RAILWAY RESERVATION SYSTEM

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A-Introduction of Program

Program Language: C++

Main Programs Name: One Way Railway Reservation System

Compiler: Visual Studio

B-Design of Program

1)The Purpose of the Program

This program aims to make our customers use the railway which is a more ecological transportation system more broadly.

Goal: We aim to offer our passengers the railway reservation system with a one-way train on a simple design. With this system, we offer opportunities to reserve, cancel, and buy tickets with different types of users. Also, we offer special opportunities for our user types of relatives of martyrs, veterans, disabled, and students. We want to increase the use of our system with these opportunities. Our train is designed to have 4 carriages and 40 seats in each carriage.

We used the C++ language to write this program.

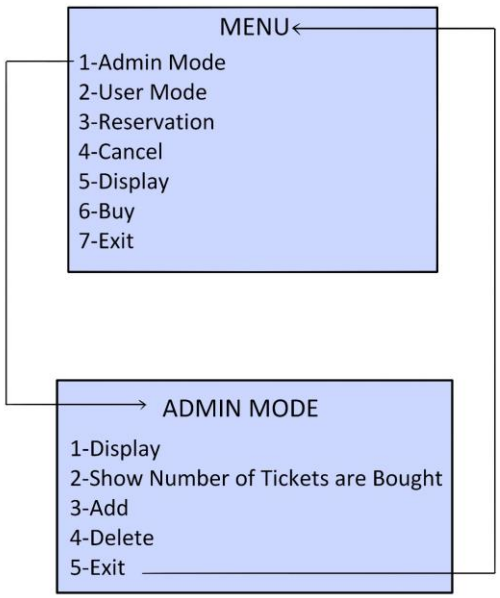
Our passengers can easily perform different operations with their preferences from the menus that will appear in front of them;

- In order to use the features of the system, passengers must register themselves in the system. During this registration, user name, surname, and passwords are requested. If this information is not entered correctly, subsequent operations will not be performed properly.
- Users must re-login after registering themselves in the system. After this entry, they will be able to access 3 basic functions in the program.
- There is no day limit in our system. It doesn't work only on Sunday.

