TRAIN MANAGEMENT SYSTEM – STATEMENT FILE

1. Project Title:

Train Management System (Python Console Project)

2. Objective:

The objective of this project is to create a simple, beginner-friendly Train Management System using Python. The system allows users to view trains, search trains by train number, and book seats. The project is designed for first-year B.Tech CSE students and avoids the use of external libraries (except a small custom PNR module).

3. Project Description:

This project simulates a basic train reservation system using Python. It maintains a predefined list of trains along with their details such as train number, train name, source, destination, and available seats.

Users can perform the following operations:

- View all trains – Displays a list of all available trains.

- Search train – Finds and displays details of a train using its train number.

- Book seat – Books a seat in the selected train and reduces seat count by one.

- PNR generation – Uses a separate module (PNR) to generate a unique PNR number after booking.

4. Features Implemented:

✔ View All Trains

Displays a formatted list of all trains with their number, name, route, and seat availability.

✔ Train Search

Allows the user to input a train number and retrieves its details if it exists.

✔ Seat Booking

- Reduces available seats by 1 when a booking is successfully made.

- Displays a system-generated PNR number using PNR.generate_pnr().

- Prevents booking if seats are unavailable.

✔ Menu-Driven Program

- Uses an infinite loop to continuously display options.

- Allows users to exit anytime.

5. Data Structure Used:

A list of dictionaries is used to store train data.

Each dictionary contains:

- Train Number

- Train Name

- Source Station

- Destination Station

- Available Seats

6. Working of the System:

Step 1:

User is shown the main menu:

- View Trains

- Search Train

- Book Seat

- Exit

Step 2:

User enters a choice.

Step 3:

Depending on the choice, the respective function is executed.

Step 4:

Program continues until the user selects Exit.

7. Advantages:

- Simple and easy to understand for beginners.

- Demonstrates Python basics: lists, dictionaries, loops, conditions, and functions.

- Useful for understanding menu-driven applications.

- Can be expanded later to include ticket cancellation, user login, fare calculation, etc.

8. Conclusion:

The Train Management System project fulfills its objective by providing a functional, beginner-friendly railway booking simulation. It helps students understand how real-life systems work and builds a good foundation for more advanced Python projects.