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Subject: Design and Analysis of Algorithm
Exp 5: To implement single source shortest path

12/11/22

Page No.
Date

Report:-

① Dijkstra's algorithm [May not work for negative edges]
It is a single source shortest path algorithm. Here, single source means that only one source is given and we have to find the shortest path from the source to all the nodes.

Functions used:-
void dijkstra() : Given a graph and no. of vertices as parameters, it prints the shortest distance from source to all the other vertices.

int findMinVertex() : It is a helper function inside dijkstra() that returns the vertex "closest" to current vertex.

② Bellman-ford algorithm [Works for negative edges as well]

Functions used:-
void bellman() : Performs relaxation on the given graph n-1 times and checks if the shortest distances found gets updated if relaxation is performed nth time [n = no. of vertices]
Then it prints the shortest distances from source to all nodes. It also detects negative cycle if it exists.

Conclusion: Performed single source shortest path using Drijkstra's algorithm and Bellman ford algorithm