

# Chat System Project

When exporting the project as a `.rar` file, it will produce a root folder named:

`OS_Project/`

```
|  
|   └── SocketClient/          # Socket-based Chat Client project  
|       └── client.cbp        # Code::Blocks project file  
|       └── bin/  
|           └── debug/  
|               └── gui.exe     # Runs as admin  
  
|   └── SocketServer/          # Socket-based Chat Server project  
|       └── server.cbp        # Code::Blocks project file  
|       └── bin/  
|           └── debug/  
|               └── gui2.exe    # Runs as admin  
  
|   └── SharedMemoryClient/    # Shared-Memory Chat Client project  
|       └── client2.cbp        # Code::Blocks project file  
|       └── bin/  
|           └── debug/  
|               └── gui3.exe    # Runs as admin  
  
|   └── SharedMemoryServer/    # Shared-Memory Chat Server project  
|       └── server2.cbp        # Code::Blocks project file  
|       └── bin/  
|           └── debug/  
|               └── gui4.exe    # Runs as admin  
  
└── README.md                 # Project documentation, screenshots, demo
```

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## 2. Project Details

- **Programming Language:** C++
- **Project Requirements:**  
Implement **two chat systems** with a simple graphical user interface (GUI), both **completed** with the following properties:
  1. **Sockets and Multithreading (Completed)**
    - Users can communicate over the network on **different machines**.
    - Uses TCP sockets and multithreading to support multiple clients.
  2. **Shared Memory and Synchronization (Completed)**
    - Users communicate on the **same machine**.
    - Uses shared memory with synchronization primitives (mutexes/events).

#### **Team Members:**

- Malak Magdy Mohammed Abdalwahab | **ID:** 2300512
- Mohamed Ahmed Abdel Fatah Hussein Ismail | **ID:** 2300535
- Mohamed Ibrahim Abdelfattah Youssef Shalaby | **ID:** 2300528
- Sama Omar Saad Mohamed Meliha | **ID:** 2300522
- Ahmed Mohamed Morsy Abdallah | **ID:** 2302383

#### **Notes: Contributions by Team Members**

- **Malak Magdy Mohammed Abdalwahab**
  - Implemented **Socket-based chat client GUI**.
- **Mohamed Ahmed Abdel Fatah Hussein Ismail**
  - Implemented **Socket-based chat server GUI**.
- **Mohamed Ibrahim Abdelfattah Youssef Shalaby**
  - Implemented **Shared-Memory chat server**.

- **Sama Omar Saad Mohamed Meliha**
  - Implemented Shared-Memory chat client GUI.
- **Ahmed Mohamed Morsy Abdallah**
  - Implemented Shared-Memory chat client GUI.
  - Created project documentation and README.

### 3. How to Open and Use the Project

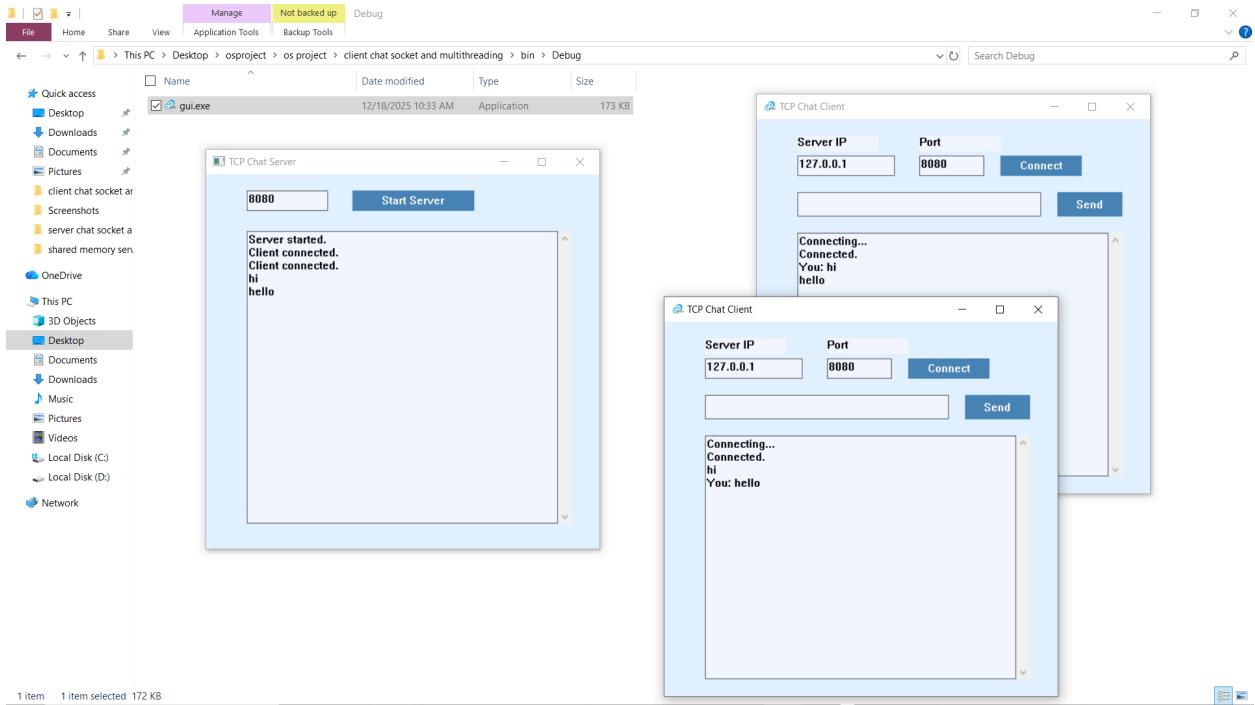
1. **Run the server first** (either TCP Socket or Shared Memory)
  2. **Run any number of clients** of the same type
  3. Make sure to **run as administrator on Windows**
  4. Both server and clients will have a GUI to enter IP/Port (TCP) or use default shared memory (Shared Memory)
  5. Messages sent from clients will appear in all connected clients' log boxes
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### 4. GitHub Link and Required Installations

- **GitHub Repository:** <https://github.com/MalakMAmer/osproject>
  - **Required Installations:**
    - Windows OS (server and clients tested on Windows)
    - Code::Blocks or any C/C++ compiler supporting Win32 API and Winsock2
    - Run all `.exe` files as administrator
    - No additional libraries required (uses standard Windows API)
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### 5. Screenshots & Demo

#### Socket Chat System



## Shared Memory Chat System

