

Project Report

Title: Metro-Rail Management System

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Submitted to-

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Project Report: Metro-Rail Management System using C++ Object Oriented Programming

Source Code: [GitHub Link](#)

Introduction:

Our Metro Rail Management System is a program that helps in managing the operations of a metro rail system. The system has two modes, the User mode, and the Admin mode. In the User mode, users can register and login to access various features like viewing the train schedule, booking tickets, cancelling tickets, viewing previous records, and viewing their profile. In the admin mode, after providing the admin password, an admin can view trains, add a new train, delete a train, view users, and change the admin password. This project is developed using C++ Object-Oriented Programming concepts.

Objectives:

The main objective of the Metro Rail Management System is to provide an efficient and easy-to-use interface for users to book tickets and manage their travel. The system also aims to provide the admin with the necessary tools to manage the system effectively.

Design and Implementation:

The Metro Rail Management System is designed using C++ Object-Oriented Programming concepts. The system has two classes and some sub-classes, the User class and the Admin class. The User class is responsible for managing the user-related operations, such as registration, login, viewing train schedules, booking tickets, cancelling tickets, viewing previous records, and viewing profiles. The Admin class is responsible for managing the admin-related operations, such as viewing trains, adding trains, deleting trains, viewing users, and changing the admin password.

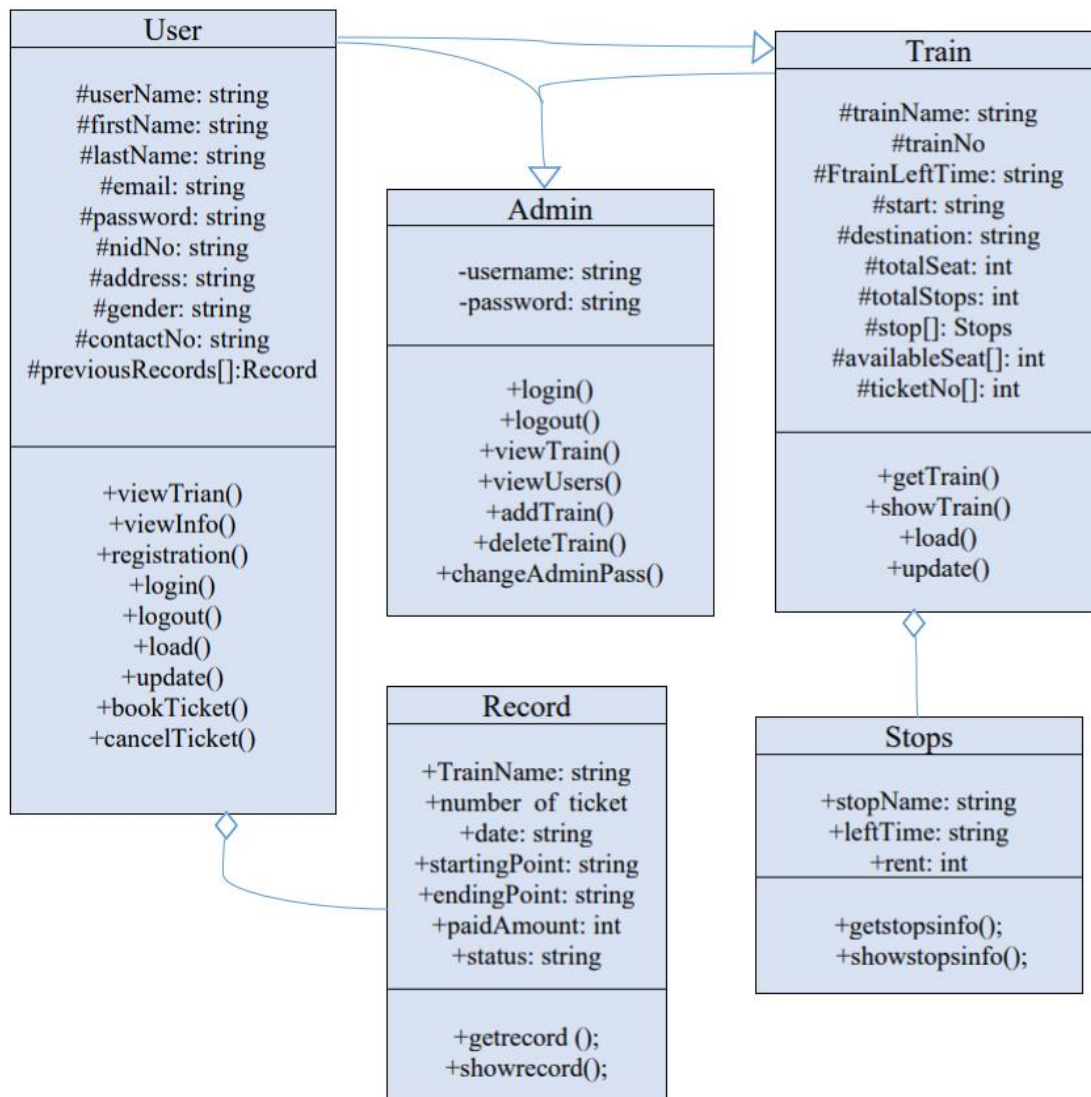
File Handling:

The system uses a file-based database to store the user and train information. The data is stored in separate files for users and trains, and the data is loaded into memory when the system starts. The user data includes user ID, password, name, contact information and others. The train data includes train no, train name, source, destination, departure time, and arrival time.

Privacy maintenances:

The system has a login module that checks the user's credentials and allows access to the user or admin mode accordingly. The system also has input validation checks to ensure that the data entered by the user is valid.

UML diagram:



Features:

Our Metro Rail Management System has the following features:

```

      Fri Mar 17 13:17:21 2023

=====
=           WELCOME TO           =
=       DHAKA METRO-RAIL       =
=====

[1] USER

[2] ADMIN

[0] EXIT

*****
*****
ENTER YOUR CHOICE:

```

USER Mode:

```

=====
=       DHAKA METRO RAIL       =
=====

      ----User Menu-----

[1] LOG IN

[2] SIGN UP

[3] GO BACK

[0] EXIT

*****
*****
ENTER YOUR CHOICE:

```

Registration: Users can register by providing their name, contact information, password, and others information.

```

=====
=       User Registration       =
=====

User Name(Must user lower case): jon
First Name: Jon
Last Name: Player
Gender: male
Email: jon23@juniv.edu
NID No: 45643245
Address: ju,savar,dhaka
Contact no: 017234532453
Password: 1234
Confirm Password: 1234

.....You are now registered.....
Press any key for go back....

```

Login: Registered users can log in using their user's name and password.

```

=====
=      User Log in      =
=====

Enter User Name: jon

Password: 1234

-----Login successfully-----

```

```

~~~~Welcome, jon~~~~
=====
=      DHAKA METRO RAIL      =
=====

[1] VIEW TRAIN SCHEDULE
[2] BOOK TICKET
[3] CANCEL TICKET
[4] VIEW BOOKING HISTORY
[5] VIEW PROFILE
[6] GO BACK
[0] EXIT

*****
*****
*****
ENTER YOUR CHOICE:

```

View Train Schedule: Users can view upcoming the train schedule with train stoppage Details.

```

~~~~Train Schedule~~~~

```

Train no:	Train name	start place	destination place	price	seat	time	Total Stops
1	padma	dhaka	araiharaz	60	20	10:00am	4
2	bullet	saver	Airport	80	120	8:10am	6
3	cse	pallabi	savar	30	50	9:00	2
4	pallas	Uattara	Motijheel	80	140	9:10am	5

Press '0' to go back.
OR, Press Train No. to see the train's stoppage details : 2

```


```

Train no:	Train name	start place	destination place	price	seat	time	Total Stops
2	bullet	saver	Airport	80	120	8:10am	6

```


```

Train Stop-Points					
No.	Name	Rent	Lefting time	Available seat	
1	J_U	0	8:05am	118	
2	Savar	10	8:10am	115	
3	Gabtolli	30	8:30am	115	
4	Mirpur-10	45	8:45am	113	
5	Kuril	65	9:00am	120	
6	Airport	80	9:10am	120	

Press any key for go back....

Book Ticket: Users can book tickets for a particular train and date.

Ticket Booking	Ticket Booking
Enter Train No: 2	Enter Train No: 4
Number of Ticket you want to buy: 5	Number of Ticket you want to buy: 3
Boarding Point No: 1	Boarding Point No: 1
Destination Point No: 4	Destination Point No: 4
You must pay: 225	You must pay: 180
Press any Key for Pay and Confirm ticket OR, Press '0' for Go Back.:1	Press any Key for Pay and Confirm ticket OR, Press '0' for Go Back.:g
~~~~~Ticket successfully Booked~~~~~	~~~~~Ticket successfully Booked~~~~~
~~~Ticket ID: 3207~~~~~	~~~Ticket ID: 1500~~~~~
Press any key for go back.....	Press any key for go back.....

