Computer Science 241
Spring 2010
Programming Assignment 3
Due: Friday, May 21
Contribution to your grade: 40 points

In this assignment you will implement a version of Dijskra's Single Source Shortest Path Algorithm..

1.  The program will prompt for an input file containing a table of distances between nodes in a weighted graph.

2.  The program will also prompt for an output file name.

3.  The program will calculate and output in an easily interpreted table (1) giving the length of the shorted path between a source and all possible destinations and (2) a table giving the shortest path between the start node and all possible destinations.

**Input Format**.  The input file will be an upper triangular collection of distances between unnamed nodes.  The first line should be interpreted as the distance between the first node and all other nodes; the second line is the distance between the second node and all other nodes (except the first, of course) and so forth.   The first node should always be the source node for each calculated distance and path.

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 5 | 0 | 33 | 6 | 19 | 0 | 3 | 5 | 0 | 20 | 19 |
| | 0 | 8 | 3 | 0 | 1 | 13 | 14 | 13 | 0 | 0 | 7 |
| | | 0 | 3 | 5 | 7 | 0 | 4 | 3 | 8 | 2 | 6 |
| | | | 0 | 2 | 4 | 6 | 8 | 6 | 4 | 3 | 0 |
| | | | | 0 | 7 | 9 | 12 | 3 | 6 | 1 | 1 |
| | | | | | 0 | 21 | 18 | 2 | 3 | 0 | 1 |
| | | | | | | 0 | 0 | 0 | 0 | 9 | 8 |
| | | | | | | | 0 | 5 | 4 | 3 | 2 |
| | | | | | | | | 0 | 1 | 5 | 7 |
| | | | | | | | | | 0 | 17 | 6 |
| | | | | | | | | | | 0 | 1 |
| | | | | | | | | | | | 0 |

A sample input file is posted with this assignment on Blackboard.

**Submission**.  The source code should be emailed to me at James.Hearne@wwu.edu.