ONLINE RAILWAY RESERVATION SYSTEM

Low level Design (LLD)

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Domain Name: .Net

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INTRODUCTION

Document Purpose

Railway Reservation System has various kinds of information that helps regarding booking of railway tickets.

This system contains the information about the passenger.

Users will be able to search the train, train fare, arrival and departure time of the train and they can also book the ticket by using online payment and after booking the ticket if the user wants to cancel the ticket, they can cancel that ticket.

Overview

This system is designed for the online reservation of railway tickets for travel between any destinations.

This system enables the Advance booking in general and lady's quota, on payment of fare in full for adults and children, a maximum of six seats at a time, for journey between any two stations served by a train.

Intended Audience

This document is intended as a reference for the following roles and stakeholders who are interested in the Railway Reservation System technical architecture.

ROLE	NATURE OF ARCHITECTURE
PASSENGER	The person to whom our services would be directly provided to.
ADMIN	The person who would be responsible for smooth functioning of the system.

Problem Statement

The need of this system arises because as is the known fact that India has the largest railway network and to handle it manually is quite a tough job.

By computerizing it, we will be able to overcome many of its limitations such as we can manage passenger record in database instead of hardcopy and will be able to make it more efficient. As we all know, if we want to book a railway ticket. We heaved to go the station stand in that queue, which leads to wastage of time.

With the help of online railway reservation system, we can book ticket online and can save our time.

Requirements

Hardware Requirements

- Operating Systems- Windows, macOS, Linux, Chrome OS
- Windows 8.0, 8.1 and 10, 11 (32-bit and 64-bit)
- Random Access Memory (RAM) - 1 GB RAM minimum; 8 GB RAM recommended.
- 1.6 GHz or faster processor.
- Internet Connection (20MBps or above)

Software Requirements

- Microsoft Windows XP or later versions.
- A standard web browser.
- .Net framework Core.
- .Net SDK 6.0 or above.
- Visual Studio above 2019.
- SQL Server Management Studio (SSMS).
- Angular CLI.

Technology Used

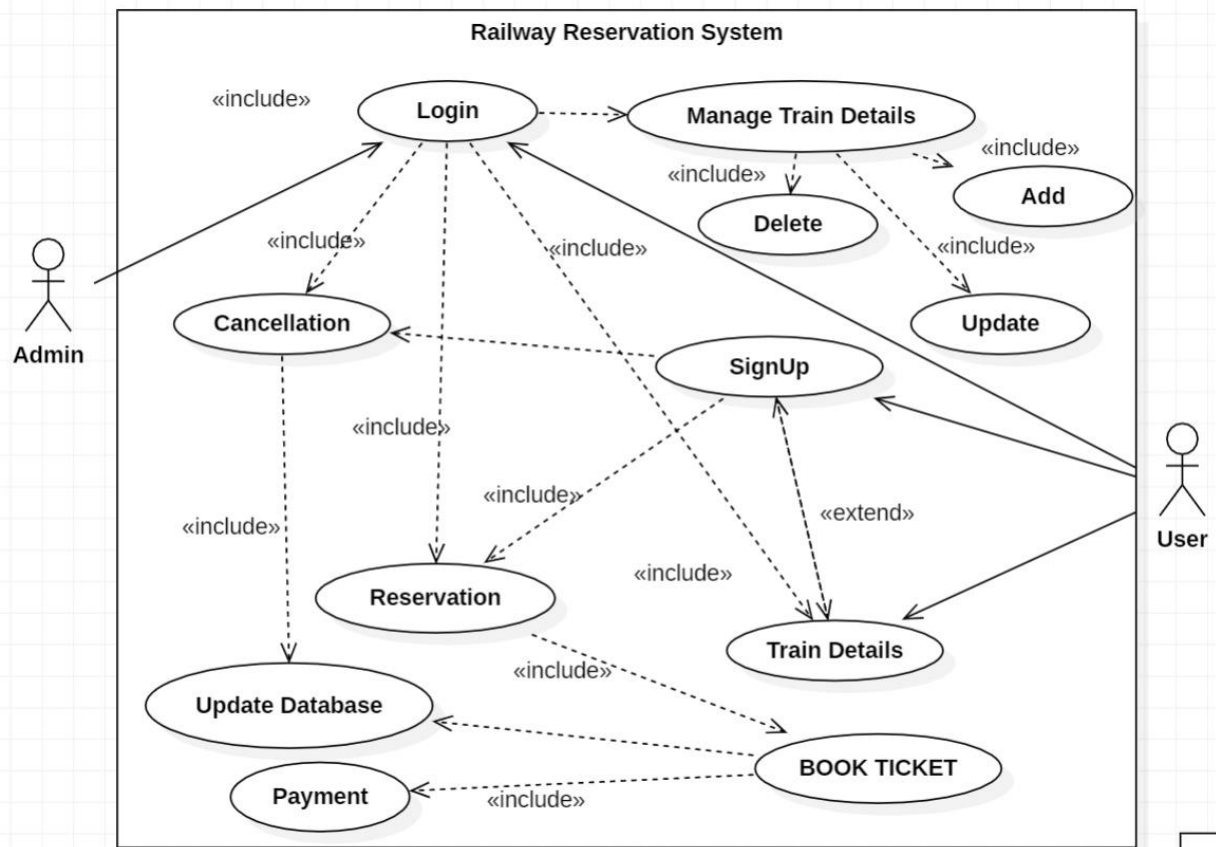Technologies which are going to use in this Application are as follows:

- ➢ **HTML** - HyperText Markup Language is a markup language with the help of that we can give the structure to our application.

- ➢ **CSS** - CSS is a style sheet language responsible for the presentation of documents written in a markup language, CSS is use for designing purpose in our application.

- ➢ **Angular -** Angular is an open-source, front-end, JavaScript framework written in TypeScript. Google maintains it, and its primary purpose is to develop single-page applications. Angular is client-side framework that can be use at any platform.

- ➢ **Bootstrap -** Bootstrap is a free, open-source front-end development framework for the creation of websites and web apps.

- ➢ **C#** - It is an object-oriented programming language provided by Microsoft that runs on .Net Framework Core. For logical purpose we use C# in our application.

- ➢ **ASP .NET Core MVC** - The MVC (Model-View-Controller) is an application development pattern or design pattern which separates an application into three main components. Model, View, Controller. It is an open source, cross platform.

- ➢ **Asp .Net Core Web API -** ASP.NET Core Web API is a framework that helps you to build services by making it easy to reach a wide range of clients including browsers, mobiles, tablets, etc. It is a framework for building HTTP services. It is going to be use as middleware between user interface and server.

➢ **Entity Framework Core-** Entity Framework is an open-source, light weight, Cross Platform, ORM (Object Relational Mapping) Framework for the .NET Core applications supported by Microsoft. It enables the developers to work with the database using the objects of domain-specific classes. Entity Framework can generate the necessary database commands for reading or writing the data in the database and execute them for us.

