Lecture 5

Editors

Goals of this lecture:
Learn how to startup, save, navigate, and exit:

- nano/pico
- emacs
- vi/vim

Editing files in Unix can be done in a number of ways, depending on user preference. However, typical GUI-based editors may be difficult to use, particularly when logging into remote machines. Additionally, some programs use a default editor for certain actions, such as commit messages in source control softwares. In this lecture, 3 common editors are presented briefly to provide the basic usage skills. Ultimately, the choice of editor is a personal one, and once an editor is chosen, going through a thorough tutorial is highly recommended.
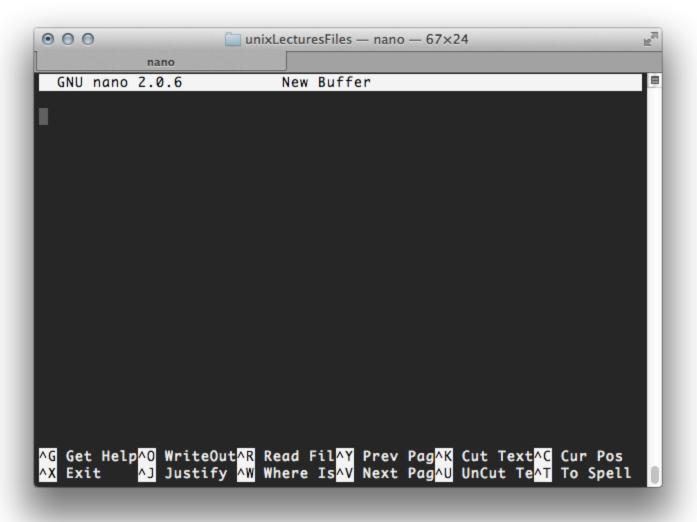
Setting a default editor
To set a default editor, the EDITOR environment variable should be set to the path of your chosen editor. Environment variables are covered in Lecture 6.

Nano/Pico

Nano is a simple full-screen editor that is one of the easiest to start using, because all commands are displayed in the window. Pico is a clone editor, using the same commands as nano.

Nano uses the Control key (notated as '^') as the way to indicate all commands. While the letters corresponding to commands at the bottom of the screen are capitals, when typing the commands, nano is case insensitive and will accept lower case letters.

Starting an instance

To start up nano, you can do one of two things.
Simply call the program:

```
$ nano
```

Or call the program with a filename:

```
$ nano filename.txt
```

If the file exists, it will be opened for editing, otherwise a new file with that name will be opened.

Open a file

To open a file, type Control-r (^R). This will insert the contents of the file opened into the current buffer. If a file is already opened, it will insert the contents of the requested file at the location of the cursor. This means that you cannot edit two files at once, and must close the current file to edit another one.

Navigation

The arrow and return keys can be used to navigate within the file, as well as the Control-y (^Y) and Control-v (^V) keys to page through the file. Control-c (^C) can be used to cancel any command.

Save a file

To save the file currently being edited, use the Control-o (^O) command, which will allow you to use the name of the file, or save as a new or different filename.

Exit

To exit nano, use Control-x (^X) which will ask to save any unsaved changes before exiting.

In-depth Tutorials
For more information on the nano/pico editor search the internet, or check these tutorials:
- http://www.nano-editor.org/dist/v2.1/nano.html
- http://www.howtogeek.com/howto/42980/the-beginners-guide-to-nano-the-linux-command-line-text-editor/
- http://www.uta.edu/oit/cs/unix/editors/pico/Using-the-Pico-Editor.php
- http://staffwww.fullcoll.edu/sedwards/Nano/IntroToNano.html

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Emacs

Emacs is a much more powerful and extensible editor than nano. While it can be fully customized and even be used as a full integrated development environment (IDE) only it's editing usage will be covered here.

Notation

Emacs uses the following notation to describe keyboard commands:

C-x	For any x, the character Control-x.
M-x	For any x, the character Meta-x
C-M-x	For any x, the character Control-Meta-x.
RET	The return key
SPC	The space bar
ESC	The escape key

