**Rajagiri School of Engineering and technology, Cochin**

**Department of Computer Science and Engineering**

### B.Tech S4 CSE KTU - 2020

CS232 : Free and Open Source Software Lab

## **Lab Cycle**

## **List of Experiments**

**Section No: 1 - Linux Commands**

1. Familiarize with basic Linux commands for directory and file operations - [pwd, ls, cd, mkdir, rmdir, rm, touch, cp, mv, cat, find, sort, wc]

2. Familiarize with Linux commands for operations such as redirection >, pipes |, filters, job control, changing ownership/permissions of files/links/directory - [chmod, kill, pkill, ps, top, pstree, renice, pidof]

3. Familiarize with advanced linux commands – [grep, wget, ssh]

**Section No: 2 - Shell Programming**

4. Write a shell script to show various system configuration like:

1. Currently logged user's login name
2. Your current shell
3. Your home directory
4. Your operating system type
5. Your current working directory
6. Number of users currently logged in

5. Write a shell script to show various system configurations like:

1. Your OS and version, release number, kernel version
2. All available shells
3. Computer CPU information like processor type, speed etc
4. Memory information
5. Hard disk information like size of hard-disk, cache memory, model etc
6. File system (Mounted)

6. Write a shell script to implement a menu driven calculator with following functions

1. Addition

2. Subtraction

3. Multiplication

4. Division

5. Modulus

7. Write a script called addnames that is to be called as follows:

./addnames ulist username

Here ulist is the name of the file that contains a list of user names and username is a particular student's username. The script should:

1. check that the correct number of arguments was received and print a message, in case the number of arguments is incorrect
2. check whether the ulist file exists and print an error message if it does not
3. check whether the username already exists in the file. If the username exists, print a message stating that the name already exists. Otherwise, add the username to the end of the list.

**Section No: 3 - GIT**

8. Familiarize with Version Control System setup and usage using GIT. Try the following features.

1. Creating a repository
2. Checking out a repository
3. Adding content to the repository
4. Committing the data to a repository
5. Updating the local copy
6. Revert

**Section No: 4 - Text Processing**

9. Flipkart organized 3 days of discount sale. A file stores the details of the sales of mobiles on these days. Process the recorded data using AWK to perform the following analysis:

1. Display the day on which maximum no: of mobiles were sold. Also display the total number of mobiles sold on that day.
2. Display the total number of mobiles sold by all brands on Tuesday. Hence determine the brands that sold more than 50 mobiles on Tuesday.
3. Display the name of the brands which sold more than 250 mobiles in total.
4. Display the total number of mobiles sold by all brands. Hence determine the brand which sold least number of mobiles during the sale.
5. Display the days in which the brand Sony sold more than 50 mobiles.

|  |  |  |  |
| --- | --- | --- | --- |
| **Brand** | **Monday** | **Tuesday** | **Wednesday** |
| Samsung | 100 | 60 | 140 |
| Asus | 120 | 10 | 70 |
| Sony | 130 | 80 | 30 |
| LG | 90 | 40 | 110 |
| Oppo | 50 | 30 | 150 |

10. Perform the analysis mentioned in question No: 7 using Perl.

**Section No: 5 – PHP & MySQL**

11. Familiarize with Running PHP after setting up a LAMP stack. Create a table custbalance with attributes accnum, cusname, curbalance, acctype. Create a table custlogin with attributes accnum, PIN. Create webpages to perform the following operations:

1. Insert the details of a customer.
2. Deposit Amount
3. Withdraw Cash.
4. Display the details of all the customers with a current balance less than a given amount.

**Section No: 6 - GUI Programming**

12. Create scientific calculator using Gambas.

**Section No: 7 – Network Configuration**

13. Familiarize with ifconfig command to set up the complete network interface by configuring services such as gateway, DNS, IP tables etc. Perform following operations:

1. Display the current IP address of the system.
2. Change the current IP address of the system to 192.168.64.86.
3. Display the available network interfaces and bring one of them down/up.
4. Change the default gateway. Reset the same.
5. Change your DNS servers to 8.8.8.8 and 8.8.4.4
6. Display the details of a given network interface.
7. Change the netmask of a given network interface to 255.255.255.255
8. Change the broadcast address of a given network interface to 172.16.25.98

## **Home Assignments**

1. Develop a Shell script which starts on system boot up and kills every process which uses more than a specified amount of memory or CPU.

2. Familiarize with Virtualisation environment (e.g., xen, kqemu, virtualbox or lguest) to test applications, new kernels and isolate applications. It could also be used to expose students to other alternate OS such as freeBSD

3. Familiarize with Compiling from source : learn about the various build systems used like the auto\* family, cmake, ant etc. instead of just running the commands. This could involve the full process like fetching from a cvs and also include autoconf, automake etc.,

4. Familiarize with Kernel configuration, compilation and installation : Download / access the latest kernel source code from kernel.org, compile the kernel and install it in the local system. Try to view the source code of the kernel.

5. Familiarize with Installing various software packages. Either the package is yet to be installed or an older version is present. The student can practice installing the latest version. (Internet access is needed).

* Install samba and share files to windows
* Install Common Unix Printing System (CUPS)

6. Familiarize with packet management system. Given a set of RPM or DEB, build and maintain, and serve packages over http or ftp. Configure client systems to access the package repository.

**Lab in-charge**

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