

Assignment 2

Problem Statement : Write a program to implement Bellman-Ford Algorithm using Dynamic Programming and verify the time complexity .

```
#include <bits/stdc++.h>
using namespace std;

struct Edge {
    int u, v, w;
};

int main() {
    int n, m, src;
    cin >> n >> m >> src;
    vector<Edge> edges(m);
    for (int i = 0; i < m; i++) cin >> edges[i].u >> edges[i].v >> edges[i].w;
    vector<int> dist(n, 1e9);
    dist[src] = 0;
    for (int i = 0; i < n - 1; i++) {
        for (auto e : edges) {
            if (dist[e.u] != 1e9 && dist[e.u] + e.w < dist[e.v]) {
                dist[e.v] = dist[e.u] + e.w;
            }
        }
    }
    for (auto d : dist) cout << (d == 1e9 ? -1 : d) << " ";
}
```