Design and Analysis of Algorithms – 20ISL57A

Program 5 - Implement and analyze Prim's algorithm and find minimum cost spanning tree of a given connected undirected graph.

```
#include<stdio.h>
int main()
{
   int n,a[20][20],i,j,min,mincost,u,v,ne,vis[20];
   printf("Enter the number of nodes\n");
   scanf("%d",&n);
   for(i=1;i<=n;i++)
        vis[i]=0;
   printf("Enter the Cost matrix or Adjacency matrix\n");
   for(i=1;i<=n;i++)
   {
        for(j=1;j<=n;j++)
        {
           scanf("%d",&a[i][j]);
           if(a[i][j]==0)
           {
                a[i][j]=999;
           }
        }
   }
   vis[1]=1;
   ne=1;
   mincost=0;
   while(ne<n)
   {
        for(i=1,min=999;i<=n;i++)
        {
           for(j=1;j<=n;j++)
           {
                if((a[i][j]<min) && (vis[i]!=0))
                {
                   min=a[i][j];
```

```
                    u=i;
                    v=j;
                }
            }
        }
        if(vis[v]==0)
        {
            printf("Edge %d : (%d %d) cost %d\n", ne,u,v,a[u][v]);
            mincost+=a[u][v];
            ne+=1;
            vis[v]=1;
        }
        a[u][v]=a[v][u]=999;
    }
    printf("Minimum Cost = %d\n",mincost);
}
```