➢ **SQL -** SQL (Structured Query Language) is used to perform operations on the records stored in the database, such as updating records, inserting records, deleting records, creating, and modifying database tables, views, etc.
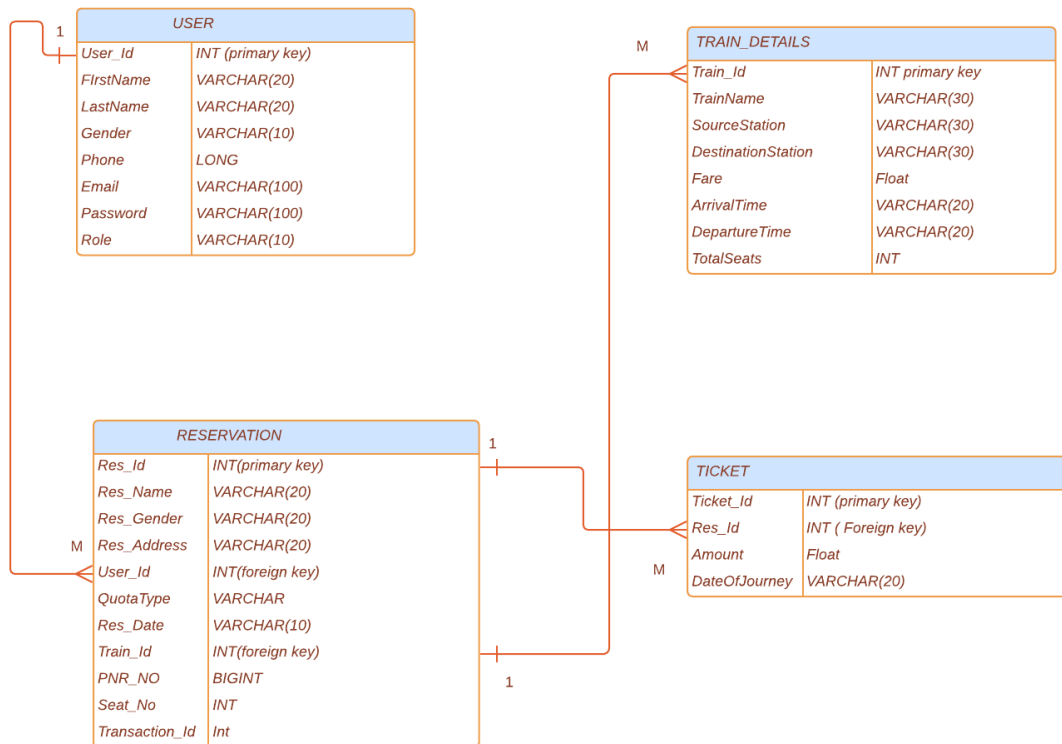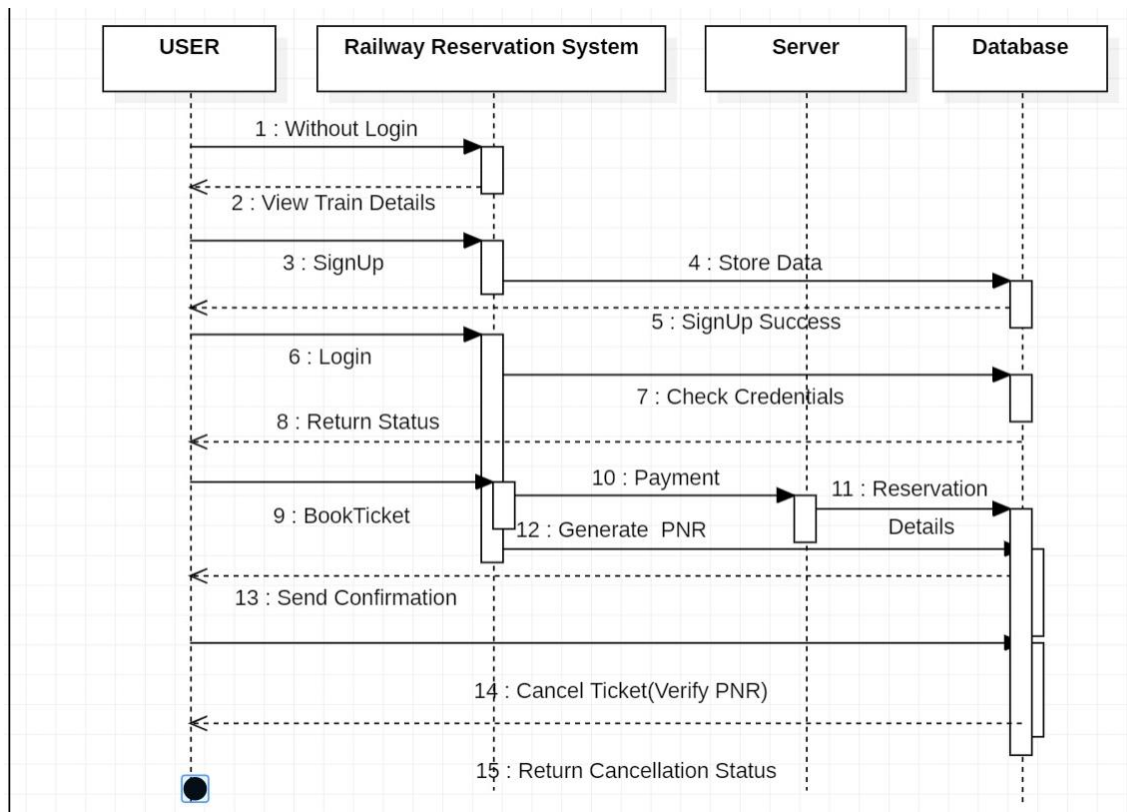
UML Diagram

