

Network Programming

Design and Analysis

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Application Introduction

Design

Protocol Design

Modules

Implementation Details

Application Introduction

Our Application is about chatting program:

- Application require login and logout
- Allow users to chat with each other
- Allow users to create a group
- Allow user to chat in a group
- Allow user to send pictures to others

- Transport protocol TCP
- Server - Client Architecture

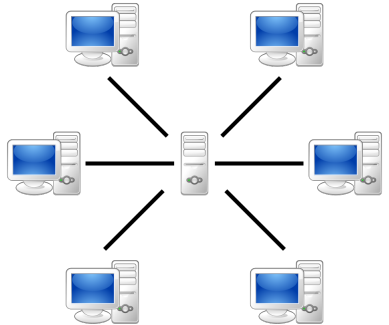


Figure 1: Model

Design

1. **Message Format**
2. **Modules**
3. **Protocol**

1. Using JSON Format
2. Client message
3. Server Message

1. Method
2. User name
3. Password
4. Sender
5. Receiver

1. Method
2. Code
3. Sender name
4. Receiver ID
5. Error list
6. Object list

1. **Library**
2. **Log In**
3. **Register**
4. **Send Message**
5. **Room**

Module Design

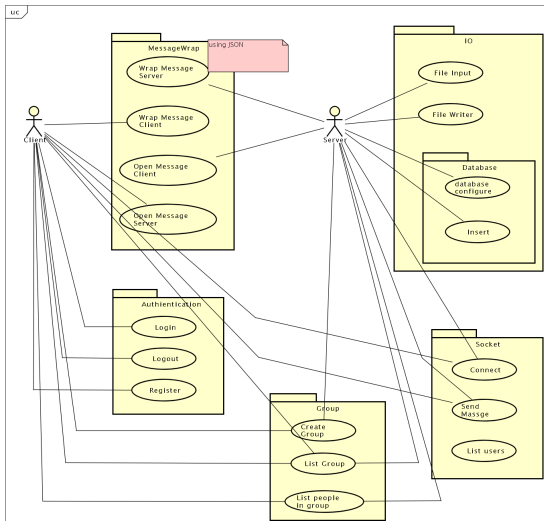


Figure 2: Module Design - Use Case diagram

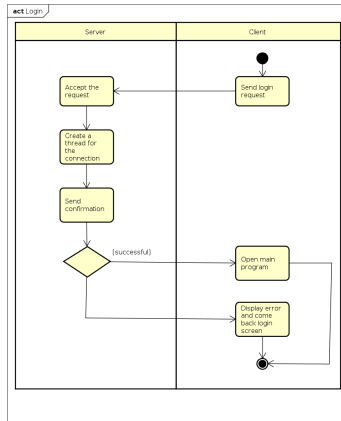


Figure 3: Log In - Activity diagram

Register

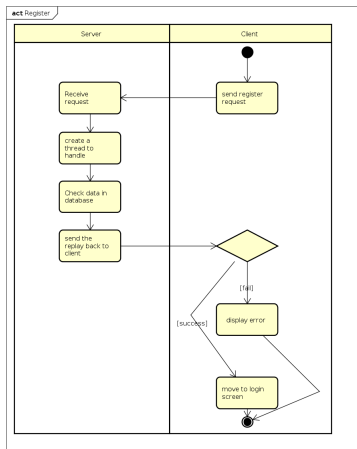


Figure 4: Register - Activity diagram

Send Messages To A Group

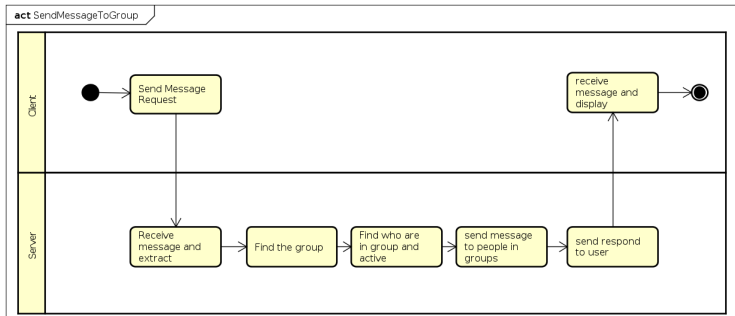


Figure 5: Send message to group - Activity

Send Message To A Person

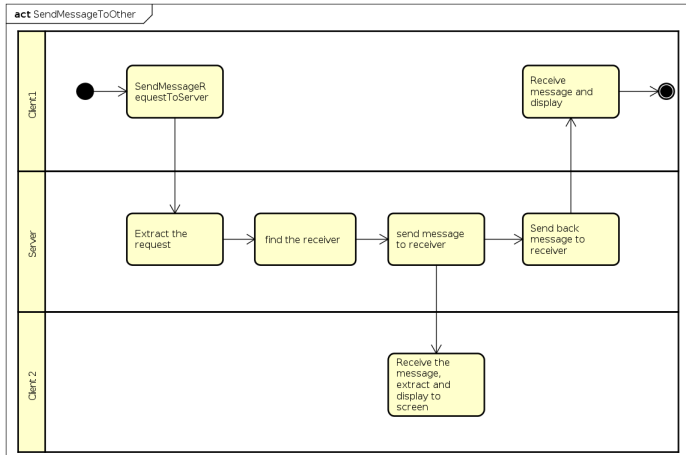


Figure 6: Send Message to an user

Implementation Details

- Online Tree Representation
 - The online tree is a binary search tree
 - Each online user will have a node on the tree

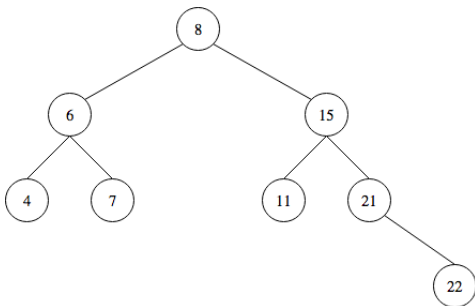


Figure 7: Online Tree Representation

- Online node representation

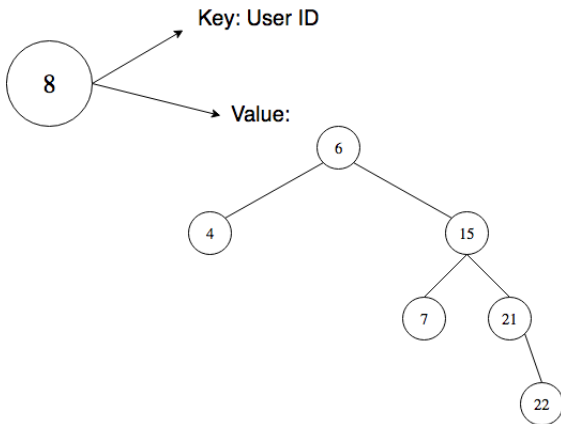


Figure 8: Online Node representation

- Between 2 online nodes
 - The message queue representative for the messages sending from node 1 to node 2.

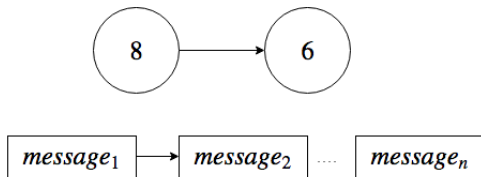


Figure 9: Message Queue between 2 online nodes