

FTP

Experiment : 3

Aim : To create and configure FTP Server

Description : FTP Server

File Transfer Protocol (FTP) is a TCP protocol for downloading files between computers. In the past, it has also been used for uploading but, as that method does not use encryption, user credentials as well as data transferred in the clear and are easily intercepted. So if you are here looking for a way to upload and download files securely. FTP works on a client/server model. The server component is called an FTP daemon. It continuously listens for FTP requests from remote clients. When a request is received, it manages the login and sets up the connection. For the duration of the session it executes any of commands sent by the FTP client.

Port No: 21

Package name: vsftpd

Configuration file: /etc/vsftpd.conf

Procedure:

1. Install the vsftpd - FTP Server Installation in the ubuntu operating system

```
$sudo apt install vsftpd
```

2. By default vsftpd is not configured to allow anonymous download. If you wish to enable anonymous download edit /etc/vsftpd.conf by changing:

```
$anonymous_enable=YES
```

3. During installation a ftp user is created with a home directory of /srv/ftp. This is the default FTP directory.

If you wish to change this location, to /srv/files/ftp for example, simply create a directory in another location and change the ftp user's home directory:

```
$sudo mkdir -p /srv/files/ftp
```

```
$sudo usermod -d /srv/files/ftp ftp
```

4. After making the change restart vsftpd:

```
$ sudo service vsftpd restart
```

5. User Authenticated FTP Configuration

By default vsftpd is configured to authenticate system users and allow them to download files. If you want users to be able to upload files, edit `/etc/vsftpd.conf`

```
$write_enable=YES
```

6. Now restart vsftpd:

```
$ sudo service vsftpd restart
```

7. Securing FTP

There are options in `/etc/vsftpd.conf` to help make vsftpd more secure.

```
$chroot_local_user=YES
```

```
$chroot_list_enable=YES
```

```
$chroot_list_file=/etc/vsftpd.chroot_list
```

