the workshop
- unzip the contents of the archive to a convenient location and note the path
- in the remaining slides, substitute '~' with the path to the workshop folder on your computer

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## What's in the zip?

- emacs executable
- aspell executable - a spell checker for e-macs
- emacs plugins:
  - ▶ autocomplete
  - ▶ admb-ide
  - ▶ ESS - emacs speaks statistics
  - ▶ magit
  - ▶ yasnippet
- associated utility files

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## Set up - emacs

- navigate to `~/workshop`
- double click 'emacs.bat' to start emacs (ignore warnings for now)
- from within emacs open the `.emacs` file located in the `~/workshop` directory
- edit line 5 of `.emacs` to reflect location of the `~/workshop/emacs` directory on your computer
- save the `.emacs` file and close emacs
- re-open emacs by double clicking on `emacs.bat`
  - ▶ the warnings should be gone

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## Tests

- each of following slides assume that you have a command prompt open and will look like:

> <command to type>

- The top line of the panel indicates what you need to type at the prompt,
- the body of the panel indicates what you should see if you were successful
  - ▶ a ... indicates that the output presented here has been trimmed
- if there are lines below the ... (eg. `q()`), they indicate the command(s) needed to return to the prompt

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## Tests (cont'd)

- if the command prompt returns “not recognized as an internal or external command” the software may not be installed or configured properly - please consult the documentation for that software
- open a command prompt or open emacs and type `Alt-x shell ret`
  - ▶ (Alt + x key, followed by s-h-e-l-l <RETURN>)
- a new buffer named `**shell**` should open
- at the command prompt (>) type:

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## Tests - Git

```
> git
```

```
git
```

```
usage: git [--version] [--exec-path[=<path>]] [--html-pager[=  
-p|--paginate|--no-pager] [--no-replace-objects] [--n  
--git-dir=<path>] [--work-tree=<path>] [--bare] [--n  
-c name=value] [--help]  
<command> [<args>]
```

```
...
```

```
>
```



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## Tests - ADMB

```
> admb
```

```
Usage: admb [-d] [-g] [-r] [-s] model
```

Build AD Model Builder executable from TPL.

```
-d      Create DLL
```

```
-g      Insert debugging symbols
```

```
-r      Create ADMB-RE
```

```
-s      Enforce safe bounds
```

```
model  Filename prefix, e.g. simple
```

```
>
```

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## Tests - R

```
> R --vanilla
```

```
R version 3.0.1 (2013-05-16) -- "Good Sport"  
Copyright (C) 2013 The R Foundation for Statistical Computing  
Platform: i386-w64-mingw32/i386 (32-bit)
```

```
R is free software and comes with ABSOLUTELY NO WARRANTY.  
You are welcome to redistribute it under certain conditions.  
Type 'license()' or 'licence()' for distribution details.
```

```
...
```

```
q()
```

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&gt; latex

latex

This is pdfTeX, Version 3.1415926-2.3-1.40.12 (MiKTeX 2

\*\*

...

\end

\end

&gt;

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## R-Packages

- the following R-packages will be used in the workshop
  - ▶ knitr (and/or sweave)
  - ▶ reshape2
  - ▶ xtable
  - ▶ Hmisc
  - ▶ ADMButils (not available on CRAN, but see `~/utils/Rpackages`)

In R type:

```
> install.packages(c('knitr', 'reshape2', 'xtable',  
                     'Hmisc'))
```

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## Setting up the ADMB-ide

- edit paths in `~/workshop/emacs/SetADMBpaths.bat`
  - ▶ `ADMB_HOME` is the directory that contains `bin`, `examples`, `include`, and `lib` subdirectories associated with your ADMB installation
  - ▶ `CPP_COMPILER` is the path to the `/bin` directory of your C++ compiler
- copy `~/workshop/utils/admb2r.cpp` to `ADMB_HOME/include/admb2r.cpp`

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## Test emacs configuration

- R
  - ▶ in emacs type `Alt-x R <RETURN>`
  - ▶ accept the default working directory
    - ★ An active R-prompt should appear in a new buffer named `*R*`
  - ▶ open file `~/tests/test.r`
  - ▶ in the test file, place your cursor immediately after `rtemp1` and press `<TAB>`
    - ★ a blank R-template should appear in the buffer

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## Test emacs configuration (cont'd)

- R
  - ▶ highlight the line in `test.r` that contains `print(1:9)` and type `Ctrl-<enter>`
  - ▶ the numbers 1 to 9 should appear in the **R** buffer
  - ▶ type `Ctrl-k` to close (kill) `test.r`
  - ▶ type `y` when emacs asks you if you are sure
  - ▶ type `q()` at the R-prompt to quit R

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## Test emacs configuration (cont'd)

- ADMB-ide
  - ▶ open the file `~/tests/simple/simple.tpl`
  - ▶ type `<F8>` to link and compile the simple model
  - ▶ once the model is compiled, type `<F9>` to run the model
  - ▶ standard ADMB output should appear in a buffer



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## Test emacs configuration (cont'd)

- git
  - ▶ type `Ctrl-c Ctrl-g`
  - ▶ emacs should prompt you for a Git repository
  - ▶ type `Ctrl-g` to quit
- ispell
  - ▶ open a new buffer and cut and paste some text (preferably with at least one spelling mistake)
  - ▶ type `Alt-x ispell <RETURN>`
  - ▶ suggestions for mis-spelled should be provided
  - ▶ type `Ctrl-g` to quit