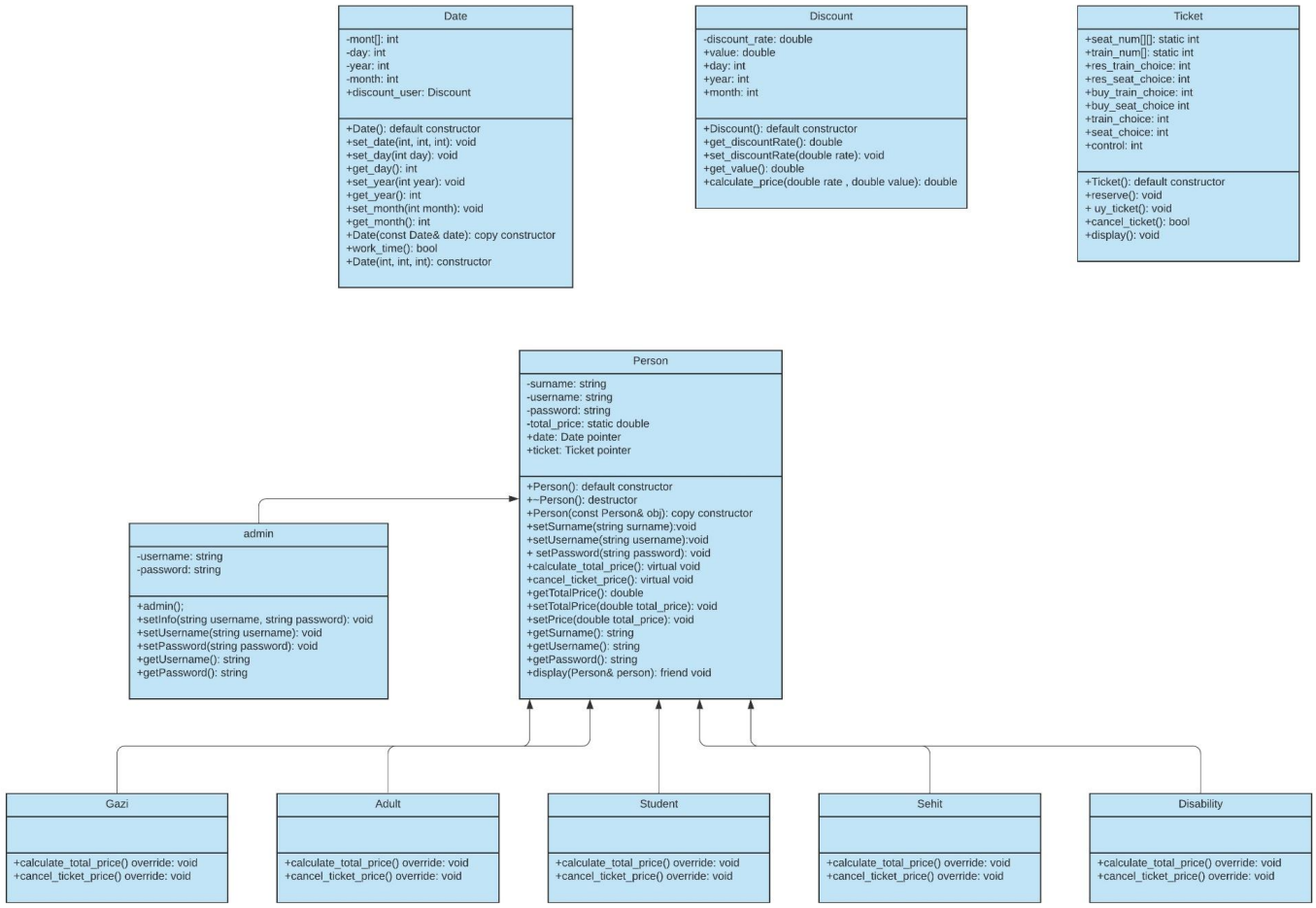
2)Solution Design

- By reserving their tickets, users can prevent their tickets from being purchased by someone else. Our system will check the seat and train number before passengers' book. If these numbers are valid, the transaction will be smooth, but this transaction will not occur if this ticket is pre-booked or if there is no such train or seat number. In this case, users must re-enter the system and write the train and wagon numbers again.
- Users can then purchase the tickets they have reserved. They can also buy tickets that they have already reserved, or if there are new tickets that they want to buy, they also have the possibility of getting them. Every purchase request received by customers is stored in the train simulation found in our program, and if they want, they also can access this simulation.
- In this train simulation, number 1 represents reserved seats, Number 5 represents purchased seats, and number 0 represents empty seats.
- Customers can cancel these tickets without any loss of money if they want, but when they buy a ticket a second time with the same user login, they lose the ability to cancel the first ticket they received. In this case, there is no refund and the cancellation process does not occur.
- In the admin mode available in the program, there are also options to add users, remove users, and see users in the system, the total fees for tickets sold, and the option to see the total number of tickets sold. In order to access these transactions, it is necessary to enter only the correct user name and password registered in the system.

