

Mini Project 3 : Railway Crossing Status

Project objective: Build an application to communicate the status of railway crossings in advance

Scenario:

James Tech Pvt. Ltd. hired you as a Full Stack Developer. They intend to develop an application that can communicate the status of a railway crossing well to the public in advance. You are asked to develop a prototype of the application. The application prototype will then be presented to the relevant stakeholders for budget approval. Your manager has set up a meeting where you are asked to present the following:

- Java EE concepts to be used in the project
- Frontend and backend technologies to be used
- Database to be used

Tasks you will perform will include:

- Develop the application using Java EE
- Work with Java Server Page to create a frontend
- Implement Servlet to develop a backend
- Perform CRUD operations using JDBC for MySQL

Operations to be implemented in the application:

- Features and operations for the public:
 - Create an Account: Registration and login operations for public users
 - Fetch the details of the railway crossings and display them on the frontend for the public
 - Display the status of the railway crossing: open or closed
 - Option to search railway crossings
 - Option to mark a railway crossing as favourite
 - View that list of Favourite Railway Crossings
- Government level operations:
 - Login to a specified admin account to access a dashboard
 - Add a railway crossing to the application
 - Delete a railway crossing from the application
 - Search for a specific railway crossing
 - Update the status of a railway crossing: open and close
 - Navigation option to access all features with ease

Flow and features of the application:

- Document the flow of the application and prepare a flow chart
- List the core technologies being used to complete this application
- Code to display the welcome screen. It should display:
 - Application name and the developer details
 - The details of the user interface such as options displaying the user interaction information
 - An option asking to navigate to either the public or government sections
- The first option is a separate webpage for the public:
 - It must provide an option to authenticate the user. The user can create an account with basic details like name, email, password, and login if the account exists.
 - It should fetch the details of railway crossings.
 - With each railway crossing listed, it must display the status of the railway crossing
 - An option to search should be implemented to search for a railway crossing by name, like how we search on Google.
 - User can mark a railway crossing as a favourite.
 - You must display the list of favourite railway crossings separately.
- The second option is used by the Railway Department to manage railway crossings. It should include:
 - A form through which an administrator can navigate to the government dashboard using a pre-created email and password in the database.
- Add a railway crossing to the application:
 - You can create a form in HTML that can send an HTTP POST request to the Servlet to add the details to the database. Remember to use JDBC or Hibernate as a backend framework.
 - Consider the Railway Crossing Model to have the following attributes:
 1. Name
 2. Address (can have latitude and longitude as well)
 3. Landmark
 4. Train schedules (probably the timings as a textual description)
 5. Details of the person in charge of the railway crossing
 6. Status
- Delete a railway crossing from the application
 - Display a list of railway crossings with an option to delete them within the Table **View**
 - Return a suitable message upon successful deletion of the railway crossing
 - Option to update the status of the railway crossing
 - It can have the default state as open
 - The state can be updated to closed when a train is approaching the crossing
 - A proper navigation bar can be created using HTML5 to facilitate easier access to the mentioned options.
 - Exceptions should be handled for invalid input
- Implement the appropriate concepts such as exception handling, collections, and searching techniques for source code optimization and increased performance

Tools and technologies:

- Eclipse or IntelliJ
- Java
- Servlets
- JSP
- JDBC or Hibernate
- MySQL
- Apache Tomcat
- Search and Sort techniques

