



**Institute of Arts and Sciences (Chiniot Campus)  
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# **Software Requirement Specification**

**(SRS Document)**

**For**

**Connect GC**

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**Bachelor in Computer Science (2022-2026)**

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## Revision History

Name	Date	Reason For Changes	Version

# **1. Introduction**

## **1.1 Purpose**

The purpose of this document is to provide a detailed specification for the development and implementation of the Connect GC application.

## **1.2 Intended Audience**

This document is intended for:

- Developers
- Testers
- Project Managers
- Stakeholders involved in the Connect GC

Readers are advised to review the document thoroughly to understand the requirements and constraints of the system.

## **1.3 Project Scope**

Connect GC is a chat application allowing users to connect to a server, join a chat room, send and receive messages, and disconnect gracefully.

## **1.4 Definitions**

### **Input**

Input is the data or information that a system receives from the external environment. It serves as the raw material for processing within a system.

In a computer program, user keyboard entries, mouse clicks, or data from sensors can be considered as input.

### **Output**

Output is the result or information produced by a system or process after the input has been processed.

In a computer program, the output could be displayed on a screen, printed on paper, or saved in a file.

### **Prompt**

Prompt refers to a message or indicator that prompts the user to provide input. It's a way for the program to communicate with the user.

### **GUI**

A Graphical User Interface (GUI) is a visual way for users to interact with computers, software applications, and electronic devices

## Client

A client is a computer program or device that requests services or resources from another computer program, known as a server.

## Server

A server is a computer program or device that provides services or resources to clients in a client-server architecture. Servers handle incoming requests from clients, process those requests, and send back the appropriate responses

# 2. Overall Description

## 2.1 Product Perspective

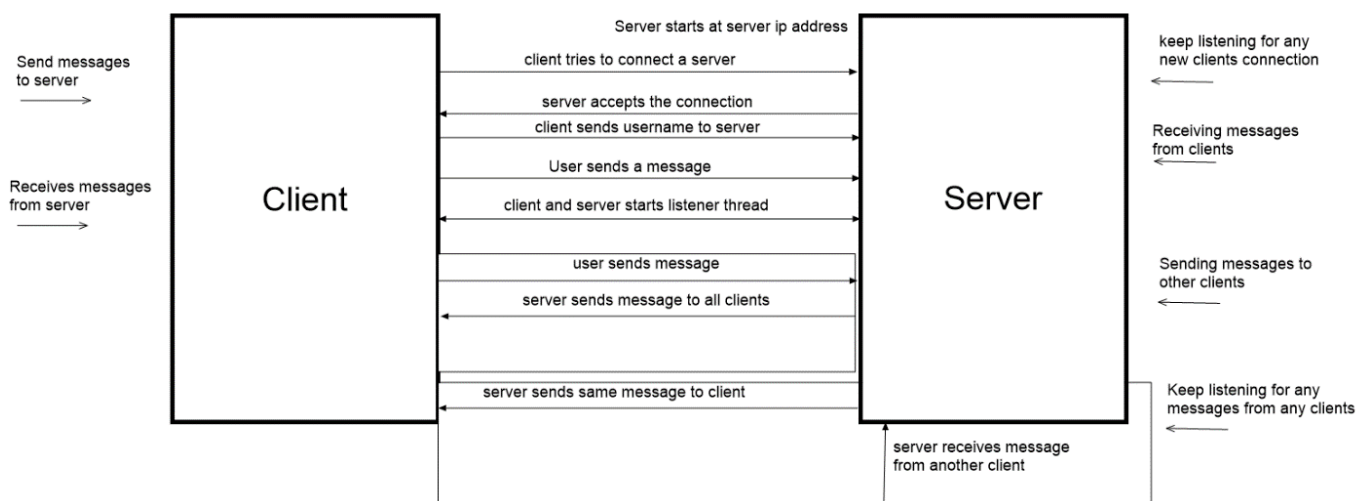
Connect GC consists of two main components – the client application and the server application. The client facilitates user interaction, while the server manages communication between clients.