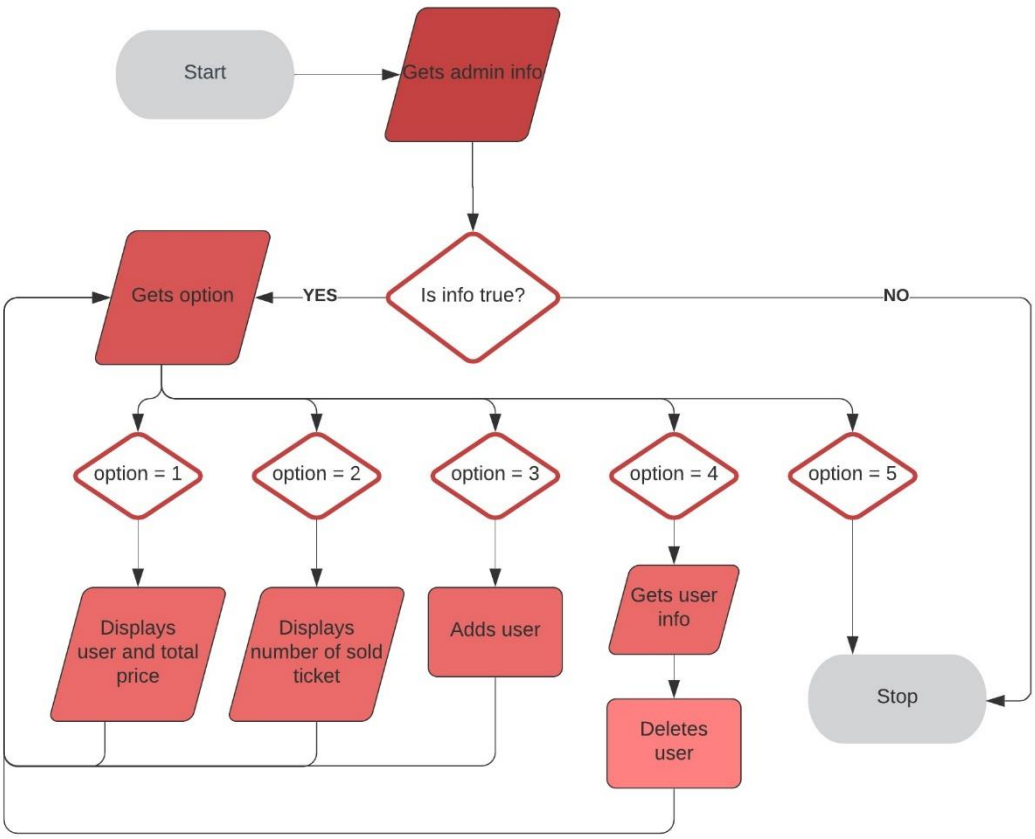
3)Design for Programming



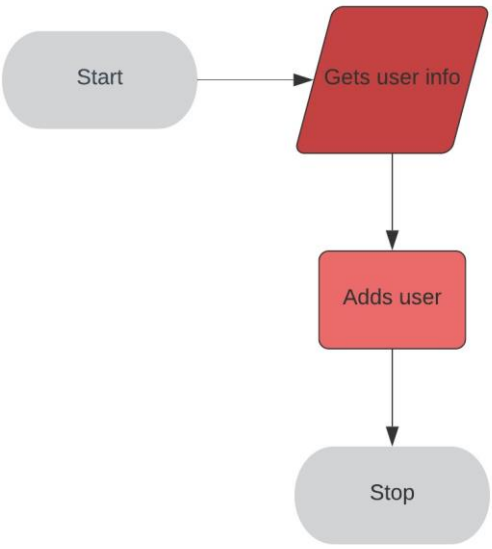
UML class


Date
-mont[]: int
-day: int
-year: int
-month: int
+discount_user: Discount
+Date(): default constructor
+set_date(int, int, int): void
+set_day(int day): void
+get_day(): int
+set_year(int year): void
+get_year(): int
+set_month(int month): void
+get_month(): int
+Date(const Date& date): copy constructor
+work_time(): bool
+Date(int, int, int): constructor
Discount
-discount_rate: double
+value: double
+day: int
+year: int
+month: int
+Discount(): default constructor
+get_discountRate(): double
+set_discountRate(double rate): void
+get_value(): double
+calculate_price(double rate , double value): double
Ticket
+seat_num[][]: static int
+train_num[]: static int
+res_train_choice: int
+res_seat_choice: int
+buy_train_choice: int
+buy_seat_choice int
+train_choice: int
+seat_choice: int
+control: int
+Ticket(): default constructor
+reserve(): void
+ uy_ticket(): void
+cancel_ticket(): bool
+display(): void
Person
-surname: string
-username: string
-password: string
-total_price: static double
+date: Date pointer
+ticket: Ticket pointer
+Person(): default constructor
+~Person(): destructor
+Person(const Person& obj): copy constructor
+setSurname(string surname):void
+setUsername(string username):void
+ setPassword(string password): void
+calculate_total_price(): virtual void
+cancel_ticket_price(): virtual void
+getTotalPrice(): double
+setTotalPrice(double total_price): void
+setPrice(double total_price): void
+getSurname(): string
+getUsername(): string
+getPassword(): string
+display(Person& person): friend void
admin
-username: string
-password: string
+admin();
+setInfo(string username, string password): void
+setUsername(string username): void
+setPassword(string password): void
+getUsername(): string
+getPassword(): string
Gazi
+calculate_total_price() override: void
+cancel_ticket_price() override: void
Adult
+calculate_total_price() override: void
+cancel_ticket_price() override: void
Student
+calculate_total_price() override: void
+cancel_ticket_price() override: void
Sehit
+calculate_total_price() override: void
+cancel_ticket_price() override: void
Disability
+calculate_total_price() override: void
+cancel_ticket_price() override: void

