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Free Voice Web Application

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ABSTRACT

As an alternative to the older communication meth-ods like telephony and telegraph, chat applications are more popularly used for communication. These applications come with advanced features that enable the users to use it for different applications. The immediate requirement is to be able to exchange text messages however recent applications also provide support for multimedia content exchange. Free Voice is a web application to facilitate communication with different departments within an organization. This system is controlled by the users and its security is autonomously managed. The communicating parties authenticate each other before exchanging messages. Using this application the user can login and select the department to which message has to be sent. It provides an alternative to send messages publicly or privately. Each category will have a category owner. Response to any message can be provided by the respective category owner. It also provides faster searching by applying filters. The application will be governed by an administrator who will have access to all messages and categories.

Keywords: Client-Server, Socket, Object-Oriented Design, JAVA, User-Interfaces.

I. INTRODUCTION

Communication stands out as a basic need of people for exchanging messages. Traditionally, people communicated using telephony and telegraph. With emergence of computer networking and telecommunication technologies, there is a drastic change in the trend for communication. This allows faster communication and also cuts down the cost involved via traditional methods. Not only text, but also multimedia data transfer is supported with these web applications.

The communication via web applications provides secure and faster data transfer and eliminates all third party ele-ments. The communicating parties authenticate each other be-fore exchanging messages. Communication through computer networks is categorized into two mainly, Client-Server and Peer to Peer. In Client-Server model, there is a dedicated server whereas the other nodes act as clients throughout the communication. Whereas in Peer-to-Peer, the communicating node can either be the client or server, depending upon whether it is requester or provider of the service.

The Client-Server Model allows the user details to be stored in a database at server side so that any user that attempts to log in, is authenticated first. This prevents the organization's information or any important data to leak out to malicious/unauthorized users. But this model generates single point of failure i.e. the Server which may lead to breakdown of the system and also causes resource consumption concentrated on the server side.

The chat applications have become important communication tools while people are using it for different purposes like business, education, etc.

II. RELATED WORK

With the increasing number of employees/users, there is also a need to manage these users. For this purpose, there is a need for centralized communication system which controls all the users and functionalities of the system like adding/deleting/updating different departments and the corre-sponding users, access all messages which is not proposed in Mr. Ibrahim Muhammad Abba etal[2] had porposed the LAN chat messenger using JAVA programming. It proposed the features like sending mesages, file transfer, etc. As the required application is network based and multiple users are involved, there is also a need of security. The messages should be encrypted and decrypted at the sender and the receiver side using appropriate algorithms. This type of model is proposed in [3]. For communication between different users, there is a need of creating multiple sockets to support both, TCP and UDP communication where TCP/IP provides reliable communication and UDP provides smart addressing operation to control the destination of data being transfered. In our application, there is a need to provide security by privately sending messages using encryption techniques and there is also a need to broadcast messages to and from any department which lacks in [4]. Mr. Maha Sabri Altemem etal discussed a model which proposed that if a socket program is written in JAVA, it would still be able to connect with other socket programs written in C or C++. In short, this model supported the transparency feature[5].

There is a need for storing the messages as the admin has the right to access all the messages exchanged. This is not proposed in [6]. Depending on the number of users, there may be overload on the server. One of the alternative to this problem is using multi-threading i.e whenever a client requests for a new connection to the server, the server creates a new individual thread for that client as stated in [7]. Security measures are also important when it comes to web based applications. User Authentication using OAuth protocol is proposed in [8] which prevents the third party applications to access the user's information.

Mr. Samer EL Sawda etal[9] developed a model for communication based on SIP protocol. As this model mainly addresses a trusted communication, the concept of SIP SIGN is implemented which means that there is a redirected server named 'Proxy Signatory' which provides the caller a mecha-nism for signing the message at the time of sending and the callee can verify the caller identity. SIP protocol also provides acknowledgement for sending and receiving messages which is stated in [10].

