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File sharing between mobile devices

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***Abstract*—**File sharing is the process of distributing or providing access to any form of digital information to one or more users. The proposed model is a form of communication that allows exchange of data within a Wi-Fi network. Similar systems are already in existence for wired networks. The aim of this paper is to provide design and implementation details of such a system for mobile phones. The user is first required to connect to a wireless LAN, discover other users and can then share files with one or more among them.

Keywords- *Peer-to-Peer communication, Wireless LAN, Socket, Mobile device, TCP and UDP*

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I. INTRODUCTION

Cell phones have evolved from being simple communication devices to a powerful portable computer. The recent advancements in the mobile phone technology have incorporated the features of accessing Wi-Fi from Cell phones[7]. In addition smartphones have become mini-computers and an increasing amount of data is stored on them. Hence it is necessary to develop a system for sharing of files between them within a network just as one does between computers in a LAN File sharing is the practice of sharing or offering access to digital information or resources, including documents, multimedia (audio/video), graphics, computer programs, images and e-books. It is the private or public distribution of data or resources in a network with different levels of sharing privileges[8].

In general there are two types of file sharing.
Peer-to-Peer file sharing: One user can share the file to other users who are connected to the relevant network. These files are divide into small parts or pieces which can be taken from multiple peers who have the file and then those small pieces can be taken into a one file by the downloader through a peer to peer client[2][3][5].

File sync and sharing services: Cloud-based file syncing and sharing services implement automated file transfers by updating files from a dedicated sharing directory on each user's networked devices. Files placed in this folder also are typically accessible through a website and can be easily shared with other users for viewing. Such services have become popular via consumer products such as Dropbox and GoogleDrive.

II. EXISTING SYSTEM

File sharing system is available in PC's connected to a LAN wherein to do so the files are placed in a shared folder and their access permission is controlled[13]. Another method of file sharing is by means of cloud storage. The files to be shared are uploaded to a server so that they can be accessed from anywhere provided authentication is provided. This method is typically useful when a file is to be shared with a large number of distributed users. On mobile devices, Files are transferred by means of wireless hotspot created by sender. Sender selects among the available users in the vicinity. The receiver then connects to the same network and receives the file.

III. PROPOSED SYSTEM

This paper gives a description of a system that enables sharing of files between android based devices connected within a wireless LAN. When users enters the Wi-Fi network, proposed system displays the list of other users who are having this system on their mobile in that network. Using the system services, user can communicate with other user by exchanging packets to IP address of destination user, with the condition that both communicating person should be in same Wi-Fi network. Hence connecting to the network acts as authentication for the users.

The proposed system allows communication through Wi-Fi which requires neither any internet connectivity nor any service from the service providers. A user can choose which file he wants to share and with which user. UDP protocol is used to discover other devices present in the network and for request-response whereas TCP is used for actual sharing of files[12].

IV. DESIGN AND IMPLEMENTATION

A Use Case diagram shows the various activities the users can perform on the system. Figure 1 shows the use case diagram for the proposed system[11]. The following are the actors in our system

1. One user who shares the file: The user can put the files in shared folder. He discovers the other users in the network and selects the users or a group of users to whom he wants to share the files.
2. Other users with whom the files are shared: These users can discovers the other users who has shared the files in their shared folder and open one of the shared folder. He then can select any file and download if he wants to edit it.
3. Router: Router provides a better communication between the devices at higher speed and a proper authentication required for the system

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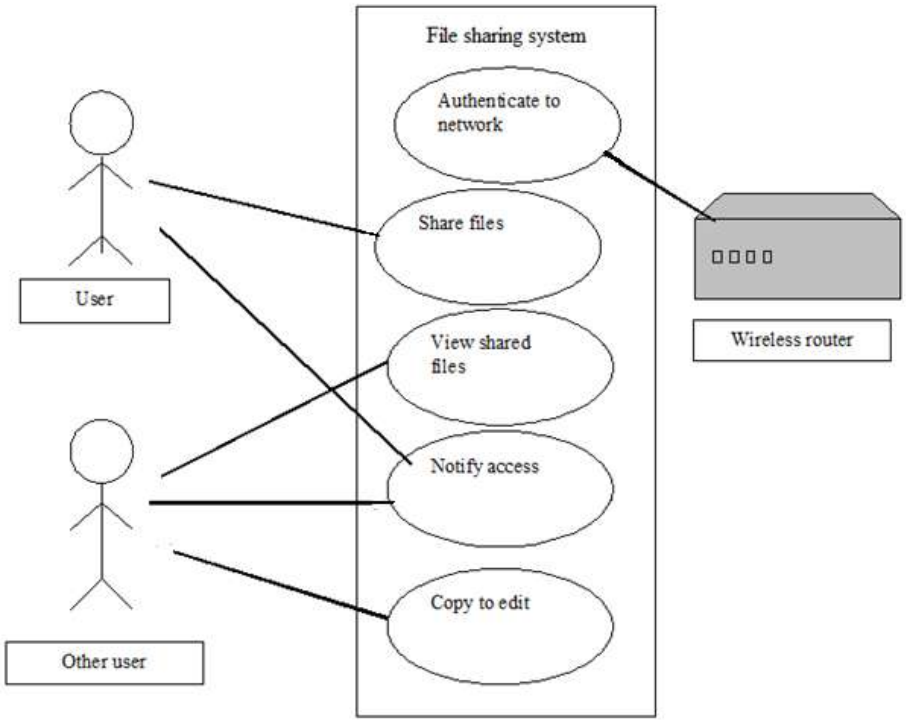

