SMTP Email client/server application

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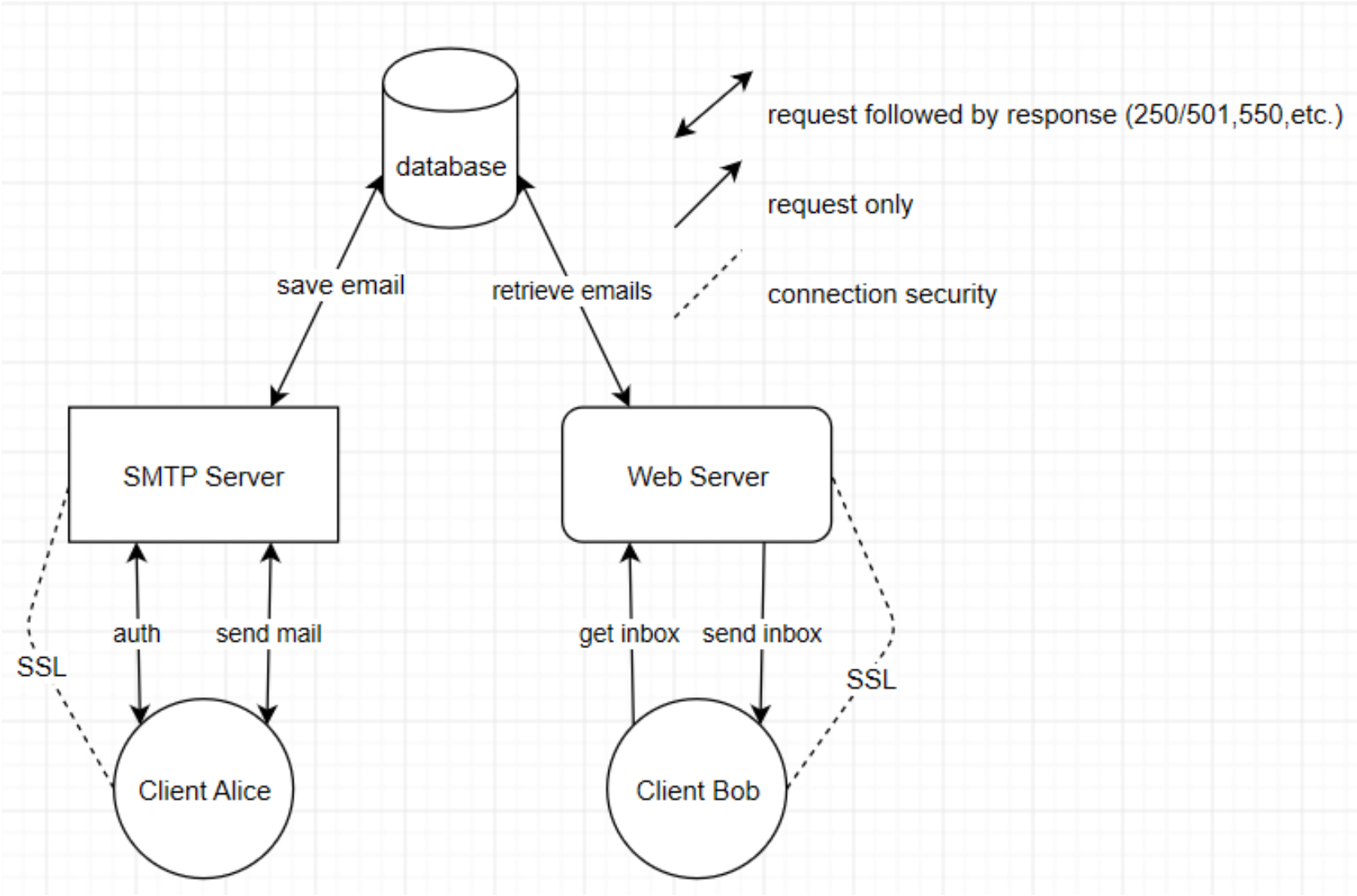

Project Diagram

Client Application

GRAPHICAL USER INTERFACE

- Build using PyQt5.
- Design created using Qt Designer tool.
- Connected to logic by translating .ui files to .py files using Visual Studio Code PyQt5 extension.

CLIENT LOGIC

- Implemented by extending smtplib class.
- Uses SMTP protocol to communicate with SMTP Server.
- Uses TCP protocol to communicate with TCP Server.
- SMTP and TCP socket connections are using SSL for security.
- Client is not connected to the database directly.

SMTP Server

- Used to send emails from one client to another via SMTP protocol.
- Runs on localhost, port 8025.
- Implemented by subclassing aiosmtpd.smtp.
- 4 new SMTP commands added: PING, AUTH, REG, and GET USER
- Uses sqlite3 database to access data requested by the user
- Creates new self signed key and certificate file for the ssl context if those files are not already in the project directory.

Web Server (TCP socket)

- Used to send user's inbox when requested by the client application.
- Runs on localhost, port 9999
- SSL encryption is implemented by subclassing TCPServer class and adding key and certificate members to use them for SSL context when connection with TCPClient is initialized.

Database 

- Database Engine: sqlite3
- Database file is stored locally on the PC so in order to access it, both SMTP Server and Web Server must run on the same machine.
- Consists of two tables:
  1. Accounts (id, username, password)
  2. Emails (id, mail from (account id), recipient (account id), message, date)

  All emails can be tracked to either the recipient of the email, or the sender of the email.
- Client never has direct access to database, client must request information via either SMTP Server, or Web Server, depending on the information needed.