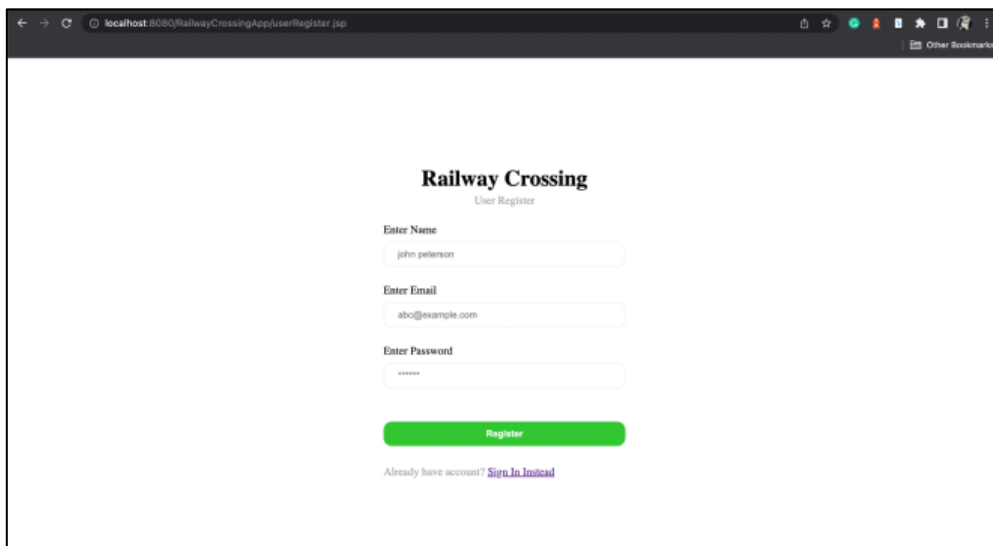
Requirements to be met:

Please ensure you have accomplished the following by the end of your application completion:

- End user authentication to access the application
- Listing of railways crossing sites with status
- Favourite railway crossings for end users
- Government user authentication to access admin Dashboard
- CRUD operations for Railway Crossing Management
- Update Status of railway crossing site

