

CYCLE-2

LAB-2: Write a program for distance vector algorithm to find suitable path for transmission.

Program:

```
#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 router: "

    ;
    cin >> no;
    cout << "Enter the adjacency 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;
        }
    }

    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\tCost" << 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]);
}
return 0;
}

```

Output:

```

Enter no of router: 5
Enter the adjacency matrix:
0 1 1 0 0
0 0 1 0 1
0 0 0 1 0
0 0 0 1 0
0 0 0 0 1
0 0 0 0 0
Router info for router: 1
Dest    Next Hop    Cost
1        1            0
2        4            0
3        4            0
4        4            0
5        5            0
Router info for router: 2
Dest    Next Hop    Cost
1        1            0
2        2            0
3        1            0
4        4            0
5        1            0
Router info for router: 3
Dest    Next Hop    Cost
1        1            0
2        2            0
3        3            0
4        1            0
5        5            0
Router info for router: 4
Dest    Next Hop    Cost
1        1            0
2        2            0
3        3            0
4        4            0
5        1            0
Router info for router: 5
Dest    Next Hop    Cost
1        1            0
2        2            0
3        3            0
4        4            0

```