



PROGRAM DOCUMENTATION

Railway Database System

Introduction to problem solving

Course Code: CS143

Name: Mazen Tarek

ID: [REDACTED]

Problem Definition

Program must store data of tickets booked by users, display train numbers, train routes, price and admin mode to add more trains to the database or to search for a specific user.

Analysis

Input: User inputs his choice of operation using an integer variable

Output: A different interface is drawn depending on the input from the user.

Assumption: The maximum number of the array for each struct is 10.

Design

Libraries used:

- 1 – #include<stdio.h>: used for built – in functions such as scanf and printf
- 2 - #include<stdlib.h>: used for system (“cls”), & system(“PAUSE”) and system (“COLOR F”); to display the text in a bright white color.
- 3 - #include<string.h>: To use built in string functions such as strlen and strcmp and strncmp to check specific characters between 2 strings.
- 4 - #include<conio.h>: To use getch() function and clrscr() function
- 5 - #include “railway.h”: User defined header file that contains 2 structs

Functions used:

- 1 – reserveTicket(); Function that books a ticket for the user using struct.
- 2 - viewTrains (); Function that displays all of the trains available.
- 3 - fileWrite (); Save the details entered by the user for the ticket in a text file.

4 – Admin (): Function that asks for username and password to make sure the person is an admin and enables him to enter admin mode.

5 – addTrain (); Function that is only accessible if in admin mode, allows the admin to add more trains.

6 – userSearch (); Function that is only accessible if in admin mode, allows the admin to search for users using phone number (as it is unique).

7- main (); Function used to start the code

Data types used:

- 2 structs
- 1 FILE data type
- 12 integer variables
- 6 character variables

Data types used in functions:

- 6 functions of void data type

Entities used:

1st struct: bookTicket

- Char FName → First name
- Char Lname → Last name
- Int trainNum → Train Number
- Int num_seats → Number of seats
- Char phone → Phone number

2nd struct: addTrain

- Int trainNum → Train number to be added
- char trainName → Name of train to be added
- Char Destination → Destination of the train

- Int Price → Price of the train

Testing

The image on the right shows the program running without any errors.

```
Welcome to the Railway Ticket Reservation System
1>> Reserve A Ticket
-----
2>> View All Available Trains
-----
3>> Admin
-----
4>> Exit
-----
-->
```

The user is first asked how many tickets he wishes to buy, and the program waits for an integer input.

```
Welcome to the Railway Ticket Reservation System
1>> Reserve A Ticket
-----
2>> View All Available Trains
-----
3>> Admin
-----
4>> Exit
-----
-->1
How many tickets do you want to buy?
_
```

The image on the right shows the program accepting the first and last name from the user as they are valid and rejecting an input of 8 for the train number as this train number doesn't exist in the train database.

```

Welcome to the Railway Ticket Reservation System
1>> Reserve A Ticket
-----
2>> View All Available Trains
-----
3>> Admin
-----
4>> Exit
-----

-->1
How many tickets do you want to buy?
1
    Ticket (1 of 1)
Please enter your first Name: Mazen
Please enter your last Name: Tarek
Enter train number: 8
A train with this number doesn't exist, please try again
Enter train number:
```

The image on the right shows the program rejecting an input of 20 for the number of seats because the maximum number of seats allowed per transaction is between 1 and 5 seats.

```

Welcome to the Railway Ticket Reservation System
1>> Reserve A Ticket
-----
2>> View All Available Trains
-----
3>> Admin
-----
4>> Exit
-----

-->1
How many tickets do you want to buy?
1
    Ticket (1 of 1)
Please enter your first Name: Mazen
Please enter your last Name: Tarek
Enter train number: 8
A train with this number doesn't exist, please try again
Enter train number: 3
Enter the number of seats you want in Train Number (3): 20
Maximum number of seats allowed per transaction is 5 and Minimum is 1
Enter the number of seats you want in Train Number (3):
```

The image on the right shows the program rejecting the phone number input from the user because of 2 reasons,

1st reason: the phone number was not 11 digits long.

2nd reason: The phone number didn't start with 01 (Egyptian prefix).

```
Welcome to the Railway Ticket Reservation System

1>> Reserve A Ticket
-----
2>> View All Available Trains
-----
3>> Admin
-----
4>> Exit
-----

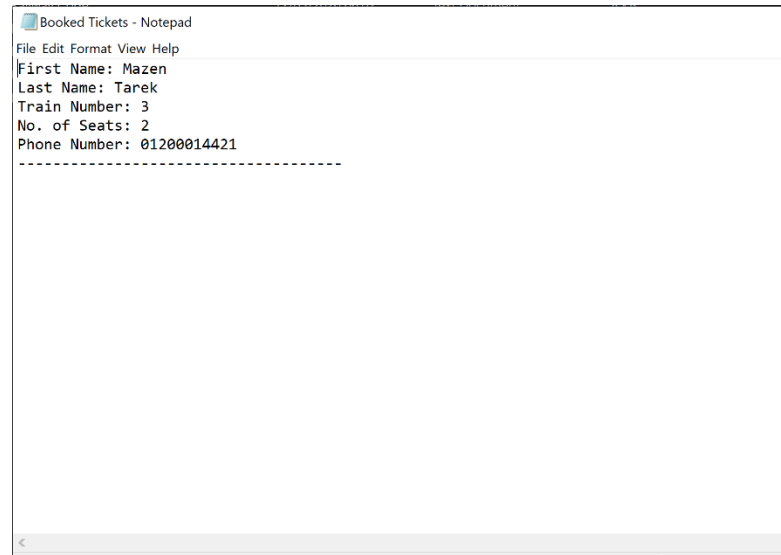
-->1
How many tickets do you want to buy?
1
    Ticket (1 of 1)
Please enter your first Name: Mazen
Please enter your last Name: Tarek
Enter train number: 8
A train with this number doesn't exist, please try again
Enter train number: 3
Enter the number of seats you want in Train Number (3): 20
Maximum number of seats allowed per transaction is 5 and Minimum is 1
Enter the number of seats you want in Train Number (3): 2
Please enter your phone number: 09142
Phone number MUST be 11 digits
Phone number must start with 01,please try again
Please enter your phone number: _
```