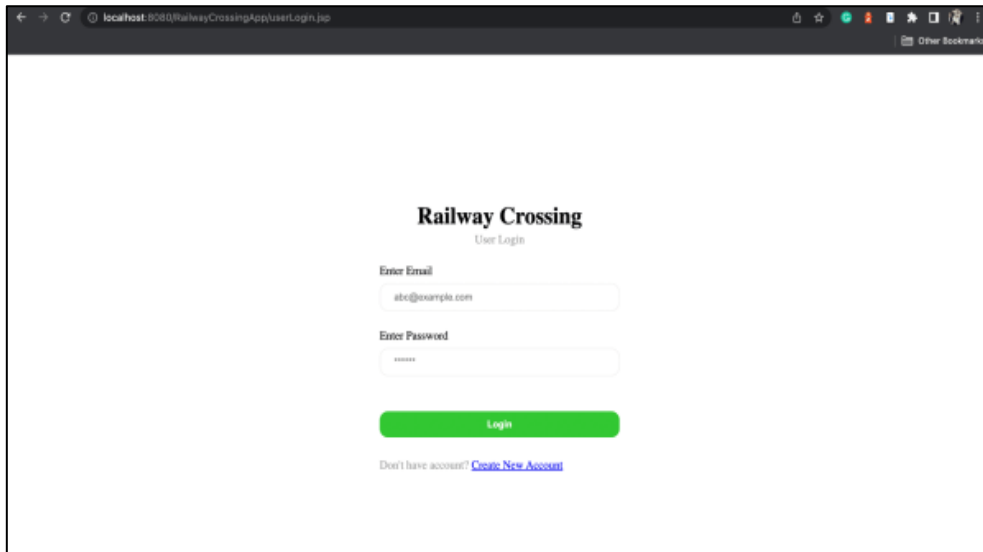
Screenshots:**User end**

Task 1: Create an account or Register



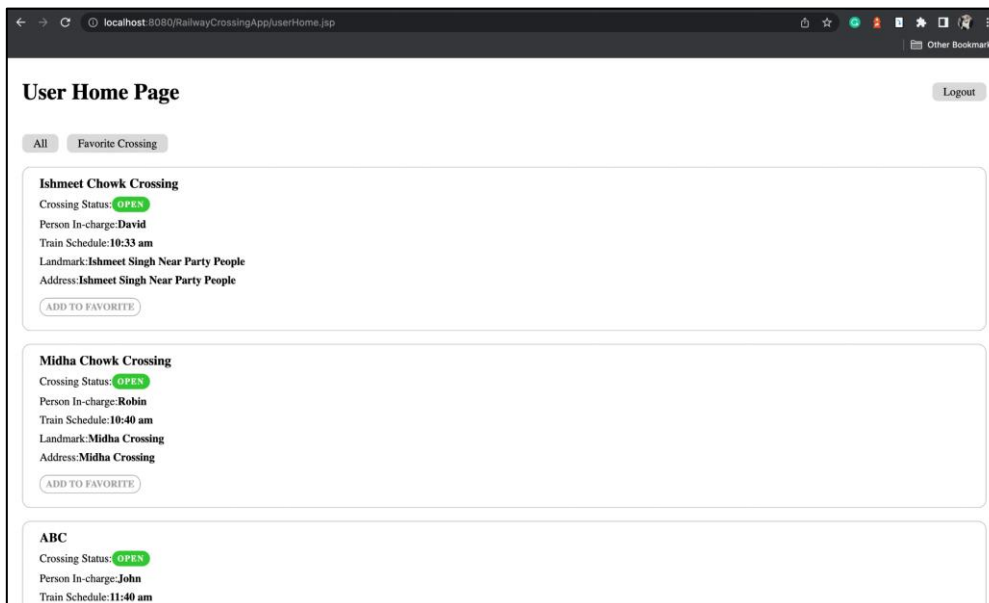
The screenshot shows a web browser window with the URL `localhost:8080/RailwayCrossingApp/UserRegister.jsp`. The page has a white background and a dark header bar. The main content area is titled "Railway Crossing" in bold, with "User Register" in a smaller font below it. There are three input fields: "Enter Name" with the value "john.peterson", "Enter Email" with the value "abc@example.com", and "Enter Password" with masked characters. Below these fields is a green "Register" button. At the bottom, there is a link that says "Already have account? [Sign In Instead](#)".

Task 2: Log in



The screenshot shows a web browser window with the URL `localhost:8080/RailwayCrossingApp/UserLogin.jsp`. The page has a white background and a dark header bar. In the center, the text "Railway Crossing" is displayed in a bold, black font, with "User Login" underneath it in a smaller font. Below this, there are two input fields: "Enter Email" with the placeholder text "abc@example.com" and "Enter Password" with the placeholder text "password". A green "Login" button is positioned below the password field. At the bottom, there is a link that says "Don't have account? [Create New Account](#)".