The Meta key differs based on your keyboard, it is often the `alt` or `option` key. All commands **ARE** case sensitive.

```
  ○ ○ ○                     unixLecturesFiles — emacs — 82×28
                emacs
Welcome to GNU Emacs, a part of the GNU operating system.

Type C-l to begin editing.

Get help              C-h  (Hold down CTRL and press h)
Emacs manual          C-h r
Emacs tutorial        C-h t           Undo changes      C-x u
Buy manuals           C-h C-m         Exit Emacs        C-x C-c
Browse manuals        C-h i
Activate menubar      F10  or  ESC `  or   M-`
(`C-' means use the CTRL key.  `M-' means use the Meta (or Alt) key.
If you have no Meta key, you may instead type ESC followed by the character.)

GNU Emacs 22.1.1 (mac-apple-darwin)
 of 2014-06-05 on osx105.apple.com
Copyright (C) 2007 Free Software Foundation, Inc.

GNU Emacs comes with ABSOLUTELY NO WARRANTY; type C-h C-w for full details.
Emacs is Free Software--Free as in Freedom--so you can redistribute copies
of Emacs and modify it; type C-h C-c to see the conditions.
Type C-h C-d for information on getting the latest version.

If an Emacs session crashed recently, type Meta-x recover-session RET
to recover the files you were editing.

---- GNU Emacs --------------------------------------------------------------
For information about the GNU Project and its goals, type C-h C-p.
```

Starting an instance

To start up emacs, you can do one of two things.
Simply call the program:

```
$ emacs
```

Or call the program with a filename:

```
$ emacs filename.txt
```

If the file exists, it will be opened for editing, otherwise a new file with that name will be opened.

Open a file

To open a file in emacs use Control-x-Control-f (`C-x  C-f`). You can then type the name of the file you are looking for into the bottom line on the screen (that is, the *mode line*). You can also change directories here, and use the tab key to see a list of the files in that directory.

Navigation

The arrow and return keys can be used to navigate through the file, and Control-v (`C-v`) and Meta-v (`M-v`) can be used to scroll up or down, respectively.   It is also possible to move forward or backward by characters, words, lines, etc.

Amount	Forward Command	Backward Command

Character	C-f	C-b
Word	M-f	M-b
Line	C-n	C-p
Paragraph	M-}	M-{

To navigate to the start of a line, use Control-a (C-a), the end of a line Control-e (C-e), and the start of the buffer is Meta-> (M->), the end is Meta-< (M-<). Many other methods for navigation exist, more can be found in the in-depth tutorials.

Control-g (C-g) can be used to cancel any command.

Save a file

To save a file, use Control-x Control-s (C-x C-s). To save the file using a different name, use Control-x Control-w (C-x C-w).

Exit

To exit emacs, use Control-x Control-c (C-x C-c). You will be asked if you want to save any modified buffers, if any files have unsaved changes.

In-depth Tutorials
In addition to any online tutorials, there exists within emacs a very good tutorial that can be accessed through the help menu, or by using Control-h T (^h T).
- http://www.gnu.org/software/emacs/manual/html_node/emacs/index.html
- http://www.rgrjr.com/emacs/emacs_cheat.html

Vi/Vim

Vi or vim is another, equally as popular and powerful editor as emacs.

Starting an instance

To start up vi, you can do one of two things.
Simply call the program:

```
$ vim
```

Or call the program with a filename:

```
$ vim filename.txt
```

If the file exists, it will be opened for editing, otherwise a new file with that name will be opened.

Modes

Vi uses the idea of modes to distinguish between editing a file, or giving the editor a command. This differs from emacs in that when using emacs, upon startup, one can immediately start typing into the file. However this requires all commands in emacs to be preceded by Control or Meta keys. In contrast, vi requires the user to switch between insert-text mode and command mode, and once in a particular mode, no special keys are needed to distinguish between commands and text.

Upon starting, vi is in command mode. To switch to insert-text mode, use the `i` key. You can now type into the file as you normally would. To switch back to command mode, use the escape (`esc`) key. When in insert-text mode `'-- INSERT --'` will appear at the bottom of the screen, when in command mode nothing will be shown at the bottom.

Open a file

To open an existing file in an already running instance of vi, enter command mode, and type `:e filename.txt`. You can open more than one file by using the `:tabnew` command, and navigate between tabs using `gt`.

Navigation

In insert-text mode you can navigate the text using the arrow and return keys. In command mode you can use the following commands:

Amount	Forward Command	Backward Command
Character	h	l
Word	w	b
Line	j	k

To get to the end of the current line, use `$`, and to get to the start of the current line use `0`. To page down, use `control-f` and page up, `control-b.`

Save a file

To save a file, switch to command mode and use the `:w filename.txt` command. To save to the current filename and quit, use `:wq` in the command mode, or `ZZ` in insert-text mode.

Exit

To exit vim, use `:q` in command mode. If changes need to be saved, you will be prompted to do so. To quit without saving changes, use `:wq`.

In-depth Tutorials
- http://www.openvim.com/tutorial.html
- http://heather.cs.ucdavis.edu/~matloff/UnixAndC/Editors/ViIntro.html
- http://www.fprintf.net/vimCheatSheet.html