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**FREE AND OPEN SOURCE LAB RECORD**

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- (DETAILED REPORT ON ASSIGNED TASK)

10/02/2019 P.NO:1

**TASK. 1**

**LINUX COMMANDS**

Linux is an operating system’s kernel. Linux is free and open source, since we can change anything in linux. The major linux commands are:

* **pwd**: To know which directory you are in.
* **ls:** It let us know what files are in the directory you are in.
* **ls –a**: It enables to see all the hidden files in the directory.
* **Cat**: Use the cat commands to display the contents of a file.
* **Ping**: To check your connection to a server.
* **rm**: To remove or delete a file.
* **grep**: To search in the file.

Linux terminal is its important part. Its distros came in GUI( Graphical User Interface ), but basically linux has a CLI( Command Line Interface ) and using GUI is nice and really simple.

11/02/2019 P.NO:2

**TASK .2**

**SCRIPTING TASK**

A Task to calculate the CGPA of all students of S4 ,D batch in s1 and s2 examinations.

* For this task we need to change pdf file of the downloaded data i.e., s1 results from ktu sites, to text file .
* Select the computer science students using "grep" command.
* Change the grade values to points using the command

**sed -i 's/(grade)/ point /g'** and save in a new file format.

* Calculate the SGPA of all students.
* Paste the Name, Register no: ,SGPA in a file.
* Do the same to obtain s2 result and its SGPA.
* Paste the Register no and s2's SGPA in a file.
* Add the two SGPA results and get CGPA of each students by taking its average.
* An "echo" command is used here to display the output as per Name,Register no, and CGPA of each student.
* We can view our CGPA calculation using the linux command: cat filename.txt

This task is nothing but gives us thorough knowledge in linux commands and its usage.

25/02/2019 P.NO:3

**TASK .3**

**NETWORKING**

This task stresses on setting up a network using network hub.

A hub is a common connection point for devices in a network or It is a device commonly used to connect segments of a LAN.

* **if** **config**: we use the interface configuration mode for the setting , viewing, and testing the configuration of software features on a specefic interface. Its also used to configure the system's kernel - user interfaces.
* **ping**: As we said earlier in task 1.,it is a linux command used to check our connection to a server.
* **route:** It is a virtual appliance that n passes information between 2 or more packet - switched computer networks - analyzing a given data packet's destination IP address, calculating the best way for it to reach that destination and then forwarding it accordingly.
* **Netmask :**  netmask are a shorthand for referring to ranges of consecutive IP addresses in the Internet Protocol

On this task we are asked to establish a connection between two devices. And on effective lab hours ,connected two computers route to network hub and connection established.

17/03/2019 P.NO:4

**TASK NO. 4**

**SSH, rsync, SCP (TRANSFERRING FILE S)**

As we know that there are lots of linux commands. In this task it is about transferring files using linux commands.

* **SSH** or Secure shell is a command used for file transferring.
* For implementation: **cs17d09 @ 192.168.0.30**
* Another command used is **rsync** ,which is used for transferring and synchronizing files.
* **SCP** or Secure Copy is command line utility that allows you to securely copy files and directories between two locations.With SCP . you can copy a file or direcrory from:

1. Your local system to a remote system.
2. A remote system to your local system.
3. Between two remote systems from your local system
4. SCP requires password or paraphrase for authentificaion.
5. syntax: **scp<source><Destination>**

* rsync is the syntax used for sync data transfer.

**-a<source><Destination>**

This task is pretty much standardized one with effective file transfer commands like SSH , rsync , SCP.

17/03/2019 P.NO:5

**TASK NO .5**

**FTP COMMANDS**

FTP or File Transfer Protocol is used for file transferring.It is the simplest file transfer protocol to exchange file to and from a remote computer or network

* To establish FTP,we need to install **ftp sudo apt install vsftpd**.
* Add a user by **adduser username.**
* **sudo** **mkdir**: To make a new directory for file transfer.
* **sudo ls**: To show file in new directory.
* **sudo nano**: Exit
* **echo**: As mentioned in task 2, its used to show the file created to be in particular file list of that particular directory

So. ftp,in other words is a file transfer between client and server on a computer network.

and by extracting this information establishing an ftp server is also a task assigned for us.

