



Bharatiya Vidya Bhavans

Sardar Patel Institute of Technology

Autonomous Institute Affiliated to Mumbai University

Data Structures Project:

TOPIC: Travel planner

GROUP MEMBERS:

ANUSHKA AGRAWAL(2019140002)

ADITI BHOSALE(2019140009)

SHWETA CHAVAN(2019140011)

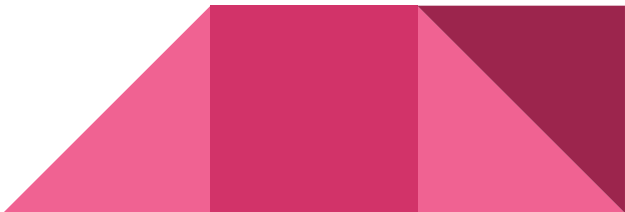
INTRODUCTION:

We have made a travel planner using **graphs** data structure.

We have considered 12 cities in our project, and taken 3 hotels(5 star, 4 star, 3 star) and 4 sight seeing places for each city.

The graph made is a directed and weighted graph, the weight being the time and costs of travel between the nodes(cities).

With the help of this travel planner, the user can plan the trip according to his/her convenience.



Flight Details:

	Mumbai	Bangalore	Goa	Chennai	jaipur	Ahemdabad	Bhopal	kolkata	pune	Varanasi	Hyderabad	Delhi
Mumbai		0 90min,2400	80min, 2150	120min,1960	100min,2410	80min,2010	90min,2450	165min,3555	NO FLIGHTS	NO FLIGHTS	130min,2150	130min,3000
Bangalore	90min,2400		0 80 min, 1800	75min,1650	235min,3250	110min,3040	125min, 3662	145min,3010	90min, 2198	140min,6182	80min,1900	160mins,3400
Goa	80min, 2150	80 min, 1800		0 105min,2720	NO FLIGHTS	150min,2400	NO FLIGHTS	NO FLIGHTS	55min,4800	NO FLIGHTS	70min,2050	NO FLIGHTS
Chennai	120min,1960	75min,1650	105min,2720		0 NO FLIGHTS	130min, 2725	NO FLIGHTS	140min, 2922	120min, 3164	155 mins, 4838	70min, 1512	180min, 2580
jaipur	100min,2410	235min,3250	NO FLIGHTS	NO FLIGHTS		0 105min, 2162	NO FLIGHTS	135min, 3370	135min, 3435	110 min, 5354	120min, 2897	60min, 1830
Ahemdabad	80min,2010	110min,3040	150min,2400	130min, 2725	105min, 2162		0 NO FLIGHTS	165min, 3867	90min, 1917	110min, 5046	100min, 2180	80min, 1950
Bhopal	90min,2450	125min, 3662	NO FLIGHTS	NO FLIGHTS	NO FLIGHTS	NO FLIGHTS		0 NO FLIGHTS	NO FLIGHTS	NO FLIGHTS	145min, 3195	90min, 2166
kolkata	165min,3555	145min,3010	NO FLIGHTS	140min, 2922	135min, 3370	165min, 3867	NO FLIGHTS		0 NO FLIGHTS	80min, 3187	125min, 2780	130min, 3238
pune	NO FLIGHTS	90min, 2198	55min,4800	120min, 3164	135min, 3435	90min, 1917	NO FLIGHTS	NO FLIGHTS		0 NO FLIGHTS	80min, 2500	120min, 2511
Varanasi	NO FLIGHTS	140min,6182	NO FLIGHTS	155 mins, 4838	110 min, 5354	110min, 5046	NO FLIGHTS	80min, 3187	NO FLIGHTS		(135min, 3503	60min, 1455
Hyderabad	130min,2150	80min,1900	70min,2050	70min, 1512	120min, 2897	100min, 2180	145min, 3195	125min, 2780	80min, 2500	135min, 3503		0 135min, 2890
Delhi	130min,3000	160mins,3400	NO FLIGHTS	180min, 2580	60min, 1830	80min, 1950	90min, 2166	130min, 3238	120min, 2511	60min, 1455	135min, 2890	

