1. **List of features and entities**
- Essential Features:
    - Login
        - Welcome message
        - Credentials
            - Username input
            - Password input
    - Main Menu
        - Emails
            - List of emails
            - Send an email
            - Respond to an email (get list of emails and choose email to respond to)
            - Read a specific email
            - Archive email
            - Unarchive email
            - Find an email by subject – included in the archived emails
        - Appointments
            - Create an appointment
            - Get my appointments for today / tomorrow / next week
        - Log out
    - Admin Menu
        - Create user
            - Enter user details
        - Delete user
            - Confirm delete
- Entities:
    - User (Regular user vs admin user)
        - First name
        - Last name
        - Date of birth
        - Email address
        - username
        - Password (can be saved as cleared text)
        - Address:
            - city
            - street
            - number
        - Role: Admin/User
    - Email
        - From
        - To
        - Subject
        - Body
        - Time stamp
    - Email Archive
        - EmailID

- Appointment
  - From
  - To
  - Subject
  - When the appointment occurs
  - Where the appointment occurs (can choose a place from a specific list)
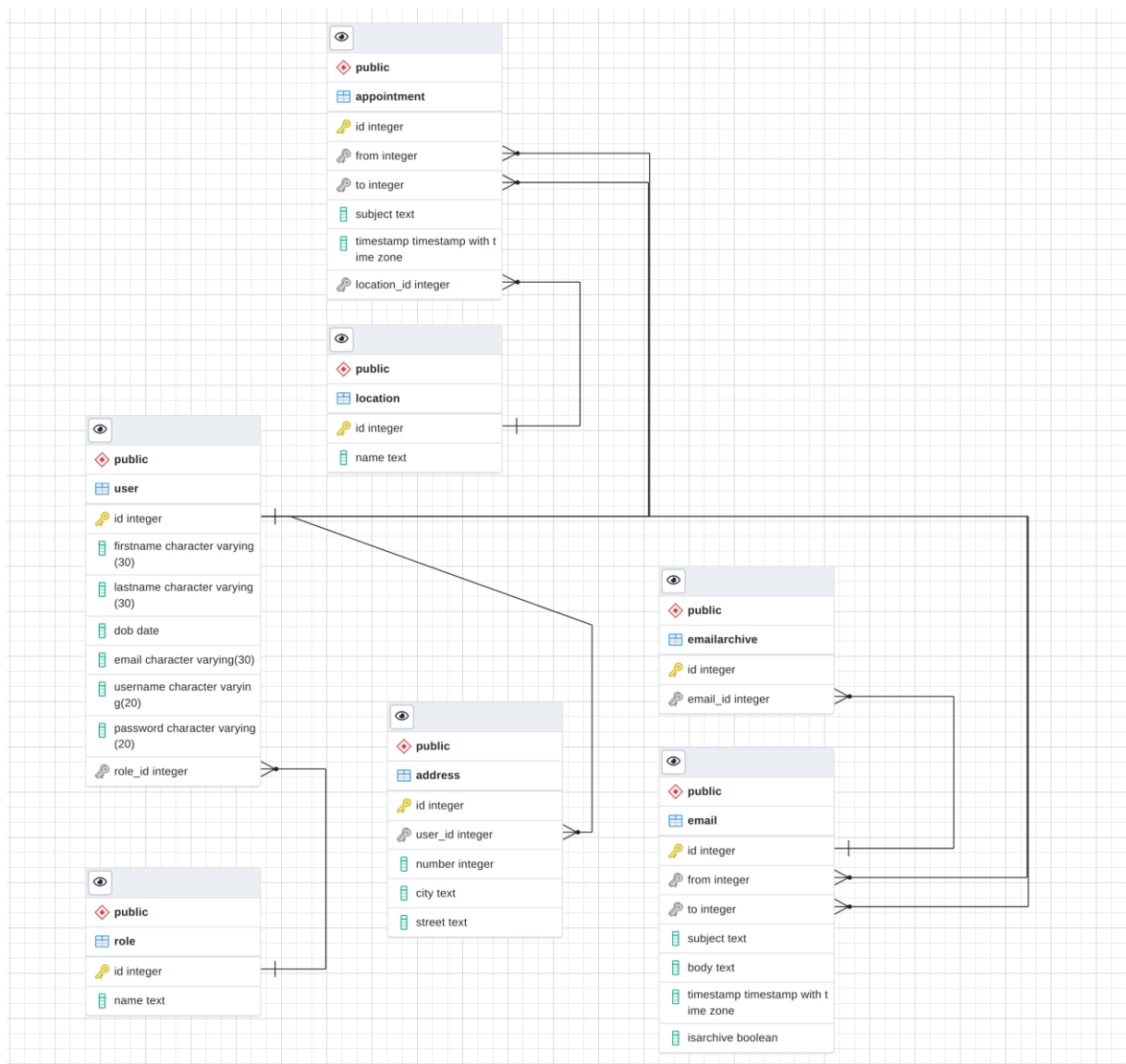- List of places for appt, to set up db or hardcode

User	
ID	PK/Int
FirstName	String
LastName	String
DOB	Date
Email	String
Username	Varchar(30)
Password	String
Role	String

Address	
ID	FK/Int
City	String
Street	String
Number	Int

Email	
EmailID	PK/Int
From	String
To	String
Subject	String
Body	String
Timestamp	DateTime