Though ftp commands really useful to steeing up such a server.

07/04/2019 P.No:6

TASK NO. 6

LINUX INSTALLATION

This task was about to install a linux in our system using a DVD provided.

This task was quite a handful. To install a linux was not so tough but still, we need to care about various things.

* The DVD provided was **Fedora** **14** .
* First,insert the DVD.
* Click on the boot menu(F12).
* Click on the install to hard drive menu.
* Select the time zone and continue.
* Enter the root password for the system.
* Then choose the mode of installation to which installation has to be done.
* We can make further changes in this step.
* Wait till the installation completes.
* Again reboot the computer as soon as the installation finishes.
* click on first boot wizard and accept license agreement.
* click to forward and set date and time.
* Then login and enter your password.
* And fedora 14 is successfully installed.

This is how installation can be done.

11/04/2019 P.NO:7

**TASK NO .7**

**FTP SERVER**

This task is about to set up ftp and http server. since http server is my assigned task , the detailed report will be pinned in at last part of my lab report.

Ftp was set up using following ways:

* Install ftp using: **sudo apt inst all vsftp**
* A user can be added using: adduser username
* sudo mkdir,sudo ls,sudo nano , echo all mentioned in task 5 are used here.

Ftp and http servers are widely used around the world.

29/04/2019 P.No:8

**TASK NO .8**

**FURTHER TASKS**

This task is to implement or to familiarize with:

1. **Package Management**
2. **Perl**
3. **Lamp Stack**
4. **Kernel Compilation**
5. Package Management:

* To update the package **apt update** ,and to upgrade **apt upgrade**
* apt search<search string> -to search package
* apt install<package.name> -to install package
* apt remove<packagename> -to remove package

B. Pearl:

* **sudo apt install** **perl** -used to install perl.
* Using "use strict" and "use warnings" added two numbers.

C. Lamp Stack:

* **sudo apt** **install apache2** - used to install lamp
* sudo systemctl enable apache2 - used to enable the lamp.
* Then install sudo mysql.
* sudo service apache2 restart - to restart
* sudo nano/var/www/html/info.php firefox localhost

D. Kernel Compilation:

* Install using sudo apt install git fakeroot

tar xvzf linux -5.0.9.tar.xz

* cp/boot/config-4.19.0-kali 4- and 64 config -used to copy this config.
* make menu config - to configure menu
* make modules -install - used to install module.

Thus four further tasks is being performed and the output is obtained.

09/05/2019 P.No:10

**TASK NO. 9**

**WEBPAGE CREATION**

This task is about to create a webpage snd upoload all the tasks into that webpage.

The page has to be created using html file "index.html" which we can edit the file

A href tag is used to give link to those html files which were uploaded in the server.

Through this page all other code can be accessed.

11/04/2019 P.No:11

**TASK NO.10**

**DETAILED REPORT ON THE ASSIGNED TASK- HTTP SERVER**

HTTP or **Hyper Text Transfer Protocol** is the underlying protocol used by the world wide web and this protocol is application -layer protocol .It uses a client - server model where the web browser is the client and communicates with the web server that hosts the website.

The brower uses HTTP ,which is carried over TCP/IP to communicate to the server and retreive Web content for the user. HTTP has been rapidly adopted over the internet because of its simplicity.It is a stateless and connectionless protocol.

A Basic HTTP request involves the following steps:

1. A connection to the HTTP server is opened.
2. A request is sent to the server.
3. Some processing is done by the server.
4. A response from the server is sent back.
5. The connection is closed.