Hotel Details:

Hotel Names:

	Rate 5	Rate 4	Rate 3
Mumbai	The Lalit	Radisson Resorts	IBIS Hotels
Bangalore	Oberoi Hotels	IRIS Hotel	Orchard Suites
Goa	Novotel Resorts	Flora Grand	Golden Plateau
Chennai	ITC Grand	Green Park	Woodland Resorts
jaipur	ITC Rajputana	Umaid Mahal	Arya Niwas
Ahemdabad	Hyatt Regency	Fortune Park	Ginger Hotels
Bhopal	Jehan Numa Palace	Noor-us-Subah	Graces Resort
kolkata	The Westin	Holiday Inn	Fern Residency
pune	Hotel Sayaji	Lemon Tree Resorts	Royal Orchard
Varanasi	Taj Ganges	Grapevine Hotel	Rivera Hotel
Hyderabad	Novotel	Oakwood Resorts	Lemon Tree
Delhi	J W Marriot	Holiday Inn	IBIS Hotel

Hotel stay cost per day:

	Rate 5	Rate 4	Rate 3
Mumbai	6700	5000	3300
Bangalore	6100	2900	1900
Goa	7600	3300	2150
Chennai	5600	3800	2400
jaipur	7500	2550	1215
Ahemdabad	4760	3250	2460
Bhopal	6700	5000	3300
kolkata	7960	3130	2500
pune	4200	2300	1620
Varanasi	6350	3580	2050
Hyderabad	5200	3600	2690
Delhi	6850	4130	2110

Site - Seeing Places Details:

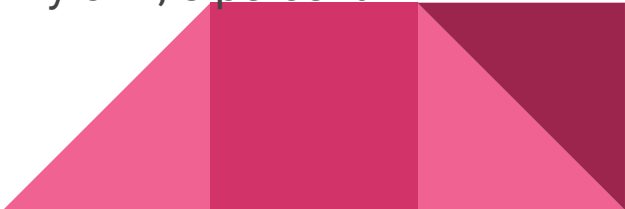
Mumbai	Places	cost		Bhopal	Places	cost
	Gateway	100			Upper Lake	50
	Elephanta Caves	70			Bhimbetka Rock Shelters	30
	Marine Drive	50			Shaukat Mahal	40
	Film City	100			Van Vihar	35
Bangalore				Kolkata		
	Bangalore Palace	60			Victoria Memorial	40
	Cubbon Park	30			Fort William	35
	Ulsoor Lake	40			Howrah Bridge	60
	Chunchi Falls	50			Belur Math	35
Goa				Pune		
	Dona Paula	30			Shaniwar Wada	45
	Fort Agauda	40			Dagdusheth Halwai Temple	60
	Dudhsagar Falls	50			Lal Mahal	40
	Chapora Fort	35			Sinhagad Fort	50
Chennai				Varanasi		
	Arignar Anna zoo	35			Dashashwamedh Ghat	40
	Ashtalakshmi Temple	50			Manikarnika Ghat	35
	Kolli Hills	40			Dhamekh Stupa	35
	Breezy Beach	45			Assi Ghat	45
Jaipur				Hyderabad		
	Amer Fort	40			Golconda Fort	50
	City Palace	35			Charminar	60
	Hawa Mahal	60			Hussain Sagar Lake	55
	Jantar Mantar	90			Vhowmahalla Palace	45
Ahmedabad				Delhi		
	Sabarmati Ashram	70			India Gate	80
	Kankaria Lake	30			Red Fort	75
	Dada Hari Wav	40			Qutab Minar	85
	Swaminarayan Temple	55			Humayu's Tomb	40

SCOPE OF THE PROJECT:

The project is divided into 2 parts

1) We take the source, destination, number of people and number of days from the user. We will then suggest the path with minimum cost or minimum time according to the choice of the user. Then the hotels and sightseeing places of the chosen destination will be displayed and the user can choose the rating of the hotel as well as the sightseeing places he/she wants to visit. Each hotel room has accommodation for maximum 4 people. The cost of taxi is a standard 2000 rs per day.


