

The background features abstract, overlapping green geometric shapes, primarily triangles and polygons, in various shades of green, creating a modern and dynamic visual effect.

CS 35L

Software Construction Laboratory

Lecture 1.2

10th January, 2019

Logistics

- ▶ Assignment 1 is due by Jan 12 by 11:55pm
 - ▶ Submit on CCLE. If you do not have access, mail it to tanmayrc@g.ucla.edu
- ▶ If you are looking for PTE's or wanting to switch labs, continue to write your name on the sheet of paper

Review - Previous Lab

- ▶ Absolute Path vs. Relative Path
- ▶ Basic commands
- ▶ Permissions using chmod
- ▶ Link Command
 - ▶ Review

Process: ps and kill

- ▶ Process
 - ▶ An instance of a computer program in execution
- ▶ ps
 - ▶ List processes that are currently running
- ▶ kill
 - ▶ Terminate a certain process
 - ▶ Usage
 - ▶ kill PID

Daemon

- ▶ A process that runs unobtrusively in the background
- ▶ Example: cron
 - ▶ Enables users to schedule jobs to run periodically at certain times (cron jobs)
 - ▶ Usage: Full Backup every month

Special Permissions

- ▶ `setuid, setgid (u+s, g+s)`
 - ▶ Run an executable with the permissions/privileges based on the executable's owner or group
 - ▶ Shows 's' bit in the permission
- ▶ For example, the `setuid` permission on the `passwd` command makes it possible for a normal user to change passwords by updating few system files like `/etc/passwd` and `/etc/shadow` which can't be updated by non-root accounts.
- ▶ Sticky bit (`o+t`)
 - ▶ On shared directories, it locks files within the directory from being modified/deleted by users other than the file creator, owner of the directory, or root, even if others have write permissions (Example: `/tmp`)

More Commands: diff

- ▶ A file comparison utility that outputs the differences between two files.
- ▶ Usage
 - ▶ `diff <original_file> <new_file>`
 - ▶ `diff -u <original_file new_file>`

Diff example

\$cat c1	\$cat c2	\$ diff c1 c2
ps	ps	2,5c2,4
cp	pwd	< cp
mv	cd	< mv
stat	rm	< stat
kill		< kill

		> pwd
		> cd
		> rm

wget

- ▶ A computer program that retrieves content from web servers
- ▶ Usage
 - ▶ `wget <URL>`
- ▶ Options
 - ▶ `-b` : background
 - ▶ `--tries = n` : To try n number of times

Emacs

“The customizable, extensible, self documenting, real-time display editor”

- ▶ Customizable
 - ▶ Users can customize font, colors, etc.
- ▶ Extensible
 - ▶ Run Lisp scripts to define new commands (dired)
- ▶ Self-documenting
 - ▶ C-h r (manual) and C-h t (tutorial)
- ▶ Real-time
 - ▶ Edits are displayed onscreen as they occur

Getting Started

- ▶ Installation
 - ▶ Should be installed already
 - ▶ Don't install if you are working on the SEASNET Server
- ▶ Emacs have both GUI and CLI
- ▶ All emacs commands start with “C” or “M”
 - ▶ “C” = ctrl; “M” = alt (Windows) / option(Mac)
- ▶ Starting emacs
 - ▶ emacs <filename>
- ▶ Exiting emacs - C-x C-c
- ▶ Saving a file - C-x C-s

Learning to use Emacs

- ▶ Navigating with file
 - ▶ Move up/down/left/right: C-p, C-n, C-b, C-f (arrow keys also work)
 - ▶ Move to the beginning/end of a line: C-a, C-e
 - ▶ Move to the first/last line of the text: M- < M-> (use shift for < and >)
 - ▶ Move to particular line number: M-g g [number]
- ▶ Search and replace file
 - ▶ C-s: search forward
 - ▶ C-r: search backward
 - ▶ M-%: replace (usage: M-% [source] Enter [dest]) (y/n)
- ▶ Erasing a line
 - ▶ C-k: erase from current cursor to end of line

Learning to use Emacs - contd.

- ▶ Copy and paste in a file
 - ▶ Begin: C- <spc> / C - @ / C-Shift-2
 - ▶ Use the <up> and <down> buttons to select the contents
 - ▶ End: C-w (cut), M-w(copy), C-y (paste)
 - ▶ Undo command: C-x u
- ▶ Cutting is called *killing*
- ▶ Pasting is called *yanking*

Directory edit (dired)

- ▶ Creates an Emacs buffer containing list of dir
- ▶ Command: C-x d
 - ▶ Enter a Directory name at prompt
- ▶ Allows you to operate on files
- ▶ Allows you to navigate filesystem
 - ▶ Switch to different directories and list content

Other Emacs Tricks

- ▶ Emacs as shell
 - ▶ **M-!** <command>, **M-x shell** (interactive shell buffer)
- ▶ Emacs as IDE
 - ▶ **M-x compile**, then specify command to compile
 - ▶ Tip for homework: `gcc hello.c -o hello`
 - ▶ Run the executable by running the shell command
 - ▶ `./hello`
- ▶ Running Lisp code
 - ▶ **M-x emacs-lisp-mode**
 - ▶ **C-x C-e** : Evaluate expression up to point
- ▶ Show Row and Column Number
 - ▶ **M-x column-number-mode**

Assignment Hints

- ▶ Submit 2 files in total
 - ▶ ans1.txt for LABORATORY section
 - ▶ Holds the answers for the 15 lab questions
 - ▶ key1.txt for HOMEWORK section
 - ▶ Keystrokes have to be manually entered into a text editor
 - ▶ Notation for keystrokes is mentioned in Assignment 1 under the “submit” section

Assignment Hints

- ▶ Make sure to prepend your PATH
 - ▶ Prepend your path using the command
 - ▶ Export `PATH=/usr/local/cs/bin:$PATH`
- ▶ You can confirm it by running `echo $PATH`

Assignment Hints

- ▶ Question 4: `man readlink`
- ▶ Question 5: If files have the same version, double check your PATH
- ▶ Question 10: `man localedef`
- ▶ Emacs Questions
 - ▶ For Emacs help - C-h ?
 - ▶ For Emacs manual - C-h r

Questions?