An http server code be like:

|  |
| --- |
| **# Example config file /etc/vsftpd.conf** |
|  | **#** |
|  | **# The default compiled in settings are fairly paranoid. This sample file** |
|  | **# loosens things up a bit, to make the ftp daemon more usable.** |
|  | **# Please see vsftpd.conf.5 for all compiled in defaults.** |
|  | **#** |
|  | **# READ THIS: This example file is NOT an exhaustive list of vsftpd options.** |
|  | **# Please read the vsftpd.conf.5 manual page to get a full idea of vsftpd's** |
|  | **# capabilities.** |
|  | **#** |
|  | **#** |
|  | **# Run standalone? vsftpd can run either from an inetd or as a standalone** |
|  | **# daemon started from an initscript.** |
|  | **listen=NO** |
|  | **#** |
|  | **# This directive enables listening on IPv6 sockets. By default, listening** |
|  | **# on the IPv6 "any" address (::) will accept connections from both IPv6** |
|  | **# and IPv4 clients. It is not necessary to listen on \*both\* IPv4 and IPv6** |
|  | **# sockets. If you want that (perhaps because you want to listen on specific** |
|  | **# addresses) then you must run two copies of vsftpd with two configuration** |
|  | **# files.** |
|  | **listen\_ipv6=YES** |
|  | **#** |
|  | **# Allow anonymous FTP? (Disabled by default).** |
|  | **anonymous\_enable=YES** |
|  | **#** |
|  | **# Uncomment this to allow local users to log in.** |
|  | **local\_enable=YES** |
|  | **#** |
|  | **# Uncomment this to enable any form of FTP write command.** |
|  | **#write\_enable=YES** |
|  | **#** |
|  | **# Default umask for local users is 077. You may wish to change this to 022,** |
|  | **# if your users expect that (022 is used by most other ftpd's)** |
|  | **#local\_umask=022** |
|  | **#** |
|  | **# Uncomment this to allow the anonymous FTP user to upload files. This only** |
|  | **# has an effect if the above global write enable is activated. Also, you will** |
|  | **# obviously need to create a directory writable by the FTP user.** |
|  | **#anon\_upload\_enable=YES** |
|  | **#** |
|  | **# Uncomment this if you want the anonymous FTP user to be able to create** |
|  | **# new directories.** |
|  | **#anon\_mkdir\_write\_enable=YES** |
|  | **#** |
|  | **# Activate directory messages - messages given to remote users when they** |
|  | **# go into a certain directory.** |
|  | **dirmessage\_enable=YES** |
|  | **#** |
|  | **# If enabled, vsftpd will display directory listings with the time** |
|  | **# in your local time zone. The default is to display GMT. The** |
|  | **# times returned by the MDTM FTP command are also affected by this** |
|  | **# option.** |
|  | **use\_localtime=YES** |
|  | **#** |
|  | **# Activate logging of uploads/downloads.** |
|  | **xferlog\_enable=YES** |
|  | **#** |
|  | **# Make sure PORT transfer connections originate from port 20 (ftp-data).** |
|  | **connect\_from\_port\_20=YES** |
|  | **#** |
|  | **# If you want, you can arrange for uploaded anonymous files to be owned by** |
|  | **# a different user. Note! Using "root" for uploaded files is not** |
|  | **# recommended!** |
|  | **#chown\_uploads=YES** |
|  | **#chown\_username=whoever** |
|  | **#** |
|  | **# You may override where the log file goes if you like. The default is shown** |
|  | **# below.** |
|  | **#xferlog\_file=/var/log/vsftpd.log** |
|  | **#** |
|  | **# If you want, you can have your log file in standard ftpd xferlog format.** |
|  | **# Note that the default log file location is /var/log/xferlog in this case.** |
|  | **#xferlog\_std\_format=YES** |
|  | **#** |
|  | **# You may change the default value for timing out an idle session.** |
|  | **#idle\_session\_timeout=600** |
|  | **#** |
|  | **# You may change the default value for timing out a data connection.** |
|  | **#data\_connection\_timeout=120** |
|  | **#** |
|  | **# It is recommended that you define on your system a unique user which the** |
|  | **# ftp server can use as a totally isolated and unprivileged user.** |
|  | **#nopriv\_user=ftpsecure** |
