

## BellmanFord.java

```
1 import java.util.Scanner;
2
3 public class BellmanFord {
4     private int distances[];
5     private int numVertices;
6     public static final int MAX_VALUE = 999;
7
8     public BellmanFord(int numVertices) {
9         this.numVertices = numVertices;
10        distances = new int[numVertices + 1];
11    }
12
13    public void BellmanFordEvaluation(int source, int destination,
14    int adjacencymatrix[][]) {
15        for (int node = 1; node <= numVertices; node++) {
16            distances[node] = MAX_VALUE;
17        }
18        distances[source] = 0;
19        for (int node = 1; node <= numVertices - 1; node++) {
20            for (int snode = 1; snode <= numVertices; snode++) {
21                for (int dnode = 1; dnode <= numVertices; dnode++) {
22                    if (adjacencymatrix[snode][dnode] != MAX_VALUE)
23                        if (distances[dnode] > distances[snode] +
24                        adjacencymatrix[snode][dnode])
25                            distances[dnode] = distances[snode] +
26                            adjacencymatrix[snode][dnode];
27                }
28            }
29        }
30        for (int snode = 1; snode <= numVertices; snode++) {
31            for (int dnode = 1; dnode <= numVertices; dnode++) {
32                if (adjacencymatrix[snode][dnode] != MAX_VALUE) {
33                    if (distances[dnode] > distances[snode] +
34                    adjacencymatrix[snode][dnode])
35                        System.out.println("The Graph contains
36                        negative egde cycle");
37                }
38            }
39        }
40    }
41}
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```
36     }
37     for (int vertex = 1; vertex <= numVertices; vertex++) {
38         if (vertex == destination)
39             System.out.println("distance of source " + source +
40 " to " + vertex + " is " + distances[vertex]);
41     }
42
43     public static void main(String... arg) {
44         int numVertices = 0;
45         int source, destination;
46         Scanner scanner = new Scanner(System.in);
47         System.out.println("Enter the number of vertices");
48         numVertices = scanner.nextInt();
49         int adjacencymatrix[][] = new int[numVertices + 1]
50 [numVertices + 1];
51         System.out.println("Enter the adjacency matrix");
52
53         for (int snode = 1; snode <= numVertices; snode++) {
54             for (int dnode = 1; dnode <= numVertices; dnode++) {
55                 adjacencymatrix[snode][dnode] = scanner.nextInt();
56                 if (snode == dnode) {
57                     adjacencymatrix[snode][dnode] = 0;
58                     continue;
59                 }
60                 if (adjacencymatrix[snode][dnode] == 0) {
61                     adjacencymatrix[snode][dnode] = MAX_VALUE;
62                 }
63             }
64             System.out.println("Enter the source vertex");
65             source = scanner.nextInt();
66             System.out.println("Enter the destination vertex: ");
67             destination = scanner.nextInt();
68             BellmanFord bellmanford = new BellmanFord(numVertices);
69             bellmanford.BellmanFordEvaluation(source, destination,
70 adjacencymatrix);
71             scanner.close();
72 }
```