Design Overview
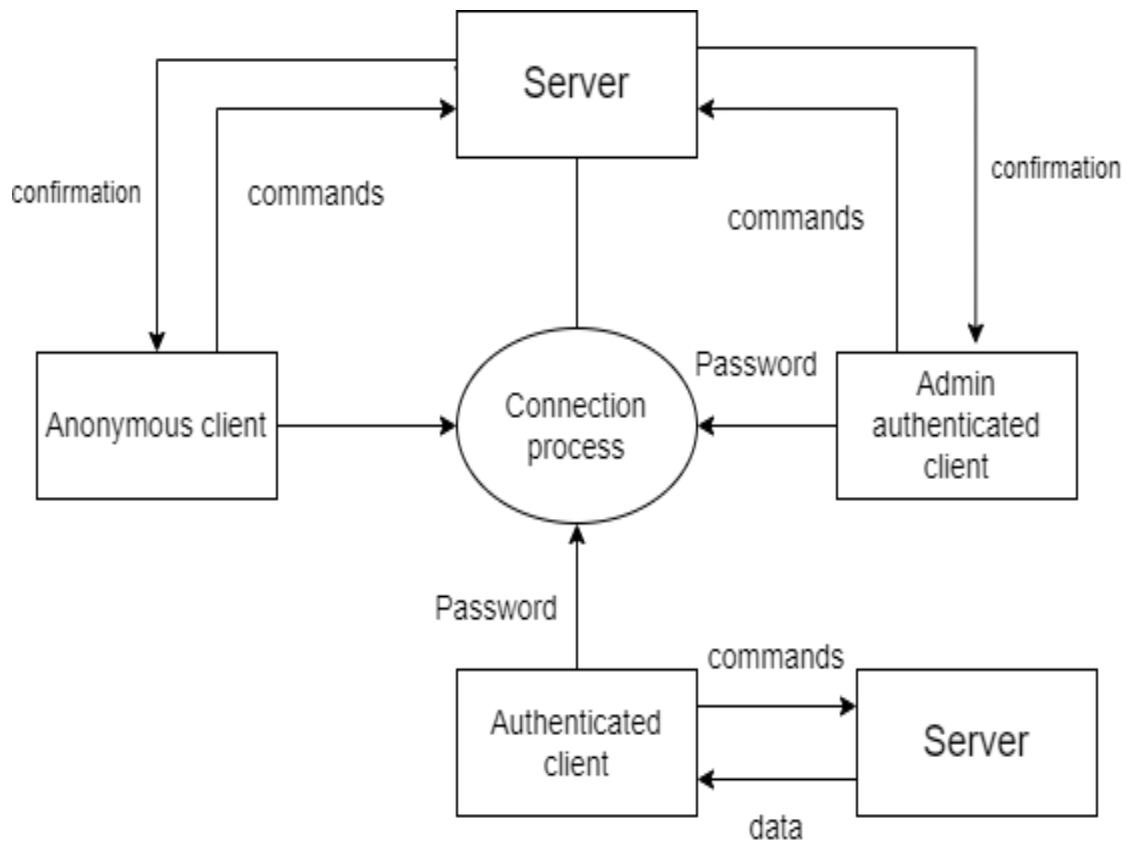