Homework #2 Due: 11:59PM, Sep. 21 (Saturday)

Construct a routing table for each node of a digragh, defined in a file called graph.txt, using

Dijkstra's shortest path algorithm for each node. (It is possible that more than one edge between two nodes.)

You are required to implement a min_heap for node selection as an intermediate step and use the data structures described in class. In particular, you need to follow the required data structures for Graph, Routing_Table, and Heap.

The format of the input file, graph.txt, is explained in the following example:

2 //source node

10 // number of nodes = 10 (labelled 0, 1, 2, …., 9)

25 //number of directed edges = 25; the next 25 lines define the edges

1 3 7 //there is an edge from V1 to V3 with a cost of 7

5 2 1 //there is an edge from V5 to V2 with a cost of 1

6 4 5 //there is an edge from V6 to V4 with a cost of 5

…

Your output:

The cost from node 2 to node 0 is 17; from node is 3

The cost from node 2 to node 1 is 14; from node is 1

The cost from node 2 to node 2 is 0; from node is 2

…

The cost from node 2 to node 9 is 18; from node is 7