1 PROBLEM STATEMENT AND CREATIVITY FOCUS

The booking system should be able to solve the following common issues

1. Overbooking and seat conflict – Prevents double booking
2. Dynamic seat allocation ---- Handle changing availability in real time
3. Passenger convenience --- Allow flexible rescheduling and cancellations
4. Operational Insights --- Provides a detailed report for stations management e.g Most used routes

2 KEY FEATURES

1. Real time seat availability --- Ensure up to date tracking of seats per train
2. Multi Station stops --- Handle complex routes with intermediate stations
3. Passenger profiles --- Keeps records of frequent travelers for loyalty programs

3 E.R.D (ENTITY RELATIONSHIP DIAGRAM) DESIGN

ENTITIES AND THEIR RELATIONSHIP

PASSENGER TABLE

Attributes : PassengerID , Name , Email , Phone , Gender , Age

Relationship : Can make multiple bookings

TRAIN TABLE

Attributes : TrainID , TrainName , Traintype(express , sleeper) capacity

Relationship[[: Operates on one or more routes

STATION TABLE

Attribute : StationID , StationName , Location ,

Relationship : Linked to trains via routes

SCHEDULE TABLE

Attributes --- ShceduleID , TrainID , RouteID , DepartureTime , ArrivalTime

Relationship ---- Linked to the train and route

ROUTE TABLE

Attribute --- RouteID , OriginstationID , DestinationID , Distance

Relationships --- Has multiple schedules

BOOKING TABLE

Attributes --- BookingID PassengerID ScheduleID , BookingDate , seatnumber bookingstatus (confirmed , cancelled)

Relationship --- Linked to passengers and schedules

PAMENTS TABLE

Attributes --- PaymentID , BookingID, PaymentMethod , Amount

Relationship --- Linked to bookings