

CSE208: Data Structures and Algorithms II Sessional

Online: Single source shortest path (B1/B2)

You are given a directed graph $G=(V,E)$ on which each edge $(u,v) \in E$ has an associated value $r(u,v)$, which is a real number in the range $0 \leq r(u,v) \leq 1$ that represents the reliability of a communication channel from vertex u to vertex v . We interpret $r(u,v)$ as the probability that the channel from u to v will not fail and we assume these probabilities are independent. Give an efficient algorithm to find the most reliable path between two given vertices.

Input: The first line of the input file will contain the number of vertices n (≤ 1000) and the number of edges m (≤ 10000) followed by m lines each containing origin u , end v and $r(u,v)$ of an edge of the directed graph. The last line will contain a source vertex s and a destination vertex d .

Sample input and output:

7 12 0 1 0.97 0 2 0.98 0 3 0.8 1 3 0.5 1 6 0.6 2 4 0.7 3 2 0.7 3 5 0.9 4 3 0.9 5 6 0.95 5 0 0.8 6 2 0.9 0 6	Most reliable path score: 0.684 0 -> 3 -> 5 -> 6
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