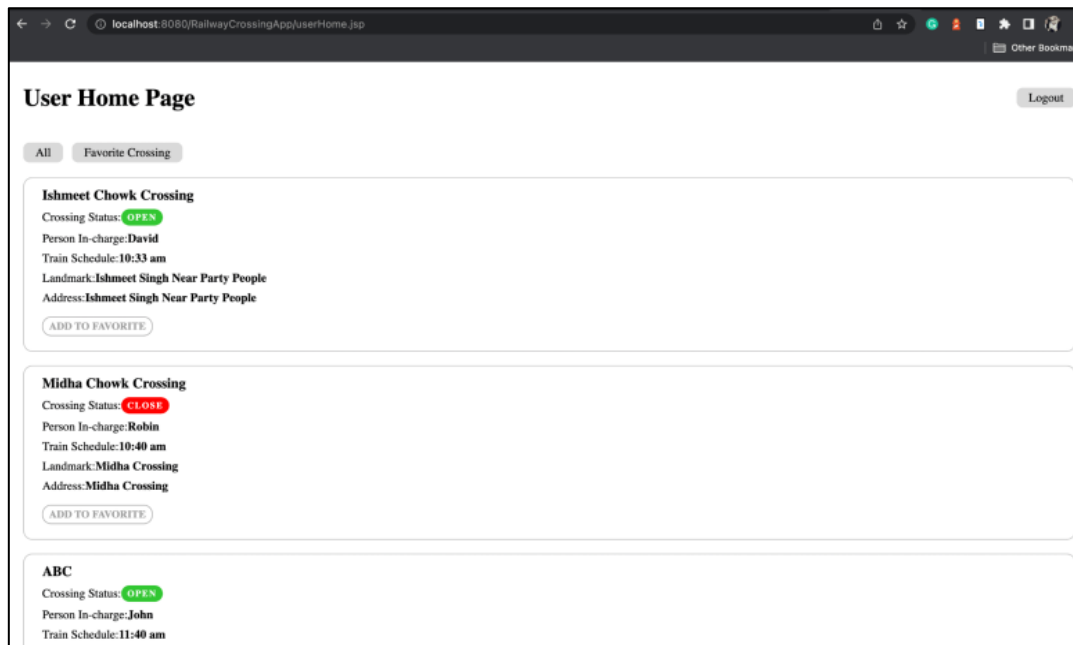
Task 3: Display Railway crossing data



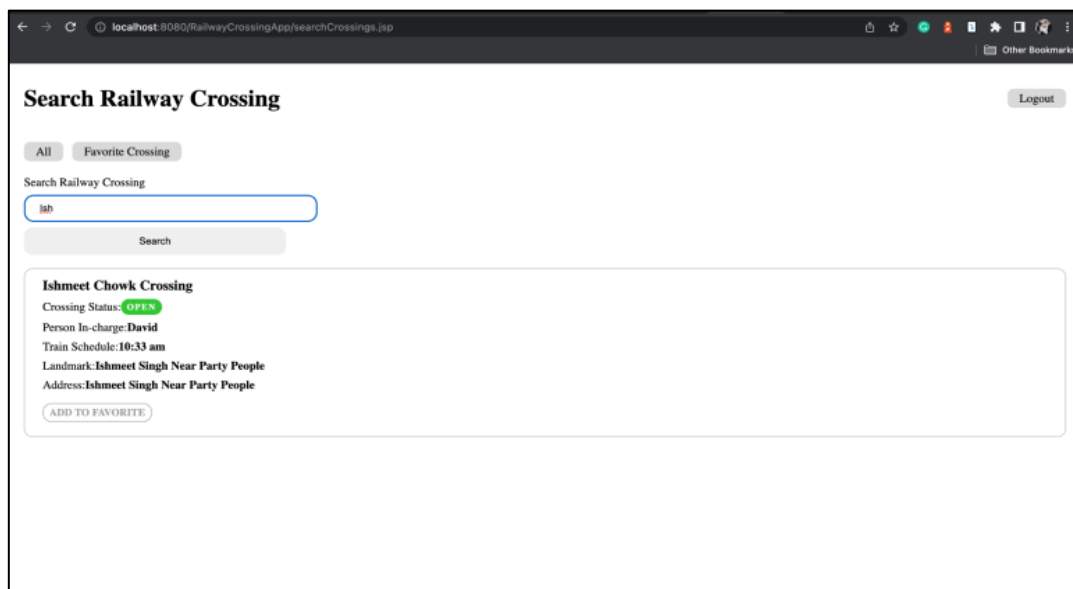
The screenshot shows a web browser window with the URL `localhost:8080/RailwayCrossingApp/UserHome.jsp`. The page has a white background and a dark header bar. The title "User Home Page" is displayed in a bold, black font. In the top right corner, there is a "Logout" button. Below the title, there are two tabs: "All" and "Favorite Crossing". The main content area displays three crossing entries, each in a white box with a light gray border. Each entry includes the crossing name, status, person in-charge, train schedule, landmark, and address, followed by an "ADD TO FAVORITE" button.

Crossing Name	Status	Person In-charge	Train Schedule	Landmark	Address
Ishmeet Chowk Crossing	OPEN	David	10:33 am	Ishmeet Singh Near Party People	Ishmeet Singh Near Party People
Midha Chowk Crossing	OPEN	Robin	10:40 am	Midha Crossing	Midha Crossing
ABC	OPEN	John	11:40 am		

