

JAYPEE INSTITUTE OF INFORMATION TECHNOLOGY



DATA STRUCTURES LAB PROJECT DELHI METRO APPLICATION

SUBMITTED BY :-

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DMRC

Data structures elements used in basic Algorithm :

1) Graphs: The shortest distance between two stations is calculated with the help of graphs.

Graph provides us nodes that can symbolize a single stations .Using graphs , the complexity can be reduced efficiently.

2) File handling :The map showing the stations all across the city can be entered and stored for further use using file handling.

3) Graphics*: The application can be visually shown using the graphics . It gives the project a mature visual.

4) Vector: The entries can be stores in the vectors rather than using arrays as the size of the entry of the graph is big and unknown .

Overview :

We have covered the following grounds under this project :

Shortest route: Describing the route ,the passenger will take to reach the destination covering the shortest possible path. It is calculated using the `dijkstra()` function.

Fare calculation :Depending upon the distance the he/she has travelled , the average fare will be charged according the rules laid down by DMRC and is calculated using the `COST()` function.

Average time: The estimated time to reach the destination.

Stations in between : Stations which lie in between the path and train will stop there is shown using the path() function.

Average Distance : the expected average distance is calculated using the distmin() function.

Change of lines: The user is also notified of the line he or she has to change and at which station to reach the destination.

Features Included :

It shows the

- Shortest Route between the stations
- Average fare
- Average time
- Average cost
- Average Distance
- No of Stations

Project Outcome :



Introduction UI

ENTER THE STARTING STATION:
Rithala

ENTER THE DESTINATION STATION:
chandni chowk

ENTER THE INTERMEDIATE STATION:
no

Enter station names dialog box

ENTER THE STARTING STATION:
Rithala

ENTER THE DESTINATION STATION:
chandni chowk

ENTER THE INTERMEDIATE STATION:
no

AVERAGE TIME :
29 MIN

THE SHORTEST PATH IS :

WANT TO SEARCH AGAIN ?

AVERAGE FARE :
Rs. 40

PATH LENGTH IS :
15.9 KM

NO OF STATIONS :
14

- >> RITHALA - >> ROHINI WEST - >> ROHINI EAST - >> PITAMPURA - >> KOHAT ENCLAVE
- >> NETAJI SUBHASH PLACE - >> KESHAV PURAM - >> KANHAIYA NAGAR
{change from RED to GREEN}
- >> INDERLOK
{change from GREEN to RED}
- >> SHASTRI NAGAR - >> PRATAP NAGAR - >> PULBANGASH - >> TIS HAZARI
{change from RED to YELLOW}
- >> KASHMERE GATE - >> CHANDNI CHOWK

Route between two stations

```

+-----+
|                                     |
| ENTER THE STARTING STATION:         | ENTER THE DESTINATION STATION:      |
|                                     |                                     |
|      rithala                        |      vaishali                      |
|                                     | ENTER THE INTERMEDIATE STATION:    |
|                                     |                                     |
|      rajiv chowk                    |                                     |
|      WANT TO SEARCH AGAIN ?  _    |                                     |
|                                     |                                     |
| AVERAGE TIME : 35 MIN,25 MIN      | AVERAGE FARE : Rs. 40, Rs. 60     |
| THE SHORTEST PATH IS :            | PATH LENGTH IS : 18.9 KM,13.4 KM  |
|                                     | NO OF STATIONS : 17,12            |
|                                     |                                     |
| ***** ROUTE FOUND *****      |                                     |
|                                     |                                     |
| ->> RITHALA ->> ROHINI WEST ->> ROHINI EAST ->> PITAMPURA ->> KOHAT ENCLAVE |
| ->> NETAJI SUBHASH PLACE ->> KESHAV PURAM ->> KANHAIYA NAGAR |
| {change from RED to GREEN}        |                                     |
| ->> INDERLOK |
| {change from GREEN to RED}        |                                     |
| ->> SHASTRI NAGAR ->> PRATAP NAGAR ->> PULBANGASH ->> TIS HAZARI |
| {change from RED to YELLOW}       |                                     |
| ->> KASHMERE GATE ->> CHANDNI CHOWK ->> CHAWRI BAZAR ->> NEW DELHI |
| {change from YELLOW to BLUE}      |                                     |
| ->> RAJIV CHOWK |
| INTERMEDIATE STATION |
| ->> RAJIV CHOWK ->> BARAKHAMBA ROAD ->> MANDI HOUSE ->> PRAGATI MAIDAN ->> INDRAPRASTHA |
| ->> YAMUNA BANK ->> LAXMI NAGAR ->> NIRMAN VIHAR ->> PREET VIHAR ->> KARKARDUMA |
| ->> ANAND VIHAR ISBT ->> KAUSHAMBI ->> VAISHALI |
|                                     |
+-----+

```

Route between two stations

```

+-----+
|                                     |
| AVERAGE TIME : 39 MIN,25 MIN      | AVERAGE FARE : Rs. 50, Rs. 60     |
| THE SHORTEST PATH IS :            | PATH LENGTH IS : 5.4 KM, 13.4 KM  |
|                                     | NO OF STATIONS : 5, 12            |
|                                     |                                     |
| ***** ROUTE FOUND *****      |
+-----+

```

Features Included

Work Distribution :

Designing :
 Algorithm implementation :
 UI :

Chetan and Divyansh
 Mayank and Chetan
 Mayank and Divyansh