**Web mail project**

**Names and ids:**

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**How to run:**

*database Setup:*

* 1. Install [MySQL :: Download MySQL Installer](https://dev.mysql.com/downloads/installer/) .
  2. Install [MySQL :: Download MySQL Workbench](https://dev.mysql.com/downloads/workbench/) .
  3. Add a new user (webMail with password webMail).
  4. Create a new connection for this user.
  5. Run the SQL script given in the folder to create the database and tables.

*Backend Setup:*

1. install [JDK Builds from Oracle](https://jdk.java.net/) and an IDE to get running with java.
2. Install [Spring Initializr](https://start.spring.io/) and choose (spring web from dependencies)
3. Navigate to the backend folder.
4. Import the project into the IDE and run the spring app or run with Maven on terminal (mvn spring-boot: run)
5. Ensure the server is running on <http://localhost:8080>.

*Frontend Setup*

1. Install [Node.js — Run JavaScript Everywhere](https://nodejs.org/en)
2. Navigate to the frontend folder.
3. Install dependencies: npm install
4. Start the frontend server: npm run dev

*Get started!*

1. Visit the URL that shows up in your terminal after running **npm run dev** to view the paint app in your browser (it should be something like <http://localhost:XXXX/>).
2. Now the paint app should be running on your browser.

**Applied Design Patterns:**

1. **Controller-Service-Repository Pattern (Layered Architecture)**:

The application follows the layered architecture where controllers (REST controllers) handle HTTP requests, services encapsulate business logic, and repositories interact with the database.

1. **DTO (Data Transfer Object) Pattern** (implicitly used):

While not explicitly stated, the entities are used as DTOs to transfer data between layers.

1. **Exception Handling Pattern**:

Custom exceptions like NotFoundException, UserAlreadyExistsException, and WrongPasswordException are used for error handling, which improves readability and modularity.

1. **Dependency Injection**:

Classes such as services and repositories are injected into controllers using @Autowired, promoting loose coupling.

1. **Singleton Pattern:**

Spring by default uses Singleton scope for beans.

1. **Façade Pattern:**

Dealing with a service layer rather than using the JPA repositories directly.

1. **Proxy Pattern:**

Handle authentication in a proxy class before moving on.

**UML**

**design decisions:**

**user guide:**