Class Diagram Rationale

Server Rationale

1. Server Controller: The ServerController object configures the server on startup and spawns the SmtpServer and ImapServer objects.
2. SSLServer: The SSLServer abstract class is the foundation for the SmtpServer and ImapServer objects. An SSLServer listens for traffic over a secured SSL socket.
3. SmtpServer: The SmtpServer object listens for and accepts SmtpConnection objects.
4. ImapServer: The ImapServer object listens for and accepts ImapConnection objects.
5. Connection: The Connection abstract class is the foundation for the SmtpConnection and ImapConnection objects. A Connection represents an incoming request over the listening socket, parsed into a byte array.
6. SmtpConnection: The SmtpConnection objects input requests into the system and pass those requests to SmtpCmdProc objects.
7. ImapConnection: The ImapConnection objects input requests into the system and pass those requests to the ImapCmdProc objects.
8. CmdProc: The CmdProc abstract class forms the foundation of the SmtpCmdProc and ImapCmdProc objects. It will process requests and then execute the appropriate action based on the format of the request.
9. SmtpCmdProc: The SmtpCmdProc objects parse requests according to the SMTP protocol.
10. ImapCmdProc: The ImapCmdProc objects parse requests according to the IMAP protocol.
11. QueryHandler: The QueryHandler class constructs queries and receives responses from the PostgreSQL database attached to the server.
12. ServeUpdate: The ServerUpdate class executes an IMAP request for an update.
13. DeleteFolder, MoveFolder, CreateFolder, DeleteEmail, MoveEmail, ReceiveEmail, and SendEmail classes all execute their respective action by calling the appropriate method in QueryHandler.
14. SendExternalEmail: The SendExternalEmail class extends the SendEmail class in the situation that an email destination address is not local. This class sends an email to the destination server by invoking the SmtpClient class and passing the request on.
15. SmtpClient: The SmtpClient object connects to an external socket and sends an email in an SMTP formatted request.

Client Rationale

1. Client: The Client class starts the program and receives input from ClientUI and translates that input into actions based on its various connected classes.
2. Authenticate: The Authenticate class receives credentials from Client and checks those credentials against a query to the SQLiteInterface class.
3. SQLiteInterface: The SQLiteInterface class processes and sends queries to the local SQLite database and responds with data as its result
4. RequestUpdate: The RequestUpdate class is periodically called by the Client class. It requests updates from a spawned ImapConnection object and then updates the local database with that data by invoking the SQLiteInterface class.
5. Connection: The Connection abstract class is the foundation for the ImapConnection and SmtpConnection objects. It opens a connection to an external listening server over the relevant protocol.
6. ImapConnection: Used to connect to the server to request updates for the RequestUpdate class.
7. SmtpConnection: Used to connect to the server to make requests for the EditMail class.
8. EditMail: The EditMail class takes actions from the Client class and calls the appropriate class to execute those actions, then responds with a status to be displayed.
9. SendEmail, MoveEmail, DeleteEmail, CreateFolder, MoveFolder, DeleteFolder classes all execute their respective actions by forming and then sending a request to the SmtpConnection class. The response is then sent back to Client.