Use Case Diagram

Database Schema

USER

User_Id	INT (primary key)
FIrstName	VARCHAR(20)
LastName	VARCHAR(20)
Gender	VARCHAR(10)
Phone	LONG
Email	VARCHAR(100)
Password	VARCHAR(100)
Role	VARCHAR(10)

TRAIN_DETAILS

Train_Id	INT primary key
TrainName	VARCHAR(30)
SourceStation	VARCHAR(30)
DestinationStation	VARCHAR(30)
Fare	Float
ArrivalTime	VARCHAR(20)
DepartureTime	VARCHAR(20)
TotalSeats	INT

RESERVATION

Res_Id	INT(primary key)
Res_Name	VARCHAR(20)
Res_Gender	VARCHAR(20)
Res_Address	VARCHAR(20)
User_Id	INT(foreign key)
QuotaType	VARCHAR
Res_Date	VARCHAR(10)
Train_Id	INT(foreign key)
PNR_NO	BIGINT
Seat_No	INT
Transaction_Id	Int

TICKET

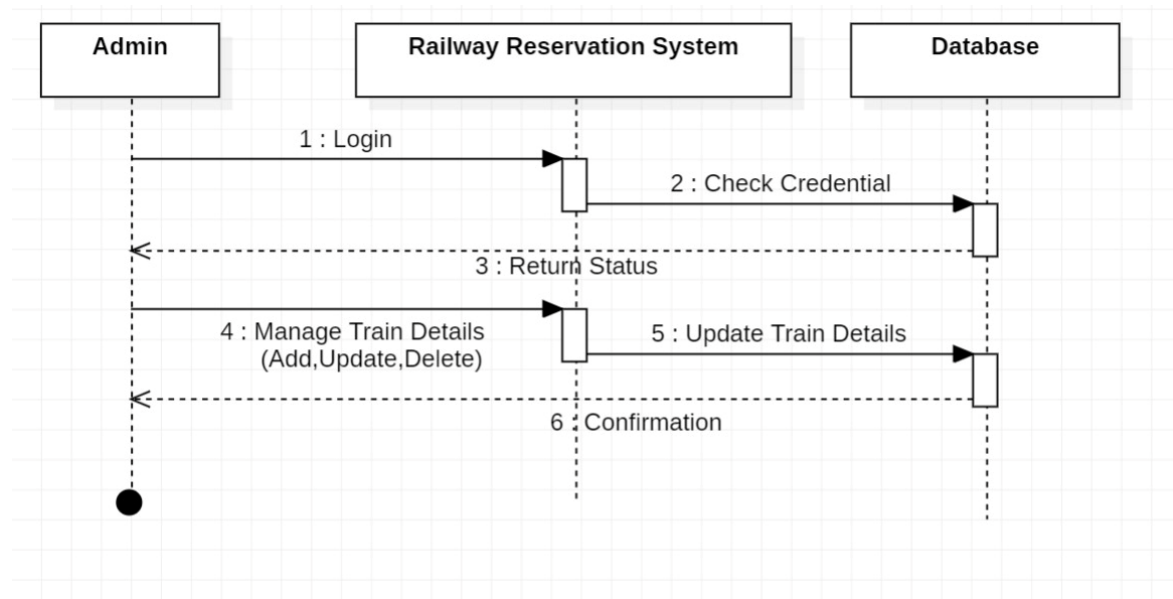| Ticket_Id | INT (primary key) |
Res_Id	INT (Foreign key)
Amount	Float
DateOfJourney	VARCHAR(20)