Figure 1 represents the Use case diagram for the system.

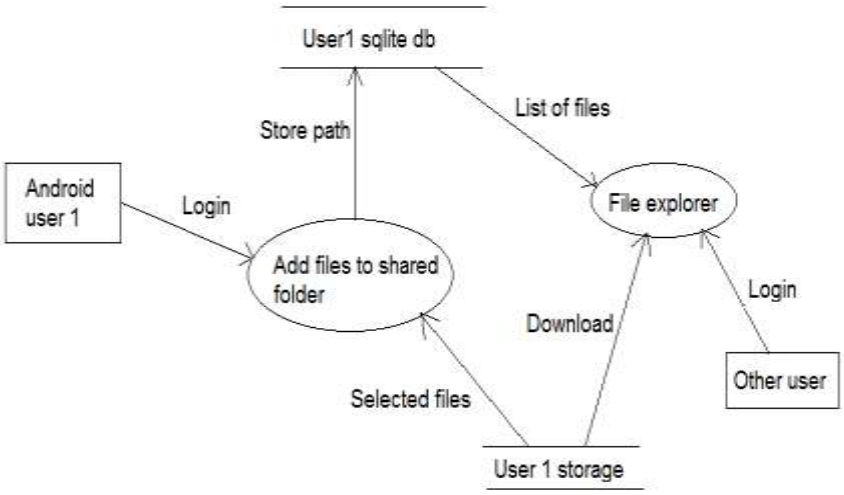

Figure 2 represents the level 1 DFD for the system.

Figure 2 shows the level 1 Data flow diagram for the system. User 1 shares the files by selecting those from its local storage. The paths of those selected files are extracted and stored in the sqlite database so that this list of files can be sent to other users in the network by means of creating sockets. This list of shared files are available for other users in the network from which they can select any file and download that from storage of the user.

V. MODULES IMPLEMENTED

User discovery : Based upon the IP address of the user, its subnet is calculated[12]. Then each address in the subnet is checked for the presence of a user.

Transfer of data : In order to transfer data or control signals, sockets with predefined port numbers are created and an input or output data stream is attached depending on the direction of data transfer[15][17].

Share file : Select one or more files to be shared and their paths are extracted and stored. Then among the

discovered users, select the users with whom file is to be shared. The details of the file shared along with the name and Mac address of the user are stored in the database of the user as SharedItems and are also sent to the intended receivers.

User profile : Each user is required to create a profile consisting of his\her name and a system image. Whenever a

new user joins, his information including name, image and Mac address are sent to the others.

View shared file : The details of files shared by other users are received and stored in the data base as SharedItems. When a particular file is selected for viewing, its path is sent to its author which checks if the particular file is present and if it is still accessible for that user. If so, the receiver creates a directory for it if not previously present. File is divided into buffers and sent.

Un-share : Un-sharing is the process of removing a previously shared file. It can be done in two ways i.e. one or more files shared with a particular user can be removed or a file no matter shared with any number of users can be removed. In order to remove it, it is removed from the database.

VI. ADVANTAGES

- Multiple users can share files with each other simultaneously.
- Receiver may choose which file he wants among the ones shared by the sender.
- User authentication is provided which results in improved security.
- Speedup in transfer speed.
- Does not require access to internet services.

CONCLUSION

Smartphones along with wireless hotspots are becoming increasingly commonplace these days. It makes perfect sense that these resources be used to construct a system for sharing data which is simple and easy to use. It also provides users the flexibility of accessing any part of data shared with them in a quick and safe manner. This system can be used anywhere provided one is connected to a wireless LAN hence it has wide consumer applications.

FUTURE ENHANCEMENTS

- Provide a mechanism by which a shared file when updated by a receiver is notified to other users having it so that each knows who has the latest copy
- Use user defined images for user profile

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