8. After uncommenting the above options, create a `/etc/vsftpd.chroot_list` containing a list of users one per line.

9. Then restart vsftpd:

```
$sudo service vsftpd restart
```

10. To configure FTPS, edit `/etc/vsftpd.conf` and at the bottom add:

```
$ssl_enable=YES
```

11. Then check the vsftpd status

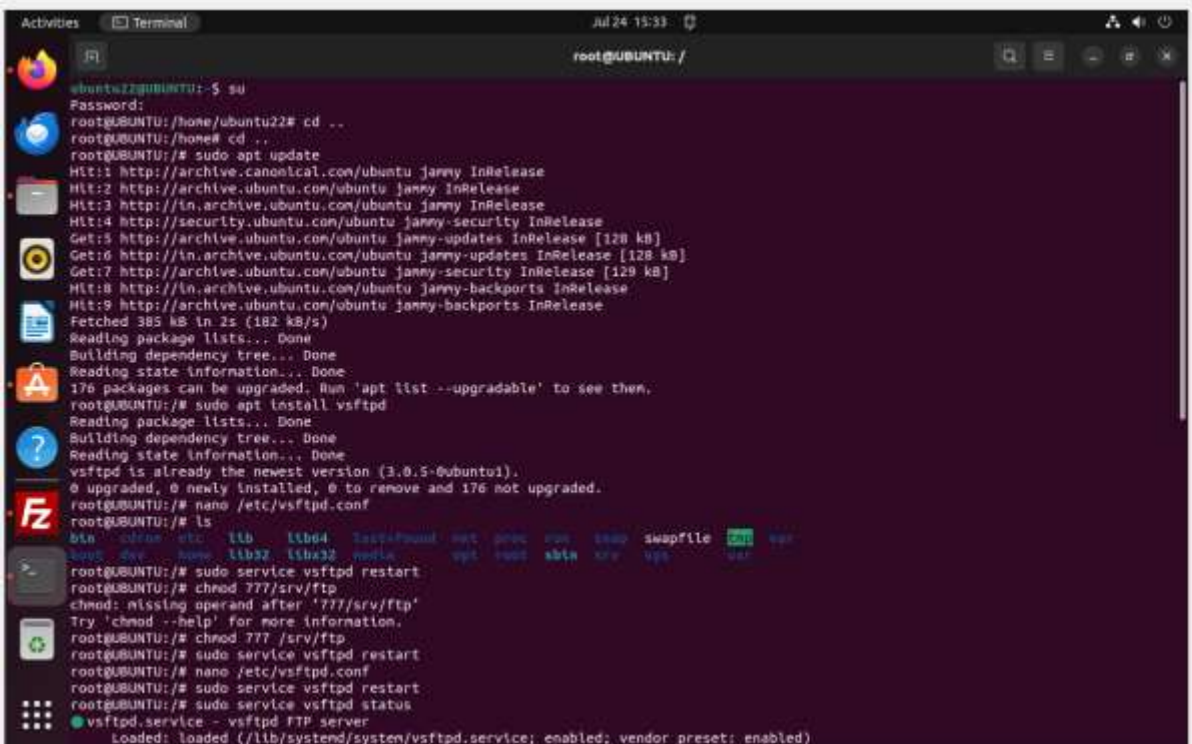
```
$sudo service vsftpd status
```

12. Now connect to ftp by the command

```
$ftp -p 192.168.234.128
```

13. Now install filezilla in ubuntu and open the filezilla and specify the ip address and port number of the ftp server then click connect

Result:

