

26/12/20

Lab 5 - C Program

Ques: To find all pair shortest path using Dijkstra's algo

Code:

```
#include <stdio.h>
```

```
#include <conio.h>
```

```
int c[10][10], n, src;
```

```
void dijkstra();
```

```
int main()
```

```
{
```

```
printf("Enter the number of vertices\n");
```

```
scanf("%d", &n);
```

```
printf("Enter the cost matrix\n");
```

```
for (int i = 1; i <= n; i++)
```

```
{
```

```
for (int j = 1; j <= n; j++)
```

```
{
```

```
scanf("%d", &c[i][j]);
```

```
}
```

```
}
```

```
printf("Enter the source vertex\n");
```

```
scanf("%d", &src);
```

```
dijkstra();
```

```
return 1;
```

```
}
```

```
void dijkstra()
```

```
{
```

```
int dist[10], vis[10], j, cost, min, u;
```

```
for (j = 1; j <= n; j++)
```

```

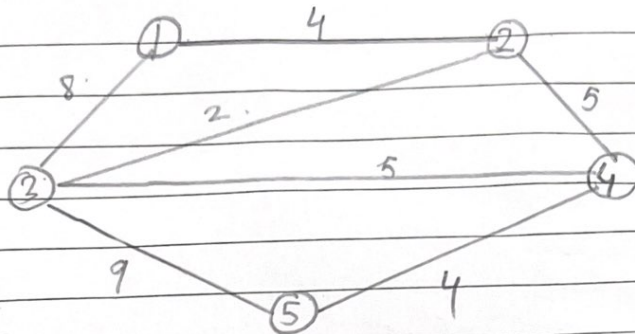
1
    dist[i] = c[0][i];
2
3
for(j=1; j<=n; j++)
{
    vis[j] = 0;
}
dist[0] = 0;
vis[0] = 1;
count = 1;
while(count != n)
{
    min = 9999;
    for(j=1; j<=n; j++)
    {
        if(dist[j] < min and vis[j] != 1)
        {
            min = dist[j];
            u[j];
        }
    }
    vis[u] = 1;
    count++;
    for(j=1; j<=n; j++)
    {
        if(min + c[u][j] < dist[j] and vis[j] != 1)
        {
            dist[j] = min + c[u][j];
        }
    }
}
3
printf("In Shortest dist ance is %d", n);
for(j=1; j<=n; j++)
{

```



```
print f("\n j-d ----> j-d = j-d \n", src,
        dist[j])
```

O/P



Enter the number of routers

5

Enter the cost matrix.

	1	2	3	4	5
1	0	4	8	0	0
2	4	0	2	5	0
3	8	2	0	5	9
4	0	5	5	0	4
5	0	0	9	4	0

$$1 \rightarrow 1 = 0$$

$$1 \rightarrow 2 = 4$$

$$1 \rightarrow 3 = 8$$

$$1 \rightarrow 4 = 9$$

$$1 \rightarrow 5 = 12$$

2/1/23