CL205 - Operating Systems Lab

Lab#02 - Basics of Ubuntu

1. Ubuntu's File System Structure

Ubuntu uses the Linux file system, which is based on a series of folders in the root directory. These folders contain important system files that cannot be modified unless you are running as the root user or use **sudo**. This restriction exists for both security and safety reasons; computer viruses will not be able to change the core system files, and ordinary users should not be able to accidentally damage anything vital.

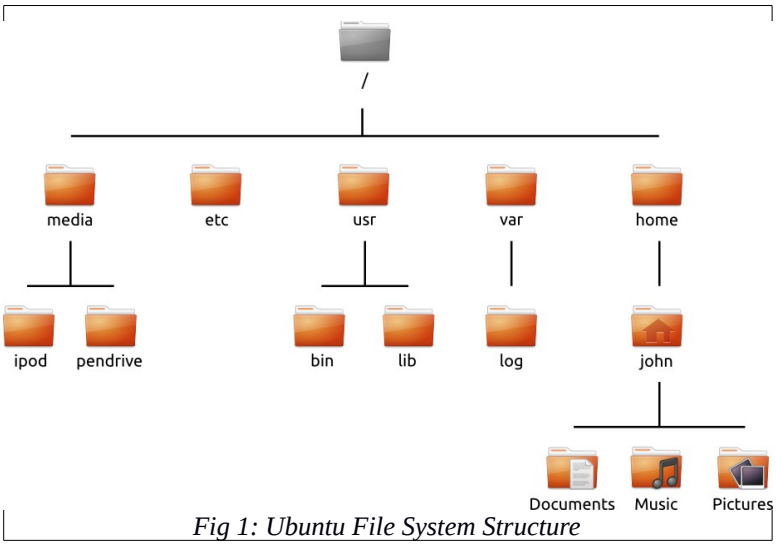

Fig 1: Ubuntu File System Structure

At the top of the hierarchy is the root directory which is denoted by /. The root directory contains all other directories and files on your system. Below the root directory are the following essential directories:

- **/bin** and **/sbin** Many essential system applications (equivalent to **C:\Windows**).
- ***/etc*** System-wide configuration files.
- **/home** Each user will have a subdirectory to store personal files (for example, **/home/yourusername**) which is equivalent to **C:\Users or C:\Documents and Settings** in Microsoft Windows.
- **/lib** Library files, similar to .dll files on Windows.

- **/media** Removable media (cd-roms and usb drives) will be mounted in this directory.
- **/root** This contains the root user's files (not to be confused with the root directory).
- **/usr** Pronounced "user," it contains most program files (not to be confused with each user's home directory). This is equivalent to C:\Program Files in Microsoft Windows.
- **/var/log** Contains log files written by many applications.

2. Terminal

In order to fully realize the power of Ubuntu, you will need to learn how to use the terminal. Most operating systems, including Ubuntu, have two types of user interfaces. The first is a GUI. This is the desktop, windows, menus, and toolbars you click to get things done. The second, much older type of interface is the command-line interface (CLI). The terminal is Ubuntu's CLI. It is a method of controlling some aspects of Ubuntu using only commands that you type on the keyboard.

Why would you want to use the terminal?

You can perform most day-to-day activities without ever needing to open the terminal. However, the terminal is a powerful and invaluable tool that can be used to perform many useful tasks you might not be able to accomplish with a gui. For example:

- Troubleshooting any difficulties that may arise when using Ubuntu sometimes requires you to use the terminal.
- A command-line interface is sometimes a faster way to accomplish a task. For example, it is often easier to perform operations on many files concurrently using the terminal.
- Learning the command-line interface is the first step towards more advanced troubleshooting, system administration, and software development skills. If you are interested in becoming a developer or an advanced Ubuntu user, knowledge of the command-line is essential.

