PROGRAM 15

Find Minimum Cost Spanning Tree of a given undirected graph using Kruskal's algorithm.

//Code

```
#include<stdio.h>
void kruskals();
int c[10][10],n;
int main()
{
int i,j;

printf("\nenter the no. of vertices:\t");
scanf("%d",&n);
printf("\nenter the cost matrix:\n");
for(i=1;i<=n;i++)
{
 for(j=1;j<=n;j++)
 {
  scanf("%d",&c[i][j]);
 }
}
kruskals();
}

void kruskals()
{
int i,j,u,v,a,b,min;
int ne=0,mincost=0;
int parent[10];
for(i=1;i<=n;i++)
{
 parent[i]=0;
```

```
}
while(ne!=n-1)
{
 min=9999;
 for(i=1;i<=n;i++)
 {
  for(j=1;j<=n;j++)
  {
    if(c[i][j]<min)
    {
     min=c[i][j];
     u=a=i;
     v=b=j;
    }
  }
 }
 while(parent[u]!=0)
 {
  u=parent[u];
 }
 while(parent[v]!=0)
 {
  v=parent[v];
 }
 if(u!=v)
 {
  printf("\n%d----->%d=%d\n",a,b,min);
  parent[v]=u;
  ne=ne+1;
  mincost=mincost+min;
 }
 c[a][b]=c[b][a]=9999;
}
printf("\nmincost=%d",mincost);
}
```

//Output

```
clang++-7 -pthread -std=c++17 -o main main.cpp
./main

enter the no. of vertices:  6

enter the cost matrix:
9999 3 9999 9999 6 5
3 9999 1 9999 9999 4
9999 1 9999 6 9999 4
9999 6 6 9999 8 5
6 9999 9999 8 9999 2
5 4 4 5 2 9999

2----->3=1

5----->6=2

1----->2=3

2----->6=4

4----->6=5

mincost=15
```