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Algorithms and Data Structures-II

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Module-6_All-Pairs-Shortest-Path

Due date: Friday, 1 April 2016, 11:55 PM
Maximum number of files: 1
Type of work: Individual work

Given a graph G=(V, E) consisting of set of vertices and non-empty set of edges, Implement the All-Pairs Shortest Path Algorithm.

Input :

The first line of the input contains the number of vertices.

The second line contains the set of vertices (names) separated by commas (,).

The third line on wards contains the Adjacency Matrix.

Output :

Print the shortest distances between every pair of vertices in the graph in the form of a matrix. If you are not able to find the distances between every pair of vertices, Print "Graph contains a negative weight cycles. Can't able to find the shortest path distances between every pair of vertices for the given graph."

Note : Infinity is represented as 999. If there is no direct edge between (u, v), then the edge is represented as infinity. For an edge between (u, u), consider the distance as 0.

Input #1:

4

1,2,3,4

0,8,999,1

999,0,1,999

4,999,0,999

999,2,9,0

Output #1:

ADMINISTRATION

Course administration

LESSONS

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2. ADSII_Module-2_Directed Acyclic Graphs (DAG)
3. ADSII_Module-3_Nonnegative Edge Costs (Dijkstra's Algorithm)
4. ADSII_Module-4_Analysis of Dijkstra'
Algorithm
5. ADSII_Module-5_BellmanFordAlgorith
m
6. ADSII_Module-6_Al
Pairs Shortest Path
7. ADSII_Module-7_Shortest Paths Queries (Optional)
8. ADSII_Module-8_Minimum Spanning Tree
9. ADSII_Module-9_Jarnik-Prim Minimu
Spanning Tree Algorithm
10. ADSII_Module-10_Kruskal's Algorithn
11. ADSII_Module-11_Union-Find Data Structure
12. ADSII_Module-12_Travelling Salesma
Tours
13. ADSII_Module-13_Analysis of Travelling Salesma
Tours (Parallel Implementation)

0,3,4,1

5,0,1,6

4,7,0,5

7,2,3,0

VPL 3.1.2

14. ADSII_Module-14_Optimization-Linea Programming
15. ADSII_Module-15_Optimization-Integer Linear Programming
16. ADSII_Module-16_Greedy Algorithms
17. ADSII_Module-17_Applications of Greedy Algorithms
18. ADSII_Module-18_Graph Representation
19. ADSII_Module-19_Dynamic Programming
20. ADSII_Module-20_Applications of Dynamic Programming
21. ADSII_Module-21_Systematic Search
22. ADSII_Module-22_Applications of Systematic Search
23. ADSII_Module-23_Local Search
24. ADSII_Module-24_Evolutionary Algorithms

LESSONS

1. ADSII_Module-1_Shortest Paths
2. ADSII_Module-2_Directed Acyclic Graphs (DAG)
3. ADSII_Module-3_Nonnegative Edge Costs (Dijkstra's Algorithm)
4. ADSII_Module-4_Analysis of Dijkstra's Algorithm

5. ADSII_Module-5_BellmanFordAlgorithm
6. ADSII_Module-6_All Pairs Shortest Path
7. ADSII_Module-7_Shortest Paths Queries (Optional)
8. ADSII_Module-8_Minimum Spanning Tree
9. ADSII_Module-9_Jarnik-Prim Minimum Spanning Tree Algorithm
10. ADSII_Module-10_Kruskal's Algorithm
11. ADSII_Module-11_Union-Find Data Structure
12. ADSII_Module-12_Travelling Salesman Tours
13. ADSII_Module-13_Analysis of Travelling Salesman Tours (Parallel Implementation)
14. ADSII_Module-14_Optimization-Linear Programming
15. ADSII_Module-15_Optimization-Integer Linear Programming
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ADS-II