EXPERIMENT-7

Aim: Installation and working with FTP (File Transfer Protocol).

FTP:

File Transfer protocl server can be set up on Windows to upload and download files from virtually anywhere to the computer without the limitations of the cloud storage. It creates a private cloud without any file or size restrictions and can be used for mutiple accounts. Thus, it proves to be very useful personally and proffessionally.

Installation of FTP server components:

1. The required components of FTP can be added manually.
2. Open *Control Panel.*
3. Click on *Programs.*
4. Under *Programs and features* click the *Turn Windows features on or off.*
5. When the dialog box opens, expand the *Internet Information Services* feature and expand *FTP server* option.
6. Check the *FTP Extensibility* and *FTP Service* option.
7. Check the *Web Management Tools* option with the default selections, but making sure that the *IIS Management Console* option is checked.
8. Click the OK button.
9. Click the Close button.

Configure FTP server site on Windows 10

After installing the required components, configure an FTP server on the computer, which involves creating a new FTP site, setting up firewall rules, and allowing external connections.

<u>Setting up an FTP site</u>

1) Open *Control Panel*.
2) Click on *System and Security*.
3) Click on *Administrative Tools.*
4) Double-click *the Internet Information Services (IIS) Manager* shortcut.
5) On the *Connections* pane, right-click Sites, and select the *Add FTP Site* option.
6) In the FTP site name, type a short name for your server.
7) In the *Content Directory section*, under *Physical path* click the button on the right to locate the folder you want to use to store your FTP files.
8) Click the Next button.
9) Use the default *Binding settings* selections.
10) Check the *Start FTP site automatically* option.
11) In the "SSL" section, check the *No SSL* option
12) Click the Next button.
13) In the *Authentication* section, check the *Basic* option.
14) In the *Authorization* section, use the drop-down menu, and select *Specified users* option.

15) Type the email address of your Windows 10 account or local account name to allow yourself access to the FTP server.
16) Check the *Read and Write* options.
17) Click on the *Finish* button.

FTP is now operational on the computer.

Configuring Firewall Rules:
The services should be manually allowed as the built-in farewell on Windows-10 will block the FTP server.
1) Open *Windows Defender Security Center.*
2) Click on *Firewall & network protection.*
3) Click the *Allow an app through firewall* option.
4) Click the *Change settings* button.
5) Check the *FTP Server* option, as well as the options to *allow Private and Public access.*

Allowing External Connections:
For reaching external servers, TCP/IP port number 21 has to set up.
1) Open *Settings.*
2) Click on *Network & Internet.*
3) Click on *Status.*
4) Click the *Change connections properties* option.
5) Make a note of the IPv4 DNS server address, which is the address of your router. Usually, it's private address in the 192.168.x.x range. For instance, 192.168.1.1 or 192.168.2.1.
6) Open your default web browser.
7) On the address bar enter the router's IP address and press Enter.
8) Sign-in with your router credentials.
9) Open *the Port Forwarding* page.
10) Add a new rule to forward incoming connections to the FTP server from the internet by including this information:
    Service name: Type a descriptive name for the port forwarding rule.
    Port range: 21.
    Local IP: This is the FTP server IP address that the router will forward incoming connections.
    Local port:21.
    Protocol: TCP
11) Click the add button.
12) Click the Apply button to save the changes.
After completing the steps, any incoming connection on port 21 will be forwarded to the FTP server to establish a networking session

Setting up static IP address:
1) Open *Control Panel.*

2) Click on *Network and Internet.*
3) Click on *Network and Sharing Center.*
4) In the left pane, click the *Change adapter settings* option.
5) Right-click the network adapter, and select the *Properties* option.
6) Select the *Internet Protocol Version 4 (TCP/IPv4)* option.
7) Click the *Properties* button.
8) Select the *Use the following IP address* option.
9) Specify the IP settings:
   IP address: Specify a static network address for the computer.
   Subnet mask: In a home network, the address usually is 255.255.255.0.
   Default gateway: This is usually the IP address of the router.
   Preferred DNS server: Typically, this is also the IP address of your router.
10) Click the OK button.
11) Click the Close button.