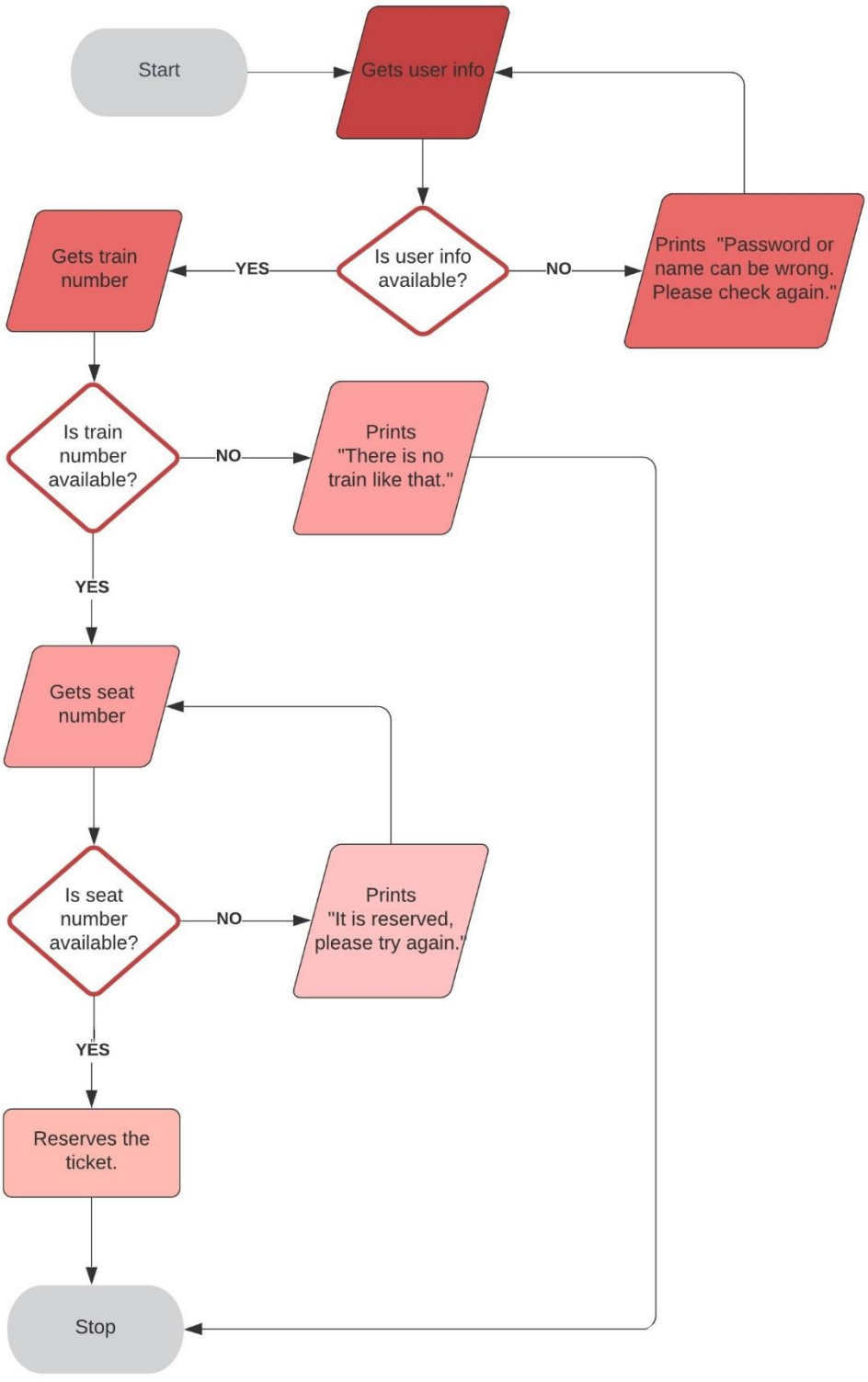
1-Admin Mode



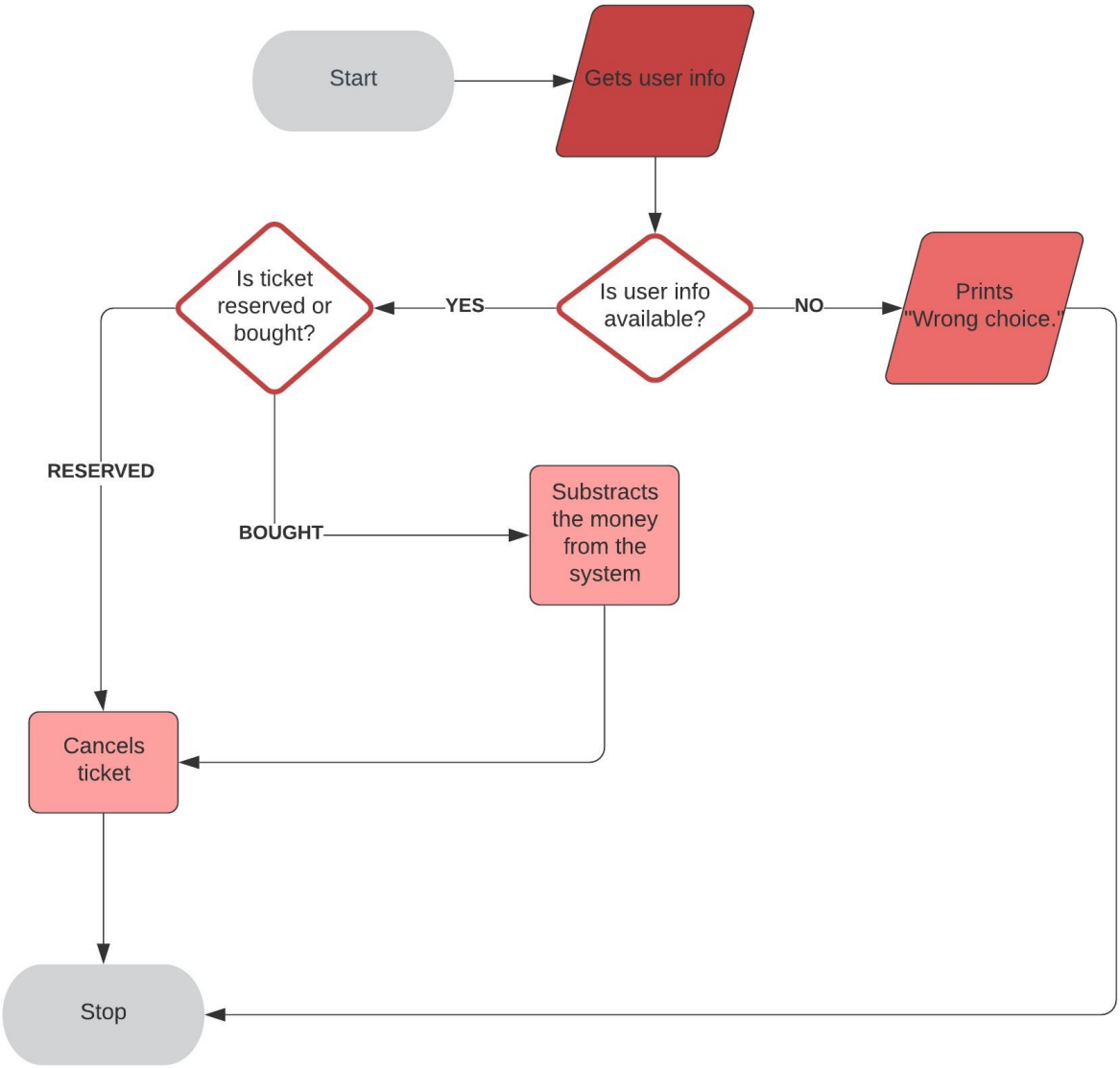
2-User Mode



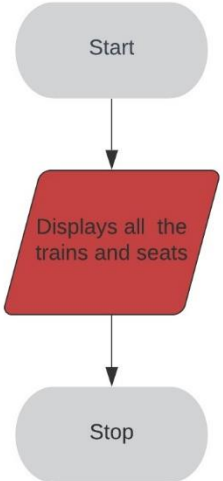
3-Reservation



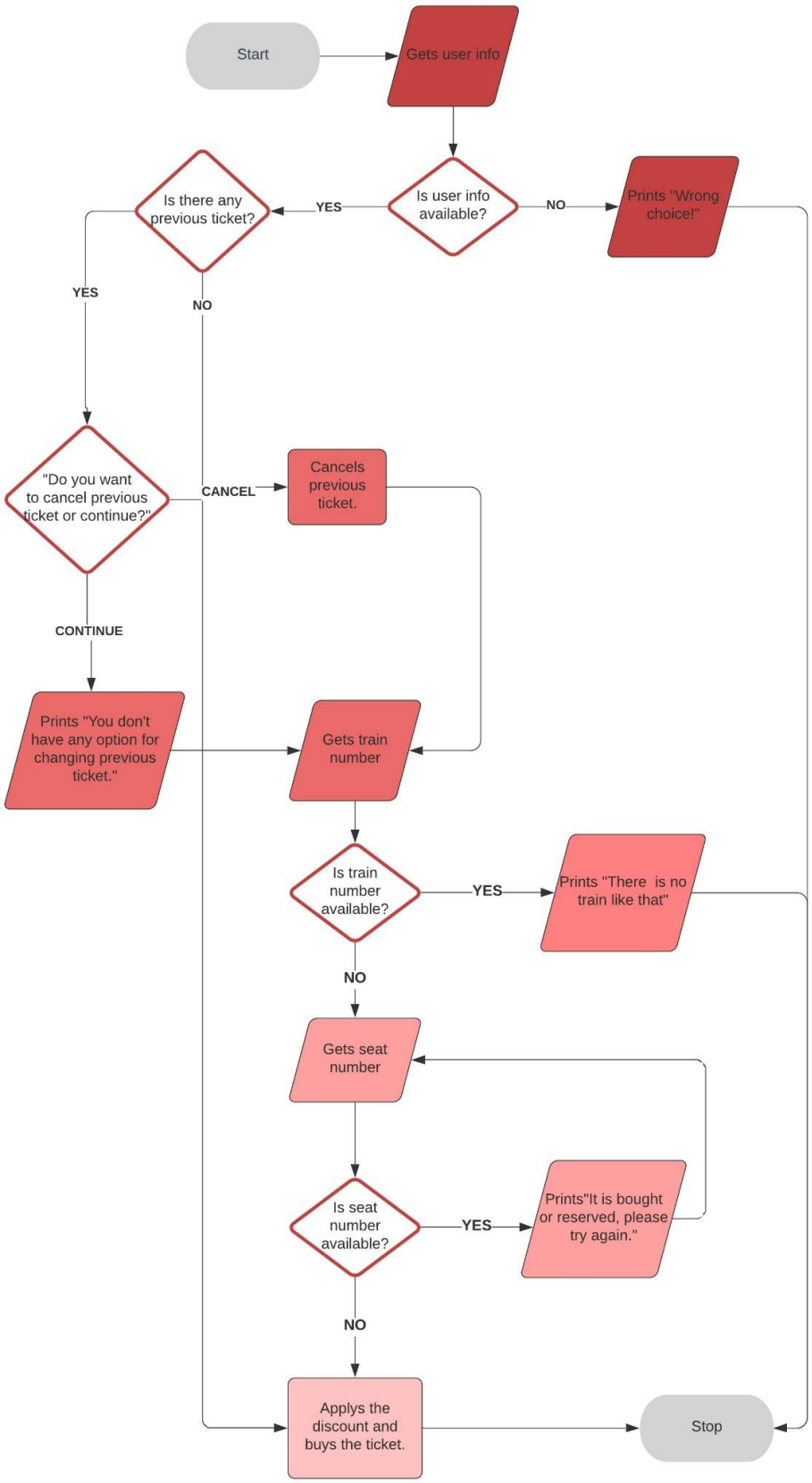
4-Cancel



5-Display



6-Buy


Start
Gets user info
Is user info available?
NO
Prints "Wrong choice!"
YES
Is there any previous ticket?
YES
NO
"Do you want to cancel previous ticket or continue?"
CANCEL
Cancels previous ticket.
CONTINUE
Prints "You don't have any option for changing previous ticket."
Gets train number
Is train number available?
YES
Prints "There is no train like that"
