

# CL205 - Operating Systems Lab

## Lab#03

### 1. Commands

A command is a request from a programmer, an operator, or a user to Linux operating systems asking that a specific function be performed. For Example, a request to list all files in your current directory will be the command `ls`.

#### Syntax

The general way commands are entered in Linux is as such:

*command -option(s) argument(s)*

Here,

- A command tells the operating system what to do.
- Option(s) tells the way of action to be performed. For example, `ls` command displays directory contents, and `-r` option tells the way in which the directory should be displayed. Here `-r` displays directory contents in reverse (alphabetically) order.
- Argument tells that on what objects (file, directory, devices, etc.) the command and its arguments are applied. For example if we need to display all files starting with alphabet a, you will give "`ls a*`" and press enter.

**Note** Make sure you don't forget that there is always a space between the command, the options, and the arguments.

#### 1.1. The Asterisk \*

The asterisk `*` symbol is basically a wildcard. It can be used in a number of contexts. For example:

- It can be used to denote *everything*. For example, in MS-Dos, typing `delete *` will delete all files in a current directory. With Linux, you can use `rm *` to do the same thing.
- It can be used as a filter. For example, typing `ls ab*` will print all file/folder names that start with ab.

#### 1.2. Case Sensitivity

Linux Commands are case-sensitive. All standard Linux commands are given in lower case letters only. As an example, typing `ls` will print the directory contents. Typing `Ls`, or `LS`, or `lS` will result in

a command syntax error.

### 1.3. Auto-Completion

Auto-Completion is a short-cut feature for quickly entering commands that are long or you have forgotten their spelling. To practice, just type `f` and press the TAB key. You will see the list of all commands starting with an `f`. Type `fd` and press TAB, you will see all commands starting with `fd`. Type `fdi` and press TAB, you will see a list of commands all starting with `fdi`, so on and so forth.

You can also use the auto-completion to detect directories. For example, you want to access the home directory of a user who for some strange reason is called `abcdefghijklmnopqrstuvwxyz`. From the root directory (`/`), you will type `cd /home/a` and press TAB. The rest of the characters `bcdefghijklmnopqrstuvwxyz` will be given automatically and you will be spared the time and effort of writing such a large name.

### 1.4. Redirection

You can use the `>` and `<` symbols to redirect your output. The types of redirection are as such:

- `>` Output redirection to a file
- `1 >` Same as `>`
- `2 >` Error output redirection to a file
- `<` Output redirection from file to terminal

Try it using the following set of commands

```
cd
```

```
ls
```

```
touch newfile
```

```
ls
```

```
ls > newfile
```

```
cat < newfile
```

```
lsot
```

```
lsot 2 > newfile
```

```
cat < newfile
```

```
rm newfile
```

### 1.5. Practicing Commands

Some of the most commonly used commands are given below. Try and practice each one of them

and see what they do.

**ls** Print the contents of the current directory

**cd** Change directory

**mkdir** Create a new directory

**rmdir** Remove a directory (if it is empty)

**cat** View contents of a file, or write contents to a file

**cp** Copy a file from one location to another

**mv** Move a file from one location to another

**rm** Remove file(s) and/or directory(ies)

To see them working, practice the following set of commands, the # sign represents the shell prompt.

*# mkdir temporary*

*# cd temporary*

*temporary# ls*

*temporary# cat > newfile*

*Type any text and press CTRL+D*

*temporary# cat newfile*

*temporary# mkdir another*

*temporary# cp newfile another/newest*

*temporary# cp newfile newester*

*temporary# cd another*

*another# ls*

*another# cp newest newestest*

*another# cat newestest*

*another# cd ..*

*temporary# mv newester another/newester*

*temporary# ls*

*temporary# ls another/n\**

*temporary# cd ..*

*# rm temporary*

*# rm temporary/\**

*# rm temporary*

*# rm temporary -r -f*

## **1.6. Exercise 1**

Implement the following directory tree.

Grades

A B C Maths Physics Maths Physics