



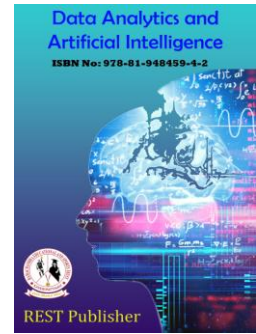
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FTP Server Client Using Android Application

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Abstract- On a computer network, the File Transfer Protocol (FTP) is a common communication protocol used to transfer data from a server to a client. FTP uses distinct control and data connections between the client and the server in client-server architecture. FTP offers two transfer methods: an anonymous technique and a password-based authentication method. The primary goal of FTP is to encourage file sharing. Clients can connect to the server using third-party applications (eg. FileZilla). A single FTP object can manage status, connection, settings, etc. is the centre of the Apache Commons Libraries. Obtaining a remote connection to involves a set of details, including the server's hostname or IP address, a username and a password.

Keywords: Existing System, Proposed System, Methodology

1. INTRODUCTION

File transfer protocol, or FTP for short, is used on computer networks to move files from a server to a client. FTP uses distinct control and data connections between the client and the server in a client-server architecture. FTP connects to servers using two different methods. They are password authentication and anonymous method. These protocols allow clients to connect to the server. The main tool for developing a server application is Android Studio. Clients can connect to a smart phone that has been turned into a server. Windows clients can access the server using in-built network plugins or any third party softwares and Android clients can also access the server using third party applications and latest android clients can access the server using it's in-built plugins. Clients can copy the files and view it in their own device.

2. LITERATURE SURVEY

A. Prototype File Transfer Protocol Application for

LAN and Wi-Fi Communication One of the original Internet protocols was the FTP (File Transfer Protocol). A URI (Universal Resource Identifier) can be used to access an FTP server. FTP file exchange between clients and servers is simpler to complete because there is no need for an intermediary. However, in order to communicate using FTP, an application must be created that enables direct communication between clients and servers without the use of a browser. In this case, the programming language used to create the FTP application is Borland Delphi.

B. Research on the Design and Implementation of FTP

Client Based on Java the Java programming language offers the benefits of being simple to use and having a robust processing procedure library for the TCP/IP protocol. Java-based applications may access remote objects effectively. Based on this, this paper examines the features and capabilities of the Java development tool environment in the first section, the requirements analysis of the FTP client system based on Java development in the second section, and the specific process of FTP client design and implementation based on Java development in the third section.

C. FTP: The Forgotten Cloud

When transmitting data between hosts, HTTP, SCP, and BitTorrent have essentially replaced the once-dominant File Transfer Protocol (FTP). Nevertheless, we found that there are still more than 13 million FTP servers in the IPv4 address space, 1.1 million of which provide "anonymous" (public) access, after a thorough investigation of the FTP ecosystem as

of 2015. These anonymous FTP servers expose private data, including tax records and cryptographic techniques. Since more than 20,000 FTP sites permit open write access, bad actors can utilise the free storage to spread malware and conduct clickfraud attacks. We use eight FTP honeypots to further study actual attacks, revealing how attackers abuse and take advantage of weak systems.

3. EXISTING SYSTEM

As android smartphones get more and more popular, a server or connections with other clients are required to access and obtain their resources. But that couldn't have happened without FileZilla. According to what we know, FileZilla is utilised with Windows and other operating systems and requires appropriate training and experience to use. There was no option to connect to the server using a hotspot or Wi-Fi; the connection was done solely through IP address. Users had no opportunity to serve as the server panel and could only operate as clients. There was no way to continue the current procedure, so we had to wait until it was still underway.

4. PROPOSED SYSTEM

No dependencies are used in the development of a server application. This application is initiated in a smart phone which is being converted into a server. When a client wants to connect to a server it doesn't want to depend on another application to run. The client can connect to the server by providing its name and the necessary password and using the anonymous approach by utilising the server's IP address. When you access the resources, you can download them to your computer or Android device and perform a variety of operations on them, including renaming the file, creating folders, deleting it, sorting it, performing a search, getting information about a specific file, granting others access to the resources, and many other custom settings.

