Munster Technological University

Computer Science Dept.

COMP6042 Operating Systems in Practice

Lab 2

- ***Today*** you will be introduced to the ***command terminal***.
- We will use ***Ubuntu*** (not Xubuntu).
- We will install and test a ***screen capture application.***
- Finally, we will ***create users*** and use more command line commands.
- Take some notes and **save** in a word document.

Install Ubuntu

- Go to ***Ubuntu*** (note: NOT Xubuntu) website, and download a ***64 bit iso for Windows***.
- Create a Virtual Machine from ***Ubuntu iso***, and install Ubuntu (Use the latest ***LTS version***)

Using the Terminal to explore the Directories and Files of the File System

Overview

1. Open a terminal. *Reminder, right-click on the desktop and click on **Open Terminal**.*
2. Type **pwd** and press the ***enter key***.
   What is the purpose of this command?
   *It shows the printed working directory, i.e. it shows the current directory (folder) that you are on. You should see **'/home/username'** which is the home directory for the **current user.***
3. Type **ls** and press the enter key.
   What is the purpose of this command?
4. Try **ls –l** (i.e. -l is the minus symbol followed by small letter L or lower case L; also, for a command to be entered, you should hit the ***enter key***).
   What is different about this command?
   Can you identify the difference between ***directories*** and ***files*** by using **ls** and **ls -l?**

   Note: On the ***command line*** we use the word ***directory***; in the ***graphical file manager***, we use the word ***folder***.
5. Explore with the **cd** command. Type ***pwd*** and ***ls***, each time after using the ***cd*** command.
6. Try **cd ..**
7. Try **cd ~**
8. Make a few ***folders*** and ***files*** using the ***desktop file manager*** and ***text editor***.
   Can you find these files using ***cd*** and ***ls*** commands?
9. To display a file, type **cat <filename>**, where <filename> is the name of the file to be displayed.
10. To see ***disk*** and ***swap disk*** information, type **sudo fdisk –l**.

Exercise 1 - Type the following and explain what is happening?

Using the ***terminal***: Type the following:

1. **cd ~**
2. **pwd** ← *pwd shows you the new directory you changed to.*
3. **ls** ← *What does **cd ~** do?*
4. **ls -l**
5. **cd ..**
6. **pwd**
7. **ls** ← *What does **cd ..** do?*
8. **cd /usr/games**
9. **pwd**
10. **ls** ← *What does **cd /usr/games** do?*
11. ← *Now run a game by typing its name.*

Exercise 2 - Type the following and explain what is happening?

Using the ***terminal***: Type the following:

1. **cd /etc** ← *Remember: the **pwd** command can be used to check the **current directory.***
2. **pwd**
3. **ls** → *Notice the file called "**timezone**"*
4. **cat timezone** → ***Display*** *the file-contents.*

Exercise 3 - Type the following and explain what is happening?

Using the ***terminal***: Type the following:

1. **cd ~** → Go to your home directory
2. **pwd**
3. **ls -l** → *Notice the files and directories.*
   *A directory has the attributes starting with the letter **d**;*
   *files normally start with **-***
4. **ls** → *Notice the files and directories.*
   *What **colour** are the names of directories?*
   *What **colour** are the names of files?*
5. **cd Desktop** → *Change to the **desktop directory.***
6. **pwd**
7. **ls** → *List the contents of the directory.*
8. **cd ..** → *Go back to the previous (**parent**) directory.*
9. **pwd**
10. **ls** → *List the contents of the directory.*

Exercise 4 - Type the following and explain what is happening?

Using the ***terminal***: Type the following:

1. **cd /** → *Go to the **root directory** (*i.e. the very *top directory).*
2. **pwd**
3. **ls** → *List the contents of the directory.*
4. **cd etc**
5. **pwd**
6. **ls** → *Notice the file called **timezone***
7. **cat timezone** → ***Display*** *the file-contents.*

Exercise 5 - Type the following and explain what is happening?

Using the ***terminal***: Type the following:

1. **nautilus /** ← *Launch the **graphical file manager** which will start on the **root** (top) directory (also called folder from the graphical viewpoint.*

   ← *Find the **timezone** file in the **etc** folder. Can you open the File?*
2. Close the application.

Exercise 6 - Find the graphical file manager desktop icon

1. Look at the ***left hand side*** of the screen, and find the ***graphical file manager*** (it should look like a *filing cabinet **icon***). Launch it.
2. Is it the same as that launched from the terminal in ***Exercise 5***? Try to move through ***folders***… Do you notice anything different?
3. Close the application.