Finally the total budget of the trip will be displayed. If the person travelling is a student, 10 percent discount will be given. If person is travelling in a family of 4, 5 percent discount will be given



SCOPE OF THE PROJECT:

2) In this case the user will enter the source and budget along with number of people and number of days and we will suggest destinations along with their flight costs and route (according to minimum cost), according to the given information. The user can then choose which destination he/she likes the most according to the given description and sightseeing places available in the city. We will then show the hotels available according to the remaining budget and user can choose from it.


Finally the remaining budget if any is displayed and user can use that money as per his/her convenience.



ALGORITHM USED:

We have used **Dijkstra algorithm** which helps us to find the **minimum weight path** between 2 nodes in a weighted graph.

1. Select the source node called the initial node.
 2. Define an empty set cSet that will be used to hold nodes to which a shortest path has been found.
 3. Label the initial node with 0, insert it into cSet, and initialize the value of other nodes with INT_MAX..
 4. Repeat Steps 5 to 7 until the destination node is in cSet or till there are no more nodes in cSet.
 5. Consider each node that is not in cSet and is connected by an edge from the newly inserted node.
 6. (a) If the node that is not in cSet has value INT_MAX then set the label of the node = the label of the newly inserted node + the length of the edge.

(b) Else if the node that is not in cSet was already labelled, then set its new label = minimum (label of newly inserted vertex + length of edge, old label)
 7. Pick a node not in cSet that has the smallest label assigned to it and add it to cSet.
- 

Vertex

A -> B

A -> C

A -> D

A -> E

Minimum Cost

4

6

5

3

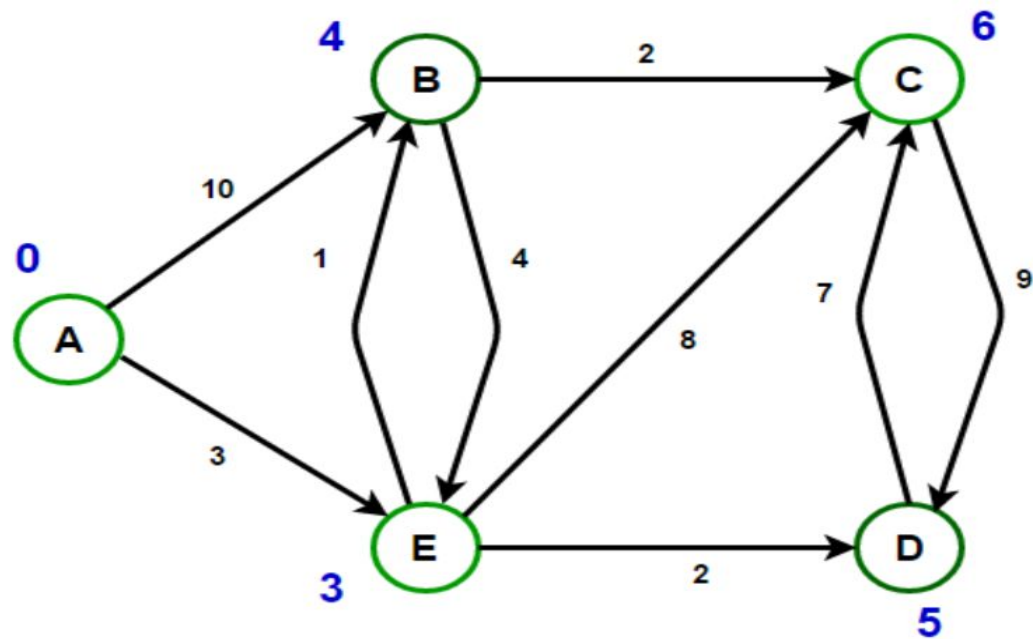
Route

A -> E -> B

A -> E -> B -> C

A -> E -> D

A -> E



FORMULAS USED:

For hotel: a variable will store the number of rooms which will be equal to ceil (no. of people/4), since each room accommodates 4 people. { part 1,2}

Total hotel cost=stay[des]->cost[rating]*no of days*no. of rooms;{part1,2}

budget-(budget*discount percent/100) {part 1- discount}

budget=total flight cost +no. of days*2000+total hotel cost+sight seeing cost; {1}

Budget for flight<=(cost of flight*2*no. of people) {part2 }

Remaining budget=budget-no. of people*2*costs_of_destination; {part 2}

Enter the source: Mumbai

Enter the destination: Varanasi

Source is Mumbai and destination is Varanasi

Enter the number of people travelling: 2

Enter the number of days for travelling 2

The Hotels according to your destination are:

1	hotel: Taj Ganges	price: 6350	rating: 5 stars
2	hotel: Grapevine Hotel	price: 3580	rating: 4 stars
3	hotel: Rivera Hotel	price: 2050	rating: 3 stars

All hotels have one room having max. accomodation for 4 people.

Enter the rating of a hotel for stay 4

The places to visit according to your destination are:

NO.	Places	Cost_per_ticket
1	Dashashwamedh Ghat	40
2	Manikarnika Ghat	35
3	Dhamekh Stupa	35
4	Assi Ghat	45

Enter the number of places to visit: 2

Enter the option number 1

Enter the option number 3

PART 1:

Over here as you can see, we have asked user for source Where source was taken as Mumbai and destination was Varanasi.,

We have then displayed the hotels available at Varanasi And user has selected choice of hotel as 4 star.

User is also asked to pick sightseeing places he/she is interested in, for which he has entered his choices.

Plan for minimum cost :

Required : Mumbai to Varanasi

One way flight cost per person: 4455 rupees

Route: Mumbai--> Delhi--> Varanasi

Total flight Time: 380 mins

Travel & Accomodation charges:

Price(In rupees)

Total flight cost: 17820

Total hotel cost: 7160

Total site-seeing cost: 150

Taxi cost(standard 2000/day) : 4000

Total budget: 29130

Press 1 if you are a student, 2 if you are travelling in a family of 4, and 0 otherwise :1

Congratulations!!! you can avail 10 percent discount.

Your discounted budget is: 26217.000000

As we can see, the plan minimum cost has been displayed. The route will be via Delhi. The total time of flight(including both ways) is also displayed.

Flight cost will be cost of flight into no. of people *2 since we are considering a return ticket

Hotel cost will be no. of rooms(which is one since there are 2 people) into the cost of hotel room per day into number of days.

Sight seeing cost will be sum of ticket prices of places chosen into number of people.

And hence we finally calculate total budget.

Discount of 10 percent is given since students are travelling

Enter the source: Mumbai

Enter the destination: Varanasi

Source is Mumbai and destination is Varanasi

Enter the number of people travelling: 6

Enter the number of days for travelling 2

The Hotels according to your destination are:

1	hotel: Taj Ganges	price: 6350	rating: 5 stars
2	hotel: Grapevine Hotel	price: 3580	rating: 4 stars
3	hotel: Rivera Hotel	price: 2050	rating: 3 stars

All hotels have one room having max. accomodation for 4 people.

Enter the rating of a hotel for stay 3

The places to visit according to your destination are:

NO.	Places	Cost_per_ticket
1	Dashashwamedh Ghat	40
2	Manikarnika Ghat	35
3	Dhamekh Stupa	35
4	Assi Ghat	45

Enter the number of places to visit: 2

Enter the option number 2

Enter the option number 4

Over here as you can see, we have asked user for source

Where source was taken as Mumbai and destination was Varanasi.,

We have then displayed the hotels available at Varanasi And user has selected choice of hotel as 3 star.