NO
Gets seat number
Is seat number available?
YES
Prints"It is bought or reserved, please try again."
NO
Applys the discount and buys the ticket.
Stop

4)Testing Results

```
-------Reservation System-------
1-Admin Mode
2-User Mode
3- Reservation
4-Cancel
5-Display
6-Buy
7-Exit
1
Enter your name: admin
Enter your password: admin123
-----------Admin------------
1-Display
2-Show Number of Tickets are Bought
3-Add
4-Delete
5-Exit
3

Please enter your name ,surname and password
Volkan Mazlum 123
Choose option
1-Adult2-Student3-Gazi 4-Sehit5-Disability
1
-----------Admin------------
1-Display
2-Show Number of Tickets are Bought
3-Add
4-Delete
5-Exit
```

```
1
-----------Admin------------
1-Display
2-Show Number of Tickets are Bought
3-Add
4-Delete
5-Exit
1
Surname : Mazlum
Username : Volkan

Total Price our company have is : 0
-----------Admin------------
1-Display
2-Show Number of Tickets are Bought
3-Add
4-Delete
5-Exit
4
Enter name, surname and password you want to delete: Volkan Mazlum 123
Choose option
1-Adult2-Student3-Gazi 4-Sehit5-Disability
1
-----------Admin------------
1-Display
2-Show Number of Tickets are Bought
3-Add
4-Delete
5-Exit
1
```

