

pg) Find minimum cost spanning tree of given undirected graph using Prim's algorithm.

import java.util.Scanner;

public class Prim {

static int SIZE=10;

static int INFINITY=999;

public static void main (String[] args) {

int g[][] = new int [SIZE] [SIZE];

int nodes;

int v1, v2, length, i, j, n;

System.out.println("In Prim's algorithm\n");

System.out.println("Enter the no. of nodes in graph");

Scanner in = new Scanner (System.in);

nodes = in.nextInt();

System.out.println ("In Enter the matrix:");

for (i=0; i<nodes; i++)

for (j=0; j<nodes; j++)

g[i][j] = in.nextInt();

System.out.println("The entered matrix:");

for (i=0; i<nodes; i++)

for (j=0; j<nodes; j++) {

System.out.print(g[i][j]+ " ");

System.out.println();

}

Prim's(g, nodes);


```
public static void prims(int g[][] , int nodes)
{
```

```
    int tree[] = new int[size];
```

```
    int p, j, k;
```

```
    int min-dist = 0, v1 = 0, v2 = 0, total = 0;
```

```
    for (i = 0; i < nodes; i++)
```

```
        tree[i] = 0; 0 to 3
```

```
    System.out.println("Minimum spanning tree  
is : ");
```

```
    for (k =
```

```
        tree[0] = 1;
```

```
        for (k = 0; k < nodes - 1; k++) 0 to 2 (k < 3)
```

```
        {
```

```
            min-dist = INFINITY;
```

```
            for (p = k; p < nodes; p++)
```

```
                for (j = 0; j < nodes; j++)
```

```
                    if ((g[p][j] != 0) && ((tree[p] == 1 &&  
                        tree[j] == 0) || (tree[p] == 0 &&
```

```
                        tree[j] == 1)))
```

```
                    {
```

```
                        if (g[p][j] < min-dist)
```

```
                            { min-dist = g[p][j];
```

```
                                v1 = i; v2 = j;
```

```
                                y y y y
```

```
                                System.out.println("An edge [" + v1 + " " + v2 + "]");
```


and weight "+ min-dist");

$tree[V1] = tree[V2] = 1$

total = total + min-dist; y

System.out.println("total path length: " + total);
y y

output:

PRIM'S ALGORITHM

Enter the no. of nodes in graph:

4

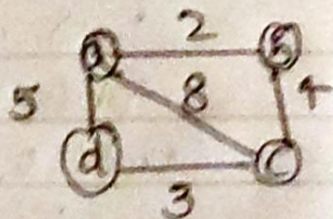
enter the matrix

0 2 8 5

2 0 4 999

8 4 0 3

5 999 3 0



The extended matrix is:

0 2 8 5

2 0 4 999

8 4 0 3

5 999 3 0

Minimum spanning tree is:

edge [0,1] and weight 2

edge [1,2] and weight 4

edge [2,3] and weight 3

total path length is: 9