## 2.2 Product Features

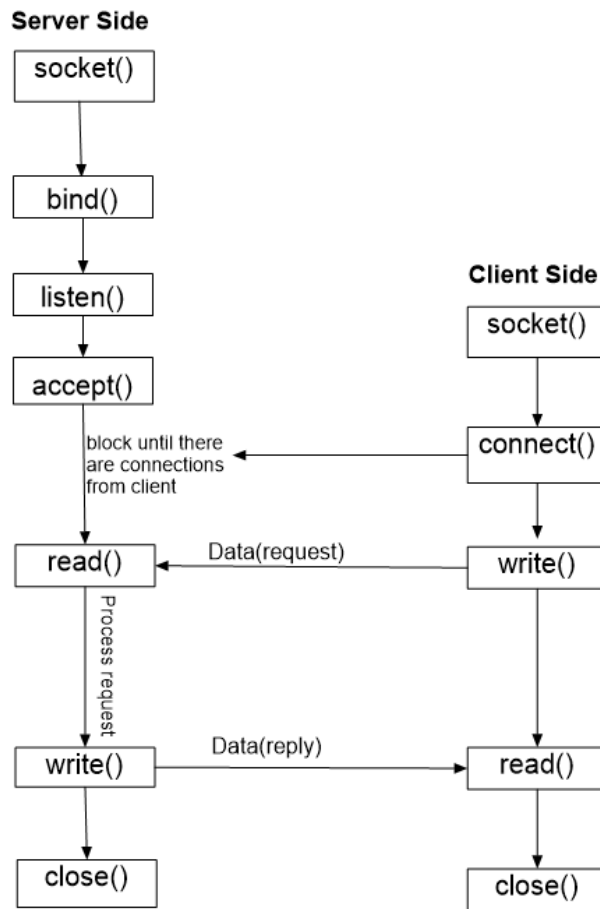
- User authentication with unique usernames.
- Real-time chat functionality.
- Graceful connection and disconnection handling.

## 2.3 User Classes and Characteristics

### Activity Diagram



## Flowchart of connections



## 2.4 Operating Environment

The system will be compatible with Windows operating systems.

## 2.5 Design and Implementation Constraints

- The system will be developed using Python Programming Language.
- Compatibility with latest version of Python.

## 2.6 User Documentation

Comprehensive user documentation will be provided, including user manuals and guides for both client and server.

## 2.7 Assumptions and Dependencies

- Assumption: Users will have a stable internet connection.
- Dependency: Python interpreter must be installed.

## **3. Functional Requirement's**

### **3.1 User Registration**

- Users must enter a unique username.
- Blank usernames are not allowed.

### **3.2 Connection Establishment**

- Users must connect to the server using the specified IP address and port.
- Connection errors must be handled gracefully, with appropriate error messages.

### **3.3 Message Sending**

- Users can send messages by typing in the message text box and pressing 'Enter'.
- Blank messages are not allowed.

### **3.4 Message Display**

- All chat messages are displayed in a scrollable text box.
- Messages should include the sender's username.

### **3.5 Clear Chat**

- Users can clear the chat history by pressing the "Clear Chat" button.

### **3.6 Disconnection**

- Users can disconnect by closing the application or pressing the "X" button.
- Server should handle client disconnection gracefully.

## **4. Non-Functional Requirement's**

### **4.1 Performance**

- The system should handle up to 35 concurrent connections.

### **4.2 Reliability**

- The application should handle unexpected disconnections without crashing.

### **4.3 Usability**

- The GUI should be intuitive, with clear instructions.

### **4.4 Portability**

- The application should run on any system with a Python interpreter and required dependencies.

