PROJECT REPORT

Project name - *MetAssistant*

Introduction

AIM: To create a user friendly C++ application which will help user in Metro Navigation

The Metro travel system is a complex system which is quite extensively used in many cities of our country today. For people who are newly introduced to this system, understanding and being part of it might be a tiresome task. Hence our aim is to build a c++ application which has a user friendly interface and to advise the user the trains he/she has to take from the starting station till the destination station depending upon the users' choice of cheapest commute price or shortest time from start to destination station.

About the project

We are trying to build a metro navigator keeping in mind the requirements of the user. The application will have a user-friendly interface. The idea will be implemented using graphs data structures. The project we will be creating will take details from the user about the beginning i.e. the source and the destination station names. Based on the details entered, our application will search the station names and find the most efficient path between them in terms of distance, time, and price. It will guide the user and display the fare, shortest route, and minimum time. The project will also help users gain knowledge on the metro interchanges and display all the stations as part of their journey. This application will in general also have the option to display the whole station's map of the metro system graphically.

Project Objectives

- To build a user-friendly c++ application helps act as an assistant to understand the metro system.
- An integrated service which provides all information about the metro rail and its routes for the public.
- The proposed system will display the shortest route between two entered stations, minimum fare of the journey, minimum time for the journey.
- The map of the whole metro station system would also be displayed in this application.
- New stations can be added to the system.
- It provides a graphical illustration of the coloured lines and it's coloured.

Features of the project

"MetAssistant" has been designed to computerise the following features that are performed by the system:

- Display full station map - To display the full map of all stations under the metro system.
- Minimum fare between two stations - To find the cheapest route for people among all the available paths between the input origin and destination stations.
- Minimum time to reach between stations - In order to find the minimum time taken to reach the destination station among all the available paths.
- Shortest distance between two stations - In order to look for the minimum distance among all the available paths between the input origin and destination stations.

- All interchanges between two stations - To display all the metro and station line changes in between the origin and destination station.

