Implementing Multiple Algorithms

A Java program that takes number of Nodes and the cost matrix of a positive undirected graph as input and the user can select either Dijkstra’s Algorithm to find shortest path, or find minimum cost Spanning tree using Prims algorithm, or find the all pairs shortest path using Floyd’s algorithm. (If no link exists between two nodes the cost is 999.) Implementation of this program helped to understand the functioning of these algorithms on graphs .

**OUTPUT:**

**Which Algorithm would you like to test?**

**1.Dijkstras Algorithm**

**2.Prims Algorithm**

**3.FLoyds Algorithm**

**4. Exit**

**1**

**Enter no. of nodes**

**4**

**Enter cost matrix for an undirected graph:**

**0 1 4 999**

**1 0 2 8**

**4 2 0 3**

**999 8 3 0**

**The entered cost matrix is:**

**0 1 4 999**

**1 0 2 8**

**4 2 0 3**

**999 8 3 0**

**DIJKSTRAS ALGORITHM**

**Enter source:**

**1**

**Shortest distance between 1->2 is 1**

**The path is 2<->1**

**Shortest distance between 1->3 is 3**

**The path is 3<->2<->1**

**Shortest distance between 1->4 is 6**

**The path is 4<->3<->2<->1**

**-----------**

**Which Algorithm would you like to test?**

**1.Dijkstras Algorithm**

**2.Prims Algorithm**

**3.FLoyds Algorithm**

**4. Exit**

**2**

**Enter no. of nodes**

**4**

**Enter cost matrix for an undirected graph:**

**0 10 20 999**

**10 0 999 40**

**20 999 0 30**

**999 40 30 0**

**The entered cost matrix is:**

**0 10 20 999**

**10 0 999 40**

**20 999 0 30**

**999 40 30 0**

**PRIMS ALGORITHM**

**MST edges and cost are:**

**1)Min edge is (2,1) and cost is 10**

**2)Min edge is (3,1) and cost is 20**

**3)Min edge is (4,3) and cost is 30**

**MST cost is:60**

**----------**

**Which Algorithm would you like to test?**

**1.Dijkstras Algorithm**

**2.Prims Algorithm**

**3.FLoyds Algorithm**

**4. Exit**

**3**

**Enter no. of nodes**

**4**

**Enter cost matrix for an undirected graph:**

**0 10 40 999**

**10 0 999 20**

**40 999 0 30**

**999 20 30 0**

**The entered cost matrix is:**

**0 10 40 999**

**10 0 999 20**

**40 999 0 30**

**999 20 30 0**

**FLOYDS ALGORITHM**

**All pair shortest path matrix**

**0 10 40 30**

**10 0 50 20**

**40 50 0 30**

**30 20 30 0**

**Which Algorithm would you like to test?**

**1.Dijkstras Algorithm**

**2.Prims Algorithm**

**3.FLoyds Algorithm**

**4. Exit**

**4**