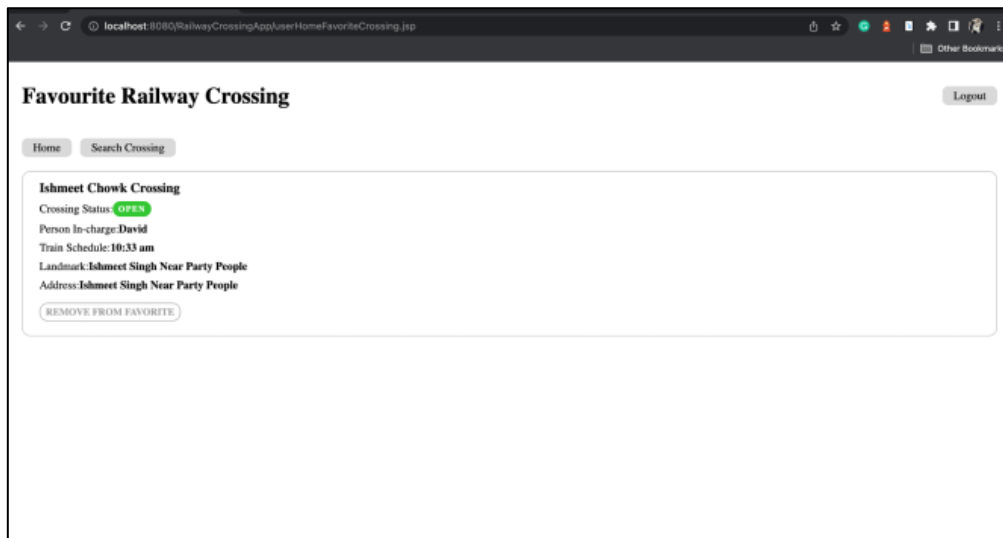
Task 4: Railway crossing status



Task 5: Search Railway Crossing

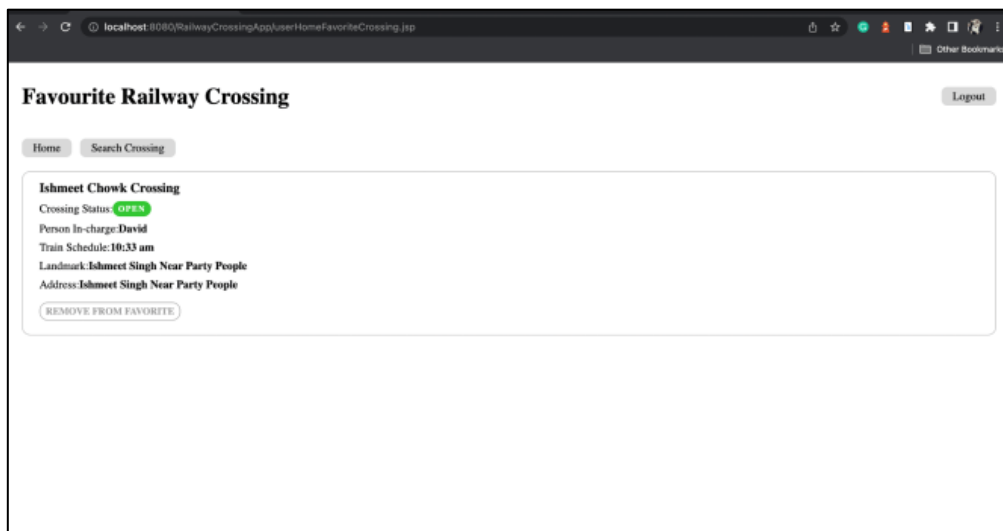


Task 6: Mark railway crossing as Favourite



Admin-End:

Task 7: Add Crossing



Task 8: Manage Crossings

localhost:8080/RailwayCrossingApp/adminHome.jsp

Admin Home Page Logout

Railway Crossings [3]

[Home](#) [Add Railway Crossing](#) [Search Crossing](#)

Sr. No	Name	Address	Landmark	Train Schedule	Person In-charge	Status	Action
1	Ishmeet Chowk Crossing	Ishmeet Singh Near Party People	Ishmeet Singh Near Party People	10:33 am	David	Open	Update Delete
2	Midha Chowk Crossing	Midha Crossing	Midha Crossing	10:40 am	Robin	Closed	Update Delete
3	ABC	ABCDEF	ABCDEF	11:40 am	John	Open	Update Delete

Task 9: Delete a Crossing

localhost:8080/RailwayCrossingApp/adminHome.jsp

Landmark	Train Schedule	Person In-charge	Status	Action
Ishmeet Singh Near Party People	10:33 am	David	Open	Update Delete
Midha Crossing	10:40 am	Robin	Closed	Update Delete
ABCDEF	11:40 am	John	Open	Update Delete

Task 10: Update Crossing details

localhost:8080/RailwayCrossingApp/updateRailCrossingForm.jsp?railwayCrossingId=1

Railway Crossing

Update Railway Crossing Information

Enter Name
Ishmeet Chowik Crossing

Address
Ishmeet Singh Near Party People

Landmark
Ishmeet Singh Near Party People

Train Schedule
10:33 am

Person In-charge
David

Crossing Status
☐ Open
☒ Close

Currently: Open

Submit