Sequence Diagram

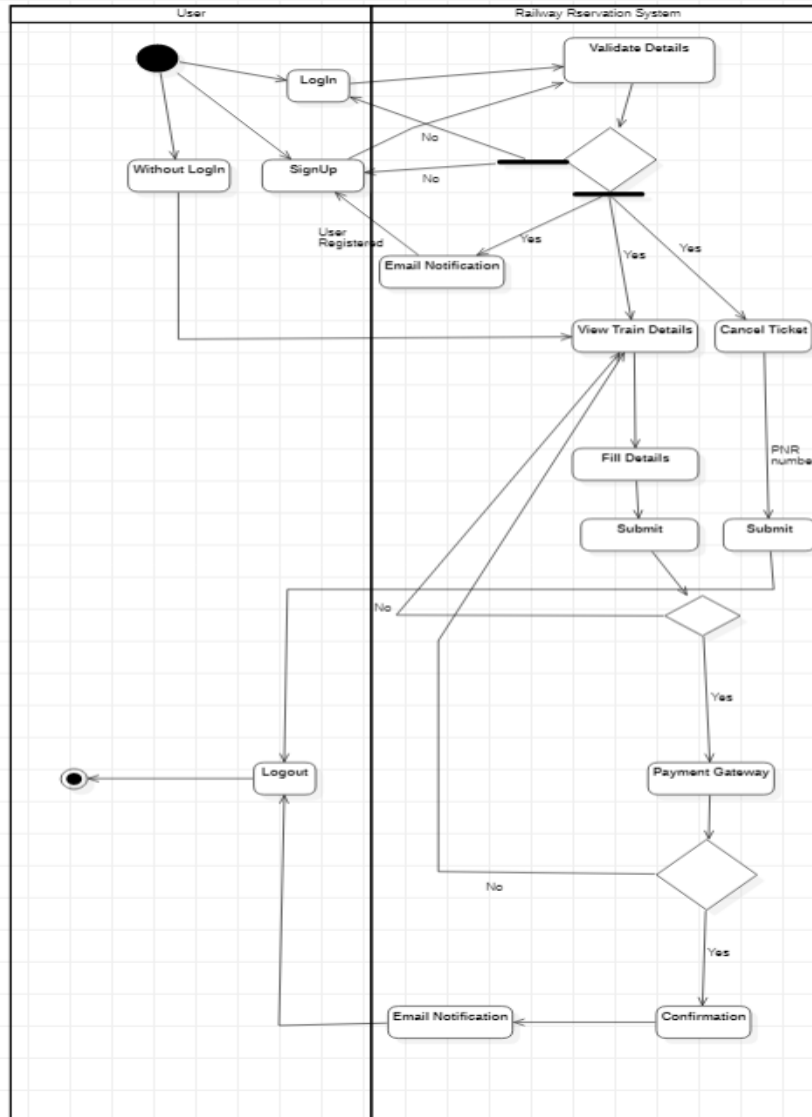# <u>User Sequence Diagram</u>

Admin Sequence Diagram

Activity Diagram

User Activity Diagram

Admin Activity Diagram