**Lab 5.1 - Linux**

* **Ensure that you have reviewed 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**
2. **ps –l** (minus lowercase-L)
3. **ps -aux**
4. **uptime**
5. **w**
6. **top (press q to quit)**
7. **free**
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.
9. Explain the **sleep** command.
10. Why would you need to use the **sleep** command?
11. What is the difference between commands sleep 10 and sleep 10 &
12. 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?
13. 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
14. 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
15. 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.
16. Using a Linux command, how would you append your name to the end of the file listings.txt**?**
17. What is the command to remove the write permission from the listings.txt file, for the owner of the file?
18. Having completed step 11. What happens if you try to append your name to the listings.txt file in the normal way?
19. Rewrite the command to redirect the output of the command you wrote in the previous step to an error file.