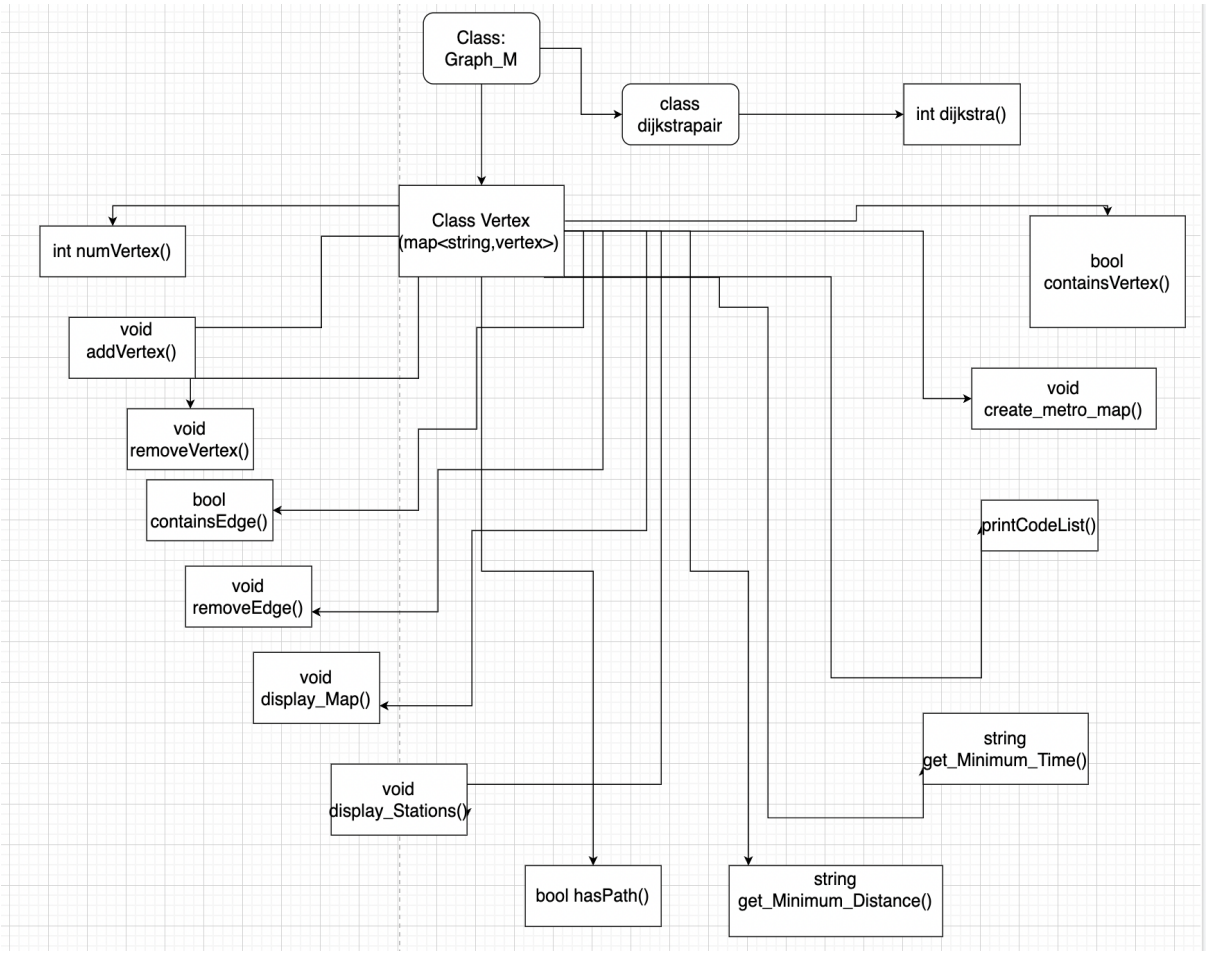
Functions added in the project

1) int numVertex()
2)bool containsVertex(string vname)
3)void addVertex(string vname)
4)void removeVertex(string vname)
5)int numEdges()
6)bool containsEdge(string vname1, string vname2)
7)void addEdge(string vname1, string vname2, int value)
8)void removeEdge(string vname1, string vname2)
9)void display_Map()
10)void display_Stations()
11)bool hasPath(string vname1, string vname2, map<string, bool> processed)
12)`string get_Minimum_Distance(string src, string dst)
13)string get_Minimum_Time(string src, string dst)
14)vector<string> printCodeList()
15)int dijkstra(string src, string des)
16)vector<string> get_Interchanges(string str)
17)void create_metro_map(Graph_M *g)
18)create fare()
19)void graph()
20)

