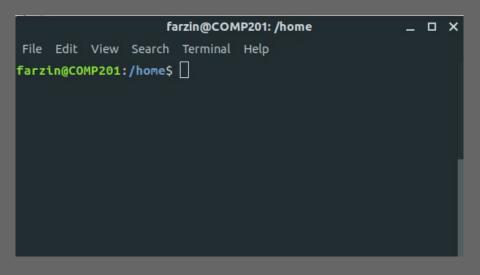
# Introduction to Linux Shell



COMP201 Lab Session Fall 2020

## What is shell?



 The Linux shell is the interface between you and operating system that controls the hardware.

 The most commonly used shell is called BASH – Bourne Again Shell

- username@hostname:curr\_dir\$
  - username: farzin
  - hostname: COMP201
  - curr\_dir: /home



# Executing system programs



Execute programs

- \$date
  - This program prints current date and time
- \$echo
  - This program prints the input argument



## Path and \$PATH



#### \$PATH

 A variable that contains addresses where system look for programs to execute

## \$which

 Prints which file is being executed given an input program name

## \$pwd

- This program prints current working directory
- Stands for "print working directory"



## Path

```
farzin@COMP201: ~
                                                      _ D X
File Edit View Search Terminal Help
farzin@COMP201:/home$ pwd
/home
farzin@COMP201:/home$ cd ~
farzin@COMP201:~$ pwd
/home/farzin
farzin@COMP201:~S cd /home
farzin@COMP201:/home$ cd ...
farzin@COMP201:/$ pwd
farzin@COMP201:/$ cd ./home/farzin/
farzin@COMP201:~$ pwd
/home/farzin
farzin@COMP201:~$
```

### \$cd

- Changes the working directory
- .. is the parent directory
- is the current directory
- Tilda (~) is the /home/usr directory
- Absolute vs Relative path
  - Relative: ./home/farzin
  - Absolute: /home/farzin



# Listing files and directories

```
farzin@COMP201: /
                                                                  File Edit View Search Terminal Help
farzin@COMP201:/home$ ls
farzin
farzin@COMP201:/home$ ls -l
total 4
drwxr-xr-x 44 farzin farzin 4096 Oct 11 02:02 farzin
farzin@COMP201:/homeS cd ..
farzin@COMP201:/$ ls
bin
      etc
                      lib
                                  media root srv
                                                          USF
                                               swapfile
      home
                      lib32
                                         run
boot
                                                          var
cdrom initrd.img
                      lib64
                                  opt
                                          sbin
                                                          vmlinuz
      initrd.img.old lost+found
                                                          vmlinuz.old
                                  ргос
                                          snap
farzin@COMP201:/$ ls /home
farzin
farzin@COMP201:/$ ls ./home
farzin
farzin@COMP201:/$
```

#### \$|s

- Prints files and directories under current working directory
- You can use options with commands like "-I" which shows a long list containing more details of files and folders
- You can also pass absolute or relative path to \$ls command
- Use --help for more info about arguments



## Redirection

```
farzin@COMP201: ~/COMP201
                                                                         _ D X
File Edit View Search Terminal Help
farzin@COMP201:~/COMP201$ touch myfile.txt
farzin@COMP201:~/COMP201$ cat myfile.txt
farzin@COMP201:~/COMP201$ echo "Test1: Hello!" > myfile.txt
farzin@COMP201:~/COMP201$ cat myfile.txt
Test1: Hello!
farzin@COMP201:~/COMP201$ cat < myfile.txt</pre>
Test1: Hello!
farzin@COMP201:~/COMP201$ echo "Test2: Anybody there?" >> myfile.txt
farzin@COMP201:~/COMP201$ cat myfile.txt
Test1: Hello!
Test2: Anybody there?
farzin@COMP201:~/COMP201$ mkdir myfolder
farzin@COMP201:~/COMP201$ ls
myfile.txt myfolder
farzin@COMP201:~/COMP201$ cat < myfile.txt > ./myfolder/myfile2.txt
farzin@COMP201:~/COMP201$ ls ./myfolder
mvfile2.txt
farzin@COMP201:~/COMP201$ cat ./myfolder/myfile2.txt
Test1: Hello!
Test2: Anybody there?
farzin@COMP201:~/COMP201$
```

#### \$touch

- Creates a file with desired extension and name
- \$cat
  - Print the content of the given file
- "< file" and "> file"
  - You can wire the input and output of a program to a file
  - ">> file" appends to end of file
- \$mkdir
  - Makes a directory with the given name



# Piping

```
farzin@COMP201: ~/COMP201
                                                           _ _ ×
     Edit View Search Terminal Help
farzin@COMP201:~/COMP201$ cat myfile.txt
BaNanA
apple
BaNanA
orange
Apple
farzin@COMP201:~/COMP201$ cat myfile.txt | grep apple
farzin@COMP201:~/COMP201$ cat myfile.txt | grep -i apple
farzin@COMP201:~/COMP201$ cat myfile.txt | grep -i a
BaNanA
 pple
BaNanA
orange
 pple
farzin@COMP201:~/COMP201$
```

- Pipe character " | "
  - Connects output of a program to input of another one
- \$grep
  - Searches for a particular information
  - By default it is case sensitive
- Try "grep --help" and find what does -i option do

