

Instant messaging over LAN using Android application

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Abstract – Instant Messaging (IM) is a conventional method for exchanging messages using the power of internet, people can use an IM to contact family, friends and colleagues. The staff of an organization can contact their clients or vendors online as well as through IM. There are ample of IM android applications in the market which uses internet to provide services. The main objective of this paper is to introduce an LAN based communication system that allows android users to send and receive messages over LAN through Wi-Fi which neither requires any internet connection nor messaging services.

Key Words: Instant Messaging, Wi-Fi, Android, LAN, Intranet server.

1. INTRODUCTION

Instant messaging is a set of communication technologies used for exchanging messages between two or more users over the internet. In the organization, staff can send and receive messages in real time without meeting face-to-face; the documents can be shared during the chat session. IM helps in faster communication than phone calls or emails within the organization. This is a huge benefit of using Instant Messenger. IM requires internet connection provided by Internet Service Providers to exchange messages between two users. IM provides us the convenience to interact with others but there exists some side effects like invasion of privacy.

This paper will provide the benefits of using LAN based communication system that stores the data in the organization's server where data is secure within in the organization.

2. RELATED RESEARCH

Bhoopesh kumawat, Sudhendra Pal Singh and Chandra Prakash Varma proposed an Intranet Based Messaging Service on Android Smartphones and Tablets that incorporates relevant modules and basic ideas to implement LAN based communication system[1]. Muhammad Ehsan Rana provides the benefits of IM in business specially for small enterprise[2].

3. THE PROPOSED SYSTEM

In any large organization where communication is tougher because of the wide area, the proposed system serves as a great alternative. Using this system the message can be broadcasted on LAN to all the members of the organization. The members can be grouped and messages can be broadcasted to the required group only. This can also be used to broadcast to a single member in the network. Since it requires the registration before receiving the message from the server which provides a great security. The possibility of attaching files as pdf, Windows office documents and also pictures of JPG and PNG format gives an easier way of communication. The application offers reliability, time savings and easy control. It is mainly designed for the students and the teachers to know the activities within the organization.

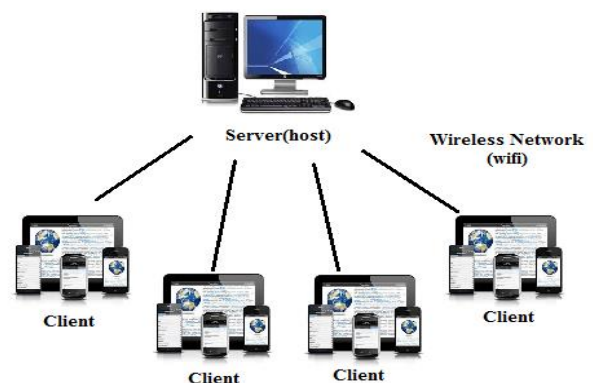


Fig -1: Proposed system architecture.

Proposed architecture mainly consists of two modules namely client and server.

3.1 Client Module

Client application runs on android based Smart phones. The workflow of the client application is as follows:

Step 1: Users need to login to the network by their unique id that is provided by the organization.

Step 2: The messages sent from server end is received over established UDP socket connection.

Step 3: The messages can be text or attachments are viewed in the application.

Client:

Operating System: Android version 4.0 or above.
Coding: Java Programming Language and XML.

Development Tool: Android Studio version 1.5.

Eclipse Mars IDE

JDK version 1.8

5. FINAL PRODUCT

Server application provides the control panel where the Administrator can register/modify/delete the user details and send message to a particular user or group of users. The messages can be normal text or attachments (pdfs, images, documents etc).

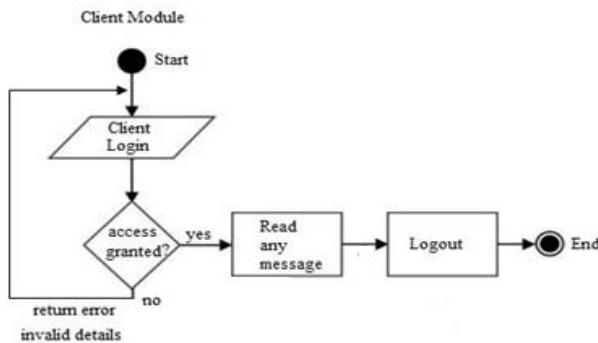


Fig -2: Client Module flowchart.

