MONASH University


# LINUX

## OBJECTIVES

- The purpose of this lab is to introduce you to the Linux environment

## MARKS

- The lab worths 3 of the unit final mark.

## INSTRUCTIONS

1. Before class: Work out solutions and answers to all the tasks. Read the marking rubric.
2. During class:
    - You will participate in one of the working groups to discuss, learn from your peers, and refine your answers and solutions
    - Teaching staff will randomly pick questions for you or your group to answer (oral interview).
3. At the end of class/after class: Double check all your codes and/or written answers. Submit the latest version of your codes and/or answers to Moodle before the due date. Marks will not be awarded if no submission (or empty submission) is made to Moodle.
4. You are allowed to use search engines or AI tools to search for information and resources during pre-class preparation. However, search engines and AI tools are not allowed during the oral interview/assessment period.

## LAB ACTIVITIES

**Task 0 – Preparation (No Marks)**

a. Read the Linux Environment Setup Guidelines
b. Download and set up the Linux environment (with Docker if needed)
c. Get familiar with the Linux environment
d. Confirm gcc and Open MPI are available within your Linux installation or docker environment (for future labs/applied sessions)

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Prepare to answer the following questions.

**Task 1 – Basic Linux Operations - Finding Help and File/Directory Manipulation (20%)**

1. Which text-based command provides information on the use of other Linux commands and utilities?
2. List the command line for finding help on the usage of ssh?
3. How do you access Linux manual pages? List the full command line for accessing a particular section.
4. List the command-lines for creating directories.
5. List the command-lines for deleting sub-directories.
6. List the command-line for creating a zero-length file.

**Task 3 – Basic Linux Operations – Access Control (20%)**

7. Set the permissions for your home directory such that no one besides yourself can read your home directory's contents. List the command line.
8. What does chmod 4775 filename do?
9. How do you set the executable permission on a file (to make it executable)? List the command-line.
10. List the command-line for inspecting the permissions assigned to a particular file "hello.c".

**Task 4 – Linux Shell (40%)**

[Hint: Read the manual pages on your shell and then answer the following questions. You can run the command **echo $SHELL** in the terminal to figure out the shell you are running]

11. How do you get the last command-line re-displayed?
12. Which key-stroke invokes filename completion?
13. Locate the file in your home directory/system containing the PATH variable. What does it do?
14. How do you inspect its value?
15. What does the shell function alias do?
16. How does which command work?
17. How do you execute a program file in the shell? List the command-line.
18. How are the contents of a text file displayed? List the command-line.
19. List the command-line for search all files with an extension .html on the system.

**Task 5 – Basic Networking (20%)**

20. Which command can show the IP address for the ethernet card (eth0)?
21. Which command can show the Hardware address for the ethernet card (eth0)?
22. What is the function of /etc/hosts file?
23. What is the function of /etc/resolv.conf?