User is also asked to pick sight seeing places he/she is interested in, for which he has entered his choices.

Plan for minimum time :

~~~~~

Required:Mumbai -> Varanasi

One way time: 190 mins      Route: Mumbai-->Ahmedabad--> Varanasi

Total flight time is : 380 mins

| Travel & Accomodation charges: | Price(In rupees) |
|--------------------------------|------------------|
|--------------------------------|------------------|

|                    |       |
|--------------------|-------|
| Total flight cost: | 84672 |
|--------------------|-------|

|                   |      |
|-------------------|------|
| Total hotel cost: | 8200 |
|-------------------|------|

|                         |     |
|-------------------------|-----|
| Total site-seeing cost: | 480 |
|-------------------------|-----|

|                                |      |
|--------------------------------|------|
| Taxi cost(standard 2000/day) : | 4000 |
|--------------------------------|------|

|               |       |
|---------------|-------|
| Total budget: | 97352 |
|---------------|-------|

-----

Press 1 if you are a student, 2 if you are travelling in a family of 4, and 0 otherwise :2

Congratulations!!! you can avail 5 percent discount.

Your discounted budget is: 92484.400000

-----

As we can see, the plan minimum time has been displayed. The route will be via Ahmedabad. The total time of flight(including both ways) is also displayed.

Flight cost will be cost of flight into no. of people \*2 since we are considering a return ticket

Hotel cost will be no. of rooms(which is one since there are 2 people) into the cost of hotel room per day into number of days.

Sight seeing cost will be sum of ticket prices of places chosen into number of people.

And hence we finally calculate total budget.

Enter the source: Chennai

Enter the number of people travelling: 2

Enter the number of days for travelling 2

Enter total budget : 40000

Enter budget for flight:

We suggest a minimum 6000 rupees per person so that we can suggest you good places!  
17000

| Suggested Destination | Total Flight Cost | Path                          |
|-----------------------|-------------------|-------------------------------|
| Mumbai                | 7840              | Chennai --> Mumbai            |
| Bangalore             | 6600              | Chennai --> Bangalore         |
| Goa                   | 10880             | Chennai --> Goa               |
| Ahmedabad             | 10900             | Chennai --> Ahmedabad         |
| Kolkata               | 11688             | Chennai --> Kolkata           |
| Pune                  | 12656             | Chennai --> Pune              |
| Varanasi              | 16140             | Chennai --> Delhi--> Varanasi |
| Hyderabad             | 6048              | Chennai --> Hyderabad         |
| Delhi                 | 10320             | Chennai --> Delhi             |

Route

Suggested destinations for you are:

Mumbai index: 0  
Mumbai, the capital of Maharashtra is a coastal city located on the west coast of India, and is also one the main metropolitan cities of India.  
It is also popular as a entertainment and financial capital.  
Mumbai is home to three UNESCO World Heritage Sites: the Elephanta Caves, Chhatrapati Shivaji Maharaj Terminus, and the city's distinctive ensemble of Victorian and Art Deco buildings.  
Site seeing places:

## PART 2

This forms the part 2 of the project. Here we took Chennai as the source destination, number of people and number of days 2.

The total budget and budget for flight are taken input as 40000 and 17000 respectively.

Then the destinations according to the condition are specified with cost and route.

And then the description of each destination along with sightseeing places are displayed

Varanasi index: 9

Varanasi is a city in the northern Indian state of Uttar Pradesh dating to the 11th century B.C.

Regarded as the spiritual capital of India, the city draws Hindu pilgrims who bathe in the Ganges River's sacred waters and perform funeral rites

Along the city's winding streets are some 2,000 temples, including Kashi Vishwanath, the Golden Temple dedicated to the Hindu god Shiva.

Site seeing places:

| Serial NO. | Places             |
|------------|--------------------|
