**PRACTICAL-13**

**AIM:** Write a program to solve travelling salesman problem using C.

**Source Code:**

#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;

}

**Output:**