The terminal gives you access to what is called a shell. When you type a command in the terminal, the shell interprets this command, resulting in the desired action. All commands in the terminal follow the same approach: Type a command, possibly followed by some parameters, and press Enter to perform the specified action. Parameters (also called switches) are extra segments of text,

usually added at the end of a command, that change how the command itself is interpreted. These usually take the form of **-h** or **--help**, for example. In fact, **--help** can be added to most commands to display a short description of the command, as well as a list of any other parameters that can be used with that command. Often, some type of output will be displayed confirming the action was completed successfully, although this can depend on the command being executed. For example, using the **cd** command to change your current directory will change the prompt but will not display any output, as shown in the figure below.

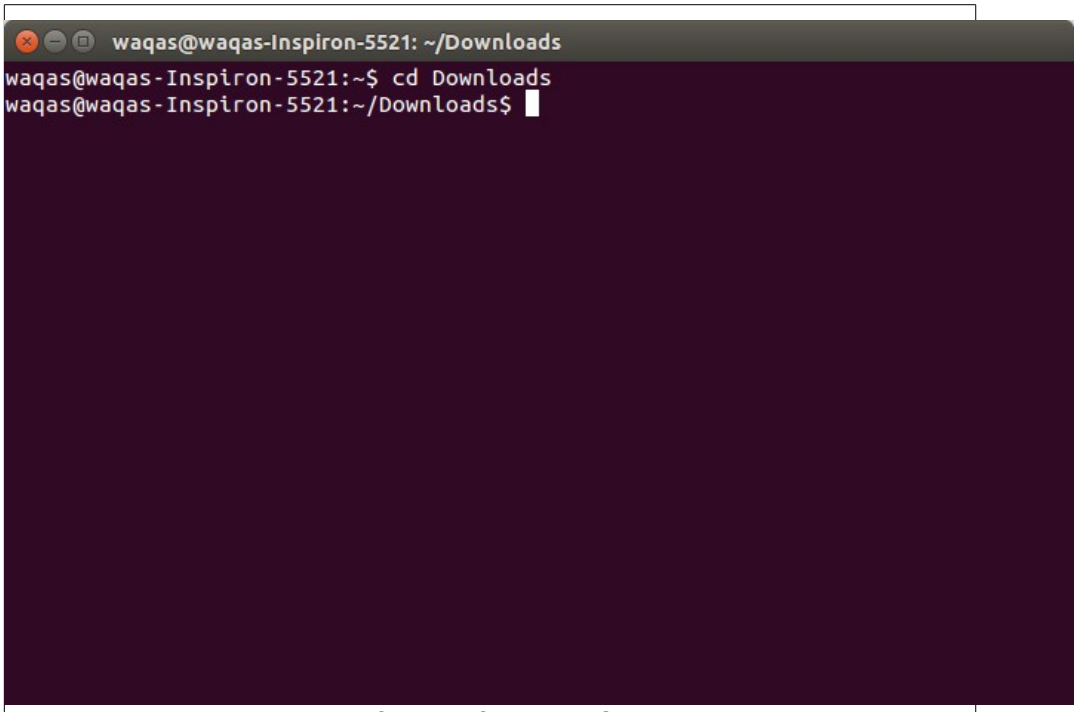

Fig 2: Changing the current directory

3. Basic Commands

a) ls: list directory contents

(The **ls** command will show you the list of files in your current directory)

