COLLEGE OF ENGINEERING CHENGANNUR
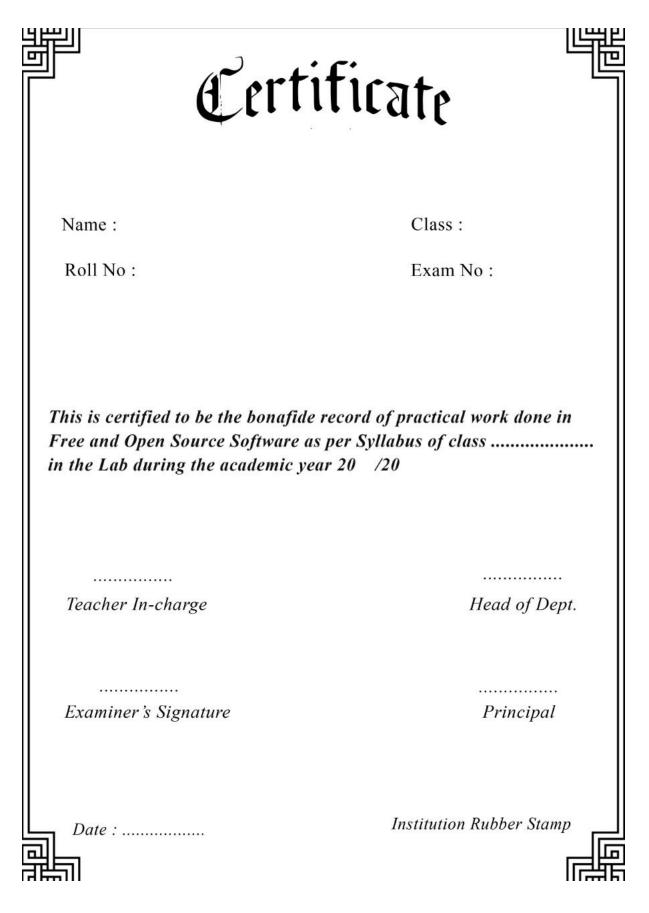
FREE AND OPEN SOURCE SOFTWARE LAB REPORT

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Certificate

Name :   Class :

Roll No :   Exam No :

**This is certified to be the bonafide record of practical work done in Free and Open Source Software as per Syllabus of class ....
in the Lab during the academic year 20   /20**

....

Teacher In-charge   *Head of Dept.*

....

Examiner's Signature   *Principal*

Date : ....   *Institution Rubber Stamp*

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EXPERIMENT 1

Linux Commands

pwd

This command prints the location of your current working directory. It's important to know actually where you're before going to a parent or sub directories.

Ls

ls is one of the most used basic linux commands, used to **print** contents of a directory, by default it lists contents of current working directory(**pwd**).

File and directory manipulation commands

- **mkdir** : Used to create a directory if not already exist. It accepts directory name as input parameter

- **rm** : Used to remove files or directories
.
- **cat** : It is generally used to concatenate the files. It gives the output on the standard output

- **mv** : Used to move the files or directories. This command's working is almost similar to *cp* command but it deletes copy of file or directory from source path.

Extract,sort and filter commands

- **grep** : This command is used to search for the specified text in a file.

- **sort** : This commands is used to sort the contents of files.

- **wc** : Used to count the number of characters, words in a file.

cut : Used to cut a specified part of a file

Basic terminal navigation commands

- **ls** : To get the list of all the files or folders.
- **cd** : Used to change the directory.
- **du** : Show disk usage.
- **pwd** : Show the present working directory.
- **man** : Used to show the manual of any command present in Linux.
- **rmdir** : It is used to delete a directory if it is empty.

EXPERIMENT 2

CGPA CALCULATION

- Computing CGPA requires to download the PDFs of the results
- The file containing register number and names of students of our class
- Form a pdf containing register number and marks of all courses of students as one per line
- Then the pdf file is compiled through the c program to get file containing register number and CGPA of students as one per line
- This file is joined with the file containing the register number and marks with the existed file to form a final form of CGPA list of students in our class.