Cancel Ticket: Users can cancel their booked tickets.

```

Ticket Cancelling
-----

Enter your ticket ID: 1500

-----Ticket Successfully Cancelled-----

```

View Previous Records: Users can view their previous travel records.

~~~~~ Booking History ~~~~~							
Timestamp	Tkt-ID	Tra-Name	Total-Tkt	Boarding-Point	Destination-Point	Total-fare	Status
Fri_Mar_17_13:44:17_2023	3207	bullet	5	J_U	Mirpur-10	225	Paid
Fri_Mar_17_13:45:41_2023	1500	pallas	3	Uatara	Tejgaon	180	Cancelled
~~~~~							
Press any key for go back.....							

View Profile: Users can view and update their profile information.

```

                        jon's Profile
-----
User Name : jon
First Name: Jon
Last Name : Player
Gender    : male
Email     : jon23@juniv.edu
NID No    : 45643245
Address   : ju,savar,dhaka
Contact no: 017234532453
-----

```

Admin Mode:

Admin Login: Admins can log in using the admin password.

```

=====
=      DHAKA METRO RAIL      =
=====

Enter Admin Password :admin

-----Login successfully-----

```

```

~~~~Welcome, Admin~~~~

*****

[1] VIEW TRAINS
[2] VIEW PASSENGERS INFO
[3] ADD TRAIN
[4] DELETE TRAIN
[5] CHANGE ADMAIN PASSWORD
[6] GO BACK
[0] EXIT

*****

*****

ENTER YOUR CHOICE:

```

View Trains: Admins can view the details of all trains as same as user.

Add Train: Admins can add a new train to the system.

```
~~~~Train Input~~~~
-----

Enter train name : Rocket_Express
Enter start place : JU_Transport
Enter destination Place : DU_TSC
Enter Total number of Seats : 99
Enter Total number of Stops : 2
Enter train lefting time : 8:20am
Enter starting Ticket id: 3300
Enter date(dd-mm-yy): 20--3-2023
      stops no : 1
Enter stops name: JU_Transport
Enter train lefting Time: 8:20am
Enter rent: 0
      stops no : 2
Enter stops name: DU_TSC
Enter train lefting Time: 8:50am
Enter rent: 35
****Train Successfully Added****
Press any key for go back.....|
```

~~~~Train Schedule~~~~							
Train no:	Train name	start place	destination place	price	seat	time	Total Stops
1	padma	dhaka	araihasar	60	20	10:00am	4
2	bullet	saver	Airport	80	120	8:10am	6
3	cse	pallabi	savar	30	50	9.00	2
4	pallas	Uattara	Motijheel	80	140	9:10am	5
5	Rocket_Express	JU_Transport	DU_TSC	35	99	8:20am	2

Press '0' to go back.  
OR, Press Train No. to see the train's stopage details :

**Delete Train:** Admins can delete a train from the system.

```
~~~~Deleting Train~~~~

Enter Train Name: Rocket_Express

~~~~ train Successfully Deleted~~~~
```

~~~~Train Schedule~~~~							
Train no:	Train name	start place	destination place	price	seat	time	Total Stops
1	padma	dhaka	araihasar	60	20	10:00am	4
2	bullet	saver	Airport	80	120	8:10am	6
3	cse	pallabi	savar	30	50	9.00	2
4	pallas	Uattara	Motijheel	80	140	9:10am	5

Press '0' to go back.
OR, Press Train No. to see the train's stopage details :

View Users: Admins can view the details of all registered users with their previous booking history.

```
~~~~Passenger's List~~~~
User no.      Name
-----
1             emon
2             nayeem
3             pallas
4             limon
5             neon
6             protik
7             jon
-----
Enter '0' to go back.
OR, Enter User no. to see the User's Profile : 7
```

```
~~~~jon's Profile~~~~
User Name : jon
First Name: Jon
Last Name : Player
Gender    : male
Email     : jon23@juniv.edu
NID No    : 45643245
Address   : ju,savar,dhaka
Contact no: 017234532453
-----
Enter '0' to go back.
OR, Enter Others to see the User's Previous Records : y
```

```
~~~~~Booking History~~~~~
Timestamp      Tkt-ID  Tra-Name  Total-Tkt  Boarding-Point  Destination-Point  Total-fare  Status
-----
Fri_Mar_17_14:01:10_2023  3207    bullet    5          J_U             Mirpur-10          225         Paid
Fri_Mar_17_14:01:40_2023  1500    pallas    3          Uatara          Tejgaon            180         Cancelled
-----
Press any key for go back.....
```

Change Admin Password: Admins can change the admin password.

Conclusion:

This Metro Rail Management System is a user-friendly program that provides users with an easy-to-use interface for booking tickets and managing their travel. The system also provides the admin with the necessary tools to manage the system effectively. The program is developed using C++ Object-Oriented Programming concepts and uses a file-based database to store the user and train information. Overall, the system is an efficient and reliable solution for managing a metro rail system.