S.No: 27	Exp. Name: ***Travelling Sales Person problem using Dynamic programming***	**Date:2023-06-19**

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
```