

## **PROJECT TITLE: CHAT APPLICATION**

### **PROJECT IMPLEMENTATION**

Chatting is a method of using technology to connect individuals and ideas across geographic boundaries. There are several issues for discussion in today's world, and each person has a distinct opinion on each topic. I've created a Chat Application where individuals may converse and debate. It is more like to a forum for conversation, but it will be private and not open to everyone.

Some of the major features of the project are:

- **Hosting:**

Web hosting is an online service that enables you to publish your website or web application on the internet. When you sign up for a web hosting service, you basically rent some space on a physical server where you can store all the files and data necessary for your website to work properly.

There are many hosting services out there on the internet. Some of them includes, Bluehost, SiteGround, Flywheel etc., There are some cons associated with these services like monthly rent is high compared to others, always need to close ad/promotion boxes in their dashboards, less control over automatic backups etc.

I personally prefer Hostinger as a hosting service for my project. It is so because it provides incredible speed to the application, won't take more time to load. Pricing is way better than other web hosting services. It also has a user-friendly control panel which allows a layman coder to work easily on this platform.

- **Socket Server:**

A socket server is usually a multi-threaded server that can accept socket connection requests.

There are many ways to build this. You can either write code or use already built services like Active MQ and Rabbit MQ where each puts a message on a queue requesting something is done, the other side does it and optionally sends a response.

In this project, I have done socket programming. I have programmed the socket server and pushed in to the Hostinger hosting platform. There are 2 main parameters in the socket server, IP and PORT. IP creates the socket address as an identifier that is unique throughout all Internet networks. The IP address is the one which will be available when you start your Hostinger server. That particular IP address is required by the users to connect to each other. A port is a logical identifier assigned to a process in order to identify that process uniquely in a network system. The Port can be any number which is included in the code by the user. Once the server is up and running, it informs us that it is ready to be used by the users who want to use this server.

- **Socket Client:**

The socket client connects to the server, exchange information, and then disconnect.

In this project, I have programmed a simple socket client. The process is such that the client code needs to connect to the given IP and Port. If there is a problem in the connect then it returns a connection error message. Once the connection is successfully established, the user can enter their username, IP address of the server and the Port number. The user now gets into the chat box. When a user sends a message, it goes to the socket server of that particular IP address and port, the other user having the same IP and Port receives the same and sends the reply. Once the chat is done and the user leaves the chat, a message saying Connection is closed by the user is given.

- **Windows Subsystem for Linux:**

The Windows Subsystem for Linux (WSL) is a feature of the Windows operating system that enables you to run a Linux file system, along with Linux command-line tools and GUI apps, directly on Windows, alongside your traditional Windows desktop and apps.

There are many Linux based operating systems which includes Debian, Manjaro Linux, Fedora. There are some demerits associated with these platforms like some of them are not entirely user-friendly, keeps non-free software out of its official system, additional hardware configurations can become complicated.

In this project, I have installed WSL and Ubuntu which is a popular free and open-source Linux-based operating system you can use on a computer or virtual private server. Linux is basically known for its stability, reliability and security. I personally prefer Ubuntu as it is available free of cost for both personal and professional use, the process of setting up especially for the purpose of testing is easy, it provides an easy user interface.

- **Programming Language:**

Programming languages are rules designed by software engineers to send instructions to computers. These programming languages are written in lines of code. When it's arranged in the right order, it can be used to create software programs.

There are many programming languages available which includes Java, C++, Python etc. for socket programming. All these programming languages serve their own purpose, specialty and efficiency.

I personally prefer Python programming language as it is easy to use and very user-friendly. Python also provides the socket module required to work with sockets at high and low levels. The socket module provides all the required functionalities to quickly write TCP and UDP clients and servers.

- **Graphical User Interface:**

A graphics-based operating system interface that uses icons, menus and a mouse (to click on the icon or pull down the menus) to manage interaction with the system.

There are many GUI based frameworks available in the market for different programming languages which can be used for making a creative UI design for a chat application. Some of them include, Kotlin, JFrame and Streamlit for Java based GUI, wxWidgets and Boost.UI for C++ based GUI, Kivy and PyQt5 for Python based GUI.

I personally prefer Python for its easy and user-friendly nature and Kivy for developing the GUI. Kivy is very fast and robust. It helps to write the class, widgets and easy to configure. It is platform dependent. The development process is easy as the framework used is rich in touch events that helps to create the application very easily. It is also a cross-platform framework in which same code can be used to build mobile apps.