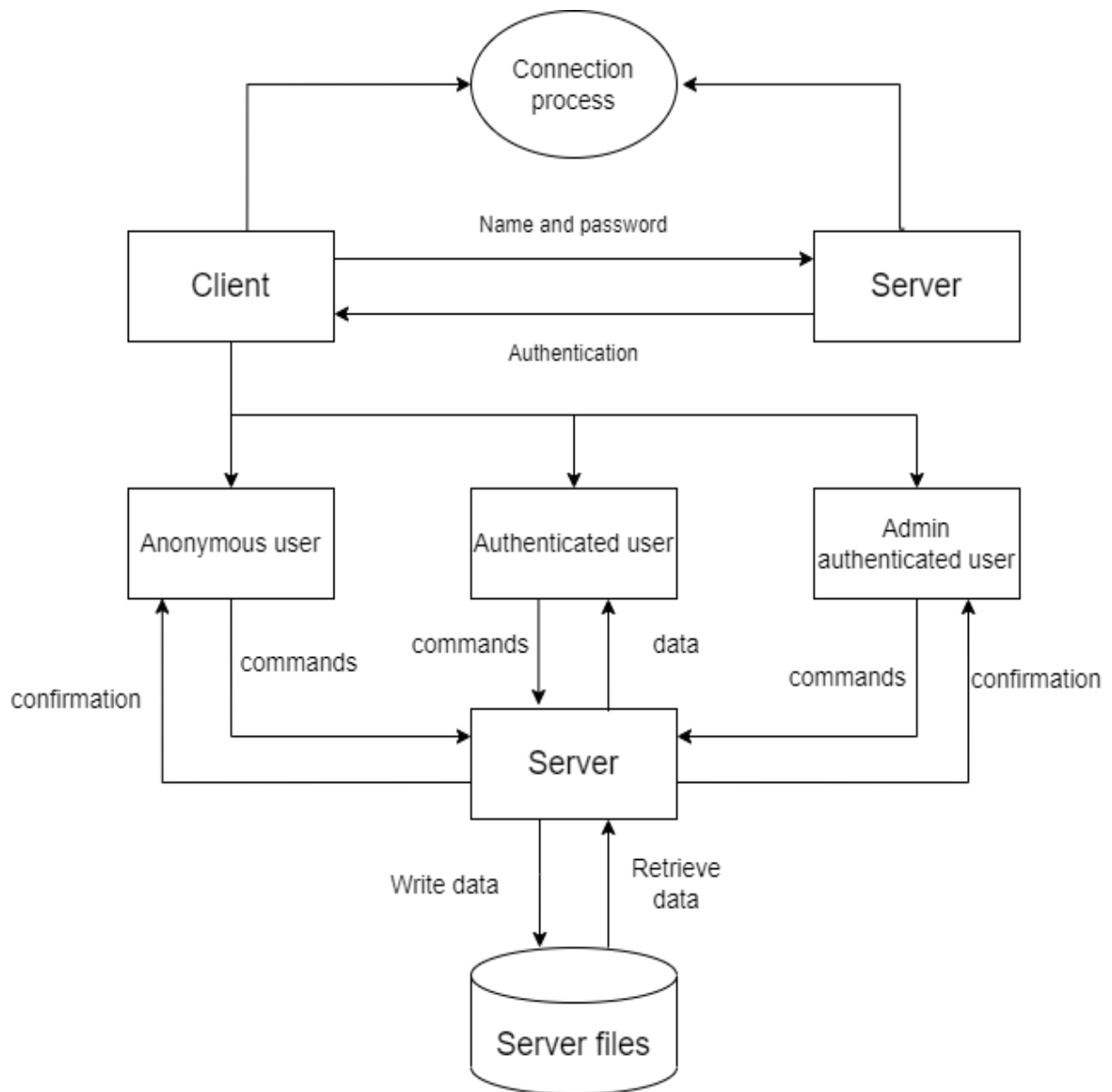
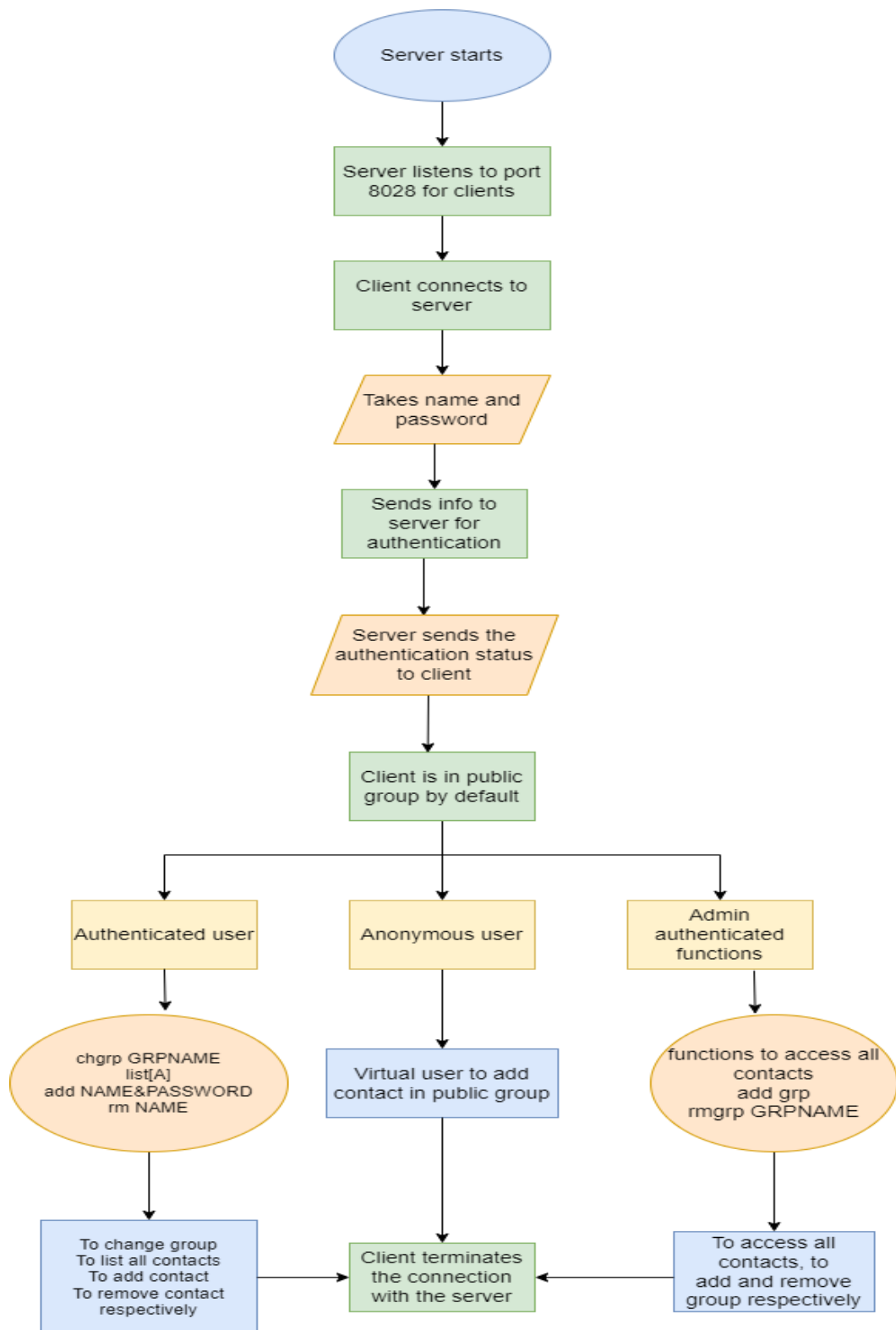## Data