Project Report

Data Structures & Algorithms Lab (EC-222L).

Submitted By:

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Railway Reservation Management System

Objective:

        To implement a Railway Reservation Management System using DSA concept. The key points of this management system will be:

- ➢ Implementation Of Reception Cabin.

    - ❖ Inquiry For Reservations.
    - ❖ Inquiry For Train Timetable.

- ➢ Implementation Of Reservation Cabin.

    - ❖ Booking A Reservation.
    - ❖ Canceling A Reservation.
    - ❖ Inquiring A Reservation.
    - ❖ Displaying Reservations Record.

- ➢ Implementation Of Control Room.

    - ❖ Adding Incoming Trains Into Timetable.
    - ❖ Removing Trains From Timetable.
    - ❖ Inquiry For An Incoming Train.
    - ❖ Displaying Train Timetable.

- ➢ Implementation Of Admin Office.

    - ❖ Registering Railway Employees / Users.
    - ❖ Deregistering Railway Employees / Users.
    - ❖ Displaying Users Record.
    - ❖ Displaying Reservations Record.
    - ❖ Displaying Control Room's Record.
    - ❖ Deleting All Record Files.

Theory

Abstract:

The main aim of this project is to closely model the working of Railway staff working at a Railway Station into programming world. The more deeply we will study them the more our Reservation System will be close to reality. We can achieve this by first noting down the perspectives of management ongoing on daily routine basis in a Railway Station.

Introduction:

The Railway Reservation Management System facilitates the passengers to inquire about the trains available on the basis of source and destination, Booking and Cancellation of tickets, enquire about the status of the booked ticket, etc. The aim of case study is to design and develop a database maintaining the records of different trains, train status, and passengers.

Project Description:

This project is based upon concepts of Data Structures & Algorithms, File Handling, and Object Oriented Programming. The following Management System models the real world working of Railway Reservation Management System by using *Abstract Data Types* and calling their objects where they are implemented (OOP Concept), the data is fetched and stored temporarily in *Linked Lists*, any entered data can be found by iterating the data using *Linear Search* (DSA Concept), then for permanent storage it is stored in respective *'.txt' files* (File Handling Concept).
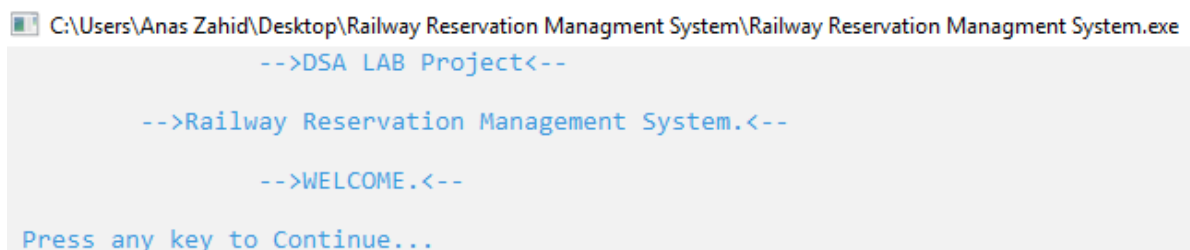
Practical Implementation

Notes:

- Minimum version needed of C++ compiler to run this program correctly is '*C++11*'.
- Firstly *Users* needs to be created to access the Reception Cabin, Reservation Cabin & Control Room by Administrator.
- Users with valid credentials will be allowed to login as created by Administrator earlier and shared.
- Default username for Admin is: ***Admin***.
- Default password for Admin is: ***Admin***.

C++ Program:

The code
As our project consists of approx. 1,500 'CPP' code lines scattered in 6 '.h' and 6 '.cpp' files, so we have provided the project files in zip format with the report and also we have uploaded all files into an online respiratory at github.com, you can view it by clicking here.
The results (Screenshot)

C:\Users\Anas Zahid\Desktop\Railway Reservation Managment System\Railway Reservation Managment System.exe

```
            -->DSA LAB Project<--

      -->Railway Reservation Management System.<--

            -->WELCOME.<--

Press any key to Continue...
```

Figure:01 Splash Screen Of Management System.