| 1          | Dashashwamedh Ghat |
| 2          | Manikarnika Ghat   |
| 3          | Dhamekh Stupa      |
| 4          | Assi Ghat          |

Hyderabad index: 10

Hyderabad is the capital of southern India's Telangana state.

A major center for the technology industry, it's home to many upscale restaurants and shops.

Its historic sites include Golconda Fort, a former diamond-trading center that was once the Qutb Shahi dynastic capital.

The Charminar, a 16th-century mosque whose 4 arches support towering minarets, is an old city landmark near the long-standing Laad Bazaar.

Site seeing places:

| Serial NO. | Places             |
|------------|--------------------|
| 1          | Golconda Fort      |
| 2          | Charminar          |
| 3          | Hussain Sagar Lake |
| 4          | Chowmahalla Palace |

Delhi index: 11

Delhi, India's capital territory, is a massive metropolitan area in the country's north.

In Old Delhi, a neighborhood dating to the 1600s, stands the imposing Mughal-era Red Fort,

a symbol of India, and the sprawling Jama Masjid mosque, whose courtyard accommodates 25,000 people. Nearby is Chandni Chowk, a vibrant bazaar filled with food carts, sweets shops and spice stalls.

Site seeing places:

| Serial NO. | Places         |
|------------|----------------|
| 1          | India Gate     |
| 2          | Red Fort       |
| 3          | Qutab Minar    |
| 4          | Humayun's Tomb |



Which destination would you like to visit?

Enter the index number: 9

remaining budget: 23860

The Hotels according to your destination are:

|   |                        |             |                 |
|---|------------------------|-------------|-----------------|
| 1 | hotel: Taj Ganges      | price: 6350 | rating: 5 stars |
| 2 | hotel: Grapevine Hotel | price: 3580 | rating: 4 stars |
| 3 | hotel: Rivera Hotel    | price: 2050 | rating: 3 stars |

Enter the rating of a hotel for stay 4.

The user enters index number 9 i.e Varanasi

The hotels along with price and rating are displayed

The user is asked to enter the rating of hotel.

Here user enters rating as 4

Destination: Varanasi

Total cost of flight is: 16140

Total cost of hotel stay is: 7160

You still have 16700 rupees remaining. Feel free to use them to your leisure. Enjoy your stay!

Process returned 0 (0x0) execution time : 75.983 s

Press any key to continue.

Then the destination ,total cost of flight,total cost of hotel stay is displayed.

Finally the remaining amount is displayed

Enter the source: Chennai

Enter the number of people travelling: 2

Enter the number of days for travelling 2

Enter total budget : 15000

Enter budget for flight:

We suggest a minimum 6000 rupees per person so that we can suggest you good places!  
12000

| Suggested Destination | Total Flight Cost | Path                  |
|-----------------------|-------------------|-----------------------|
| Mumbai                | 7840              | Chennai --> Mumbai    |
| Bangalore             | 6600              | Chennai --> Bangalore |
| Goa                   | 10880             | Chennai --> Goa       |
| Ahmedabad             | 10900             | Chennai --> Ahmedabad |
| Kolkata               | 11688             | Chennai --> Kolkata   |
| Hyderabad             | 6048              | Chennai --> Hyderabad |
| Delhi                 | 10320             | Chennai --> Delhi     |



Which destination would you like to visit?

Enter the index number: 7



remaining budget: 3312

The Hotels according to your destination are:

Sorry but there seems to be no hotels available for the budget you entered

Enter the rating of a hotel for stay 5

Sorry but there seems to be no hotels available for the budget you entered

Destination: Kolkata

Total cost of flight is: 11688

Process returned 0 (0x0) execution time : 73.064 s

Press any key to continue.

Here as the budget entered by the user is less, and that budget can't satisfy the hotel charges so the output just shows only the flight cost required and no hotels available under his/her budget.

# CONCLUSION:

Thus we can see that a project like this is very useful for travel agencies to filter out the destination according to customers needs, and to provide him the most optimal budget according to his needs



Thank  
you

designed by  freepik.com