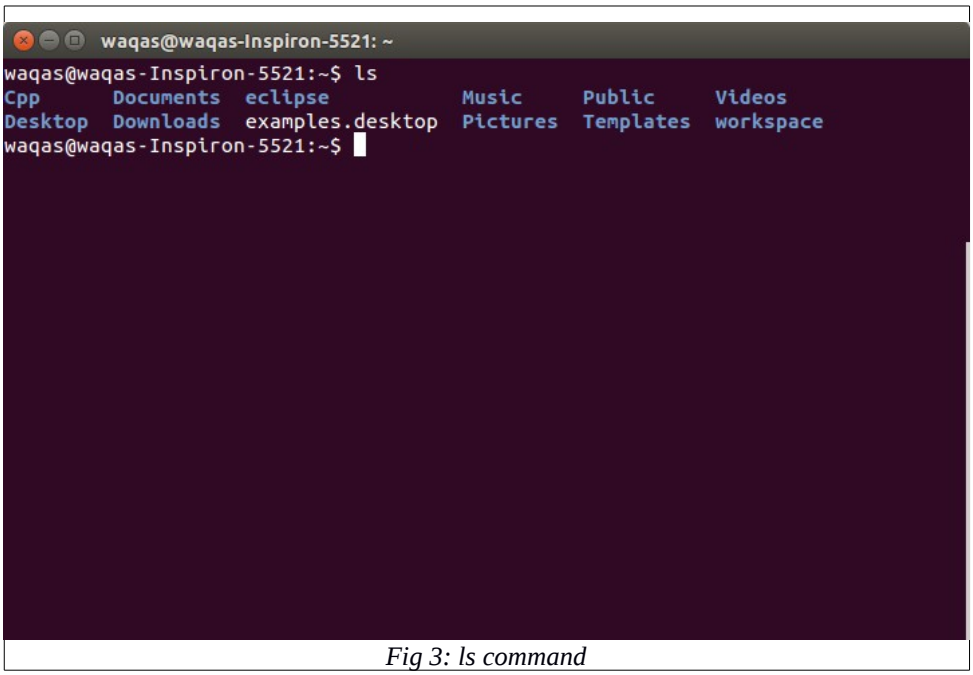

Fig 3: ls command

b) cd: Change Directory

(The **cd** command will allow you to change directories.)

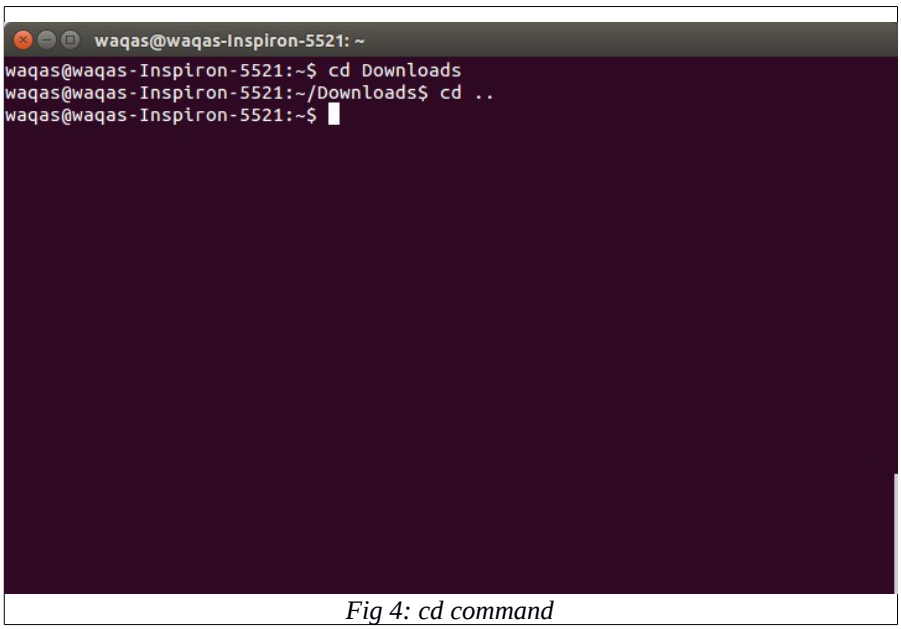

Fig 4: cd command

c) pwd : print the current/working directory

(The **pwd** command will allow you to know in which directory you are currently working)