C:\Users\Anas Zahid\Desktop\Railway Reservation Managment System\Railway Reservation Managment System.exe

```
-----MAIN MENU-----

        1. Reception Cabin.
        2. Reservation Cabin.
        3. Control Room.
        4. Administrator Cabin.
        5. About Developer.
        6. Exit Program.

 Enter Your Choice:
```

Figure:02 *Main Menu Of Management System.*

C:\Users\Anas Zahid\Desktop\Railway Reservation Managment System\Railway Reservation Managment System.exe

```
        Admin Login Page

 Enter Admin User Name: Admin
 Enter Admin Password: Admin

 Login Successful, Press any key to continue...
```

Figure:03 *Login Page For Admin.*

C:\Users\Anas Zahid\Desktop\Railway Reservation Managment System\Railway Reservation Managment System.exe

```
-----ADMINISTRATOR CABIN-----

        1. Create User Accounts.
        2. Delete User Accounts.
        3. Search For User Accounts.
        4. Display User Accounts Record.
        5. Display Recently Entered Data Of User Accounts.
        6. Display Reservations Record.
        7. Display Trains Timetable Record.
        8. Delete All Records.
        9. Go Back To Main Menu.

 Enter Your Choice:
```

Figure:04 *Main Menu Of Administrator Cabin.*

```
-----ADMINISTRATOR CABIN-----

        1. Create User Accounts.
        2. Delete User Accounts.
        3. Search For User Accounts.
        4. Display User Accounts Record.
        5. Display Recently Entered Data Of User Accounts.
        6. Display Reservations Record.
        7. Display Trains Timetable Record.
        8. Delete All Records.
        9. Go Back To Main Menu.

 Enter Your Choice: 1

        Enter User Name: Anas
        Enter User Password: 123
        Enter User Type: P

 Data Entered Successfully.


 Press Any Key To Continue...
```

Figure:05 Creating Users For Management System.

```
-----ADMINISTRATOR CABIN-----

        1. Create User Accounts.
        2. Delete User Accounts.
        3. Search For User Accounts.
        4. Display User Accounts Record.
        5. Display Recently Entered Data Of User Accounts.
        6. Display Reservations Record.
        7. Display Trains Timetable Record.
        8. Delete All Records.
        9. Go Back To Main Menu.

 Enter Your Choice: 5

 ---> Displaying Admin Data. <---

 Sr.            User Name       User Password   User Type
 ===============================================================================
 1              Anas            123             P
 2              Mirza Ji        0987            Q
 3              Nabeel          ASD             M
 4              Umer            012             D

 Press Any Key To Continue...
```

Figure:06 Displaying Data For Recently Created Users.

C:\Users\Anas Zahid\Desktop\Railway Reservation Managment System\Railway Reservation Managment System.exe

```
        User Login Page

Enter User Name: Anas
Enter User Password: 123

Login Successful, Press any key to continue...
```

Figure:07 Login Page For Users.

C:\Users\Anas Zahid\Desktop\Railway Reservation Managment System\Railway Reservation Managment System.exe

```
-----RECEPTION CABIN-----

        1. Inquire For Reservations.
        2. Inquire For Trains.
        3. Go Back To Main Menu..

 Enter Your Choice:
```

Figure:08 Main Menu For Reception Cabin.

C:\Users\Anas Zahid\Desktop\Railway Reservation Managment System\Railway Reservation Managment System.exe

```
-----RESERVATIONS CABIN-----

        1. Book A Reservation.
        2. Cancel A Reservation.
        3. Inquire For Reservations.
        4. Display Reservations Record.
        5. Display Recent Reservations.
        6. Go Back To Main Menu.

 Enter Your Choice:
```

Figure:09 Main Menu For Reservations Cabin.

