

## Program :

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#include<stdio.h>
#include<stdlib.h>
int path[20];
int n;
int g(int k, int v[n],int c[n][n]);
void trvpath(int k, int v[n],int c[n][n],int j);
void main()
{
    int mcost;
    path[0]=1;
    printf("Enter value of N:\n");
    scanf("%d",&n);
    int c[n][n];
    int v[n];
    int j = 1;
    for(int i = 1; i<=n; i++)
        v[i] = 0;
    path[n] = 1;
    printf("Enter Array Elements:\n");
    for(int i=1;i<=n;i++)
    {
        for(int j= 1;j<=n;j++)
        {
            scanf("%d",&c[i][j]);
        }
    }
    printf("Adjacency Matrix:\n");
    for(int i=1;i<=n;i++){
        for(int j=1;j<=n;j++){
            printf("%d\t",c[i][j]);
        }
        printf("\n");
    }
    v[1]=1;
    mcost=g(1,v,c);
    for(int i=1;i<=n;i++)
        v[i]=0;
        v[1]=1;
    trvpath(1,v,c,j);
    printf("Minimum cost is : %d\n",mcost);
    printf("Path :");
    for(int i=0;i<=n;i++)
        printf("%d-",path[i]);
}
int g(int k, int v[n], int c[n][n])
{
    int min,temp,flag=0;
    min = 999;
    for(int i=2;i<=n;i++){
        if(v[i]==0)
            flag=1;
    }
    if(flag==0){
        return c[k][1];
    }
    for(int i=2;i<=n;i++){
        if(v[i]==0){
            v[i]=1;
            temp = c[k][i]+g(i,v,c);
            if(temp<min){
                min = temp;
            }
        }
    }
}
```

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        }
        v[i]=0;
    }
}
return min;
}

void trvpath(int k,int v[n],int c[n][n],int j)
{
    int temp,min=999,t,v1[n];
    if(j<n){
        for(int i=2;i<=n;i++){
            if(v[i]==0){
                v[i]=1;
                temp=c[k][i]+g(i,v,c);
                if(temp<min){
                    min = temp;
                    t=i;
                    for(int i=1;i<=n;i++){
                        v1[i]=v[i];
                    }
                }
            }
        }
        path[j]=t;
        trvpath(t,v1,c,j+1);
    }
}

```

## Output :

```

stud@stud-MS-7D48: ~/Desktop/Aditya
stud@stud-MS-7D48:~/Desktop/Aditya$ gcc tsp.c
stud@stud-MS-7D48:~/Desktop/Aditya$ ./a.out
Enter value of N:
4
Enter Array Elements:
0 9 8 8
12 0 13 6
10 9 0 5
20 15 10 0
Adjacency Matrix:
0      9      8      8
12     0     13     6
10     9     0     5
20    15    10     0
Minimum cost is : 35
stud@stud-MS-7D48:~/Desktop/Aditya$

```