Aim:

Write a C program to implement **Travelling Sales Person** problem using **Dynamic programming**.

Source Code:

TSP.c

```c
#include<stdio.h>
int ary[10][10],completed[10],n,cost=0;
void takeInput(){
    int i,j;
    printf("Number of villages: ");
    scanf("%d",&n);
    for(i=0;i<n;i++){
        for(j=0;j<n;j++){
            scanf("%d",&ary[i][j]);
        }
        completed[i]=0;
    }
    printf("The cost list is:\n");
    for(i=0;i<n;i++){
        for(j=0;j<n;j++){
            printf("\t%d",ary[i][j]);
        }
        printf("\n");
    }
}
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("The Path is:\n");
    mincost(0);
    printf("\nMinimum cost is %d",cost);
    return 0;

}
```

Execution Results - All test cases have succeeded!

Test Case - 1
User Output
Number of villages: 3
0 10 15
10 0 35
15 35 0
The cost list is:
0   10   15
10   0   35
15   35   0
The Path is:
1-->2-->3-->1
Minimum cost is 60