LAB 8

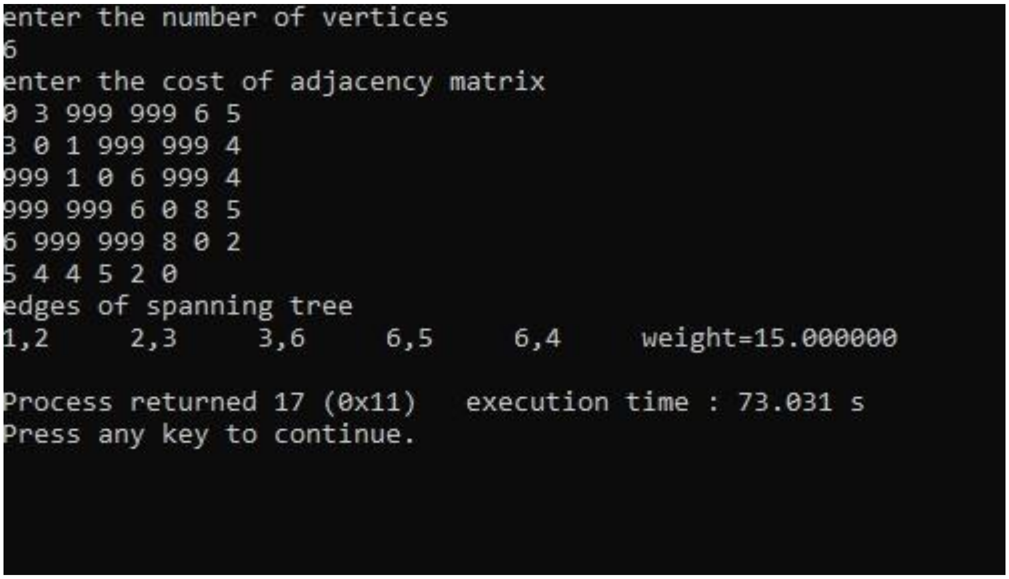
Find the minimum cost spanning tree of given undirected graph using prims and kruskal's algorithm.

PRIMS:

CODE:

```
#include<stdio.h>



float cost[10][10]; int
vt[10],et[10][10],vis[10],j,n;
float sum=0; int x=1; int e=0;
void prims();

void main()
{ int i;

   printf("enter the number of vertices\n");
   scanf("%d",&n); printf("enter the cost of
   adjacency matrix\n"); for(i=1;i<=n;i++)
   { for(j=1;j<=n;j++)
       { scanf("%f",&cost[i][j]);
       }
       vis[i]=0;
    }
    prims();
    printf("edges of spanning tree\n");
    for(i=1;i<=e;i++)
    { printf("%d,%d\t",et[i][0],et[i][1]);
    }
    printf("weight=%f\n",sum);
}

void prims()
{
   int s,m,k,u,v;
   float min;
   vt[x]=1; vis[x]=1;
   for(s=1;s<n;s++
   )
   { j=x;
       min=999;
       while(j>0)
       { k=vt[j];
            for(m=2;m<=n;m++)
            {
              if(vis[m]==0)
              {
                  if(cost[k][m]<min)
                  {
                     min=cost[k][m]
                     ; u=k; v=m;
                  }
               }
          } j--
          ;
    }
    vt[++x]=v;
    et[s][0]=u;
    et[s][1]=v;
    e++;
    vis[v]=1;
    sum=sum+min;
 }
}
```

OUTPUT:



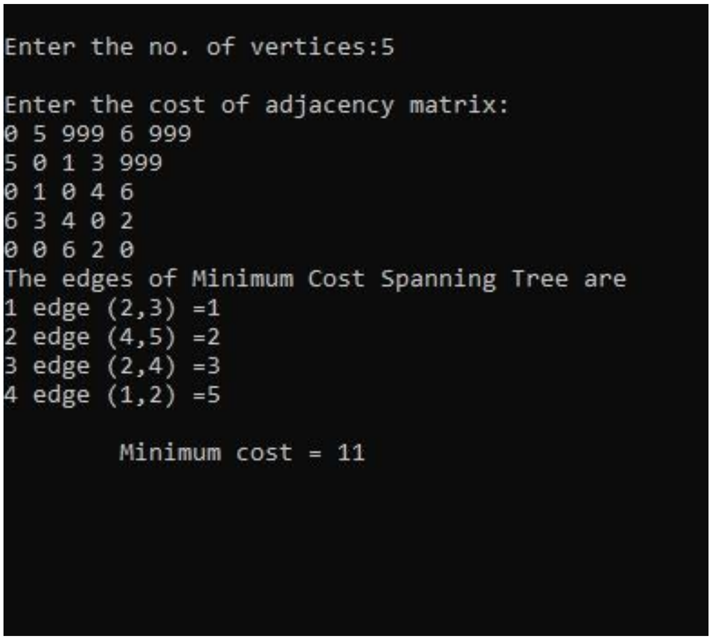
```
enter the number of vertices
6
enter the cost of adjacency matrix
0 3 999 999 6 5
3 0 1 999 999 4
999 1 0 6 999 4
999 999 6 0 8 5
6 999 999 8 0 2
5 4 4 5 2 0
edges of spanning tree
1,2     2,3     3,6     6,5     6,4     weight=15.000000

Process returned 17 (0x11)   execution time : 73.031 s
Press any key to continue.
```

KRUSHKAL’S:

CODE:

```
#include <stdio.h>
#include <conio.h> #include
<stdlib.h> int i,j,k,a,b,u,v,n,ne=1; int
min,mincost=0,cost[9][9],parent[9]; int
find(int); int uni(int,int); void main()
{
    printf("\nEnter the no. of vertices:");
    scanf("%d",&n); printf("\nEnter the cost of
    adjacency matrix:\n"); for(i=1;i<=n;i++)
    { for(j=1;j<=n;j++)
       {
         scanf("%d",&cost[i][j])
         ; if(cost[i][j]==0)
         cost[i][j]=999;
       }
    }
    printf("The edges of Minimum Cost Spanning Tree are\n");
    while(ne < n)
    {
      for(i=1,min=999;i<=n;i++)
      {
        for(j=1;j <= n;j++)
        { if(cost[i][j] <
          min)
          {
            min=cost[i][j];
            a=u=i; b=v=j;
          }
        }
      }
      u=find(u);
      v=find(v);
      if(uni(u,v))
      {
        printf("%d edge (%d,%d) =%d\n",ne++,a,b,min);
        mincost +=min;
      }
      cost[a][b]=cost[b][a]=999;
    }
    printf("\nMinimum cost = %d\n",mincost);
    getch();
} int find(int
i)
{ while(parent[i])
   i=parent[i];
   return i;
}
int uni(int i,int j)
{
  if(i!=j)
  {
   parent[j]=i;
   return 1;
  }
  return 0;
}
```

OUTPUT:



```
Enter the no. of vertices:5

Enter the cost of adjacency matrix:
0 5 999 6 999
5 0 1 3 999
0 1 0 4 6
6 3 4 0 2
0 0 6 2 0
The edges of Minimum Cost Spanning Tree are
1 edge (2,3) =1
2 edge (4,5) =2
3 edge (2,4) =3
4 edge (1,2) =5

        Minimum cost = 11
```