

Aim:

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

Source Code:TSP.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:");
    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("\nThe 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			