|  | **#** |
|  | **# Enable this and the server will recognise asynchronous ABOR requests. Not** |
|  | **# recommended for security (the code is non-trivial). Not enabling it,** |
|  | **# however, may confuse older FTP clients.** |
|  | **#async\_abor\_enable=YES** |
|  | **#** |
|  | **# By default the server will pretend to allow ASCII mode but in fact ignore** |
|  | **# the request. Turn on the below options to have the server actually do ASCII** |
|  | **# mangling on files when in ASCII mode.** |
|  | **# Beware that on some FTP servers, ASCII support allows a denial of service** |
|  | **# attack (DoS) via the command "SIZE /big/file" in ASCII mode. vsftpd** |
|  | **# predicted this attack and has always been safe, reporting the size of the** |
|  | **# raw file.** |
|  | **# ASCII mangling is a horrible feature of the protocol.** |
|  | **#ascii\_upload\_enable=YES** |
|  | **#ascii\_download\_enable=YES** |
|  | **#** |
|  | **# You may fully customise the login banner string:** |
|  | **#ftpd\_banner=Welcome to blah FTP service.** |
|  | **#** |
|  | **# You may specify a file of disallowed anonymous e-mail addresses. Apparently** |
|  | **# (default follows)** |
|  | **#banned\_email\_file=/etc/vsftpd.banned\_emails** |
|  |  |
|  |  |
|  | **#** |
|  | **# You may restrict local users to their home directories. See the FAQ for** |
|  | **# the possible risks in this before using chroot\_local\_user or** |
|  | **# chroot\_list\_enable below.** |
|  | **#chroot\_local\_user=YES** |
|  | **#** |
|  | **# You may specify an explicit list of local users to chroot() to their home** |
|  | **# directory. If chroot\_local\_user is YES, then this list becomes a list of** |
|  | **# users to NOT chroot().** |
|  | **# (Warning! chroot'ing can be very dangerous. If using chroot, make sure that** |
|  | **# the user does not have write access to the top level directory within the** |
|  | **# chroot)** |
|  | **#chroot\_local\_user=YES** |
|  | **#chroot\_list\_enable=YES** |
|  | **# (default follows)** |
|  | **#chroot\_list\_file=/etc/vsftpd.chroot\_list** |
|  | **#** |
|  | **# You may activate the "-R" option to the builtin ls. This is disabled by** |
|  | **# default to avoid remote users being able to cause excessive I/O on large** |
|  | **# sites. However, some broken FTP clients such as "ncftp" and "mirror" assume** |
|  | **# the presence of the "-R" option, so there is a strong case for enabling it.** |
|  | **#ls\_recurse\_enable=YES** |
|  | **#** |
|  | **# Customization** |
|  | **#** |
|  | **# Some of vsftpd's settings don't fit the filesystem layout by** |
|  | **# default.** |
|  | **#** |
|  | **# This option should be the name of a directory which is empty. Also, the** |
|  | **# directory should not be writable by the ftp user. This directory is used** |
|  | **# as a secure chroot() jail at times vsftpd does not require filesystem** |
|  | **# access.** |
|  | **secure\_chroot\_dir=/var/run/vsftpd/empty** |
|  | **#** |
|  | **# This string is the name of the PAM service vsftpd will use.** |
|  | **pam\_service\_name=vsftpd** |
|  | **#** |
|  | **# This option specifies the location of the RSA certificate to use for SSL** |
|  | **# encrypted connections.** |
|  | **rsa\_cert\_file=/etc/ssl/certs/ssl-cert-snakeoil.pem** |
|  | **rsa\_private\_key\_file=/etc/ssl/private/ssl-cert-snakeoil.key** |
|  | **ssl\_enable=NO** |
|  |  |
|  | **#** |
|  | **# Uncomment this to indicate that vsftpd use a utf8 filesystem.** |
|  | **#utf8\_filesystem=YES** |

The syntax of http server is:

**Sudo apt-get install nginx** (-nginx is a web server used as http cache)

**Service nginx status** (check the server is running or not)

**Sudo gedit /etc / nginx / sites enabled /default** (in gedit a file is open)

**Sudo gedit /user / share / nginx / html /index.html** ( to edit the file)

To view the page:**127.0.0.1**

Then the gedit file get opened and necessary changes should be done. Its shown above in http codes.

* And the resulting page will be like:

