James Tech Pvt. Ltd.

Problem Statement:

To develop an application to Digitize the Railway Crossing Status for the Public. Government aims to communicate the status of a Railway Crossing to the public well in advance i.e., a railway crossing is open, closed etc.,

Proposed Solution:

James tech pvt. Ltd. proposes a Java based application that has:

1. Separate user menu for general public and admin users.
2. User authentication system for public and admins
3. Data import and export utility for backups.

Using the application, the admin users will be able to:

1. Add new railway crossing
2. Delete existing railway crossing
3. Search for railway crossing in data base
4. Update the status of the railway crossing
5. Export data to database
6. Import data from the database

Same application can be used by the general public to perform following actions:

1. Create new account
2. Login to existing account
3. Fetch the details of existing crossings
4. Check status of crossing at given point of time
5. Search for a specific railway crossing
6. Sort timings of given railway crossing

Concepts to be used in the project

1. Java – for coding the backend logic
2. Object Oriented Programming – to simulate real world entities like users, railway crossings, etc.
3. Various data structures like hash maps, Lists, etc. – to store data during runtime
4. Collections frameworks – to implement various data structures
5. File IO – to import and export data from text files
6. Unified Modelling Language (UML) – to visualize various components used in project.

Project File Structure

```
| Railway Crossing Status
|
\---src
  \---com
    \---amazon
      \---atlas22
        \---railwaycrossingapp
            |   GovernmentApp.java
            |   PublicApp.java
            |   RailwayCrossingApp.java
            |
            +---controller
            |       RailwayCrossingController.java
            |       UserController.java
            |
            +---db
            |       DAO.java
            |       DB.java
            |       DBService.java
            |
            \---model
                    RailwayCrossing.java
                    User.java
```

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UML: Class Diagram for the project
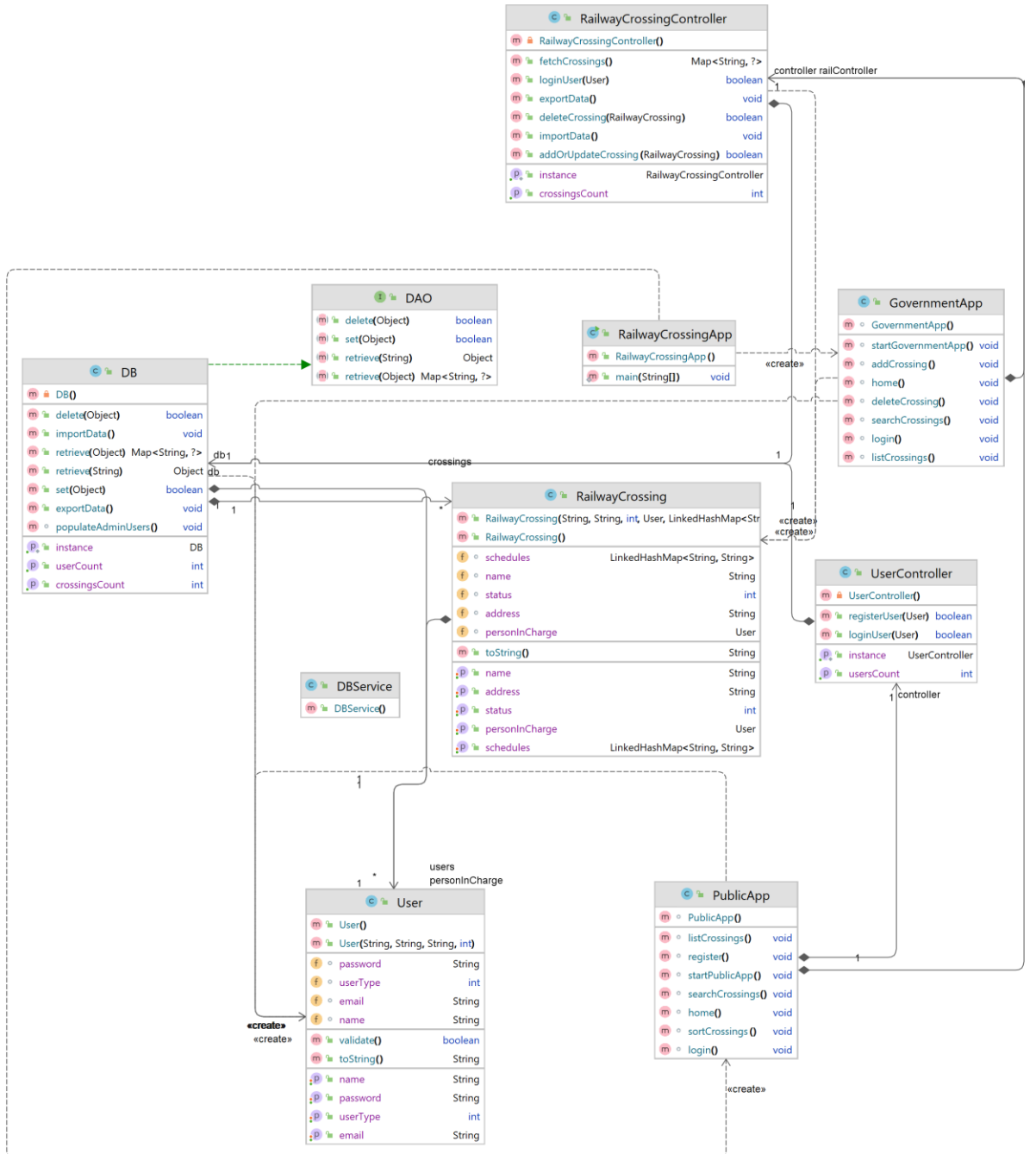
Figure 1: Class Diagram

UML: Sequence Diagram
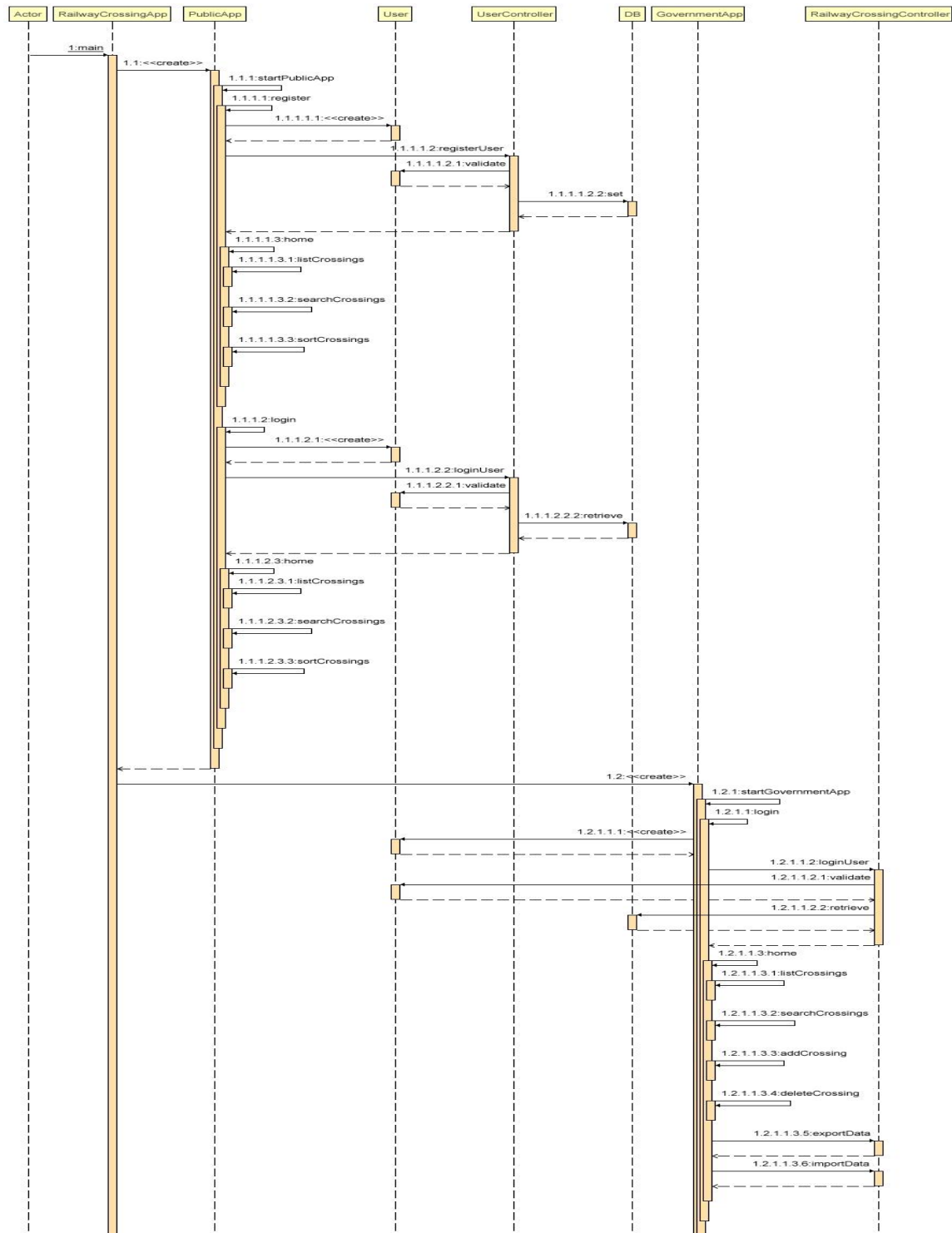
Figure 2: Sequence Diagram – RailwayCrossingApp.java

User Manual – End User

1. Run *RailwayCrossingApp.java* to start the application.

```
==========================================
Welcome to the Railway Crossing App
1. End User App
2. Government App
3. Close App
==========================================
```

2. Enter 1 to explore end user menu, 3 to close the program.
3. End User menu:

```
==========================================
Welcome User
We have 2 Users in the DataBase
1. Register
2. Login
==========================================
```

Chose 1 to register new user, 2 to login to existing account.

4. Upon choosing 1, enter details as follows to create new account and explore additional options

```
1
Enter Name:
User1
Enter Email ID:
user1@eample.com
Enter Password:
user123
User1, You are now registered successfully...
Navigating to the railway crossing application
```

5. Options for end user, chose appropriate option to begin.

```
==========================================
Welcome to the Railway Crossing Home
1. List Railway Crossings
2. Search Railway Crossings
3. Sort Railway Crossings by Schedule
4. Close Public application
==========================================
```

User Manual – Government/Admin User

1. Run *RailwayCrossingApp.java* to start the application.

```
========================================
Welcome to the Railway Crossing App
1. End User App
2. Government App
3. Close App

========================================
```

2. Enter 2 to explore admin user menu, 3 to close the program.

3. Upon choosing 2, App will ask for Admin credentials. New admin accounts cannot be created from the app directly as specified in the document.

```
========================================
Welcome User
Proceed to login
========================================
Enter Email ID:
Harry@gov.in
Enter Password:
harry@123
Hary, You are now logged in successfully...
Navigating to the government Admin railway crossing application
========================================
Welcome to the Railway Crossing Home
We have 0 Crossings in the DataBase
1. List Railway Crossings
2. Search Railway Crossings
3. Add Railway Crossing
4. Delete railway crossing
5. Export Data to Files
6. Import Data from Files
7. Close the Admin Government Application
========================================
```

4. Select appropriate option to perform desired action.
5. Choose 7 to close.
6. Example: Adding a crossing:

```
========================================
Welcome to the Railway Crossing Home
We have 1 Crossings in the DataBase
1. List Railway Crossings
2. Search Railway Crossings
3. Add Railway Crossing
4. Delete railway crossing
5. Export Data to Files
6. Import Data from Files
7. Close the Admin Government Application
========================================
3
Enter Details for Person In Charge:
Enter Name:
Operator-SBI-crossing
Enter Email ID:
operator_SBI_Colony@railways.in
Enter Password:
operator123
Enter Railway Crossing Details:
Enter Crossing Name:
SBI Crossing
Enter Crossing Address:
SBI Colony, Model Town, Delhi -05
Enter Crossing Schedule:
1005 HRS
```

7. Example: Listing all crossings

```
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
Crossing Name: SBI Crossing
Crossing Name: SBI Crossing
Crossing Address: SBI Colony, Model Town, Delhi -05
Crossing Status: OPEN
Crossing Person In-Charge: Operator-SBI-crossing
Crossing Schedules: {1005 HRS=}
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~

------------------------
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
Crossing Name: Patel Nagar
Crossing Name: Patel Nagar
Crossing Address: Patel nagar, west Delhi, Delhi - 15
Crossing Status: OPEN
Crossing Person In-Charge: Operator-Patel-Nagar
Crossing Schedules: {1205 HRS=}
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~

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```