**DSA**

**17BCE0860**

**PRATHAMESH**

**AGARWAL**

#include<stdio.h>

int ary[10][10],completed[10],n,cost=0;

void takeInput()

{

    int i,j;

    printf("Enter the number of villages: ");

    scanf("%d",&n);

    printf("\nEnter the Cost Matrix\n");

    for(i=0;i < n;i++)

    {

        printf("\nEnter Elements of Row: %d\n",i+1);

        for( j=0;j < n;j++)

            scanf("%d",&ary[i][j]);

        completed[i]=0;

    }

    printf("\n\nThe cost list is:");

    for( i=0;i < n;i++)

    {

        printf("\n");

        for(j=0;j < n;j++)

            printf("\t%d",ary[i][j]);

    }

}

void mincost(int city)

{

    int i,ncity;

    completed[city]=1;

    printf("%d--->",city+1);

    ncity=least(city);

    if(ncity==999)

    {

        ncity=0;

        printf("%d",ncity+1);

        cost+=ary[city][ncity];

        return;

    }

    mincost(ncity);

}

int least(int c)

{

    int i,nc=999;

    int min=999,kmin;

    for(i=0;i < n;i++)

    {

        if((ary[c][i]!=0)&&(completed[i]==0))

            if(ary[c][i]+ary[i][c] < min)

            {

                min=ary[i][0]+ary[c][i];

                kmin=ary[c][i];

                nc=i;

            }

    }

    if(min!=999)

        cost+=kmin;

    return nc;

}

int main()

{

    takeInput();

    printf("\n\nThe Path is:\n");

    mincost(0); //passing 0 because starting vertex

    printf("\n\nMinimum cost is %d\n ",cost);

    return 0;

}