EmailArchive	
EmailID	PK/Int

Appointment	
AppointmentID	PK/Int
From	String
To	String
Subject	String
Date	DateTime
Location	String

public

appointment
- 🔑 id integer
- from integer
- to integer
- subject text
- timestamp timestamp with time zone
- location_id integer

public

location
- 🔑 id integer
- name text

public

user
- 🔑 id integer
- firstname character varying (30)
- lastname character varying (30)
- dob date
- email character varying(30)
- username character varying(20)
- password character varying (20)
- role_id integer

public

role
- 🔑 id integer
- name text

public

address
- 🔑 id integer
- user_id integer
- number integer
- city text
- street text

public

emailarchive
- 🔑 id integer
- email_id integer

public

email
- 🔑 id integer
- from integer
- to integer
- subject text
- body text
- timestamp timestamp with time zone
- isarchive boolean

2. Map of project architecture

Program flowchart with feature and entities.
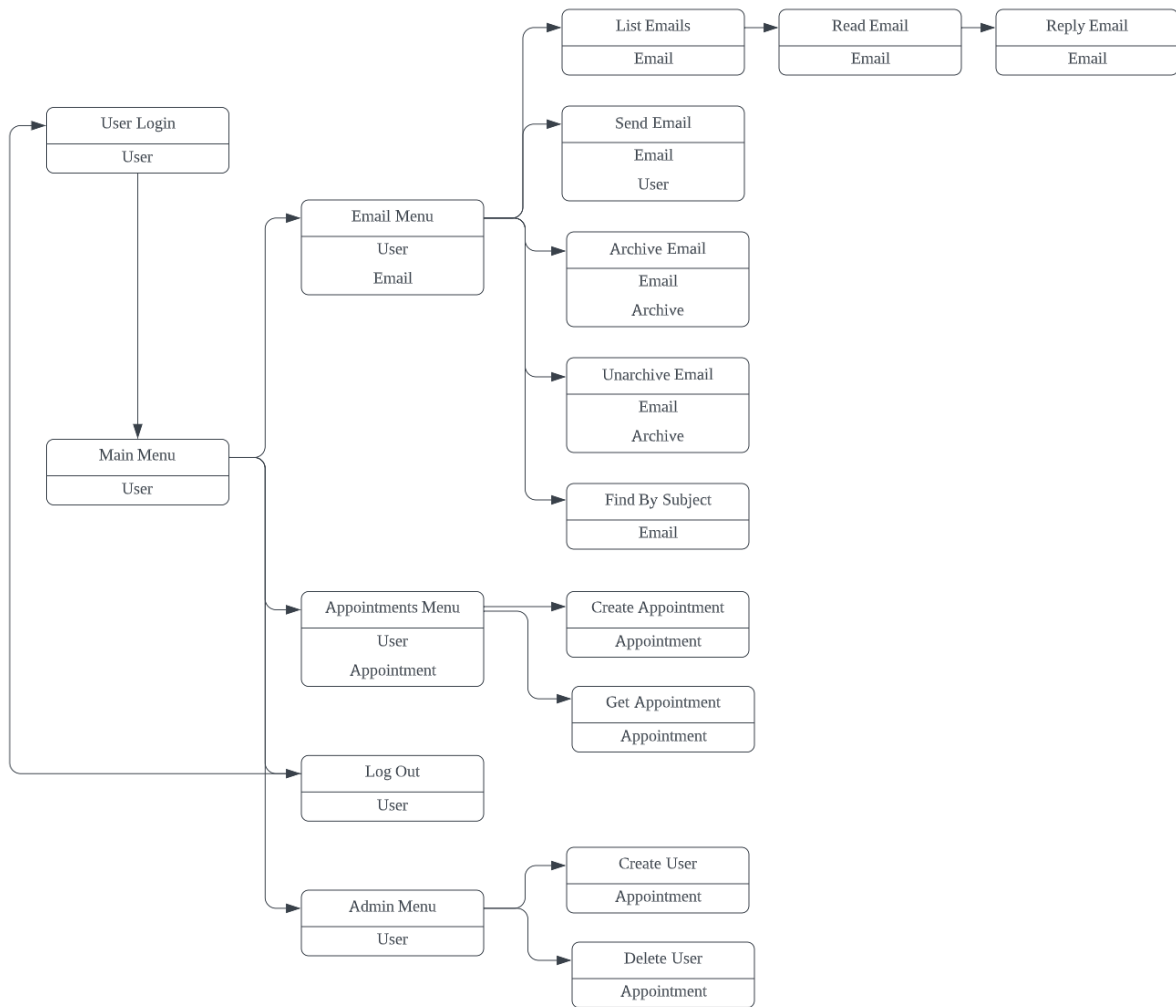
3. Implementation of features

User Login
- Entities:

User
- Instance method:

Check input vs username
and password

Main Menu
- Entities

User
- Instance method:

Display options for
Email, appointments,
admin menu, and logout
button

Email Menu
- Entities:

Email
- Instance method:

Display email options

Appointments Menu
- Entities:

User

Appointment
- Instance method:

Display appointment
options

Log Out
- Entities:

User

Admin Menu
- Entities:

User
- Instance method:

Display admin options if
admin role

List Emails
- Entities:

Email
- Instance method:

Display all emails from
db

Read Email
- Entities:

Email
- Getter method:

Get email details based on
email ID

Reply Email
- Entities:

Email
- Instance method:

Create new email related
to original email, to and
from are swapped, add a
RE: to email subject

Send Email
- Entities

Email

User
- Instance method:

Create new email

Find By Subject
- Entities:

Email
- Getter method:

Get email subjects and
search, list emailIDs and
subjects

Archive Email
- Entities:

Email

Archive
- Setter method:

Add emailID to archive

Unarchive Email
- Entities:

Email

Archive
- Setter method:

Remove emailID from
archive

Create Appointment
- Entities:

Appointment
- Setter method:

Create and set new
appointment

Get Appointment
- Entities:

Appointment
- Getter method

Get appointment details
by date

Create User
- Entities:

Appointment
- Setter method:

Create new user

Delete User
- Entities:

Appointment
- Instance method:

Delete user from database