Project Title: Meeting Manager

Name: Rahul Kumar **Date: 29-09-2024**

Introduction:

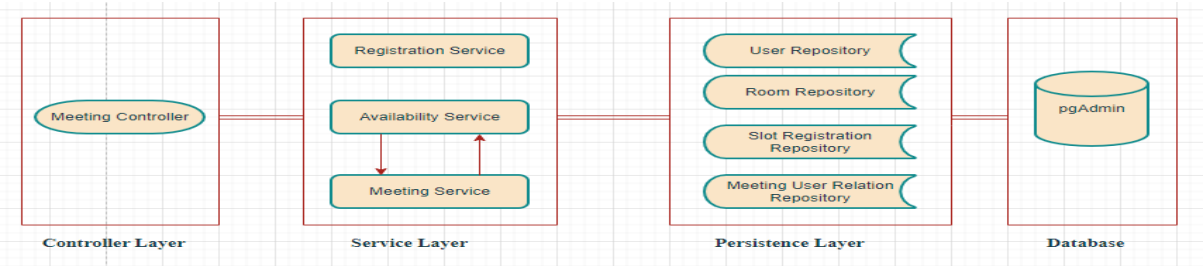
The Meeting Manager is a Spring Boot project that provides a robust backend solution for managing one-to-one online meetings and offline group meetings in a room. This system enables efficient meeting scheduling and booking, ensuring that users and rooms are utilized optimally.

Key Features:

- **User and Room Registration**: Users and rooms can be registered into the system, allowing for seamless meeting scheduling.
- **One-to-One Online Meetings**: The system facilitates online meetings that do not require a physical room, considering the input date and time slot.
- **Offline Group Meetings**: Users can book slots for group meetings in a physical room, with the ability to add multiple users to a single meeting.
- **Collision Detection**: The system detects and prevents booking conflicts, ensuring that:
    - A user is not booked for the same time slot in a one-to-one meeting if they are already occupied.
    - A room is not double-booked for the same time slot in a group meeting, considering both user and room availability.

By providing a robust and efficient meeting scheduling system, the Meeting Manager project aims to streamline meeting organization and reduce scheduling conflicts, ultimately increasing productivity and collaboration within organizations.

Component Diagram:



Implementation Details:

- **Technology Stack**:
  - Spring Boot
  - Java
  - JPA
  - Postman
  - PostgreSQL

- **Database Design**:

  Database: PostgreSQL

  1. **User_registration_table**

Column	Type
user_id	bigserial
user_name	Character varying
password	Character varying

  2. **Meeting_user_relation_table**

Column	Type
sr	bigserial
user_name	Character varying
meeting_id	Character varying

  3. **Room_registration_table**

Column	Type
room_id	bigserial
room_name	Character varying

4. **Slot_registration_table**

Column	Type
meeting_id	bigserial
In_time	Time(0)
Out_time	Time(0)
Room_id	bigint
Date_of_meeting	Timestamp

- **API Design**:

1. **Register New User:** The User Registration Service is a critical component of the Meeting Manager system, responsible for registering new users and ensuring their unique presence in the system.

Functionality:

- **New User Registration**: The service allows new users to register with the system, providing their essential details such as username, email, password, and name.
- **User Existence Check**: Before adding a new user, the service checks if the user already exists in the system to prevent duplicate registrations.
- **User Creation**: If the user does not exist, the service creates a new user account in the database, storing the provided details securely.
- **Response**: The service responds with a success message if the user is registered successfully or an error message if the user already exists.

API Endpoint: `/meeting/addUser`

2. Register New Room: The Room Registration Service is a vital component of the Meeting Manager system, responsible for registering new meeting rooms and ensuring their unique presence in the system.

Functionality:

- **New Room Registration**: The service allows administrators to register new meeting rooms with the system, providing essential details such as room name, capacity, and other relevant information.
- **Room Existence Check**: Before adding a new room, the service checks if the room already exists in the system to prevent duplicate registrations.
- **Room Creation**: If the room does not exist, the service creates a new room entry in the database, storing the provided details securely.

- **Response**: The service responds with a success message if the room is registered successfully or an error message if the room already exists.

API Endpoint: `/meeting/addMeetingRoom`

3. One To One Meeting: The One-to-One Meeting Scheduling Service is a core component of the Meeting Manager system, responsible for scheduling meetings between two individuals.

Functionality:

- **Meeting Scheduling**: The service allows organizers to schedule one-to-one meetings with attendees, providing essential details such as attendee name, meeting date, start time, and end time.
- **Availability Check**: The service checks the availability of both the organizer and the attendee for the specified time slot to ensure that neither party is busy.
- **Conflict Detection**: If either the organizer or the attendee is busy during the specified time slot, the service responds with a failure message indicating that the user is busy.
- **Meeting Booking**: If both parties are available, the service books the meeting and creates a new meeting entry in the database, storing the meeting details securely.
- **Response**: The service responds with a success message, including the meeting ID, if the meeting is booked successfully.

API Endpoint: `/meeting/oneToOneMeeting`

4. Offline Room Meeting: The Offline Room Meeting Scheduling Service is a vital component of the Meeting Manager system, responsible for scheduling meetings in a physical room with multiple attendees.

Functionality:

- **Meeting Scheduling**: The service allows organizers to schedule offline room meetings, providing essential details such as meeting date, start time, end time, room name (or room ID), and a list of attendees.
- **Room Availability Check**: The service checks the availability of the specified room for the requested time slot to ensure that it is not already booked.
- **Room Booking Conflict Detection**: If the room is not available for the specified time slot, the service responds with a failure message indicating that the room is not available.

- **Attendee Availability Check**: If the room is available, the service checks the availability of all attendees listed for the meeting to ensure that they are not busy during the specified time slot.
- **Attendee Availability Conflict Detection**: If any attendee is busy during the specified time slot, the service responds with a failure message indicating the name of the unavailable attendee.
- **Meeting Booking**: If both the room and all attendees are available, the service books the meeting and creates a new meeting entry in the database, storing the meeting details securely.
- **Response**: The service responds with a success message, including the meeting ID, if the meeting is booked successfully.

API Endpoint: `/meeting/roomMeeting`

Testing:

- Import the shared postman collection.
- Update the URL as per server details
- Register new user using respective endpoint
- Register new room using respective endpoint
- Schedule the meeting using either oneToOneMeeting or room Meeting endpoint

Future Enhancements:

Interday Meeting Scheduling: The Meeting Manager project currently has a limitation when it comes to scheduling interday meetings. An interday meeting is a meeting that spans across two days, such as a meeting that starts on September 29th and ends on September 30th.

Online Room Meeting Scheduling: Online room meeting scheduling would allow users to book virtual meeting rooms for online meetings. This would enable users to hold meetings remotely, without the need for a physical room. The online meeting room would provide a virtual space for users to collaborate and communicate in real-time.