

# Railway Reservation System – Mini Project Report

## 1. Introduction

Railway reservation is an important system used to manage seat booking and cancellation for passengers. In manual reservation systems, errors such as double booking, incorrect seat allocation, and data loss may occur. To overcome these problems, a computerized reservation system is required.

This mini project Railway Reservation System using C++ is a console-based application that helps users book seats, cancel bookings, and view seat availability. The system uses file handling to store seat data permanently and exception handling to avoid invalid operations.

## 2. Objective of the Project

The main objectives of this project are:

- To develop a simple railway reservation system using C++
- To manage seat booking and cancellation efficiently
- To prevent double booking of seats
- To store reservation data using file handling
- To understand object-oriented programming concepts in C++

## 3. Technologies Used

Technology	Purpose
C++	Core programming language
File Handling	Store and retrieve seat data
OOP Concepts	Class and object implementation
Exception Handling	Handle invalid inputs and errors

## 4. Project Description

The Railway Reservation System manages a fixed number of seats (50 seats). Each

seat can either be Available or Booked by a passenger.

The system provides the following features:

- Book a seat by entering seat number and passenger name
- Cancel an already booked seat
- Display the current status of all seats
- Save seat data in a file so that bookings are not lost after program exit

The project is menu-driven and user-friendly.

## 5. System Workflow

- The program starts and loads seat data from a file.
- All available options are displayed to the user.
- The user selects one of the following options:
  - Book Seat
  - Cancel Seat
  - Display Seats
  - Exit
- Based on the user's choice:
  - Seat is booked or cancelled
  - Seat status is displayed
- Updated data is saved back to the file.
- The program continues until the user chooses to exit.

## 6. Explanation of C++ Logic

### 6.1 Seat Management

An array of strings is used to store seat status. If a seat contains “Available”, it is free. If it contains a passenger name, it is booked.

### 6.2 Booking Logic

- Seat number is checked for validity
- If seat is already booked, an error is shown
- Otherwise, the passenger name is stored in the seat

### 6.3 Cancellation Logic

- Seat number is validated
- If the seat is not booked, cancellation is not allowed

- Seat status is reset to Available

#### 6.4 File Handling

- Seat data is saved in `railway_data.txt`
- Data is loaded automatically when the program starts
- This ensures data persistence

#### 6.5 Exception Handling

Exceptions are used to:

- Handle invalid seat numbers
- Prevent double booking
- Handle file opening errors

### 7. User Interface Design

The system uses a console-based interface. It is menu-driven and easy to understand.

Features of the interface:

- Clear menu options
- Simple input system
- Proper error messages
- Continuous execution until exit option is selected

### 8. Advantages of the System

- Simple and easy to use
- Prevents double booking of seats
- Data is stored permanently using files
- Uses standard C++ concepts
- Suitable for small-scale reservation systems

### 9. Limitations

- Console-based application only
- Fixed number of seats (50)
- No graphical interface
- No user authentication

- Single train support

## 10. Conclusion

The Railway Reservation System using C++ successfully demonstrates the use of arrays, file handling, exception handling, and object-oriented programming. The project provides a simple and effective solution for managing seat reservations. It helps in understanding real-world application development using C++.

## 11. Future Enhancements

- Graphical User Interface (GUI)
- Online database integration
- Multiple train support
- User login and authentication
- Payment and ticket generation system

Project code:

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Pasted Graphic 3.png ↴

Git hub link : <https://github.com/vyomshah14/Cpp-Mini-project>

You can see the whole code execution file zip file Document and the code on my GitHub profile