A. Methodology

The Idea of this proposed application is to store the data in a centralized database and one can use the credentials to log in and have access to the data as preferred. This surely provides some level of robustness but the main challenge here is to protect the centralized database from any type of attacks. In this application, when a user wants to communicate to another user, he first has to connect to the user and the server authenticates this client. After successful log in, the user can send the message publicly or privately communicate with other users. Some important idea of this:

- ✓ There is a centralized server for log in authentication and data storage.
- ✓ Single log in is required to communicate to multiple users.
- ✓ User log in is done for each Client as a one way authentication.

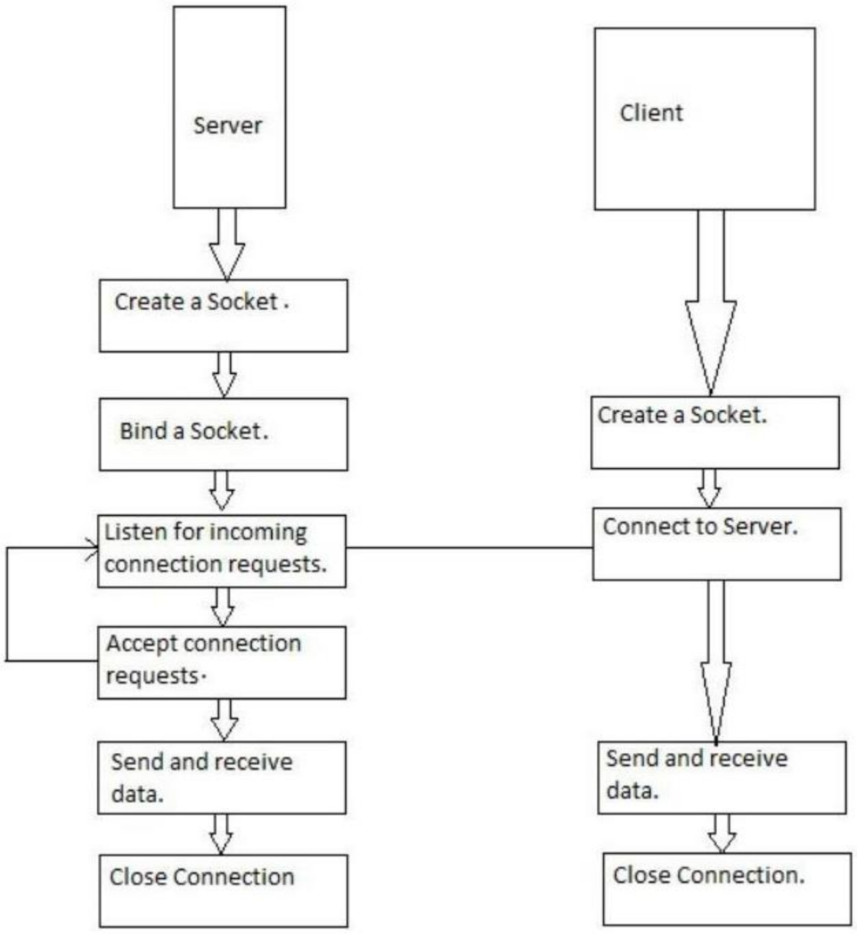

Figure 1. Working of Socket

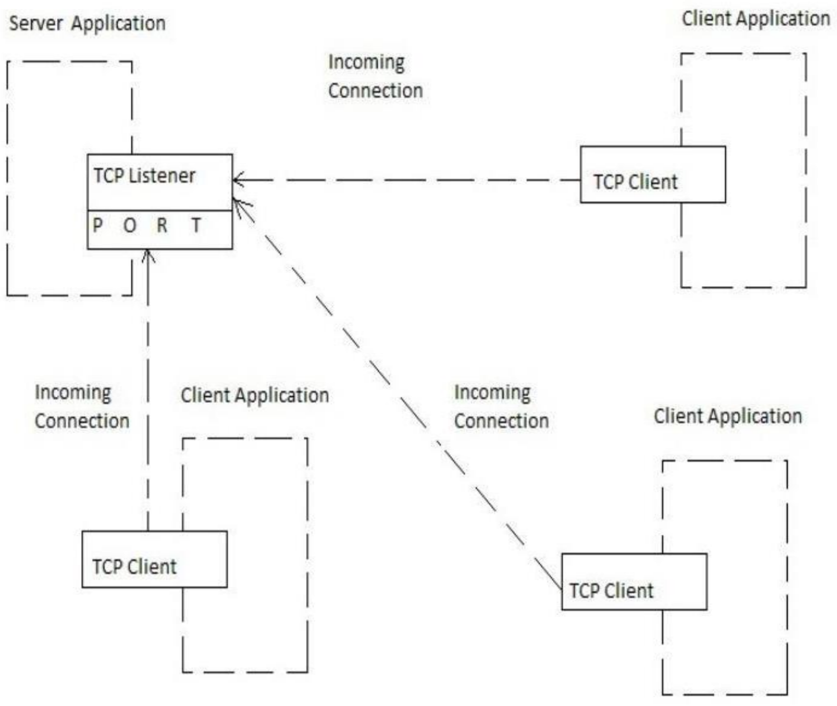

Figure 2. Block Diagram of Client-Server Model

With the use of socket, the message is sent by one staff into the socket and is passed to another staff on the receiving side. In case of group chat, a central socket is used that collects the message and broadcasts it to all the staff that is active.

B.Features

Category Wall