3.2 Server Module

Server application runs on Administrator’s computer system which acts as server. The workflow of the Server application is as follows:

Step 1: Administrator need to login to the application providing valid username and password.

Step 2: Registration of Users is carried out by the Administrator.

Step 3: Messages are sent over this UDP Socket Connection to individual users or to a group of users.

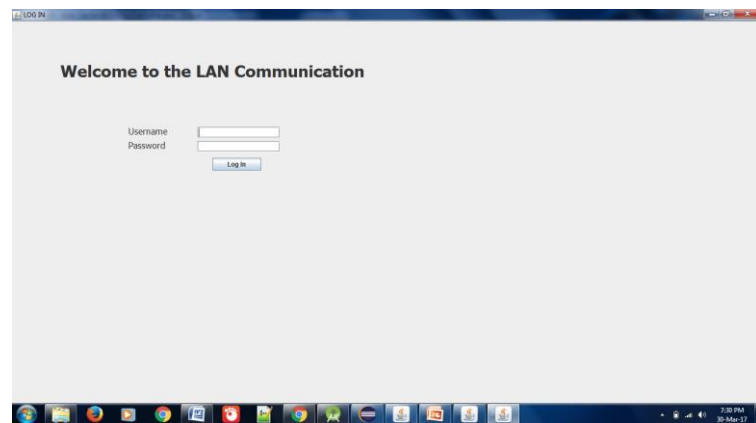


Fig -4: Server Side Admin Login.

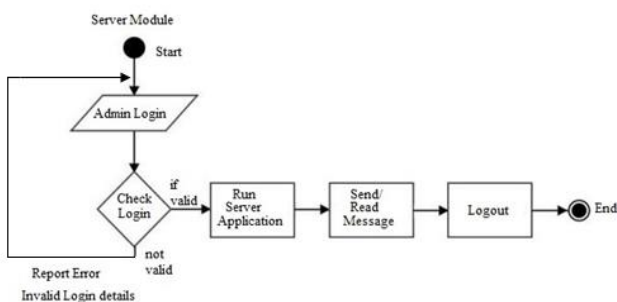


Fig -3: Server Module Flowchart

4. SYSTEM REQUIREMENTS

4.1 Hardware requirements

Server: Laptop or Computer.

Client: Mobile phones or tablets.

4.2 Software requirements

Server:

Operating System: Windows.

RAM: 2GB or greater.



Fig -5: Server Side Control Panel.

Client application provides interface for the users to set the IP address of the LAN server and login to see the messages received.

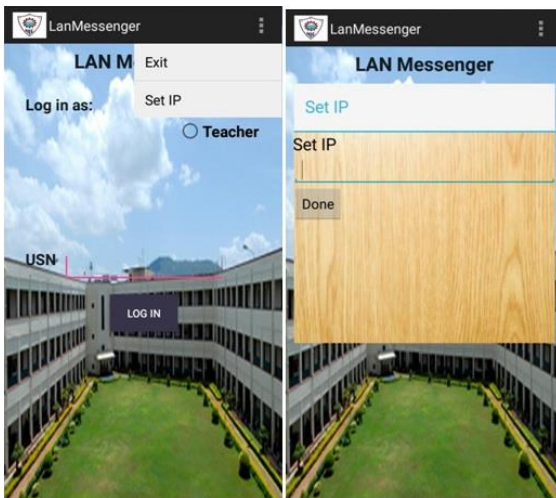


Fig -6: Client Side Android Application.



Fig -7: Client Side Android Application Inbox.

4. All message exchanges will be protected by the AES encryption algorithm.

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5. CONCLUSION AND FUTURE ENHANCEMENT

The messages can be broadcasted on Local Area Network (LAN) to all the members of the organization. The members can be grouped and the messages can be broadcasted to the required group only. This can also be used to broadcast the message to a single member in the network. Since it requires the registration before receiving the message from server this gives a great security also. The possibility of attaching files as pdf, Windows office documents and also pictures of JPG and PNG format gives a easier way of communication.

For future work the following features are to be added.

1. To make the application work when the android device (client) is switched off.
2. To give some or all the clients an option to reply.
3. To increase the size of attachment files.