Cgpa calculation:

https://github.com/ceccs17d50/cs232/tree/master/task%202

EXPERIMENT 3

Networking

3.1 ifconfig
- Firstly this task is performed by connecting the system into hub which is provided using an interconnecting cable
- Then the system is connected into the common server using the command :
- // sudo ifconfig etho
- Then system are interconnected to each other using ping command
- Then basic linux commands can be disabled from the network interface using the command

//sudo ifconfig etho down

//sudo ifconfig etho up

3.2 route

route manipulates the kernel's IP routing tables. Its primary
use is to set up static routes to specific hosts or networks
via an interface after it has been configured with the ifconfig
program.
Display details about current routing table

EXPERIMENT 4

FTP usage and commands

FTP is the simplest and most familiar file transfer protocol that exchanges files between a local and remote computer.Linux and Unix operating systems have built-in command line prompts you can use as FTP clients for making an FTP connection.

Connect to <server>
ftp <server>
Download _le from server
get <file>
Download multiple _les from server
mget <directory>
Upload _le to server
put <file>
Upload multiple _les to server
mput <server>
Change remote working directory
cd <directory>
Change local working directory
lcd <directory>
Change _le permissions of remote _le
chmod [options] [files]
Delete remote _le
delete <filename>
Delete multiple remote _les
mdelete <files>
Remove directory on remote server
rmdir <directory>
Exit ftp session
exit

EXPERIMENT 5

SSH

SSH or Secure SHell is now only major protocol to access the network devices and servers over the internet. SSH was developed by SSH Communications Security Ltd., it is a program to log into another computer over a network, to execute commands in a remote machine, and to move files from one machine to another.

Connect to a remote server
ssh user@remoteip

Connect to a 14.139.189.217 as cs17d50
$ ssh cs17d50@14.139.189.217

List remote directory
$ ls

Change directory to cs232
$ cd cs232

List contents of remote directory
$ ls

Change directory to parent directory
cd .
.
Create empty file named samplefile
touch samplefile

Remove file named samplefile
rm samplefile

Create empty directory named sampledirectory
mkdir sampledirectory

Remove directory named sampledirectory
rm -r sampledirectory

EXPERIMENT 6

RSYNC

- Rsync is a file synchronisation and file transfer program for unix-like systems that can be minimise network data transfer by using a form of delta encoding such that only the differences between and source and actually transmitted.
- The command used for rsync is: rsync mydata user@remote-host:/data/

Rsync is famous for its **delta-transfer algorithm**, in which it copies only the differences between the source files present in the local-host and the existing files in the destination or the remote host.

Syntax of rsync:

```
rsync [options] source [destination]
```

EXPERIMENT 7

SCP

The scp command in linux is used to copy files over a network connection in a secure way . The SCP command provides security by asking for passwords and passphrases before the data can be copied. The SSH (Secure Shell) system is used to transport data between two machines by the SCP command.

- It is another basic command –line tool for secure copying between two machines.
- Scp is the secure analogue of the rcp command .
- To copy a file to a host we use the command:scp myfile user@host:directory/target

EXPERIMENT 8

LINUX INSTALLATION

Linux is the foundation of thousands of open source operating systems designed to replace Windows and Mac OS. It is free to download and install on any computer. Because it is open source, there are a variety of different versions, or distributions, available developed by different groups. Follow this guide for basic instructions on how to install any version of Linux, as well as specific instructions for some of the most popular ones.

- **Steps followed**
- This task is performed with the help of the CD provided.

After the copying of required OS files localization settings like time, timezone, language, etc.. are configured. The installation interface might provide options for the creation of additional user accounts for the installed operation system. The password for the root user might be configured during installation, or set to a default password.

The disc was inserted into the CD drive of the system and the system was rebooted from the disk.
- **Then the procedures of installation was performed**
- **The each steps of installation was recorded using the mobile cameras**
- **Once the installation is performed remove the disc properly.**

Images:
https://github.com/ceccs17d50/cs232/tree/master/6.linux_installation

EXPERIMENT 9

FTP

- **FTP server can be created using any FTP server application.**

- **This server was created using vsftpd (very secure FTP daemon).**

- **Vsftpd server can be started using # vsftpd.**

- **FTP is used to transfer files across devices.**

- **Remote file transfer can be done through any FTP clients in conjunction with an FTP server.**

- **Linux has a builtin FTP client, ftp.To access FTP server on an IP**
    $ ftp <serverip>

EXPERIMENT 10

Package Management

In linux, programs are provided through package managers. These packages undergo customizations and testings so the the software program is completely compatible with the installed linux distribution. These packages are tested and deployed by the distribution mainters.
Each linux distribution has their own package managers. For example Debian and Ubuntu uses apt, apt-get, deb, while Fedora and Redhat uses rpm, yum, dnf.