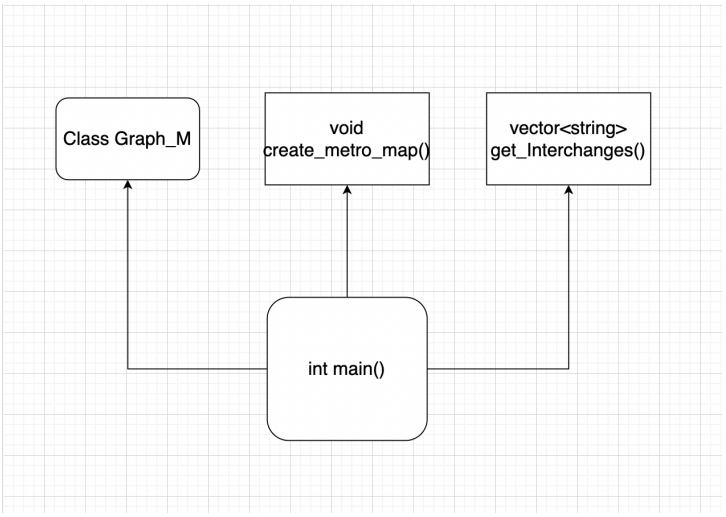
Data Structures Used are -

- Graph
- STL

DESIGN OF THE PROJECT



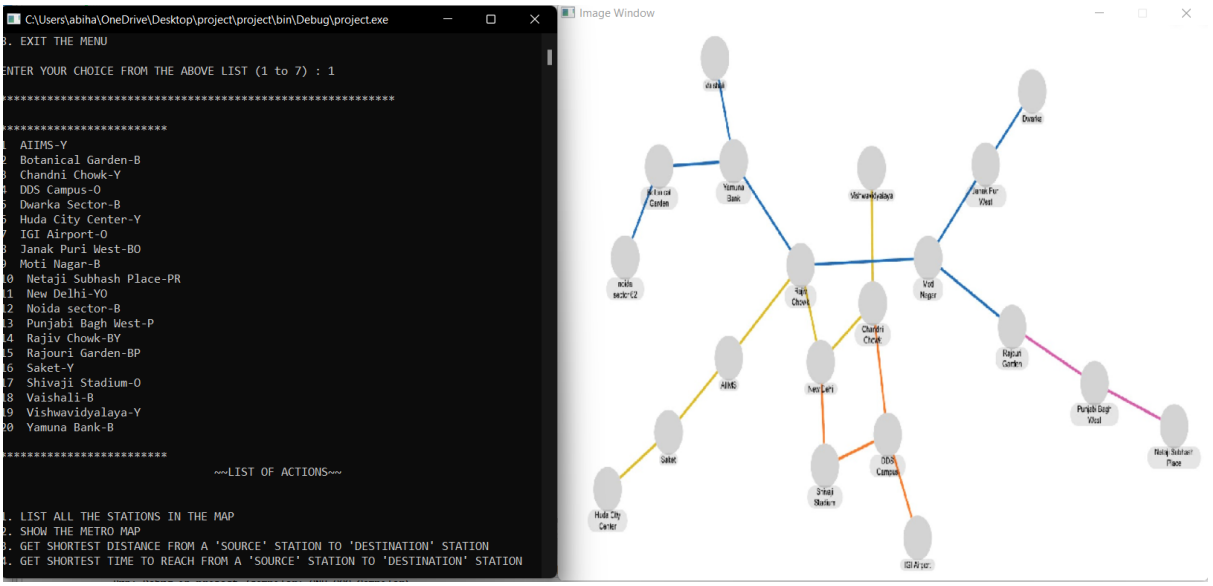
Class GRAPH_M

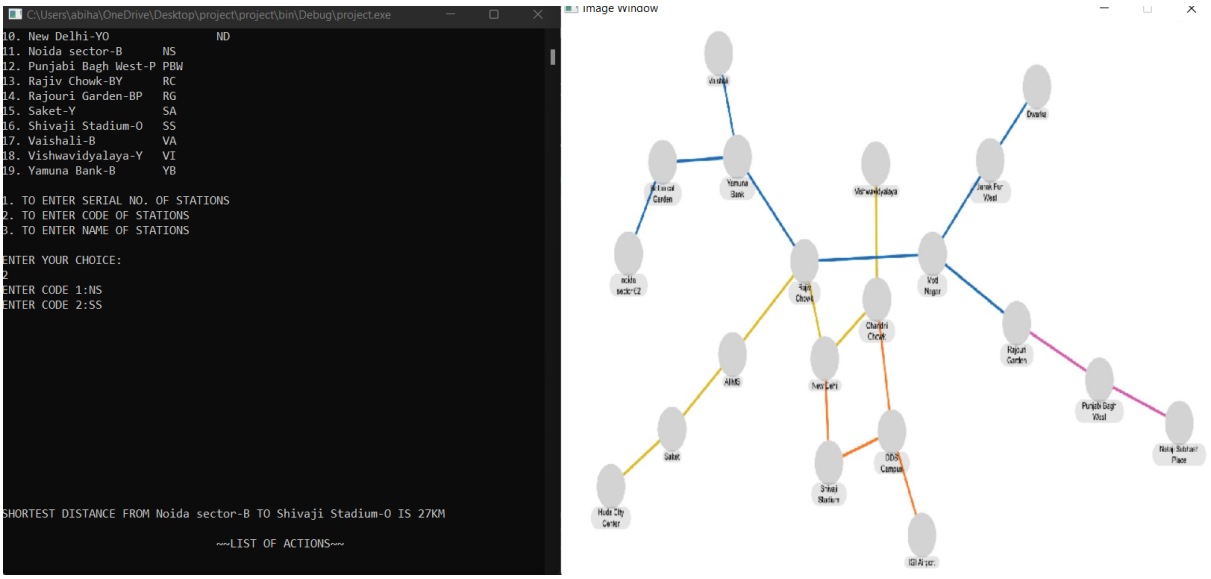


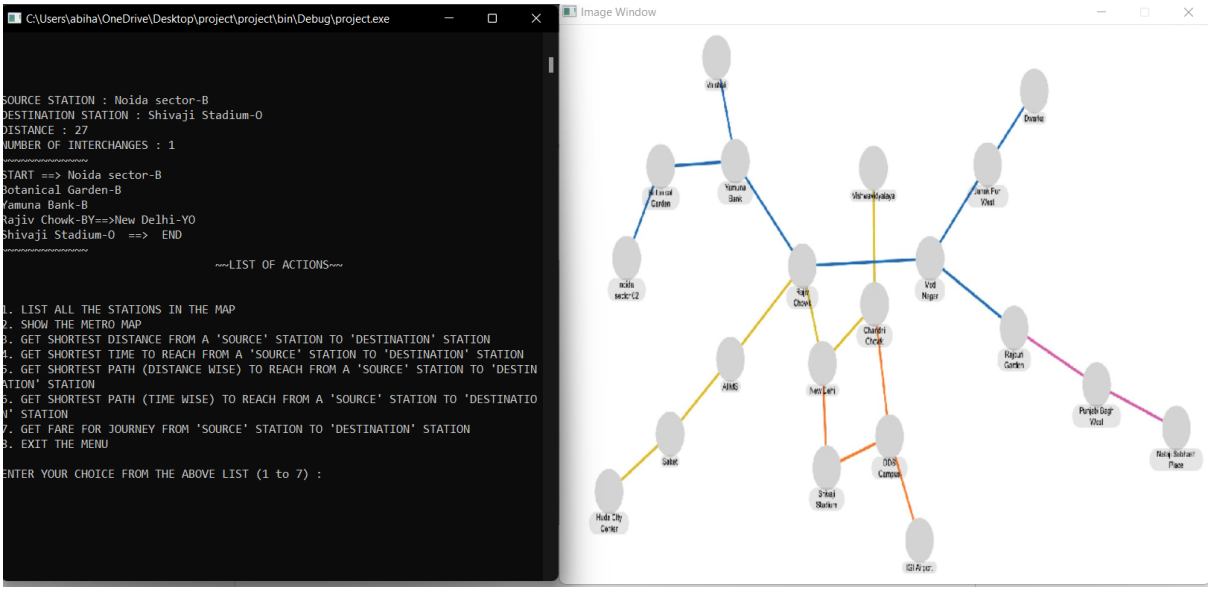
Summary

We have build a metro navigator user friendly interface which will help the traveller in getting the information regarding the metro.the Interface is made using the data structures like graphs,stacks,vector, maps and much more.The interface will take details from the user about the source and the destination station names .Based on the details entered it will guide the user about shortest distance from source station to destination station,get the shortest path (distance wise)/time wise.shortest time to reach from source station to destination,fare for the journey and much more.The project will also help users to gain knowledge on the metro interchanges and also display all the stations as part of their journey. This application will in general also have the option to display the whole station's map of the metro system.We have used Delhi metro map as a reference for the project. Hence our project is a full fledged metro assistant.

Screenshots







References

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