This application consists separate category wall for different departments. For example-Finance, IT, Admin, etc. The employer will have to login and select the category to which he/she wants to send the message. Notification will be shown for successful message delivery. The message can also be marked as public or private. In case of public everyone who logs in will be able to see the message on category wall. User can also search the messages by applying filters.

Category Owner

Category owner is able to see all the messages posted on the category wall and also respond to them. Cate-gory owner can only respond to the public messages posted on the wall and can also apply filters to search the messages.

Admin

Different categories can be Created/Updated/Deleted by the Admin. The admin is able to create the owners of the category who can respond to the messages posted on respective category wall. Admin also has access to all messages from all employees.

File Sending

This application also supports transfer of files with various file formats(eg,.txt, .jpg,.png, etc). The file can either be sent to a specific user or to the entire staff at a time as broadcast.

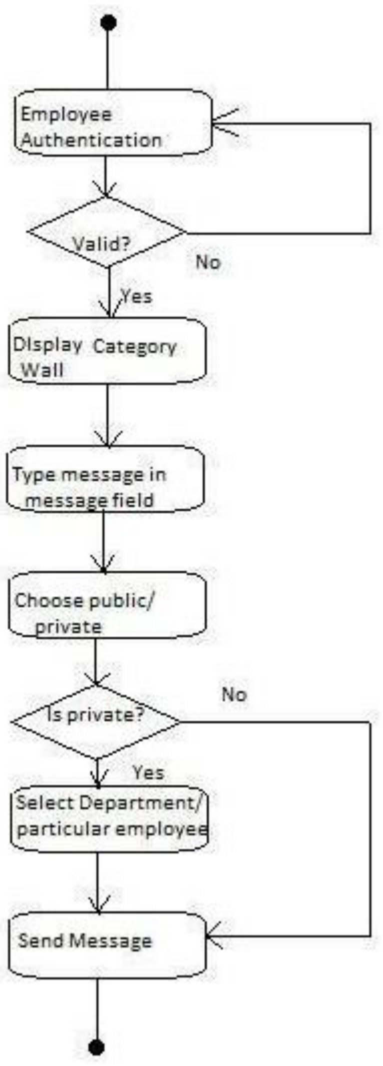

Figure 3. Flow Diagram

III. CONCLUSION

This paper introduces the Client-Server Model for com-munication using JAVA programming which is the core of our project, Free Voice Web Application . It makes use of API's for JAVA-Socket Connectivity which is explained in different diagrams like Working of Socket, Block Diagram of Client-Server Model and Flow Diagram that are included in this paper.

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