Steps Followed

`Apt get install package` - **Installs the package(s) specified, along with any dependencies.**

- `apt-get remove package-name(s)` - **Removes the package(s) specified, but does not remove dependencies.**
- `apt-get autoremove` - **Removes any** *orphaned* **dependencies, meaning those that remain installed but are no longer required.**
- `apt-get clean` - **Removes downloaded package files (.deb) for software that is already installed.**
- `apt-get purge package-name(s)` - **Combines the functions of** `remove` **and** `clean` **for a specific package, as well as configuration files.**
- `apt-get update` - **Reads the** `/etc/apt/sources.list` **file and updates the system's database of packages available for installation. Run this after changing** `sources.list`.
- `apt-get upgrade` - **Upgrades all packages if there are updates available. Run this after running** `apt-get update`.

EXPERIMENT 11

PERL

Perl is a family of script programming languages that are similar in syntax to the C language, including Perl 5 and Perl 6. Perl is an open source, general-use, interpreted language.

In general, Perl is easier to learn and faster to code in than the more structured C and c++ languages. It is often used for developing common gateway interface programs because it has good text manipulation facilities, although it also handles binary file.

Program to print two numbers

```perl
#!/usr/bin/perl

use strict;
use warnings;

print "Enter two numbers \n";
$a = <>;
$b = <>;
my $sum = $a+$b;
print "Sum = $sum\n";
```

EXPERIMENT 12

LAMP Stack

Process and steps done

Apache web server can be installed using the command **//sudo apt install apache2**.

Make sure firewall allows both http and https we use the command sudo ufw allow in apache full.

In order to install MySQL we use the command **sudo apt install Mysql-server**

To remove some dangerous defaults and to lockdown access to our database system we use the command **sudo mysql-secure installation**

Now you have to set root password ,after that **sudo mysql** which will take us to the mysql server

The final component PHP which is a server side scripting language can be installed using the command **sudo apt-get install php libapache2-mod-php-mcrypt php-mysql.**

EXPERIMENT 13

KERNAL Compilation

Linux kernel is an open source kernal. It's code can be obtained through versioning systems like git or directly downloaded as archive from https://kernel.org/.

It is then extracted to a convenient directory. For the con_guration and compilation of the kernel certain packages are required.
 These can be installed with

**# apt install git fakeroot build-essential ncurses-dev \
xz-utils libssl-dev bc flex libelf-dev bison**

It can be then con_gured manully using

$ make menuconfig

Configuring the kernel manually can cause system crashes. The configuration can be applied by copying the current system kernel configuration from /boot directory.
The kernel can be compiled by

$ make

The kernel modules can compile by

$ make modules_install

The kernel can be installed by

 # make install

EXPERIMENT 14

OWN WEB PAGES ON SERVER

The server was configured   to use the home directory of the user account as hosting
 webpages .so creating an index.html file into the home directory of the student in the
server was enough to start a webpage.

EXPERIMENT 15
DETAILED REPORT

WGET

- Wget command is a linux command line utility that helps to download the files from the web.
- We can download the files frm web servers using HTTP,HTTPS,and FTP protocols.
- We can use Wget in scripts

Wget is a non-interactive program so that it will run in the background without hindering the current process.

Wget can follows links in HTML and XHTML pages and create local versions of remote web sites,fully recreating the directory structure of the orginal site.This is sometimes referred to as recursive downloading.

Steps to followed:

To download wget:

2.To simply download a webpage:

wget http://example.com/sample.php

3.To download the file in background:

wget –b http://www.example.com/samplepage.php

4.To overwrite the log wile of the wget command:

Wget htttp://www.example.com/filename.txt -o /path/filename.txt

5.To resume a partially downloaded file

Wget –c http://example.com/samplefile.tar.gz

6.To try a given number of times:

Wget - -tries=10 http://example.com /samplefile.tar.gz

RESULT

Script started on 2019-05-12 17:36:07+0530
]0;shabeerdas@shabeerdas-VirtualBox:
~[01;32mshabeerdas@shabeerdas-VirtualBox[00m:[01;34m~[00m$ wget
https://www.edureka.co/blog/category/big
g-data-analytics/
--2019-05-12 17:36:43--
https://www.edureka.co/blog/category/big-data-analytics/
Resolving www.edureka.co (www.edureka.co)... 13.35.227.47, 13.35.227.85,
13.35.227.10, ...
Connecting to www.edureka.co (www.edureka.co)|13.35.227.47|:443...
connected.
HTTP request sent, awaiting response... 200 OK
Length: unspecified [text/html]
Saving to: 'index.html.1'

index.html.1   [<=>   ]   0 --.-KB/s
index.html.1   [<=>   ] 16.14K 75.5KB/s
index.html.1   [<=>   ] 41.57K 98.2KB/s
index.html.1   [<=>   ] 94.25K   148KB/s
index.html.1   [<=>   ] 100.76K 157KB/s   in 0.6s

2019-05-12 17:36:46 (157 KB/s) - 'index.html.1' saved [103176]

]0;shabeerdas@shabeerdas-VirtualBox:
~[01;32mshabeerdas@shabeerdas-VirtualBox[00m:[01;34m~[00m$ wget
-O[KO[Ko[Ko[KO test.zip https://www.edureka.co/blog/
/category/big-data-analytics/
--2019-05-12 17:38:58--
https://www.edureka.co/blog/category/big-data-analytics/
Resolving www.edureka.co (www.edureka.co)... 13.33.193.220, 13.33.193.4,
13.33.193.43, ...
Connecting to www.edureka.co (www.edureka.co)|13.33.193.220|:443...
connected.
HTTP request sent, awaiting response... 200 OK
Length: unspecified [text/html]
Saving to: 'test.zip'

```
test.zip          [<=>            ]      0  --.-KB/s
test.zip          [ <=>           ] 48.16K  160KB/s
test.zip          [ <=>           ] 100.76K  220KB/s   in 0.5s
```

2019-05-12 17:39:00 (220 KB/s) - 'test.zip' saved [103176]

]0;shabeerdas@shabeerdas-VirtualBox:
~[01;32mshabeerdas@shabeerdas-VirtualBox[00m:[01;34m~[00m$ wget
https://www.edureka.co/cloud-computing-c
certification-courses https://www.edureka.co/devops-certification-courses
--2019-05-12 17:41:27--
https://www.edureka.co/cloud-computing-certification-courses
Resolving www.edureka.co (www.edureka.co)... 54.192.151.85,
54.192.151.110, 54.192.151.41, ...
Connecting to www.edureka.co (www.edureka.co)|54.192.151.85|:443...
connected.
HTTP request sent, awaiting response... 200 OK
Length: 381642 (373K) [text/html]
Saving to: 'cloud-computing-certification-courses'

```
    cloud-com   0%[               ]      0  --.-KB/s
    cloud-comp  11%[=>            ] 42.38K  133KB/s
   cloud-compu  38%[======>        ] 144.52K  275KB/s
  cloud-comput  60%[===========>    ] 224.52K  275KB/s
  cloud-computi 98%[==================> ] 368.52K  325KB/s
cloud-computing-cer 100%[==================>] 372.70K  329KB/s   in
1.1s
```

2019-05-12 17:41:30 (329 KB/s) - 'cloud-computing-certification-courses'
saved [381642/381642]

--2019-05-12 17:41:30--
https://www.edureka.co/devops-certification-courses
Reusing existing connection to www.edureka.co:443.
HTTP request sent, awaiting response... 200 OK
Length: 338991 (331K) [text/html]
Saving to: 'devops-certification-courses'

```
    devops-ce   0%[               ]      0  --.-KB/s
```

```
     devops-cer  12%[=>              ]  42.38K  201KB/s
      devops-cert  48%[========>        ] 160.52K  297KB/s
      devops-certi  87%[================>  ] 288.52K  332KB/s
devops-certificatio 100%[===================>] 331.05K  375KB/s    in 0.9s
```

2019-05-12 17:41:32 (375 KB/s) - 'devops-certification-courses' saved [338991/338991]

FINISHED --2019-05-12 17:41:32--
Total wall clock time: 4.6s
Downloaded: 2 files, 704K in 2.0s (349 KB/s)
]0;shabeerdas@shabeerdas-VirtualBox:
~[01;32mshabeerdas@shabeerdas-VirtualBox[00m:[01;34m~[00m$ exit
exit

Script done on 2019-05-12 17:41:36+0530

15.1

GREP
The grep filter searches a file for a particular pattern of characters,and displays all lines that contain that pattern.The pattern that is searched in the fileis referred to as the regular expression.

