**Lab 5.1 - Linux**

* **Ensure that you have worked through the *- Lab 5.0 Preparation Linux Tutorial - Processes* before attempting this labsheet.**

1. A process is a unit of work on a Linux system. Each program you run represents one or more processes, and Linux provides commands for viewing and manipulating them. Every process is identified by a numeric process ID or PID.

There are a number of ways of viewing processes in Linux. Give a one line explanation of the commands below and include a screen shotof the output of these commands

1. **ps –** Displays information about active processes
2. **ps –l -** Displays detailed information about active processes
3. **ps -aux –** Lists all processes running actively
4. **uptime –** Shows how long the system has been running for and how many people are using it
5. **w –** Displays information about what other users that are using the system are doing
6. **top –** Shows list of tasks that are running
7. **free –** Shows how much free and used memory in the system
8. Linux allows users to run processes either in the foreground or the background. Define **foreground process** and **background process** and explain why you might run a process in the background.

**Background Process –** A process that can be carried out while the other tasks can be executed

**Foreground Process –** A process that runs directly and holds control of the terminal until it’s finished

To free up the terminal for other tasks or to do long tasks without using up the entire terminal

1. Explain the **sleep** command. – the sleep command pauses a command for a certain amount of time and allows delays
2. Why would you need to use the **sleep** command? – To have delays and pauses in commands for
3. What is the difference between commands sleep 10 and sleep 10 & - Sleep 10 pauses the execution of a command for 10 seconds while sleep 10 & pauses for 10 seconds but runs in the background.
4. Run the **sleep** command with t = 1000 in the foreground. Write down the command you used.
   1. To suspend this process type ctrl-Z
   2. Type **ps –l** and record the value at the State column (the second column labelled S) for this sleep process.
   3. To re-start the process but run it in the background type **bg**.
   4. What is the value of this (sleep) process’s State column?
5. The **kill** command is used to terminate unwanted processes. It’s syntax is: Kill -9 PID
   1. Terminate the sleep 1000 command.
   2. Type **ps** again to see if it has been removed from the list
6. Run the **top** command and then suspend it (use ctrl Z to suspend)
   1. Using the command **ps –l**, what tells you it is a suspended process?
   2. Using the command **jobs**, what tells you it is a suspended process?
   3. Restart it (use **fg** for “Foreground”).
   4. To quit the **top** process type q
7. Create a file called listings.txt in your home directory that contains the list (in long format) of all files in one of your directories.
8. Using a Linux command, how would you append your name to the end of the file listings.txt**?** Anmool>> listings.txt
9. What is the command to remove the write permission from the listings.txt file, for the owner of the file? - chmod u-w listings.txt
10. Having completed step 11. What happens if you try to append your name to the listings.txt file in the normal way? – You receive a permission denied error
11. Rewrite the command to redirect the output of the command you wrote in the previous step to an error file. – listings.txt >> error.log 2>&1