C:\Users\Anas Zahid\Desktop\Railway Reservation Managment System\Railway Reservation Managment System.exe

```
-----RESERVATIONS CABIN-----

        1. Book A Reservation.
        2. Cancel A Reservation.
        3. Inquire For Reservations.
        4. Display Reservations Record.
        5. Display Recent Reservations.
        6. Go Back To Main Menu.

 Enter Your Choice: 1

        Enter Ticket No: 76A8
        Enter Name: Anas
        Enter Destination: Lahore
        Enter Class: Buisness
        Enter Luggage: A Bag
        Enter seat No: 12-A
        Enter Train Name: Khyber Express
        Enter Depo No: 02

Data Entered Successfully.


Press Any Key To Continue...
```

Figure:10 *Booking A Reservation.*

C:\Users\Anas Zahid\Desktop\Railway Reservation Managment System\Railway Reservation Managment System.exe

```
-----CONTROL ROOM-----

        1. Enter Incoming Train In Timetable.
        2. Delete A Train From Timetable.
        3. Inquire For A Train.
        4. Load Data From Database.
        5. Display Train Timetable.
        6. Go Back To Main Menu.

 Enter Your Choice:
```

Figure:11 *Main Menu For Control Room.*

```
C:\Users\Anas Zahid\Desktop\Railway Reservation Managment System\Railway Reservation Managment System.exe

-----CONTROL ROOM-----

        1. Enter Incoming Train In Timetable.
        2. Delete A Train From Timetable.
        3. Inquire For A Train.
        4. Load Data From Database.
        5. Display Train Timetable.
        6. Go Back To Main Menu.

 Enter Your Choice: 1

        Enter Train No: 23A6B
        Enter Train Name: Khyber Express
        Train Is Coming From: Peshawar
        Enter Destination: Lahore
        Enter Arrival Time: 11:05am
        Enter Departure Time: 12:30pm
        Enter Depo No: 2

 Data Entered Successfully.


 Press Any Key To Continue...
```

Figure:12 Creating Train Timetable.

```
C:\Users\Anas Zahid\Desktop\Railway Reservation Managment System\Railway Reservation Managment System.exe

-----ADMINISTRATOR CABIN-----

        1. Create User Accounts.
        2. Delete User Accounts.
        3. Search For User Accounts.
        4. Display User Accounts Record.
        5. Display Recently Entered Data Of User Accounts.
        6. Display Reservations Record.
        7. Display Trains Timetable Record.
        8. Delete All Records.
        9. Go Back To Main Menu.

 Enter Your Choice: 8

 Are You Sure, You Want To Delete All Record!...(Yes/No).yes

 File deleted successfully
 File deleted successfully
 File deleted successfully
 File deleted successfully

 Press Any Key To Continue...
```

Figure:13 Deleting All The Available Record Files.

```
C:\Users\Anas Zahid\Desktop\Railway Reservation Managment System\Railway Reservation Managment System.exe

-----MAIN MENU-----

        1. Reception Cabin.
        2. Reservation Cabin.
        3. Control Room.
        4. Administrator Cabin.
        5. About Developer.
        6. Exit Program.

 Enter Your Choice: 5

 The Code For This Project Is Developed By Following Developers.

-----Group Members-----

        1. Muhammad Umer (19-EE-012).
        2. Anas Zahid (19-EE-028).
        3. Muhammad Nabeel Tahir (19-EE-044).
        4. Mirza Fahad Baig (19-EE-105).

 Press Any Key To Continue...
```

Figure:14 Info About Developers.

```
C:\Users\Anas Zahid\Desktop\Railway Reservation Managment System\Railway Reservation Managment System.exe

-----MAIN MENU-----

        1. Reception Cabin.
        2. Reservation Cabin.
        3. Control Room.
        4. Administrator Cabin.
        5. About Developer.
        6. Exit Program.

 Enter Your Choice: 6

 Are You Sure, You Want To Exit Program!...(Yes, No).Yes

                -->Good Bye.<--

 Press any key to Exit...
```

Figure:15 Exiting Management System.

Conclusion:

After implementing this Management System based project we are now able to build any type of *Management System* modeling real world based applications using concept of *Data Structures & Algorithms* and also permanent storage of data using concept of *File Handling Techniques*.

The End.