User Manual for Link State Routing Simulator

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4. DELETE A ROUTER AND PRINT THE CONNECTION TABLE OF SOURCE ROUTER
5. PRINT WHICH ROUTER IS THE BEST IN THE GIVEN TOPOPLOGY
6. EXIT THE PROGRAM

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PROJECT AT A GLANCE:

INTRODUCTION

LINK STATE ROUTING SIMULATOR:

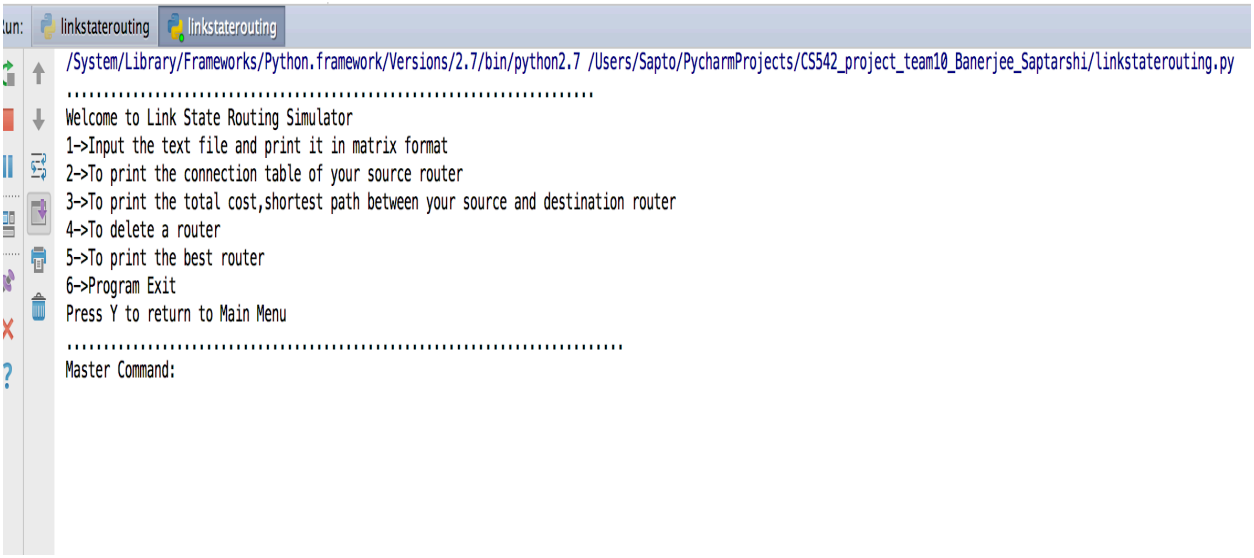
The link state routing simulator is a program which is built to implement link state routing protocol

The program has two functionalities:

- Simulate the process of generating connection table for each router in a given network
- Compute optimal path with least cost between any two specific routers

The program takes input in the form of a text file, which consists of arbitrary number of routers and costs of links between all directly connected routers. The first command takes the text file as an input and prints the topology matrix.

BUTTONS



1.Input the text file and print it in matrix format
2.To print the connection table of the source router
3.To print the total cost, shortest path between your source and destination router
4.To delete a router and modify topology
5.To print best router
6.Program exit
7.Press Y to return to Main Menu

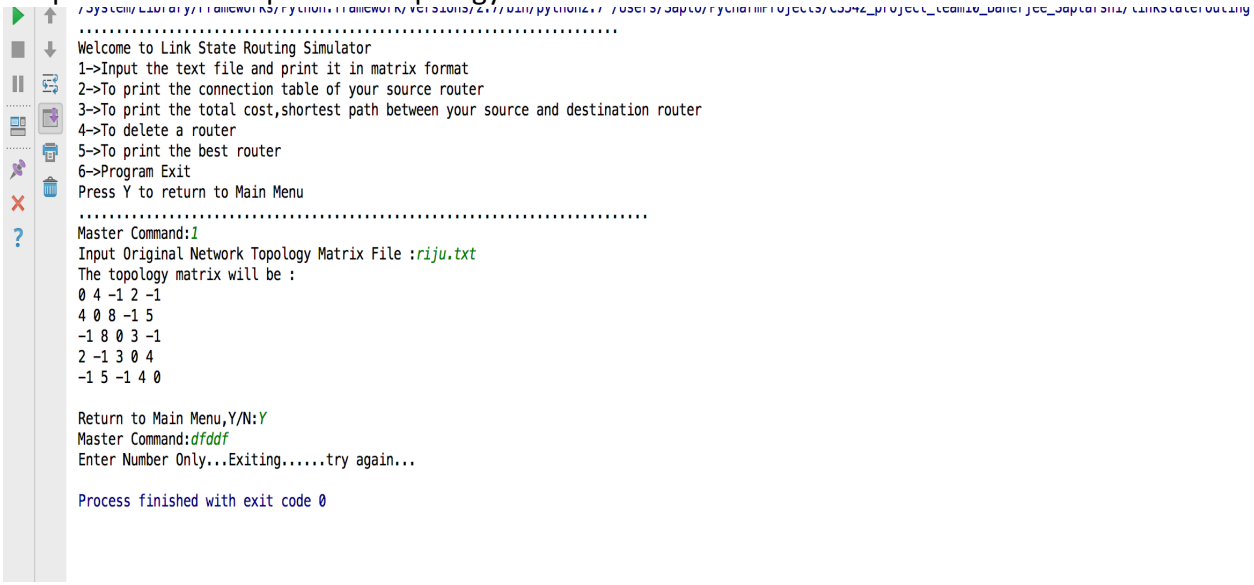
GET STARTED:

HOW TO SET UP AND RUN:

1.At first we need to install python 2.7 module in to your machine.
2.Then you should open the command prompt or terminal set the path where the python file executable file is loaded
3.Then run the linkstaterouting.py in command prompt
4.You can also install an IDE such as pycharm with 2.7 to run the executable file.
5.The input test cases should be .txt format and should be in the same folder where the executable python program is.

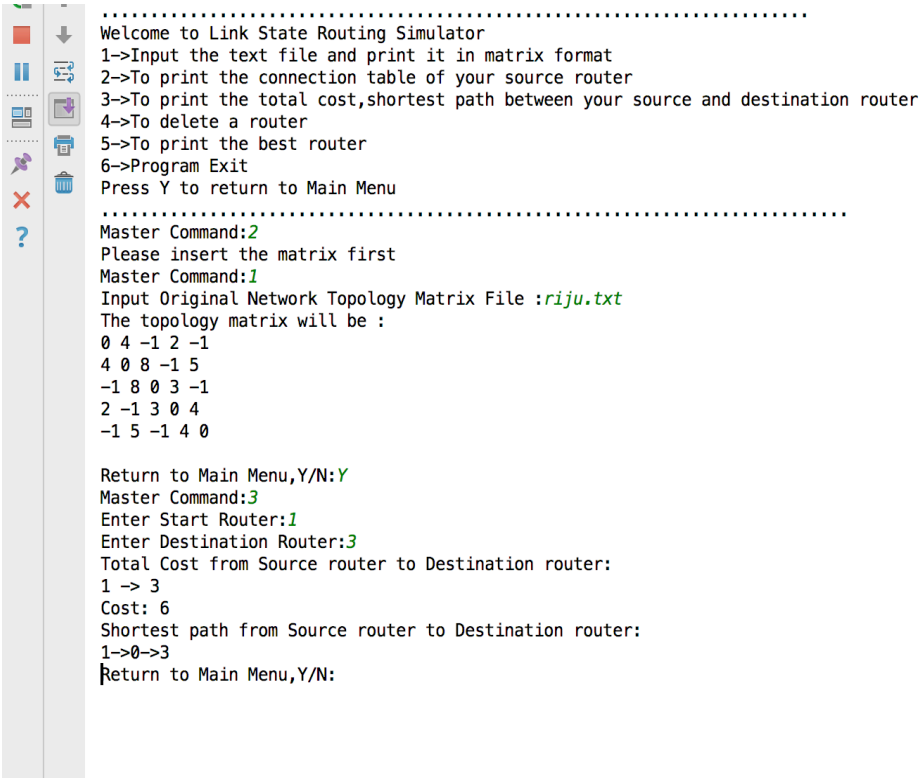
APPLICATION:

1.Input text file and print the topology matrix



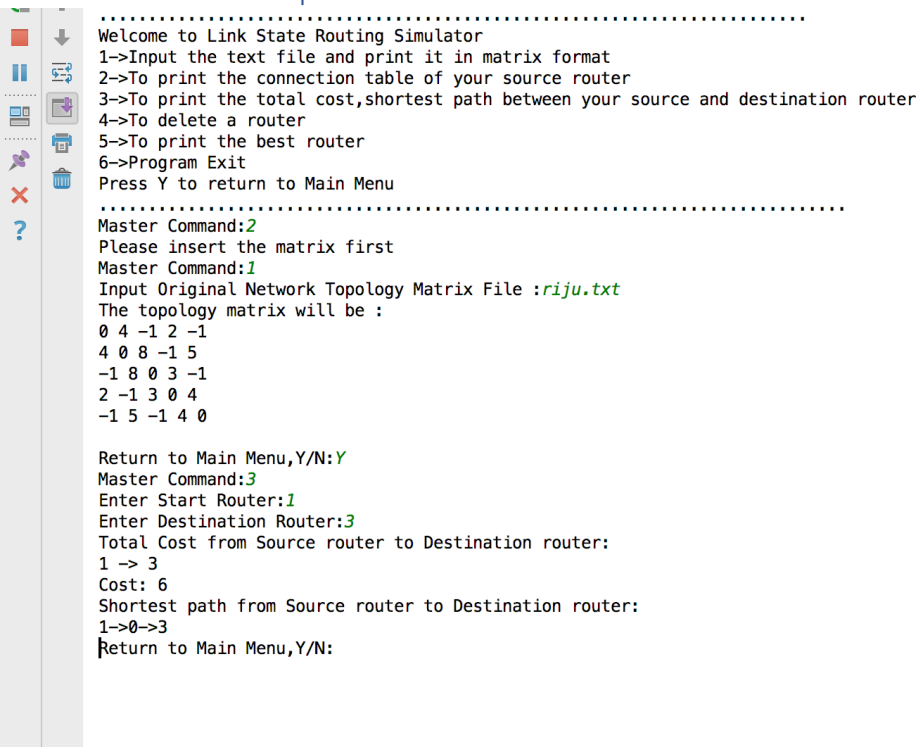
At first the program asks for user input i.e. Master Command , the user should press 1 to print the topology matrix. The type of input for Master Command should always be integers, otherwise it will generate an error message and exit the program. The user will have to run it again.
When 1 is pressed, the program asks for the input .txt file and then prints the topology matrix.

2.Connection Table of Source Router:



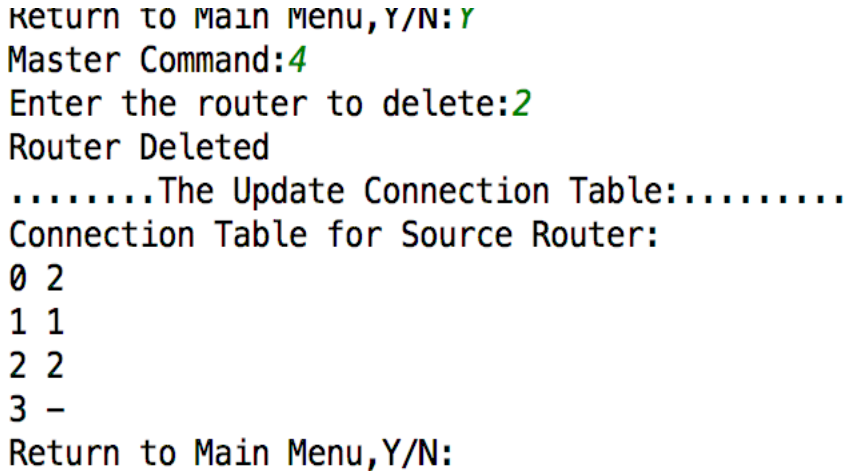
when 2 is pressed, the program asks the user to input source router for which it will print the corresponding connection table. After printing the connection table the program asks if you want to return to menu or not? if yes then press Y, else the program will exit.

3.Print total cost and path between source and destination router :



When the master command 3 is pressed the user asks for input such as to enter the source and destination router, when the user will input source and destination router the program will print the total cost from source to destination router and the shortest path calculated using shortest path algorithm.

4.Delete a router:



when the master command 4 is pressed the program asks the user to input the router which is to be deleted, when the user inputs the router name to be deleted ,the program deletes the router from the connection table updates the graph generated and prints the connection table of the source router entered in the previous option 3.

5.Print the best router in the topology matrix:

```
Return to Main Menu,Y/N:Y
Master Command:5
The mapping of every router with their total sum of distances:
{12: 2, 15: 3}
The Best Router Will be : 2
Return to Main Menu,Y/N:
```

when master command 5, the program prints the best router in the matrix.
If you want to return to main menu press Y .

6.Exit the program

```
Master Command:1
Input Original Network Topology Matrix File :riju.txt
The topology matrix will be :
0 4 -1 2 -1
4 0 8 -1 5
-1 8 0 3 -1
2 -1 3 0 4
-1 5 -1 4 0

Return to Main Menu,Y/N:Y
Master Command:6
Exit CS542-04 2016 Fall project
```

When the master command 6 is pressed, the program exits and prints the message “Exit CS542-04 2016 Fall project”

VALIDATIONS:

1. The value of the master command should always be integers otherwise it will throw an error message and exit the program
2. The file inputted must be in the form of .txt format and the length of the routers in the text file should be more than 5.
3. The value of the start and destination router should be integer value.
4. If you want to return to main menu, Y must be typed and if any other value it will throw an error message and exit the program.
5. Master command 1 should always be executed first before any other command otherwise the program would not execute further

6. Option 3 should be executed before option 4 , otherwise the program would throw an error message.