

### Experiment No. 06

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

#### Program for Distance Vector Routing Algorithm in C++:

```
#include <iostream>
#include <stdio.h>
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 << "\nEnter the distance matrix:" << endl;
    for (int i = 0; i < no; i++) {
        for (int j = 0; j < no; j++) {
            cin >> dm[i][j];
            /* Set distance from i to i as 0 */
            dm[i][i] = 0;
            route[i].dist[j] = dm[i][j];
            route[i].from[j] = j;
        }
        printf("\n");
    }

    int flag;
    do {
        flag = 0;
        for (int i = 0; i < no; i++) {
            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%d\n", j+1, route[i].from[j]+1, route[i].dist[j]);
        printf("\n");
    }
    return 0;
}

```

## Output:

```

C:\Users\staff\Desktop\CNS Programs\distance_vector.exe
Enter no of nodes:
3
Enter the distance matrix:
0
2
99
1
0
99
3
2
0
Router info for router: 1
Dest    Next Hop    Dist
1        1            0
2        2            2
3        3            99
Router info for router: 2
Dest    Next Hop    Dist
1        1            1
2        2            0
3        3            99
Router info for router: 3
Dest    Next Hop    Dist
1        1            3
2        2            2
3        3            0
-----
Process exited after 23.11 seconds with return value 0
Press any key to continue . . .

```