#include<stdio.h>

#include<conio.h>

#include<stdlib.h>

int i,j,k,a,b,u,v,n,nedge=1;

int min,mincost=0,cost[9][9],parent[9];

int find(int);

int uni(int,int);

void main()

{

clrscr();

printf("Minimum Cost Spanning Tree\n");

printf("\n\tImplemenetation of Kruskal's Algorithm\n");

printf("\nEnter the number of vertices:");

scanf("%d",&n);

printf("\nEnter the cost using adjacency martix:\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 edge of Minimum Cost Spanning Tree are\n");

while(nedge<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("Edge %d(%d->%d)=%d\n",nedge++,a,b,min);

mincost+=min;

}

cost[a][b]=cost[b][a]=999;

}

printf("\n\tMinimum 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;

}