C:\Users\VOLKAN MAZLUM\Desktop\proje\Debug\Project79.exe

```
4
Enter name, surname and password you want to delete: Volkan Mazlum 123
Choose option
1-Adult2-Student3-Gazi 4-Sehit5-Disability
1
-----------Admin------------
1-Display
2-Show Number of Tickets are Bought
3-Add
4-Delete
5-Exit
1

Total Price our company have is : 0
-----------Admin------------
1-Display
2-Show Number of Tickets are Bought
3-Add
4-Delete
5-Exit
2
There are 0 number of ticket own company sold.
-----------Admin------------
1-Display
2-Show Number of Tickets are Bought
3-Add
4-Delete
5-Exit
```

```
----------Admin-----------
1-Display
2-Show Number of Tickets are Bought
3-Add
4-Delete
5-Exit
5
1-Admin Mode
2-User Mode
3- Reservation
4-Cancel
5-Display
6-Buy
7-Exit
2

Please enter your name ,surname and password
Volkan Mazlum 123
Choose option
1-Adult2-Student3-Gazi 4-Sehit5-Disability
2
Setting information is successful.
1-Admin Mode
2-User Mode
3- Reservation
4-Cancel
5-Display
6-Buy
7-Exit
```

```
4-Cancel
5-Display
6-Buy
7-Exit
2

Please enter your name ,surname and password
Sule Guler 1234
Choose option
1-Adult2-Student3-Gazi 4-Sehit5-Disability
3
Setting information is successful.
1-Admin Mode
2-User Mode
3- Reservation
4-Cancel
5-Display
6-Buy
7-Exit
3
Please enter your name, surname and password
Sule Guler 1234
Choose option
1-Adult2-Student3-Gazi 4-Sehit5-Disability
3
Which train do you want to reserve : 1
Enter seat number you want : 2
The ticket is reserved.
1-Admin Mode
2-User Mode
```

```
Which train do you want to reserve : 1
Enter seat number you want : 2
The ticket is reserved.
1-Admin Mode
2-User Mode
3- Reservation
4-Cancel
5-Display
6-Buy
7-Exit
6
Please enter your name ,surname and password
Volkan Mazlum 123
Choose option
1-Adult2-Student3-Gazi 4-Sehit5-Disability
2
Which train do you want to buy : 2
Enter seat number you want : 13
The ticket is bought.
1-Admin Mode
2-User Mode
3- Reservation
4-Cancel
5-Display
6-Buy
7-Exit
```

```
The ticket is bought.
1-Admin Mode
2-User Mode
3- Reservation
4-Cancel
5-Display
6-Buy
7-Exit
5
Train 1
     0      1      0      0      0      0      0      0      0      0      0      0      0      0      0
     0      0      0      0      0      0      0      0      0      0      0      0      0      0      0
     0      0      0      0      0      0      0      0      0      0
Train 2
     0      0      0      0      0      0      0      0      0      0      0      0      5      0      0
     0      0      0      0      0      0      0      0      0      0      0      0      0      0      0
     0      0      0      0      0      0      0      0      0      0
Train 3
     0      0      0      0      0      0      0      0      0      0      0      0      0      0      0
     0      0      0      0      0      0      0      0      0      0      0      0      0      0      0
     0      0      0      0      0      0      0      0      0      0
Train 4
     0      0      0      0      0      0      0      0      0      0      0      0      0      0      0
     0      0      0      0      0      0      0      0      0      0      0      0      0      0      0
     0      0      0      0      0      0      0      0      0      0
1-Admin Mode
2-User Mode
3- Reservation
4-Cancel
5-Display
```

```
1-Admin Mode
2-User Mode
3- Reservation
4-Cancel
5-Display
6-Buy
7-Exit
4
Please enter your name ,surname and password
Volkan Mazlum 123
Choose option
1-Adult2-Student3-Gazi 4-Sehit5-Disability
2
Which seat did you buy or reserve : 2
Enter seat number you bought or reserved : 13
The cancellation is successful.
1-Admin Mode
2-User Mode
3- Reservation
4-Cancel
5-Display
6-Buy
7-Exit
5
Train 1
     0      1      0      0      0      0      0      0      0      0      0      0      0      0      0
     0      0      0      0      0      0      0      0      0      0      0      0      0      0      0
```

```
3- Reservation
4-Cancel
5-Display
6-Buy
7-Exit
5
Train 1
     0      1      0      0      0      0      0      0      0      0      0      0      0      0      0
     0      0      0      0      0      0      0      0      0      0      0      0      0      0      0
     0      0      0      0      0      0      0      0      0      0
Train 2
     0      0      0      0      0      0      0      0      0      0      0      0      0      0      0
     0      0      0      0      0      0      0      0      0      0      0      0      0      0      0
     0      0      0      0      0      0      0      0      0      0
Train 3
     0      0      0      0      0      0      0      0      0      0      0      0      0      0      0
     0      0      0      0      0      0      0      0      0      0      0      0      0      0      0
     0      0      0      0      0      0      0      0      0      0
Train 4
     0      0      0      0      0      0      0      0      0      0      0      0      0      0      0
     0      0      0      0      0      0      0      0      0      0      0      0      0      0      0
     0      0      0      0      0      0      0      0      0      0
1-Admin Mode
2-User Mode
3- Reservation
4-Cancel
5-Display
6-Buy
7-Exit
```

```
1-Admin Mode
2-User Mode
3- Reservation
4-Cancel
5-Display
6-Buy
7-Exit
2

Please enter your name ,surname and password
Bahu Tongal bahu
Choose option
1-Adult2-Student3-Gazi 4-Sehit5-Disability
5
Setting information is successful.
1-Admin Mode
2-User Mode
3- Reservation
4-Cancel
5-Display
6-Buy
7-Exit
6
Please enter your name ,surname and password
Bahu Tongal bahu
Choose option
1-Adult2-Student3-Gazi 4-Sehit5-Disability
5
Which train do you want to buy : 3
Enter seat number you want : 3
```

```
Enter seat number you want : 3
The ticket is bought.
1-Admin Mode
2-User Mode
3- Reservation
4-Cancel