Exercise 7 - Use the graphical file manager

1. By looking at ***Exercise 5*** or 6***,*** you can ***see*** how to launch the graphical file manager.
2. ***Repeat*** the ***Exercises 1, 2, 3*** and ***4***, however, this time ***explore*** from the ***graphical file manager*** rather that using the command line interface.

Exercise 8 – Find the swap file

1. Using both the ***command line*** and the ***graphical file manager,*** find and list the ***swap file*** which is in the ***root*** directory/folder.
   Hint: Look at ***Exercise 5.***

Install and Test the screen capture software

1. Open a ***terminal***.

2. Type **sudo apt-get update**
3. Type **sudo apt-get install vlc** ← *vlc allows the **playing** of videos*
4. Type **sudo apt-get install vokoscreen** ← *vokoscreen allows the **recording** of the screen*

5. On the terminal, type **vokoscreen** ← Run the vokoscreen program
6. Finally, the file is stored as a **.mkv** file format on the folder ***/home/user/Video***.
   Note: *'user' refers to the user-name that you are logged in as.*
7. Open the ***file manager*** program. Change to the folder ***/home/user/Video***.
8. ***Rename*** the file to a more meaningful name (keeping the ***.mkv*** file extension).
9. To ***play the video file*** from the file manager, right click the ***.mkv*** file, and click '***Open with Other Application***', then choose '***VLC media player'***.

Create users

1. On the ***desktop***, open '***Settings'*** application.
   [First click on the ***9-dots*** at the ***bottom left*** of the screen]. Next: Find the '***Settings'*** application.
2. (Select the '***Details'*** option on the left hand column.)
3. Select '***Users'***. Click on the ***lock icon*** to unlock changing of user account access, (*password* required).
4. Create ***3 standard*** user accounts called ***user1***, ***user2, user3.*** [Note: All names are lower case letters.] Give each user the ***password*** '*operatingsystems'*.

Explore the Terminal and use some more basic commands

Open a ***terminal***.

1. Type **pwd** What is the purpose of this command?
2. Type **df –l**

Explore each of the commands below. Use the help ***man****ual* to get information about commands. Can you use the commands with different options?

Help

1. **man**
2. 3 Specific examples: **man ls** **man df** **man pwd**

Disk Commands

1. **cd**
2. **ls**
3. **df**
4. **sudo fdisk –l**
5. **pwd**

Get Information Commands

1. **whoami**
2. **who**
3. **date**
4. **ls**
5. **ps** ← list the processes (i.e. programs)
6. **ps -aux**
7. **pwd**
8. **du** ← disk usage
9. **cat** ← display a file

Access to Device Commands

1. **print** ← a printer must be set up first…..
2. **lp** ←a printer must be set up first…..(to submit print jobs to a connected printer)
3. **clear** ← clear the ***terminal screen.***

Switch user Commands

1. **su** ← switch to a different user. Type ***exit*** to finish.
   Example: Type **su user3** ← you will be asked for a ***password***.
   ← Note: the ***prompt*** is changed.
   ← Type ***exit***, to return to the previous user.

Command line editors Commands (only test ***nano*** today)

1. **vi** ← very basic editor, this is an extremely small editor and is very useful when changing from system to system….. This editor is generally available on all Linux machines.
   Note: Do not test ***vi*** today.

2. **nano** ← **simple command line editor.**
   (A simple exercise.)
   a. cd ~
   b. **nano TEST** ← This ***creates*** a file called TEST and you can edit it.
   ← Enter some text such as "*Hello world*"…, then save the file.
   c. **ls** ← Notice the file is now ***in the list.***
   d. **Ls** ← Notice the ***size*** of the file.
   e. **cat TEST** ← Display the file-contents.

File copy and manipulation Commands (do not test today)

1. **cp** ← ***copy*** file**.**
2. **rm** ← ***remove*** file – ****** **CAUTION** ******
3. **mv** ← ***move*** a file, this can be used to ***rename*** a file – ****** **CAUTION** ******

Utility programs Commands

1. **ping** ← Check if a ***server is up and running.***

Example: Ping a server.

ping www.rte.ie

← you can ***kill*** this program by typing (**^*C***), i.e. hold ***control***_key and type ***C***.

Exercise

1. Make a ***2 minute video*** of you ***exploring*** the ***desktop***.
2. Make a ***2 minute video*** of you ***using commands*** at the command ***terminal***.

Preparing for Assessment 1

1. ***Assessment 1*** begins next week.
2. However, to help prepare for assessment 1, you should ***explore*** the desktop area again.
   i. Can you change the screen background for the user?
   ii. Try to **customise** some of the ***desktop*** for this user?
   iii. ***Explore*** the different applications, services and system services.

The End!