Flow Diagram Level 0:
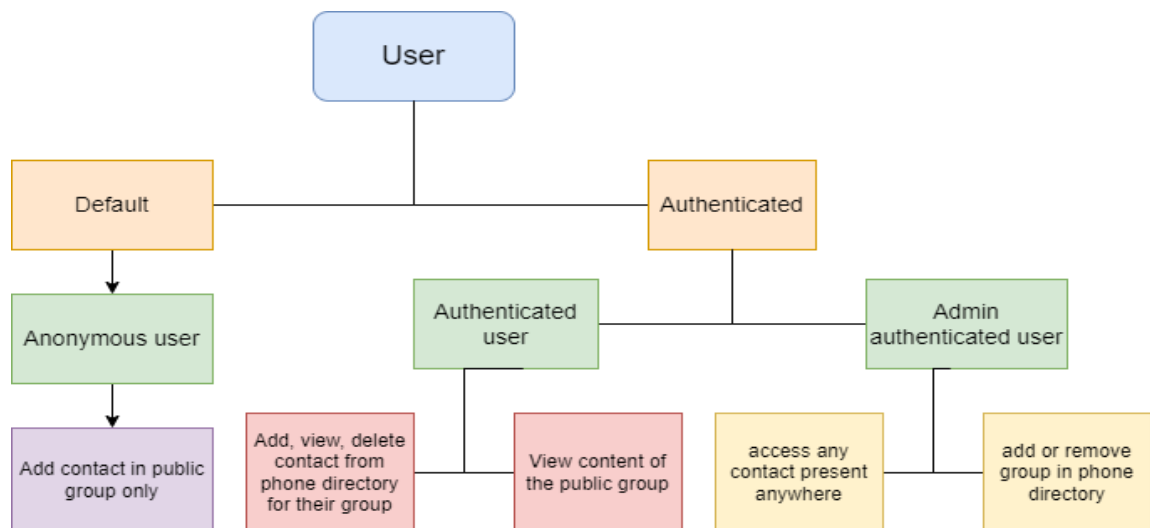

