

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

Program:

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

    printf("Enter the Number of vertices:");
    scanf("%d",&n);
    printf("Enter the cost matrix:\n");
    for(i=1;i<=n;i++)
    {
        for(j=1;j<=n;j++)
        {
            scanf("%d",&c[i][j]);
        }
    }
    prims();
}

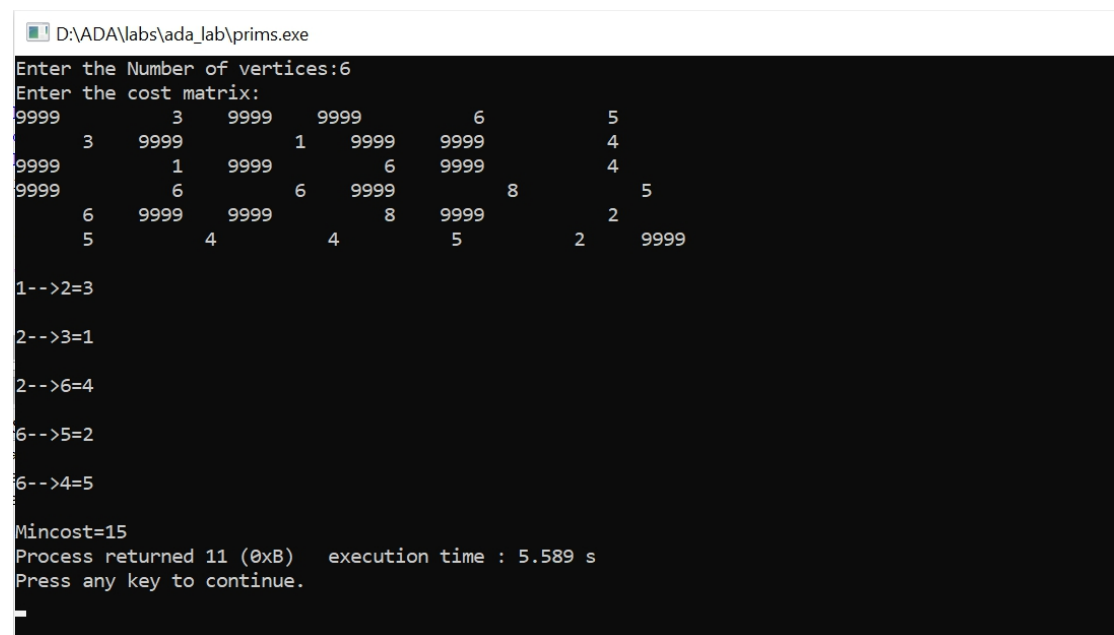
void prims()
{
    int i,j,u,v,min;
    int ne=0,mincost=0;
    int elec[10];
    for(i=1;i<=n;i++)
    {
        elec[i]=0;
    }
    elec[1]=1;
    while(ne!=n-1)
    {
        min=9999;
        for(i=1;i<=n;i++)
        {
            for(j=1;j<=n;j++)
            {
                if(elec[i]==1)
                {
                    if(c[i][j]<min)
                    {
                        min=c[i][j];
                        u=i;
                        v=j;
                    }
                }
            }
        }
        if(elec[v]!=1)
        {
            printf("\n%d-->%d=%d\n",u,v,min);
```

```

    elec[v]=1;
    ne=ne+1;
    mincost=mincost+min;
}
c[u][v]=c[v][u]=9999;
}
printf("\nMincost=%d",mincost);
}

```

Output Screenshot:



The screenshot shows a Windows command prompt window with the title bar 'D:\ADA\labs\ada\_lab\prims.exe'. The program prompts the user to 'Enter the Number of vertices:6' and 'Enter the cost matrix:'. A 6x6 cost matrix is displayed, with 9999 representing infinity. The matrix is symmetric. The program then shows the steps of Prim's algorithm: selecting vertex 1, then 2, then 6, and finally 5, with the edges added being (1,2), (2,3), (2,6), and (6,5). The final output is 'Mincost=15'. The process returned 11 (0xB) and the execution time was 5.589 s. The prompt asks to 'Press any key to continue.'.

```

D:\ADA\labs\ada_lab\prims.exe
Enter the Number 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      9999      6      9999      8      5
      6      9999      9999      8      9999      2
      5      4      4      5      2      9999

1-->2=3
2-->3=1
2-->6=4
6-->5=2
6-->4=5

Mincost=15
Process returned 11 (0xB)   execution time : 5.589 s
Press any key to continue.

```