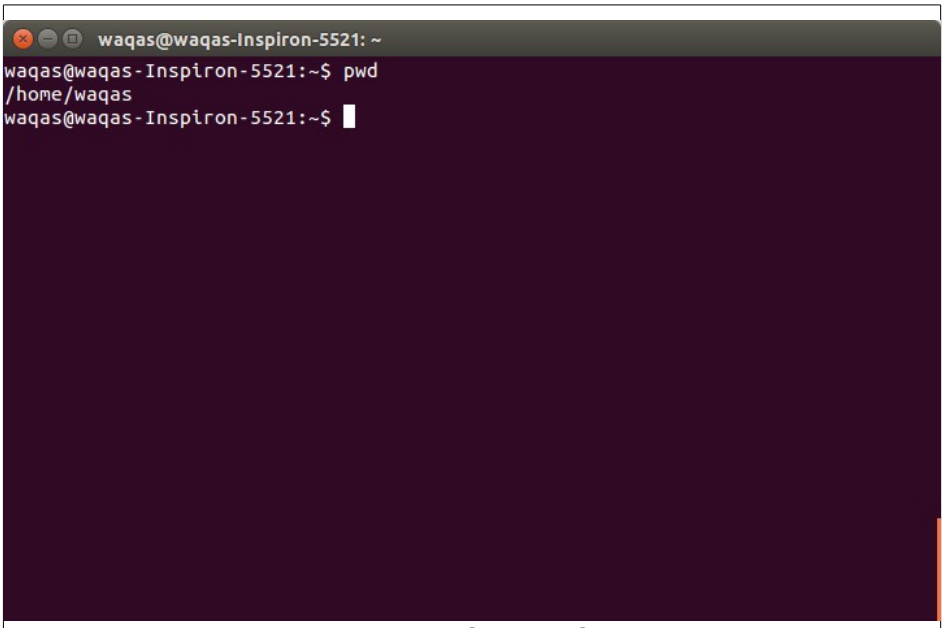

Fig 5: pwd command

d) adduser : Addition of new user

(This command will create a new user in /home directory)

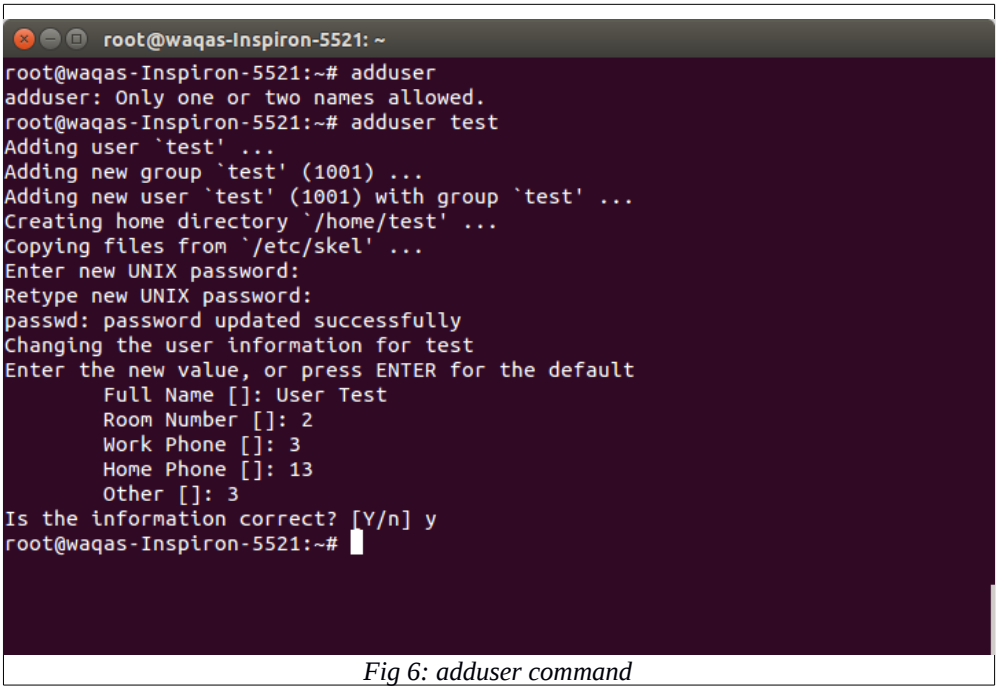

Fig 6: adduser command

e) passwd : Change password for user

(This command changes the password of a specific user)