A terminal window titled 'Terminal' with a date and time of 'Jul 24 15:33'. The user is logged in as 'root@UBUNTU: /'. The terminal shows the following commands and output:

```
ubuntu22@UBUNTU:~$ su
Password:
root@UBUNTU:/home/ubuntu22# cd ..
root@UBUNTU:/home# cd ..
root@UBUNTU:/# sudo apt update
Hit:1 http://archive.canonical.com/ubuntu jammy InRelease
Hit:2 http://archive.ubuntu.com/ubuntu jammy InRelease
Hit:3 http://in.archive.ubuntu.com/ubuntu jammy InRelease
Hit:4 http://security.ubuntu.com/ubuntu jammy-security InRelease
Get:5 http://archive.ubuntu.com/ubuntu jammy-updates InRelease [128 kB]
Get:6 http://in.archive.ubuntu.com/ubuntu jammy-updates InRelease [128 kB]
Get:7 http://archive.ubuntu.com/ubuntu jammy-security InRelease [129 kB]
Hit:8 http://in.archive.ubuntu.com/ubuntu jammy-backports InRelease
Hit:9 http://archive.ubuntu.com/ubuntu jammy-backports InRelease
Fetched 385 kB in 2s (182 kB/s)
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
176 packages can be upgraded. Run 'apt list --upgradable' to see them.
root@UBUNTU:/# sudo apt install vsftpd
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
vsftpd is already the newest version (3.0.5-0ubuntu1).
0 upgraded, 0 newly installed, 0 to remove and 176 not upgraded.
root@UBUNTU:/# nano /etc/vsftpd.conf
root@UBUNTU:/# ls
bin  cdrom  etc  lib  lib64  localisation  net  opt  power  run  sbin  swapfile  var
boot  dev  home  lib32  libx32  media  apt  root  ssh  src  uga  usr
root@UBUNTU:/# sudo service vsftpd restart
root@UBUNTU:/# chmod 777/srv/ftp
chmod: missing operand after '777/srv/ftp'
Try 'chmod --help' for more information.
root@UBUNTU:/# chmod 777 /srv/ftp
root@UBUNTU:/# sudo service vsftpd restart
root@UBUNTU:/# nano /etc/vsftpd.conf
root@UBUNTU:/# sudo service vsftpd restart
root@UBUNTU:/# sudo service vsftpd status
● vsftpd.service - vsftpd FTP server
   Loaded: loaded (/lib/systemd/system/vsftpd.service; enabled; vendor preset: enabled)
```

```
Activities Terminal Jul 24 14:28 root@UBUNTU: /
GNU nano 6.2 /etc/vsftpd.conf
# 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 initd 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
#
# Help Exit Write Out Read File Where Is Replace Cut Paste Execute Justify Location Go To Line Undo Redo Set Mark Copy
```

```
Activities Terminal Jul 24 15:33 root@UBUNTU: /
● vsftpd.service - vsftpd FTP server
Loaded: loaded (/lib/systemd/system/vsftpd.service; enabled; vendor preset: enabled)
Active: active (running) since Wed 2024-07-24 14:56:06 IST; 1min 3s ago
Process: 23875 ExecStartPre=bin/mkdir -p /var/run/vsftpd/empty (code=exited, status=0/SUCCESS)
Main PID: 23876 (vsftpd)
Tasks: 1 (limit: 2260)
Memory: 928.0K
CPU: 9ms
CGroup: /system.slice/vsftpd.service
└─23876 /usr/sbin/vsftpd /etc/vsftpd.conf

Jul 24 14:56:06 UBUNTU systemd[1]: Starting vsftpd FTP server...
Jul 24 14:56:06 UBUNTU systemd[1]: Started vsftpd FTP server.
root@UBUNTU:~# mkdir -p /srv/file/ftp
root@UBUNTU:~# usermod -d /srv/file/ftp ftp
root@UBUNTU:~# sudo service vsftpd restart
root@UBUNTU:~# sudo service vsftpd status
● vsftpd.service - vsftpd FTP server
Loaded: loaded (/lib/systemd/system/vsftpd.service; enabled; vendor preset: enabled)
Active: active (running) since Wed 2024-07-24 15:00:07 IST; 9s ago
Process: 23936 ExecStartPre=bin/mkdir -p /var/run/vsftpd/empty (code=exited, status=0/SUCCESS)
Main PID: 23938 (vsftpd)
Tasks: 1 (limit: 2260)
Memory: 868.0K
CPU: 5ms
CGroup: /system.slice/vsftpd.service
└─23938 /usr/sbin/vsftpd /etc/vsftpd.conf

Jul 24 15:00:07 UBUNTU systemd[1]: Starting vsftpd FTP server...
Jul 24 15:00:07 UBUNTU systemd[1]: Started vsftpd FTP server.
root@UBUNTU:~# nano /etc/vsftpd.conf
root@UBUNTU:~# sudo service vsftpd restart
root@UBUNTU:~# nano /etc/vsftpd.conf
root@UBUNTU:~# sudo cp /home/ubuntu22/Pictures/Screenshots/Screenshot from 2024-06-06 16-03-14.png /srv/file/ftp
cp: cannot stat '/home/ubuntu22/Pictures/Screenshots/Screenshot': No such file or directory
cp: cannot stat 'from': No such file or directory
cp: cannot stat '2024-06-06': No such file or directory
cp: cannot stat '16-03-14.png': No such file or directory
root@UBUNTU:~# sudo cp /home/ubuntu22/Downloads/kitty-cat-kitten-pet-45281.jpeg /srv/file/ftp
root@UBUNTU:~# nano /etc/vsftpd.conf
```

```
Activities Terminal Jul 24 15:34 root@UBUNTU: /  
GNU nano 6.2 /etc/vsftpd.conf  
# 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=YES  
#  
# 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? (Disabling 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 022. You may wish to change this to 022,  
# if your users expect that (022 is used by most other ftpd's)  
local_umask=022  
#  
# Help Write Out Where Is Cut Execute Location N-U Undo N-A Set Mark  
# Exit Read File Replace Paste Justify Go To Line N-B Redo H-C Copy
```

```
Activities Terminal Jul 24 15:35 root@UBUNTU: /  
GNU nano 6.2 /etc/vsftpd.conf  
# Anonpriv_user=ftpprosecure  
#  
# Enable this and the server will recognise asynchronous ABOR requests. Not  
# recommended for security (the code is non-trivial). But 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  
# useful for combatting certain DoS attacks.  
#deny_email_enable=YES  
# (default follows)  
#banned_email_file=/etc/vsftpd/banned_email  
#  
# 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
```



```

root@UBUNTU: /etc
vsftpd.conf

# This file controls the operation of the vsftpd daemon.
#
# 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=YES
#
# 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" IPv6 and IPv4
# 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? (Disabling by default).
anonymous_enable=NO
#
# 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
#

```

Help Exit Write Out Read File Where Is Replace Cut Paste Execute Justify Location Go To Line Undo Redo Set Mark Copy

The screenshot shows a terminal window with the title bar "Activities Terminal" and the date "Aug 7 14:41". The terminal is running the nano text editor, editing the file `/etc/vsftpd.conf`. The configuration file content is as follows:

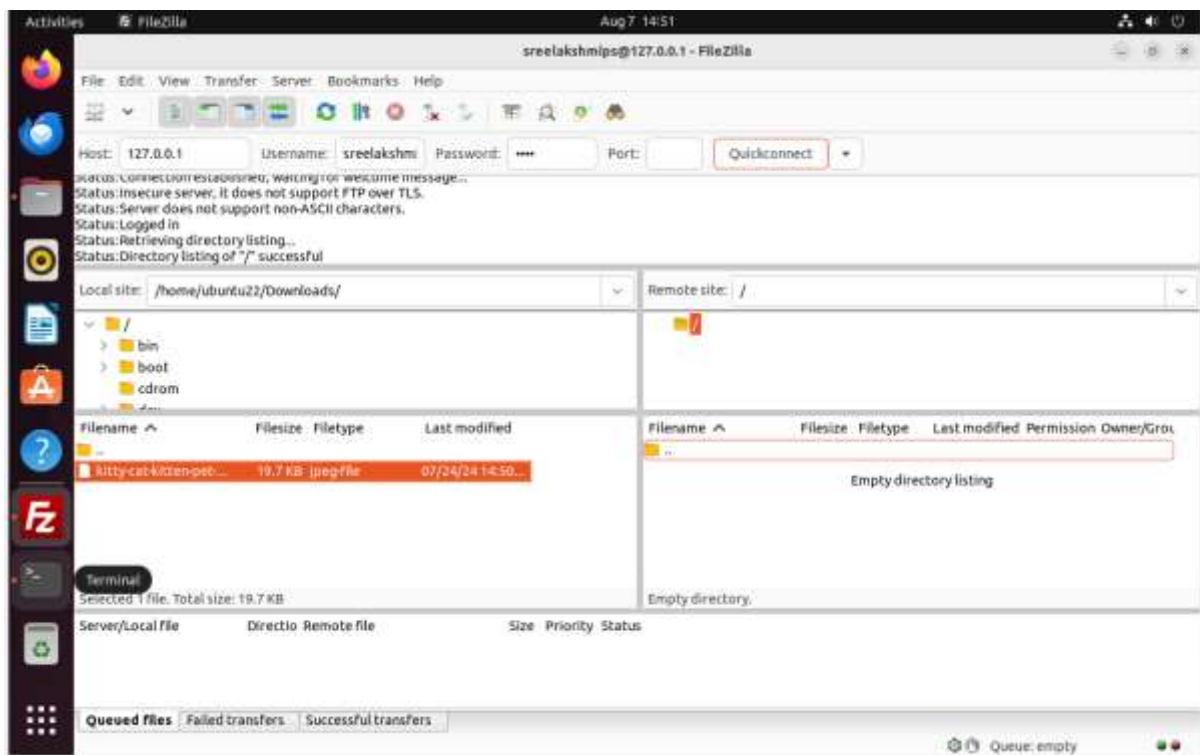
```

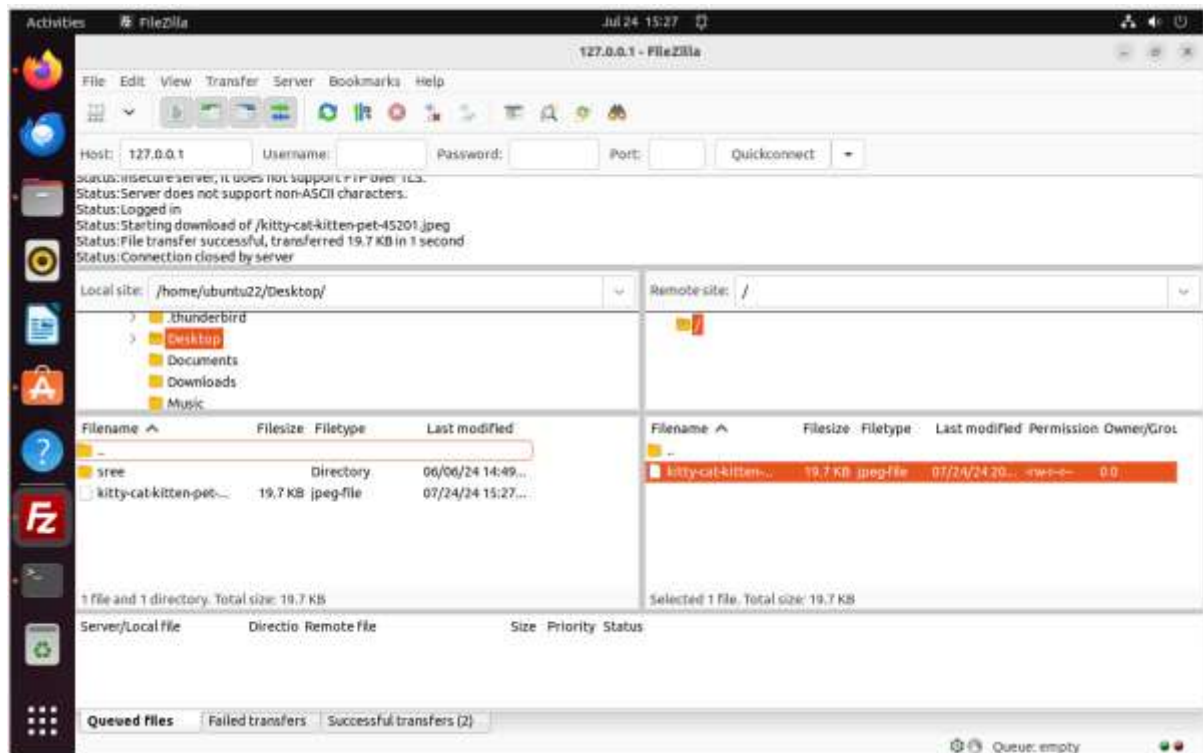
# Useful for combatting certain DoS attacks.
#deny_email_enable=YES
# (default follows)
#banned_email_file=/etc/vsftpd.banned_emails
#
# You may restrict local users to their home directories. See the FAQ for
# the possible risks to this before using chroot_local_user or
# chroot_list_enable below.
#chroot_local_user=YES
#
# 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=NO
chroot_list_enable=NO
# (default follows)
chroot_list_file=/etc/vsftpd.chroot_list
user_sub_token=$USER
local_root=/home/$USER/ftp
allow_writeable_chroot=YES
#
# 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
# files; however, some broken FTP clients such as "ncftp" and "mliror" assume
# the presence of the "-R" option, so there is a strong case for enabling it.
#ls_recurs_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

