RAILWAY MANAGEMENT SYSEM

PROJECT OVERVIEW:

Develop a centralized database for efficient railway operations management.

Provide features for ticket booking, route management, train schedules, and passenger data tracking.

Support advanced queries for analytics, reporting, and decision-making.

This project involves developing a database to manage various aspects of a railway system, including trains, station, schedules, passengers, and tickets booking.

FUNCTIONAL REQUIREMENTS:

Passenger Management:

- **Store passenger information (passenger Id, Name, Age, Gender, Mobile number, DOB)**
- **Track and maintain passenger travel history.**

Train Management:

- **Add, update and delete train details (Train Id, Train Name, Train type, Capacity)**
- **Assign routes and schedules to trains.**

Station Management:

- **Store details of stations (Station Id, Name, Location, Type)**
- **Manage station operations (arrival/departure schedules).**

Route Management:

- **Maintain route details (Route Id, Train Id, Station Id, Arrival times).**
- **Calculate total travel distance for trains.**

Ticket Management:

- **Book, Update and cancel tickets.**
- **Track ticket details (Ticket Id, Passenger Id, Train Id, Source/ Destination, Fare, Date of Travel)**
- **Dynamically calculate ticket fare based on distance and class (General, Sleeper, AC, NON-AC)**

Reporting and Analytics:

Generate reports for:

Daily Revenue

Train Occupancy rates

Popular routes/ stations

Peak travel hours

Database Design:

Tables

1. Passengers:

Passenger id (PK), First Name, Last Name, Age, Gender, Contact, DOB.

2.Trains:

Train id (Pk), Train Name, Train Type, Capacity.

3.Stations:

Station id (Pk), Station Name, Location, Type.

4.Routes:

Route Id (Pk), Train Id (Fk), Station Id (Fk), Arrival Time.

5.Tickets:

Ticket id (Pk), Passenger Id (Fk), Train Id (Fk), Source Station Id (Fk), Destination Station Id (Fk), Fare, Travel Date.

Relationships:

- **A train can have multiple routes.**
- **A route can involve multiple stations.**
- **Passengers can book multiple tickets.**
- **Tickets are linked to specific train and route.**

Implementation Plan:

Database creation:

Use Orace SQL to create and populate tables.

Query Testing:

Develop and execute basic and advanced queries (joins, Group by, subqueries, Analytical function, Set operator).

Reports and Analytics:

Generate summarized data views for daily operations and business insights.