1.case insensitive search:
The - i option enables to search for a string cade insensitively in the give file.It matches the words like ''unix" Unix"UNIX"

$ grep - i "UNIX" ab.txt

2.Displaying the count of number of matches
We can find the number of lines that matches the given string/pattern.

$ grep - c "unix" abfile.txt

3. Checking for the whole words in a file:
$grep –w "unix" abfile.txt

4.Displaying only the matched pattern:

$ grep - o "unix" abfile.txt

5.show the number while displaying the output using grep –n:

$ grep – n "unix" abfile.txt

6.Matching the lines that starts with a string:

$ grep "^unix" abfile.txt

15.2

CURL

Curl is a command line tool to transfer data to or from a server,using any of the supported protocols(HTTP,FTP,SFTP..).curl is powered by libcurl.This tool is preferred for automation,since it is designed to work with out user interaction.curl can transfer multiple file at once.

Curl https://www.sample.org

- **- o :saves the downloaded file on the local machine with the name provided in the parameters.**
- **Curl – o [file _name] [URL..]**

- O: This option downloads the file and saves it with the same name absinthe URL.
$ curl - O [URL...]

- **-c : This option resumes download which has been stopped due to some reason.This is useful when downloading large files and was interrupted.**

$ curl – C – [URL..]

- u :curl also provides options to download files from user authenticated FTP servers.
Curl –u {username}:{password} [FTP_URL]

RESULT

Script started on 2019-05-12 18:19:54+0530
]0;shabeerdas@shabeerdas-VirtualBox:
~[01;32mshabeerdas@shabeerdas-VirtualBox[00m:[01;34m~[00m$ curl -o
https://www.edureka.co/big-data-and-a
analytics
curl: no URL specified!
curl: try 'curl --help' or 'curl --manual' for more information
]0;shabeerdas@shabeerdas-VirtualBox:
~[01;32mshabeerdas@shabeerdas-VirtualBox[00m:[01;34m~[00m$ curl -O
https://www.edureka.co/big-data-and-a
analytics
** % Total   % Received % Xferd Average Speed   Time   Time   Time Current**

						Dload	Upload	Total	Spent	Left	Speed	

0	0	0	0	0	0	0	0	--:--:--	--:--:--	--:--:--	0	
0	0	0	0	0	0	0	0	--:--:--	--:--:--	--:--:--	0	
0	0	0	0	0	0	0	0	--:--:--	0:00:01	--:--:--	0	
73	375k	73	275k	0	0	103k	0	0:00:03	0:00:02	0:00:01	103k	
100	375k	100	375k	0	0	129k	0	0:00:02	0:00:02	--:--:--	129k	

]0;shabeerdas@shabeerdas-VirtualBox:

~[01;32mshabeerdas@shabeerdas-VirtualBox[00m:[01;34m~[00m$ curl -o
app https://www.edureka.co/big-data-a

and-analytics

% Total		% Received	% Xferd	Average Speed		Time	Time	Time	Current	
				Dload	Upload	Total	Spent	Left	Speed	
0	0	0	0	0	0	0	0	--:--:--	--:--:--	--:--:--	0
0	0	0	0	0	0	0	0	--:--:--	--:--:--	--:--:--	0
0	0	0	0	0	0	0	0	--:--:--	0:00:01	--:--:--	0
34	375k	34	130k	0	0	56494	0	0:00:06	0:00:02	0:00:04	56470
94	375k	94	354k	0	0	106k	0	0:00:03	0:00:03	--:--:--	106k
100	375k	100	375k	0	0	111k	0	0:00:03	0:00:03	--:--:--	111k

]0;shabeerdas@shabeerdas-VirtualBox:

~[01;32mshabeerdas@shabeerdas-VirtualBox[00m:[01;34m~[00m$ curl
ifci=[K[K[Kconfig.mel[KL[KL[K/ip

116.68.104.177]0;shabeerdas@shabeerdas-VirtualBox:

~[01;32mshabeerdas@shabeerdas-VirtualBox[00m:[01;34m~[00m$ exit
exit

Script done on 2019-05-12 18:23:02+0530