



Software Systems Development

Lab 1 - Bash

Shell Basics

What is shell ?

- A software that acts as an interface between user and OS.

Types of Shell

- Bash (Bourne Again Shell), zsh(on mac)

Basic commands

- ls, cd ... etc

Shell Profile -

- **/etc/profile**, followed by **/etc/bash.bashrc**, **~/.profile** and finally **~/.bashrc**

Variables in bash -

- focus on syntax

Passing Arguments to shell scripts

- \$0 - name of script
- \$# - number of arguments of script (does not count \$0)
- Defined only upto \$9

Environment variables

- PS1
- PATH

Shell Basics

Man Pages

Options for shell commands

Piping of commands

Redirection of output to file

File Permission Modes

- Octal Representation and symbolic representation

whereis

Searches for binary/source and manual section for files

Supplied names are stripped of leading path extensions and trailing file extensions

The resultant name is searched for in the standard linux places

Syntax

- `whereis [options] [-BMS directory... -f] name...`

grep

grep stands for **Global Regular Expression Print**

Syntax -

- `grep [OPTION...] PATTERNS [FILE...]`
- `grep [OPTION...] -e PATTERNS ... [FILE...]`
- `grep [OPTION...] -f PATTERN_FILE ... [FILE...]`

Regular Expressions

- [Content link - https://www.man7.org/linux/man-pages/man1/grep.1.html](https://www.man7.org/linux/man-pages/man1/grep.1.html)
- Fundamental Blocks - Single characters
- Bracket Expression - `[...]`, match any character in between
- Range Expression - consists of two characters separated by '-'. Note that many locales do not sort based on code points
- Predefined classes - `[:alnum]`, `[:alpha]`, `[:blank]`
- `^` and `$` match empty strings at beginning and end of line respectively
- `\<` and `\>` match empty string at beginning and end of a word. Word is defined as an alphanumeric string that may contain underscore `_`.

grep (contd)

Meta characters - ?, +, *, {, |, (,)

Repetition

- **?** - preceding item is optional and matches atmost once.
- ***** - preceding item will be matched 0 or more times
- **+** - preceding item will be matched 1 or more times
- **{n}** - preceding item will be matched exactly n times
- **{n,}** - preceding item is matched n or more times
- **{,m}** - preceding item is matched atmost one time
- **{n, m}** - preceding item is matched atleast n times but not more than m times.

Concatenation - The concatenation of two regular expression results in a regular expression that matches any string that is formed by concatenating two substrings that respectively match the concatenated expressions.

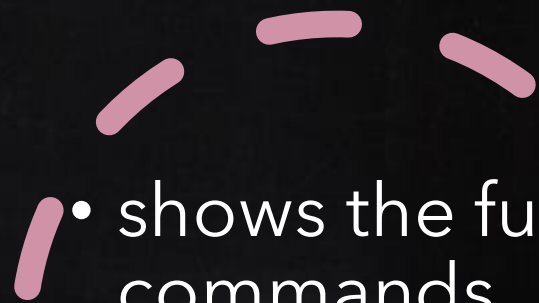
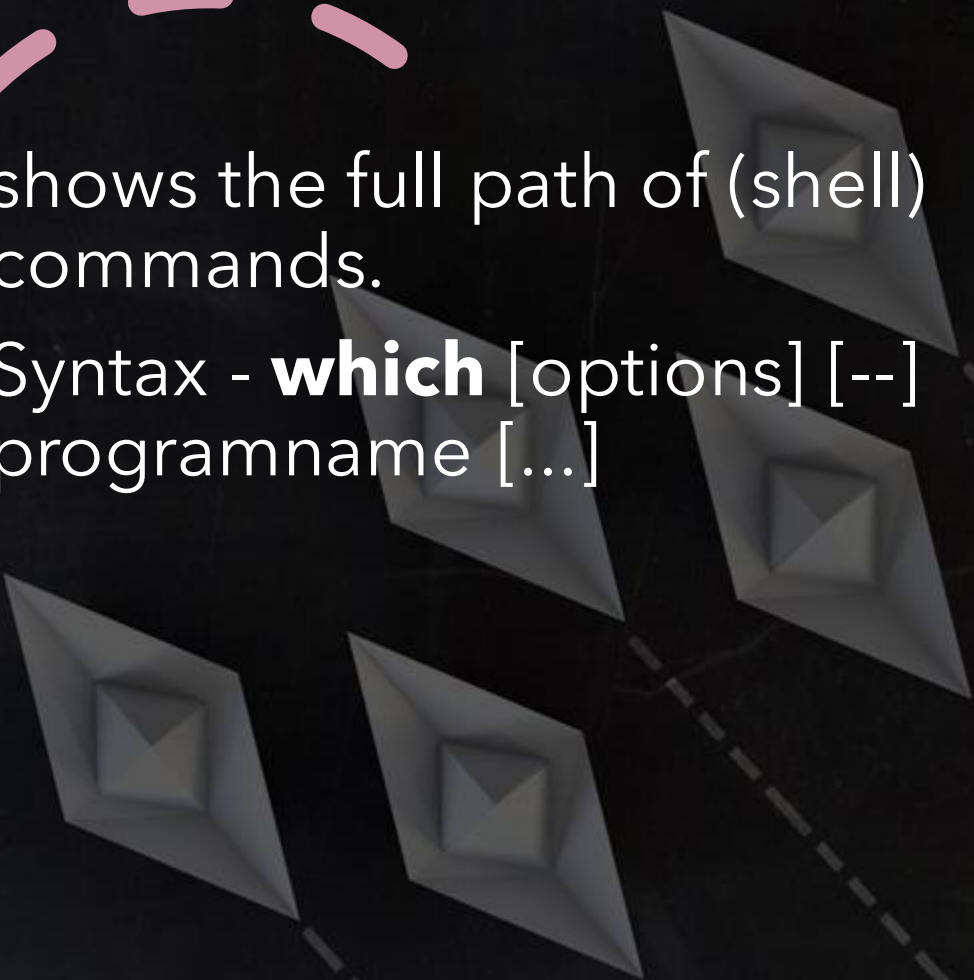
grep(contd)

- **Alteration** - May match either of the expressions separated by '|'.
- **Precedence** - Repetition > Concatenation > Alteration
- fgrep = grep -F
 - Interprets pattern as a list of fixed strings,
- egrep = grep -E



find

- search for files in a directory hierarchy
- Syntax
 - **find** [-H] [-L] [-P] [-D debugopts] [-Olevel] [path...] [expression]

- 
- shows the full path of (shell) commands.
 - Syntax - **which** [options] [--] programname [...]
- 



which



apropos

- search the manual page names and descriptions



Thank You!

Any Questions ?