### **4.5 Scalability**

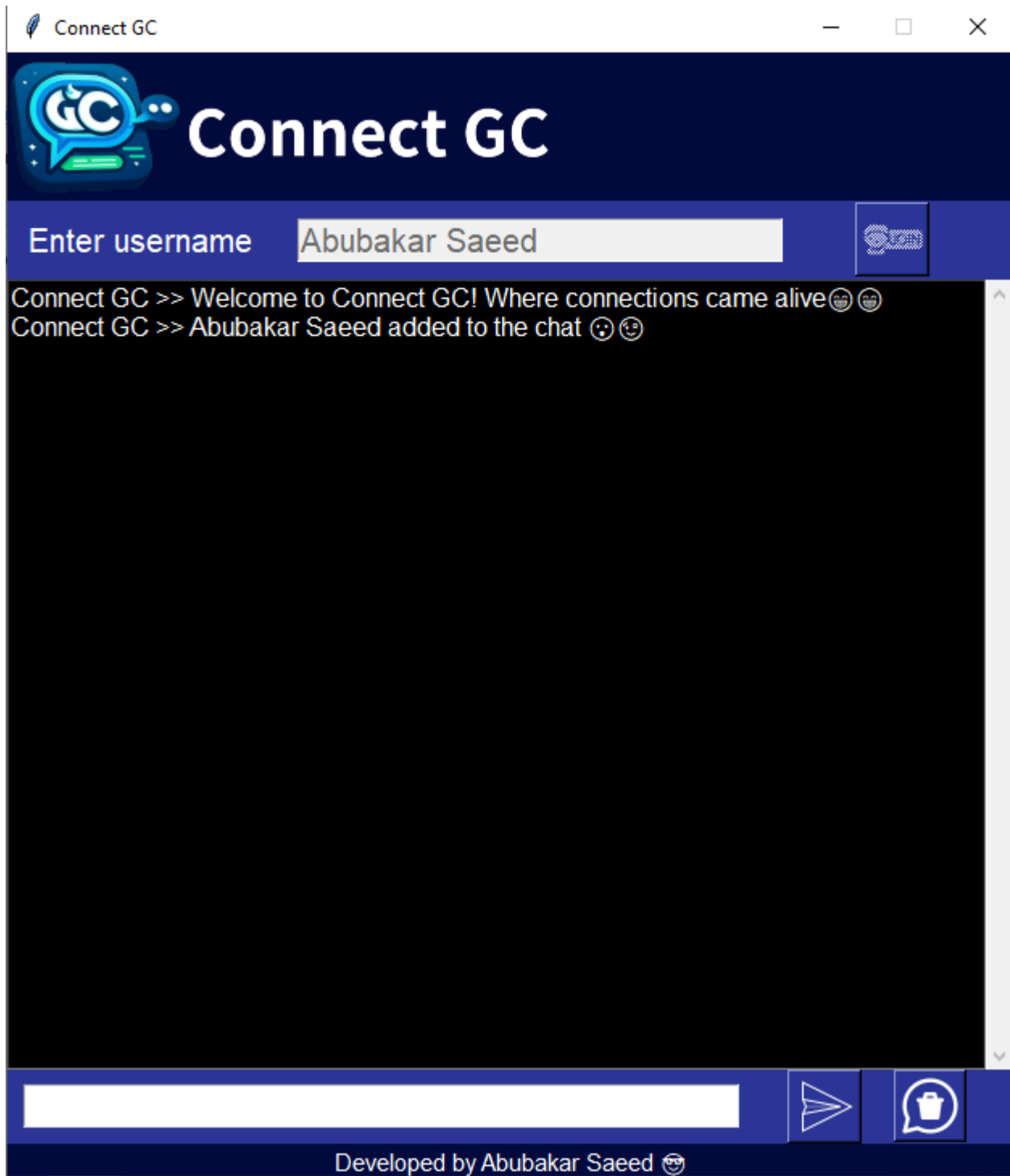
- The system should be designed to scale horizontally to accommodate an increased number of concurrent users beyond the initial 35, with minimal impact on performance

### **4.6 Security**

- Communication between the client and server should be encrypted using secure protocols (e.g., SSL/TLS) to protect user data and messages from unauthorized access.

## **5. User Interface Design**

The GUI should consist of a logo frame, top frame (for username input), middle frame (for chat display), bottom frame (for message input), and a footer frame displaying development information.



## 6. System Architecture

Connect GC uses a client-server architecture. The server listens for incoming connections and handles the distribution of messages among connected clients.



## **7. Testing Requirements**

Comprehensive testing should cover connection establishment, message sending, message display, disconnection, and error handling.

## **8. Documentation**

### **8.1 User Manual**

A user manual should be provided with instructions on installing, configuring, and using the Connect GC application

### **8.2 Technical Documentation**

Detailed technical documentation should be maintained for future maintenance and development.