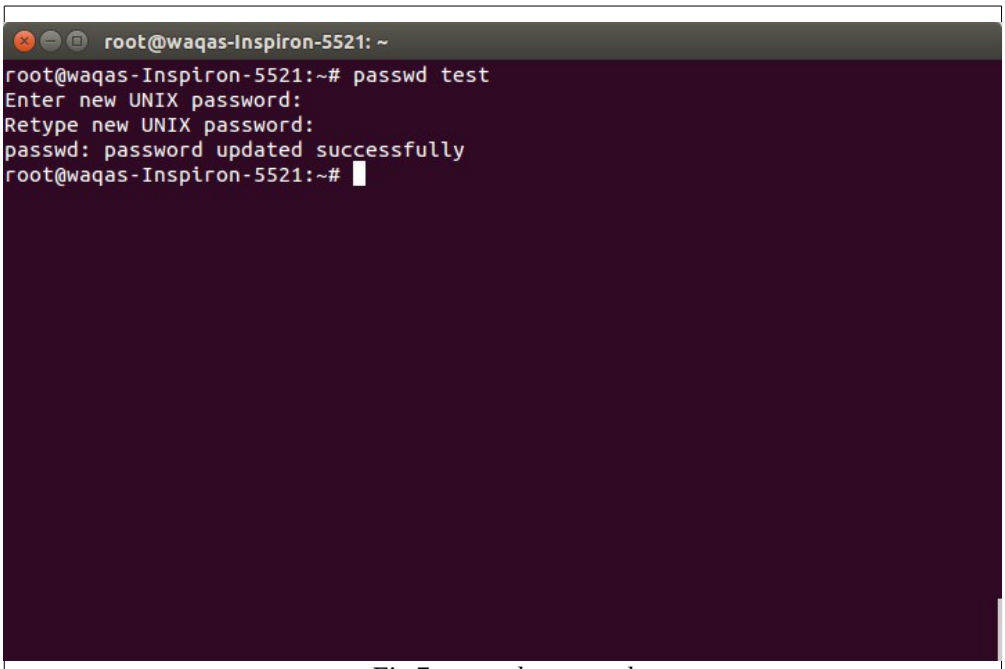

Fig 7: passwd command

f) sudo command

(run command as a super user (root))

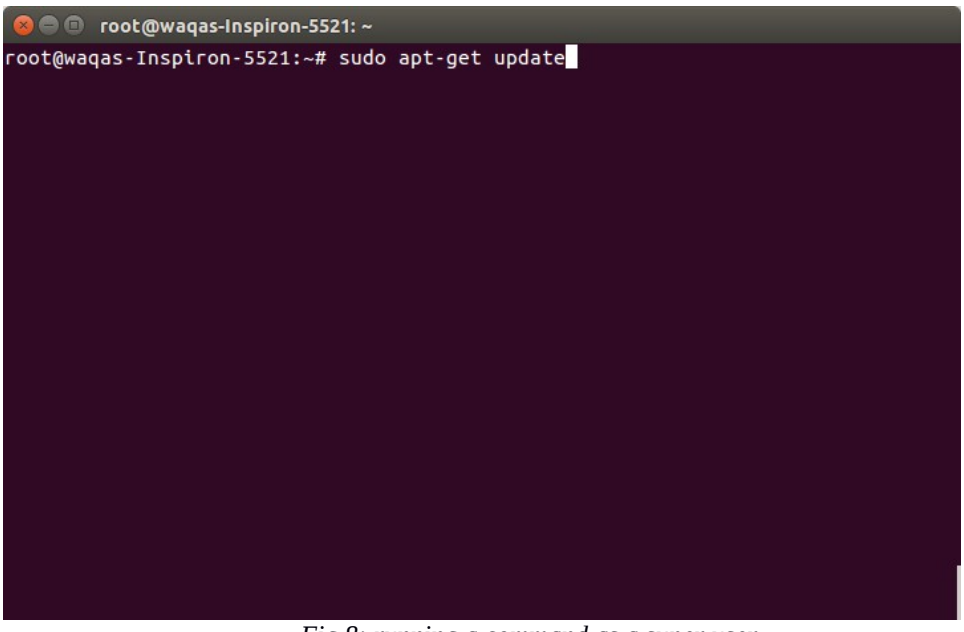

Fig 8: running a command as a super user

g) ifconfig – show network information

h) iwconfig – show wireless information