ECE 370   **Programming Assignment 5**
Winter 2016

Assigned   3/21/2016
Due   4/8/2016

This project assignment is to design and implement a method for **the shortest path** problem.

There are N cities on a traveling map. A salesman tries to find out the least expensive routes from his town to other N-1 cities, using a computer program, and he wants to share the program with other sales people in different cities on the map.

Your task is to develop a program for this salesman. You are required to use Dijkstra's algorithm and modify it so that the output will consist of the cost from one city to the rest and their associated routes. ***Your program must provide an interactive ``question-and-answer'' mode so that the starting city can be anyone among N cities. The input data file is a5.txt and the output is on the computer screen.***

The input file has an unspecified number of lines and terminated with a letter Q. Each line has three integers: the first is the cost, and next two integers represent two cities with a direct path from a city (the first of these two integers) to the other city (the second of these two integers). The output should include the minimal costs and the associated routes from the city of choice to all others.

The test of programs: your program should ask which city to start. After the user enters the number, your program should generate the **path**s and the **cost** from the city represented by this number to the rest. Your program should repeat this process until the user to terminate the program.

Here is an example of input file **a5.txt**:
```
1 2 10
1 4 30
1 5 100
2 3 50
2 1 70
3 5 10
3 1 50
4 3 20
4 5 60
5 2 40
Q
```