```

The terminal window has a sidebar on the left with various application icons. At the bottom, there is a status bar with keyboard shortcuts for Help, Exit, Write Out, Read File, Where Is, Replace, Cut, Paste, Execute, Justify, Location, Go To Line, Undo, Redo, Set Mark, and Copy.

```
Activities Terminal Aug 7 14:53
root@UBUNTU: /etc
root@UBUNTU:/etc# sudo adduser sreelakshnips
adduser: Please enter a username matching the regular expression configured
via the NAME_REGEX[SYSTEM] configuration variable. Use the '--force-badname'
option to relax this check or reconfigure NAME_REGEX.
root@UBUNTU:/etc# sudo adduser sreelakshnips
Adding user 'sreelakshnips' ...
Adding new group 'sreelakshnips' (1001) ...
Adding new user 'sreelakshnips' (1001) with group 'sreelakshnips' ...
Creating home directory '/home/sreelakshnips' ...
Copying files from '/etc/skel' ...
New password:
BAD PASSWORD: The password is shorter than 8 characters
Retype new password:
passwd: password updated successfully
Changing the user information for sreelakshnips
Enter the new value, or press ENTER for the default
  Full Name []: sreelakshnips
    Room Number []: 7313
     Work Phone []:
    Home Phone []:
       Other []:
Is the information correct? [Y/n] y
root@UBUNTU:/etc# cd /home
root@UBUNTU:/home# cd /sreelakshnips
bash: cd: /sreelakshnips: No such file or directory
root@UBUNTU:/home# cd sreelakshnips
root@UBUNTU:/home/sreelakshnips# mkdir ftp
root@UBUNTU:/home/sreelakshnips# ls
ftp
root@UBUNTU:/home/sreelakshnips# nano vsftpd.conf
root@UBUNTU:/home/sreelakshnips# cd /etc
root@UBUNTU:/etc# nano vsftpd.conf
root@UBUNTU:/etc# sudo service vsftpd restart
root@UBUNTU:/etc# nano vsftpd.conf
root@UBUNTU:/etc# sudo service vsftpd restart
root@UBUNTU:/etc# ls
adduser.conf  debconf.conf  hostname      nagic         profile       subuid-
etc           debian_version hosts          nagic.nine   protocols     sudo.conf
aliases       deluser.conf  hosts.allow  nallcap       prison        sudoers.d
```





Conclusion: All the commands have been executed and the output has been obtained successfully.