Q) Design and implement C/C++ Program to find Minimum Cost Spanning Tree of a given

connected undirected graph using Kruskal's algorithm.

#include<stdio.h>

#define INF 999

#define MAX 100

int p[MAX],c[MAX][MAX],t[MAX][2];

int find(int v)

{

while(p[v])

v=p[v];

return v;

}

void union1(int i,int j)

{

p[j]=i;

}

void kruskal(int n)

{

int i,j,k,u,v,min,res1,res2,sum=0;

for(k=1;k<n;k++)

{

min=INF;

for(i=1;i<n-1;i++)

{

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

{

if(i==j)continue;

if(c[i][j]<min)

{

u=find(i);

v=find(j);

if(u!=v)

{

res1=i;

res2=j;

min=c[i][j];

}

}

}

}

union1(res1,find(res2));

t[k][1]=res1;

t[k][2]=res2;

sum=sum+min;

}

printf("\nCost of spanning tree is=%d",sum);

printf("\nEdgesof spanning tree are:\n");

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

printf("%d -> %d\n",t[i][1],t[i][2]);

}

int main()

{

int i,j,n;

printf("\nEnter the n value:");

scanf("%d",&n);

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

p[i]=0;

printf("\nEnter the graph data:\n");

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

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

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

kruskal(n);

return 0;

}

OUTPUT:

Enter the n value:5

Enter the graph data:

0 10 15 9 999

10 0 999 17 15

15 999 0 20 999

9 17 20 0 18

999 15 999 18 00 10 15 9 999

10 0 999 17 15

15 999 0 20 999

9 17 20 0 18

999 15 999 18 0

Cost of spanning tree is=49

Edgesof spanning tree are:

1 -> 4

1 -> 2

1 -> 3

2 -> 5