Data Flow Diagram Level 1:
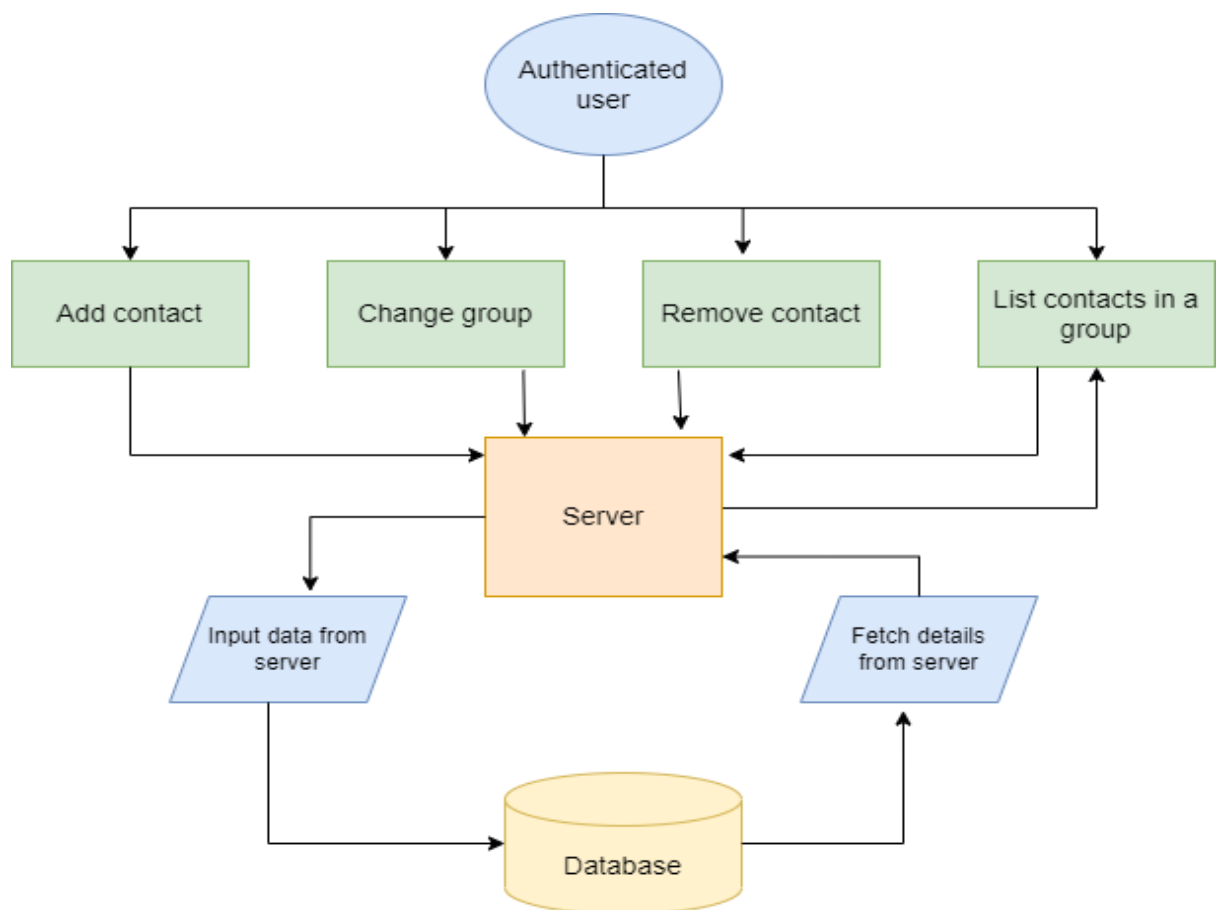
Flowchart for Remote phonebook:

```
                    ┌─────────────────┐
                    │  Server starts  │
                    └─────────────────┘
                             │
                             ▼
                 ┌───────────────────────┐
                 │ Server listens to port│
                 │   8028 for clients    │
                 └───────────────────────┘
                             │
                             ▼
                 ┌───────────────────────┐
                 │   Client connects to  │
                 │        server         │
                 └───────────────────────┘
                             │
                             ▼
                  ╱───────────────────╱
                 ╱  Takes name and   ╱
                ╱     password      ╱
               ╱───────────────────╱
                             │
                             ▼
                 ┌───────────────────────┐
                 │    Sends info to      │
                 │    server for         │
                 │   authentication      │
                 └───────────────────────┘
                             │
                             ▼
                ╱─────────────────────╱
               ╱  Server sends the    ╱
              ╱  authentication status╱
             ╱        to client      ╱
            ╱─────────────────────╱
                             │
                             ▼
                 ┌───────────────────────┐
                 │  Client is in public  │
                 │   group by default    │
                 └───────────────────────┘
```