5-Display
6-Buy
7-Exit
6
Please enter your name ,surname and password
Volkan Mazlum 123
Choose option
1-Adult2-Student3-Gazi 4-Sehit5-Disability
2
Which train do you want to buy : 4
Enter seat number you want : 12
The ticket is bought.
1-Admin Mode
2-User Mode
3- Reservation
4-Cancel
5-Display
6-Buy
7-Exit
6
Please enter your name ,surname and password
Volkan Mazlum 123
Choose option
1-Adult2-Student3-Gazi 4-Sehit5-Disability
```

```
4-Cancel
5-Display
6-Buy
7-Exit
6
Please enter your name ,surname and password
Volkan Mazlum 123
Choose option
1-Adult2-Student3-Gazi 4-Sehit5-Disability
2
There is a ticket you bought at previous time. Do you want to continue or cancel this ticket. (1-Continue 2-Cancel)
1
You can buy another ticket, but you don't have any option for changing previous ticket.
Which train do you want to buy : 1
Enter seat number you want : 30
The ticket is bought.
1-Admin Mode
2-User Mode
3- Reservation
4-Cancel
5-Display
6-Buy
7-Exit
```

```
2-User Mode
3- Reservation
4-Cancel
5-Display
6-Buy
7-Exit
6
Please enter your name ,surname and password
Volkan Mazlum 123
Choose option
1-Adult2-Student3-Gazi 4-Sehit5-Disability
2
There is a ticket you bought at previous time. Do you want to continue or cancel this ticket. (1-Continue 2-Cancel)
2
Please enter your name ,surname and password
Volkan Mazlum 123
Choose option
1-Adult2-Student3-Gazi 4-Sehit5-Disability
2
Which seat did you buy or reserve : 1
Enter seat number you bought or reserved : 30
The cancellation is successful.
1-Admin Mode
2-User Mode
3- Reservation
4-Cancel
5-Display
6-Buy
7-Exit
```

```
3- Reservation
4-Cancel
5-Display
6-Buy
7-Exit
5
Train 1
     0      1      0      0      0      0      0      0      0      0      0      0      0      0      0
     0      0      0      0      0      0      0      0      0      0      0      0      0      0      0
     0      0      0      0      0      0      0      0      0      0
Train 2
     0      0      0      0      0      0      0      0      0      0      0      0      0      0      0
     0      0      0      0      0      0      0      0      0      0      0      0      0      0      0
     0      0      0      0      0      0      0      0      0      0
Train 3
     0      0      5      0      0      0      0      0      0      0      0      0      0      0      0
     0      0      0      0      0      0      0      0      0      0      0      0      0      0      0
     0      0      0      0      0      0      0      0      0      0
Train 4
     0      0      0      0      0      0      0      0      0      0      0      5      0      0      0
     0      0      0      0      0      0      0      0      0      0      0      0      0      0      0
     0      0      0      0      0      0      0      0      0      0
1-Admin Mode
2-User Mode
3- Reservation
4-Cancel
5-Display
6-Buy
7-Exit
```

```
     0      0      0      0      0      0      0      0      0      0
1-Admin Mode
2-User Mode
3- Reservation
4-Cancel
5-Display
6-Buy
7-Exit
1
Enter your name: admin
Enter your password: admin123
----------Admin-----------
1-Display
2-Show Number of Tickets are Bought
3-Add
4-Delete
5-Exit
1
Surname : Tongal
Username : Bahu
Surname : Mazlum
Username : Volkan
Surname : Guler
Username : Sule

Total Price our company have is : 80
----------Admin-----------
1-Display
2-Show Number of Tickets are Bought
3-Add
```

```
1-Display
2-Show Number of Tickets are Bought
3-Add
4-Delete
5-Exit
2
There are 2 number of ticket own company sold.
----------Admin-----------
1-Display
2-Show Number of Tickets are Bought
3-Add
4-Delete
5-Exit
4
Enter name, surname and password you want to delete: Bahu Tongal bahu
Choose option
1-Adult2-Student3-Gazi 4-Sehit5-Disability
5
----------Admin-----------
1-Display
2-Show Number of Tickets are Bought
3-Add
4-Delete
5-Exit
2
There are 1 number of ticket own company sold.
----------Admin-----------
1-Display
2-Show Number of Tickets are Bought
3-Add
```

```
----------Admin-----------
1-Display
2-Show Number of Tickets are Bought
3-Add
4-Delete
5-Exit
1
Surname : Mazlum
Username : Volkan
Surname : Guler
Username : Sule

Total Price our company have is : 50
----------Admin-----------
1-Display
2-Show Number of Tickets are Bought
3-Add
4-Delete
5-Exit
5
1-Admin Mode
2-User Mode
3- Reservation
4-Cancel
5-Display
6-Buy
7-Exit
7
Writing file is successful
```

5)Errors and Shortcomings

- We didn't have the opportunity to create separate trains every day. We went through a single option, the dates of the tickets shown in the simulation are different from each other and do not show the number of customers based on the date. If it is desired to develop a project in the future, a separate simulation demonstration can be performed for the days purchased by the ticket, thus creating a daily passenger list.

5.1How much it serves the purpose

- It has all the options that can be seen in a standard train booking system. Some of these options, as mentioned earlier, are the ability to make a reservation, cancel a reservation, and purchase. In general, the possibility of selecting trains according to the day that we can see on each site is available in this program. It is all we need.

5.2) Result / Comment / Suggestion

In this railway reservation system program, transactions such as booking and purchasing can be offered according to the information provided by the user. This program has the potential to form the basis of the large systems we see today. By adding more functions, the program can be improved to a more advanced level. But in its current form, it contains all the basic functions. The problems we faced in the programming process allowed us to improve ourselves and the program. With our research, we tried to add functionality to our program.