The image on the right shows a message being displayed to the user letting him know that the ticket has been successfully booked and the program asks him to press any key to continue.

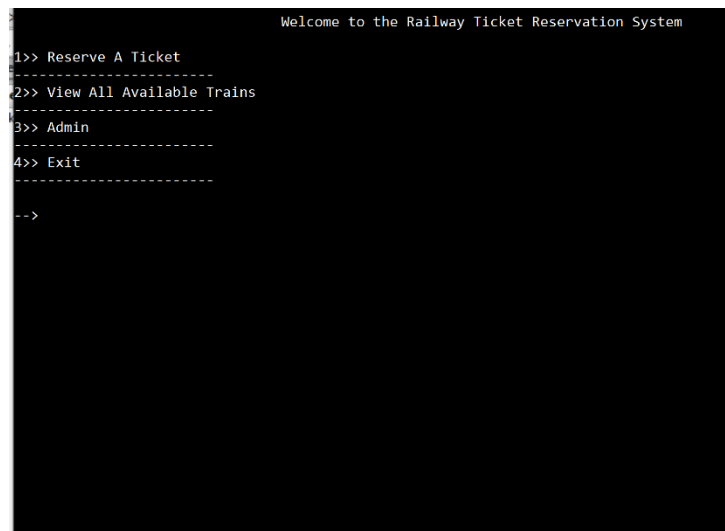
```
1>> Reserve A Ticket
-----
2>> View All Available Trains
-----
3>> Admin
-----
4>> Exit
-----

-->1
How many tickets do you want to buy?
1
    Ticket (1 of 1)
Please enter your first Name: Mazen
Please enter your last Name: Tarek
Enter train number: 8
A train with this number doesn't exist, please try again
Enter train number: 3
Enter the number of seats you want in Train Number (3): 20
Maximum number of seats allowed per transaction is 5 and Minimum is 1
Enter the number of seats you want in Train Number (3): 2
Please enter your phone number: 09142
Phone number MUST be 11 digits
Phone number must start with 01,please try again
Please enter your phone number: 01200014421
01200014421
>>>>Ticket Booked Successfully<<<<
Thank you for choosing Mazen's Railway Service
Press any key to continue . . .
```

The image on the right shows the file that was opened by the program and the data being added for the ticket booked.



The user is then brought back to the home screen and is asked to input a number.



The image on the right shows the all the trains available for the user to pick from, we can get to this menu by typing (2) in the home menu.

Train Number	Train Name	Destination	Time	Price
1	Alexandria	Ramses	100 EGP	11am
2	Alexandria	Luxor	100 EGP	2pm
3	Cairo	Tanta	100 EGP	10am
4	Cairo	PortSaid	100 EGP	5pm
5	Cairo	Mansoura	100 EGP	2pm

Press any key to continue . . .

The user is brought back to the main menu and when the user presses 3 to access the admin mode he is asked for the username

```
1>> Reserve A Ticket
-----
2>> View All Available Trains
-----
3>> Admin
-----
4>> Exit
-----
-->3
```

```
----- Admin Login Page -----
Enter username:
```


Main menu for the admin mode with 3 options.

```
|| CHOOSE AN OPERATION ||
||-----||
|| [1] Add Train ||
|| [2] Search for User ||
|| [3] QUIT ||
||-----||

Please select an operation: _
```

Admin can press 2 and search for a user using the phone number, we searched for the phone number previously entered and here are the results of search.

```
Please select an operation: 6
Invalid input,please enter the correct input

|| CHOOSE AN OPERATION ||
||-----||
|| [1] Add Train ||
|| [2] Search for User ||
|| [3] QUIT ||
||-----||

Please select an operation: 2
Enter the phone number of the user you want to search for
01200014421
First Name: Mazen
Last Name: Tarek
Booked on Train Number: 3
Number of seats booked by this user 2
Price to Pay = 200

|| CHOOSE AN OPERATION ||
||-----||
|| [1] Add Train ||
|| [2] Search for User ||
|| [3] QUIT ||
||-----||

Please select an operation: _
```