Name : Vedant Sanjay Dhamale

Roll No : 2337032

Problem Statement : Write a program to implement link state /Distance vector routing protocol to find a suitable path for transmission.

```cpp
#include <iostream>

using namespace std;

struct node {
        int dist[20];
        int from[20];
} route[10];


int main(){
        int dm[20][20], no;
        cout << "Enter no of nodes." << endl;
        cin >> no;
        cout << "Enter the distance matrix:" << endl;
        for (int i = 0; i < no; i++) {
                for (int j = 0; j < no; j++) {
                        cin >> dm[i][j];
                        dm[i][i] = 0;
                        route[i].dist[j] = dm[i][j];
                        route[i].from[j] = j;
                }
        }

        int flag;
        do {
                flag = 0;
                for (int i = 0; i < no; i++) {
```

```cpp
                for (int j = 0; j < no; j++) {
                        for (int k = 0; k < no; k++) {
                                if ((route[i].dist[j]) > (route[i].dist[k] + route[k].dist[j])) {
                                        route[i].dist[j] = route[i].dist[k] + route[k].dist[j];
                                        route[i].from[j] = k;
                                        flag = 1;
                                }
                        }
                }
        }
    } while (flag);
    for (int i = 0; i < no; i++) {
            cout << "Router info for router: " << i + 1 << endl;
            cout << "Dest\tNext Hop\tDist" << endl;
            for (int j = 0; j < no; j++)
                    printf("%d\t%d\t\t%d\n", j+1, route[i].from[j]+1, route[i].dist[j]);
    }
    return 0;
}
```

/* Output