5. VMETHODOLOGY

The mobile platform for these remote transfers, Android, is at the heart of this application's creation. Because of its broad use and accessibility, a vast amount of internet information, tutorials, and useful tips are available for those just getting started with android. The only programming language supported by Android is Java, and all projects must be organized, compiled, launched, and debugged using an integrated development environment (IDE). An interface and transfer protocols are imported as libraries from Apache FTP in a build. gradle that is produced. Android Support Repository is utilized for standard framework API, allowing us to be accessible using newer Android versions.

A. Frontend

FTP's ease of use and security led me to choose it as my networking solution. FTP employs a simple set of commands to create connections, explore directories, and manage transfers, which contributes to its simplicity. But pure FTP lacks any security in its connection, sending private login information in plain text and leaving data unencrypted, making it simple for anyone to snoop between the client and server. This issue can be resolved by simply integrating TLS/SSL security into the way that FTP operates. A signed certificate and public/private key encryption are both used by TLS/SSL to enable secure communication between two devices. After deciding on a secure transfer protocol, it is time to pick the best library for Java FTP implementation. Because of their detailed documentation and ongoing support, Apache Commons.netlibraries. Many other libraries receive very little funding since they are either run by tiny groups of people who frequently undertake the work for free, or they do receive support but charge for it. Due to its free nature and extensive contributor base, Apache Commons meets both of these criteria. Apache Commons.netlibraries is popular because of their thorough documentation and continuing maintenance. Since they are either run by small groups of people who typically do the work for free or because they do receive support but charge for it, many other libraries receive very little money. Due to its free nature and extensive contributor base, Apache Commons meets both of these criteria.

B. Establishing A Connection

The server's host name or IP address, a username, and a password are needed in order to establish a remote connection. A secure connection must be made before delivering this 14 data. This often entails the exchange of a certificate, which must either be acknowledged as legitimate by the user or externally certified by a third party. When connecting to servers that are not owned by the user, care should be given because the chosen library does not perform this check. Login information is sent when the handshake is finished, the traffic is encrypted, and a reply code indicates whether the connection was successful.

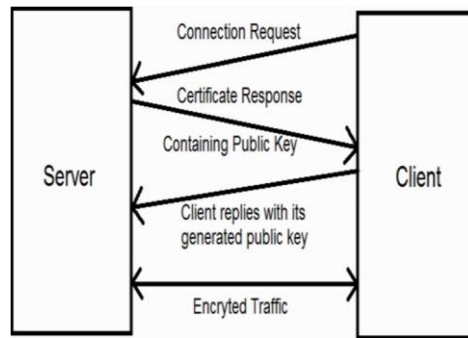


FIGURE 1: server

C. Permissions

A data link cannot be created until a few settings have been changed after creating a secure connection. The server will reject or terminate the connection if these settings are specified incorrectly. The PASV command, which switches the FTP server into passive mode, is the first and most crucial configuration. This indicates that the server will respond with the data link port number to connect to. The instructions PROT for protection and PBSZ to set the protection buffer size to zero allow the data connection to be encrypted, which may be required by the server, to further add protection to the data channel. Finally, switching to UTF-8 character encoding was necessary for compatibility with my server, but this may not be necessary for other systems.

D. Directory Listing

The next step is traversing the server's file system now that the connection has been correctly set up. To update the current working directory and download files, this entails listing the contents of specified directories to determine what files and folders are present. This can be accomplished using a number of different FTP commands. Only the names of the files and folders in a given directory are returned by the NLST command in string format. In the form of an FTP File object, the LIST command returns more details about the specified file or directory, or the current directory if none is specified. The MLSD command requires that you specify a directory but delivers the same data as the LIST command.

E. Transfer

One of two methods can be used to transmit the data after the user navigates to the file or folder they want to download. The download function delivers an input stream that must be read into a buffer and then written to an output file, whereas the first option gives the user more control. As a result, it is possible to monitor the progress and see how much of the file has already been transmitted, both of which are highly helpful pieces of information for the user. The alternative, which is simpler, involves passing an output stream to the download method, which transfers the full file at once while handling any issues. I went with the simpler approach so I wouldn't have to worry about monitoring my progress.