Takes name and password

Sends info to server for authentication

Server sends the authentication status to client

Client is in public group by default

| Authenticated user | Anonymous user | Admin authenticated functions |

chgrp GRPNAME
list[A]
add NAME&PASSWORD
rm NAME

Virtual user to add contact in public group

functions to access all contacts
add grp
rmgrp GRPNAME

To change group
To list all contacts
To add contact
To remove contact respectively

Client terminates the connection with the server

To access all contacts, to add and remove group respectively

Flowchart for user:

Flowchart for functions of authenticated user:

Flowchart for functions for admin authenticated user:
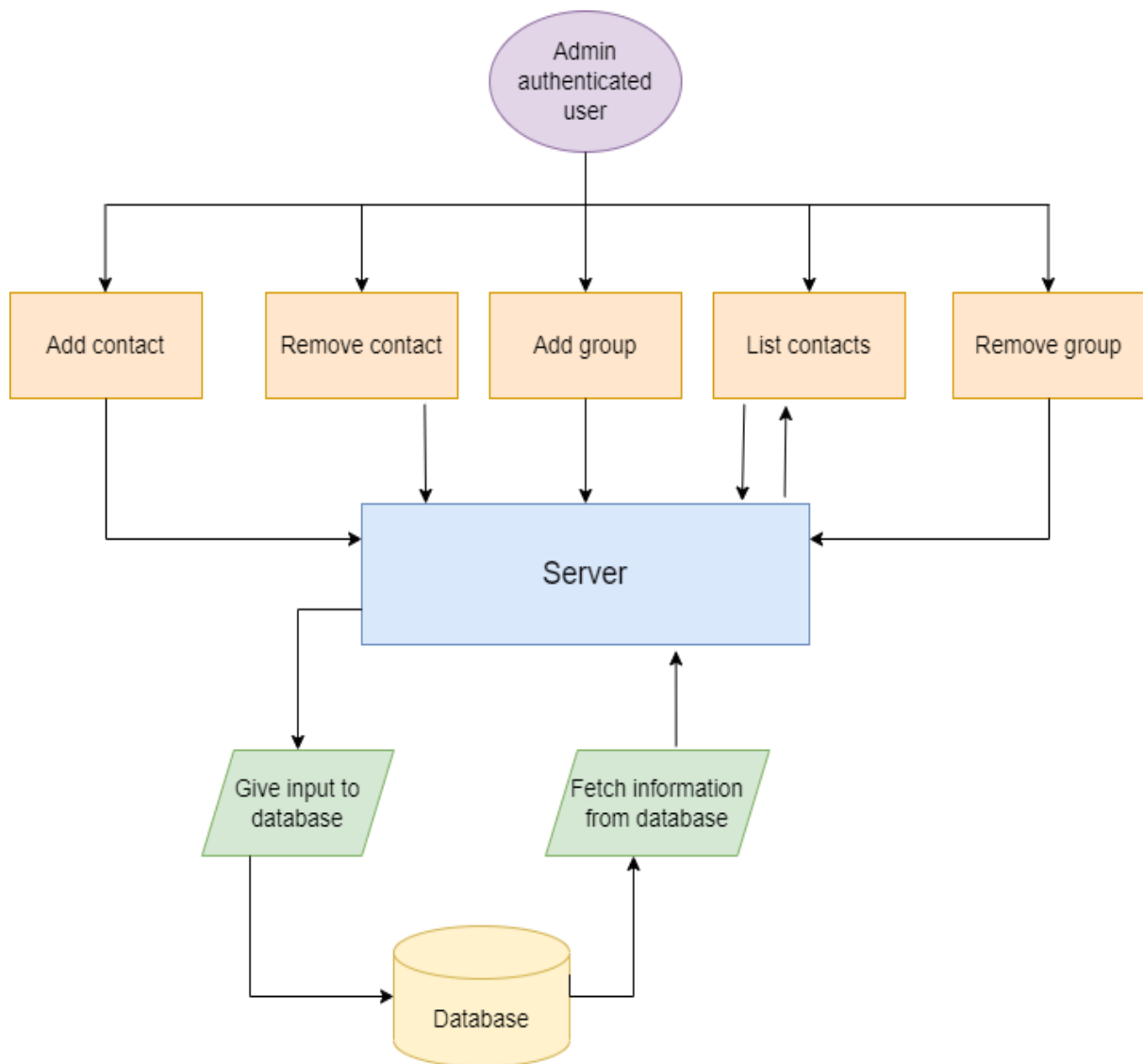
System Architecture

Functions:

SERVER FUNCTIONS:

User Authentication:

The server should authenticate the user from a poll of registered user data kept with appropriate data structure.

Server side Firewall Protection:

The server should listen to port 8028 for client connection and make the client side computer access the server port.

Service starting at boot:

The server must configure to start the service automatically at boot.

Server side concurrency:

The server should support the concurrent client connection.

CLIENT FUNCTIONS:

Client side program starting:

The user should start the client program to connect the Server whenever he wants.

Client side connection request:

Client should request a connection to the server on port 8028.

Client side authentication:

Client program should start with an authentication

Client side user environment:

On successful authentication the user should be placed in a public group for phone book access.

Client side environment customization:

Users can use chgrp GRPNAME to change his Working group on phone book.

Client side browsing contact:

list[A] to list out all contacts in a group

Client side contact Add:

User adds contact using this function.

Client side contact deletion:

User can remove any contact from working group

Client side Group Add and Remove:

Admin authenticated user use this to add and remove groups.

Client side quit:

The user uses the subcommand bye to terminate the connection.