Set up multiple FTP accounts on Windows 10:
If you want to allow multiple people to download and upload files to the FTP server simultaneously, you need to set up multiple accounts with specific permissions

Creating new user accounts:
1) Open *Settings*.
2) Click on *Accounts*.
3) Click on *Family & other people*.
4) Click the *Add someone else to this PC* button.
5) Type the Microsoft account address for the user you want to allow access to the FTP server.

Configuring user accounts to FTP server:
1) Open *Control Panel*.
2) Click on *System and Security*.
3) Click on *Administrative Tools*.
4) Double-click the *Internet Information Services (IIS) Manager* shortcut.
5) On the left pane, expand *Sites*, and select the site you created earlier.
6) Double-click the *FTP Authorization Rules* option.
7) On the right pane, click the *Add Allow Rule* option.
8) Select one of these two options:
   All Users: Allows every user configured on your Windows 10 device to access the FTP server.
   Specified users: You can use this option to specify all the users you want to access the FTP server. (separate each user using a comma.)
9) Check the *Read and Write* options.
10) Click the OK button.

Connect to an FTP server remotely on Windows 10

Viewing and downloading files:
1) Open a web browser.
2) In the address bar, type the server IP address using ftp://, and press Enter. For example,ftp://192.168.1.100.
3) Type your account credentials.
4) Click the *Log in* button.

After these steps, you will be able to navigate and download files and folders from the server.

Viewing, downloading and uploading files:
1) Open File Explorer.
2) In the address bar, type the server address using ftp://, and press Enter. For example,ftp://192.168.1.100.
3) Type your account credentials.
4) Check the *Save password* option.
5) Click the *Log on* button.

After completing these steps, you can browse files and folders, and download and upload files as if they are locally available on your device.

Configuring multi-users:
There are multiple procedures for doing so to allow others to access the FTP server:

Create multiple FTP accounts:
1) Open settings app. (Windows key + I.)
2) Click *accounts*.
3) Navigate to the left-side pane, where you'll see an option called *family & other users*. Click the link.
4) On the right-hand side, look for the option *Add someone else to this PC*.
5) In the next screen, you'll be prompted to enter that person's email ID or phone number. Look for a link called *I don't have this person's sign in information* at the bottom left. Click the link.
6) In the next screen, you'll be asked to enter the personal details of the new user. If you know the other person's Microsoft account details, you can enter. Otherwise, look for a link called *add a user without a Microsoft account* on the bottom left.
7) In the next screen, enter the details of the user. Choose a strong password for your own security as this server can be accessed from the Internet.

Add a new user to the FTP folder
1) Navigate to the FTP folder, right-click on it and select *properties*.
2) Click the *security* tab and navigate to *edit* button.

3) Look for *Add* button in the next screen and click on it. This will open the *select users or groups* dialog box. In this screen, enter the name of the user you want to add in the text area. Click on *check names* button to make sure that you have entered the right name.
4) Click OK
5) Select the newly added user account and set the permissions for this user. Once done, click apply and OK.

Configure the user to access the FTP folder
1) Go to *control panel* and open *administrative tools.*
2) Double-click *Internet information services (IIS) manager*.
3) Expand the left-hand pane and navigate to sites. Click on sites and you'll see your FTP server. Select this server.
4) On the right-hand pane, you'll see many options. Look for *authorization rules.* Right-click on it and select *add allow rules* from the context menu.
5) In the next screen, choose *selected users* option and enter the Windows 10 account you created earlier. Set the permission you'd like this user to have. Click OK.

Windows has an in-built feature for setting up the FTP server, and so it can be set up with great ease. FTP provides lot of flexibility and convenience and even allow multiple users addition so that sending and receiving files could be made easier.