F. User Interface(Ui)

The design of my app came from the process of serving the server's storage to the clients on a computer network which involves login information for the clients. The login information contains the enabled Anonymous option and Username and password. It mainly includes Server URL. On the top it contains Wifi status, IP address and Network and start and stop button to perform server action. The QR code is also generated for clients to connect easily. It is created as a simple intuitive UI. Project management could be found in Android Manifest, which contains a list of all activities and their usage filters, application information required by the Google play store such as version identification and the minimum/target Android version, and special permissions required for things like writing to memory and connecting to the internet. The only programming language supported by Android is Java, and all projects must be organised, compiled, launched, and debugged using an integrated development environment (IDE). The core of Android programming is the use of activities, which segment the app's activity into the various displays the user sees. Whether it is gathering data through text boxes, presenting things in a scrollable list, or just displaying a loading screen while processing data, each activity has a distinct purpose. These activities are made up of a piece of code that contains the standard onCreate() method, which is run whenever the activity is started or switched to, and an xml layout file that describes the appearance and functionality of the user interface. An intent containing contextual data from the previous activity is sent to an activity when it is launched. This enables crucial information to be transferred between changes in the screen as well as between whole different bodies of code. A list of all activities and their usage filters, application data required by the Google Play store, such as version identification and the minimum/target Android version, and special permissions

necessary for actions like writing to memory and connecting to the internet, can all be found in the Android manifest, which is where project management can be found.

G. Main Screen

The Initial Action When the app is first launched, will be opened by the designed method in Android Studio, and it manages the login details for the client application to access the Server. The built-in server application's icon is the first thing that appears on the screen. The username and password are then shown. The user creates and sets their own username and password. Any Username and any Password can be set by the User for the Server Application. Additionally, decide whether or not to display the password to the client as well as the server itself. The path for data access has been formed based on the server's choice, or where the data is stored (for example, whether the data is stored in a file, which is in a certain location). The IP address for Apple devices and other devices for File Transfer Protocol is produced when the server is functioning. Using the IP address, Client Application can quickly access the account.



FIGURE 2:

H. Server

A smartphone was utilised as the project's server. Using the created programme, the smart phone is transformed into a server. SSH, FTP, drive sharing for both Apple and Windows computers, and even web hosting are all configuration options available through the server's web dashboard. There are numerous configuration options for practically every part of FTP setup, but security is the key issue because it will be accessed from outside of my home network. For guarded access, a username and password are given with the choice of showing or hiding the password. The second approach, password authentication, can be used as a method of access. The first approach can also be used to reach the server. The anonymous technique is that. Using a created IP address, the server can be accessed using the Anonymous method.

I. Client for windows in-built system

Point-to-point connections via a public or private network, like the internet, are what Virtual Private Networks (VPNs) are. A virtual call to a virtual port on a VPN server is made by a VPN client using unique TCP/IP or UDP protocols. A client starts a virtual point-to-point connection to a remote access server (i.e., a built-in application) over the internet in a conventional VPN implementation. The built-in plug-in and Universal Windows Platform (UWP) VPN plug-in platform are built on top of the Windows VPN platform in Windows 10 and Windows 11. Both the username and password provided by the server as well as the server's IP address can be used by the VPN client to connect to the server using password authentication.

J. For mobile file manager plus

All of the fundamental file management functions, including copy, cut, paste, delete, rename, compress, decompress, transfer, download, and bookmark, are included in File Manager Plus. You can examine files on your devices as well as those on your network, including those stored via FTP, SMB, and cloud storage. It is compatible with several media files and common file types, including .apk. An intuitive and capable file explorer for Android devices is called File Manager Plus. Because of its straightforward UI, it is cost-free, quick, and feature-rich. With the help of this application, we can transfer files from our mobile devices to the server.

6. CONCLUSION

FTP server waits for the client to connect to it and it uses the FTP protocol commands to do all the tasks such as uploading, listing directories, or downloading. FTP is a very useful software application that have enormous benefit to a website or a collaborative computing in which files need to be shared between clients and servers. Android Studio which

was an core development platform was used to design the server Frontend. The protocols are imported in the form of libraries using Apache FTP server and other packages imported using Android Support Repository which is being a good and better helper for Android Studio. JDK 8 used for build backend manipulations. Android SDK manager used to construct the template. Genymotion, a virtual machine used to run the templates in a virtual device and APK options are used to extract APK. A simple intuitive user interface is developed and make server to make custom username and password. Mainly a completely adfree server application is developed. Client from Windows(using in-built plugins) and Android(using third-party client applications) can access the Server by Anonymous method by Anonymously and also by Password authentication method by using username and password. Therefore the server can be accessed by two mechanisms of File Transfer Protocol.

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