| **Fr. Conceicao Rodrigues College of Engineering**  **Department of Computer Engineering** | | | |
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| **Student’s Roll No** | **9914** | **Students Name** | **Vivian Ludrick** |
| **Date of Performance** | **25/01/2024** | **SE Computer – Div** | **A** |

**Aim:**

(a) Study Linux File System, Types of Users, Environment Variables

(b) Study basic commands, User , File and Process related commands

**Lab Outcome:**

**CSL403.1: Demonstrate basic Operating system Commands, Shell scripts, System Calls and API wrt Linux.**

**Problem Statement:**

Explore the linux commands.

| **Copy paste the executed instructions here** | | |
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| **Command** | **Description** | **Output** |
| Process Commands | | |
| bg | Sends a process to background |  |
| fg | To bring a stopped process to foreground |  |
| top | displays the linux processes |  |
| ps | report a snapshot of the current processes. |  |
| ps <PID> | show to detail of the process based on its process id |  |
| ps ux | report a snapshot of the user process |  |
| kill <PID> | kill an ongoing process that has the same PID as the PID mentioned |  |
| pidof <Process\_name> | outputs the pid of the process mentioned |  |
| nice -n <a number between -20 to 19> <process name> | run a program with the modified scheduling priority |  |
| renice <a number between -20 to 19> -p <PID> | Change the priority of the already running process |  |
| df -h | give the filesystem disk space usage. -h flag is used to convert the output into a readable format |  |
| free -m | show the detail of ram and swap memory. -m flag is used to show the output in a readable format |  |
| Environment Variables | | |
| PATH | This contains list of directories separated by ‘:’ where the system looks for executable files. Files in this dirs can be executed just by invoking their name instead of the whole path |  |
| USER | The name of the user of the current session |  |
| HOME | Path for the user’s home directory |  |
| EDITOR | Path to the editor which edits the contents of a file |  |
| UID | Current user unique id |  |
| TERM | Default terminal emulator |  |
| SHELL | Default shell of the user |  |
| NOTE: never put space between variable\_name, = and value | | |
| export <VARIABLE>=<VALUE> | Creates a environment variabel for the current shell as well as its subshell. |  |
| <VARIABLE>=<VALUE> | Creates a new variable |  |
| unset <VARIABLE> | Removes a variable |  |
| echo $<VARIABLE> | prints the variables value |  |
| Basic linux commands | | |
| ls -al | It list the files and dirs in the current directory  -a: list all hidden as well as non hidden  -l: Gives detailed information |  |
| ls -R | Displays the files recusively |  |
| cat <filename> | View the content of a file |  |
| cat > <filename> | Create a new file |  |
| cat <file1> <file2> > <output\_file> | Merge two or more files into one file |  |
| rm <filename> | Remove a file |  |
| mv <input\_file> <output\_file> | Rename a file |  |
| sudo <command> | Give admin privileges to a command |  |
| mv <file> <directory> | Move file to the new location |  |
| mkdir <directory\_name> | Make a new directory in the current location |  |
| mkdir <directory\_location>/<directory\_name> | Make the new directory in different location |  |
| rmdir <directory\_name> | Remove an empty directory |  |
| mv <input\_dir> <output\_dir> | Rename the directory |  |
| man <command> | Display the manual page for that command |  |
| history | Display the command that you used in the past |  |
| clear | clears the terminal screen |  |
| pr | Formatting a file while it prints on the terminal  -x Divides the data into ‘x’ columns  -h “header” Assigns “header” value as the report header  -t Does not print the header and top/bottom margins  -d Double spaces the output file  -n Denotes all line with numbers  -l page length Defines the lines (page length) in a page. Default is 56  -o margin Formats the page by the margin number |  |
| lp <filename>  or  lpr <filename> | Sends the file to the printer to print | I don’t have a printer |
| sudo apt–get install <package\_name> | Install a package on your system  Note: Only works on debian based distros |  |
| mail -s “<Subject>” –account “<receiver\_email\_id>” | Sends an email via terminal |  |
| rm -rf | removes a file  -r: remove the files in a directory recusively  -f: removes them forcefully |  |
| User Commands | | |
| sudo addUser <username> | add a new user |  |
| sudo passwd <username> | change the passwd of the user |  |
| sudo userdel -r <username> | delete the user |  |
| sudo passwd -l <username> | remove the password of the user |  |
| sudo usermod -a -G “<list\_of\_groups>” <username> | add new groups to the user.  Tip: You can check the default group in the file /etc/group |  |
| sudo deluser <username> <group> | Remove a user from a group |  |
| finger | give the information on all users |  |
| finger <username> | Gives the details the user |  |
| File system Commands | | |
| cat <file> | Print the file content in stdout |  |
| cd <directory> | Change the working directory |  |
| cp <input\_file> <output\_file> | Copy the file content from one file to another |  |
| file <filename> | Identifies the file type based on its contents |  |
| find <filename>  or  find <dir> | finds the file or directory |  |
| head <filename> | prints the first few lines of a file |  |
| tail <filename> | prints the last few lines of a file |  |
| ls <directory> | prints the contents of the directory |  |
| mkdir <directory> | make a new directory |  |
| more <filename> | Pages through the file contents one screenful at a time |  |
| pwd | prints the current working directory |  |
| rm <filename> | remove the file |  |
| rmdir <dirname> | Removes an empty directory |  |
| whereis <filename> | shows the location of the command’s binary, source, and man pages |  |
| which <filename> | Shows the location of the file in your path |  |
| df | Shows the disk usage |  |
| du | Show the disk usage of the sub-directories |  |
| mount | Shows the mounted filesystems |  |
| mount -t <file\_system> <device\_to\_mount> <mount\_location> | Mount the device to a specific location | no output generated for successful execution.  Use lsblk ot verify |
| umount <mounted\_device> | Removes a mounted drive | no output generated for successful execution. Use lsblk to verify |

**References:**

**Section (a)**

[**https://www.geeksforgeeks.org/linux-file-hierarchy-structure/**](https://www.geeksforgeeks.org/linux-file-hierarchy-structure/)

[**https://www.guru99.com/file-permissions.html**](https://www.guru99.com/file-permissions.html)

**Environment Variables:** [**https://www.guru99.com/linux-environment-variables.html**](https://www.guru99.com/linux-environment-variables.html)

**Section (b)**

**Basic Commands** [**https://www.guru99.com/must-know-linux-commands.html**](https://www.guru99.com/must-know-linux-commands.html)

Process Commands: [**https://www.guru99.com/managing-processes-in-linux.html**](https://www.guru99.com/managing-processes-in-linux.html)

User Commands: [**https://www.guru99.com/linux-admin.html**](https://www.guru99.com/linux-admin.html)

**or** [**https://www.tutorialspoint.com/unix/unix-user-administration.htm**](https://www.tutorialspoint.com/unix/unix-user-administration.htm)

File Commands: [**https://www.tutorialspoint.com/unix/unix-file-system.htm**](https://www.tutorialspoint.com/unix/unix-file-system.htm)

| **On time Submission(2)** | **Knowledge of Topic(4)** | **Implementation and Demonstraion(4)** | **Total (10)** |
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| **Signature of Faculty** |  | **Date of Submission** |  |