LAB 4

Minimum Spanning Tree

1.Find Minimum Cost Spanning Tree of a given undirected graph using Prim’s algorithm.

#include <stdio.h>

int cost[10][10], n, t[10][2], sum;

void prims(int cost[10][10], int n);

int main()

{

int i, j;

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

scanf("%d", &n);

printf("Enter the cost adjacency matrix:\n");

for (i = 0; i < n; i++)

{

for (j = 0; j < n; j++)

{

scanf("%d", &cost[i][j]);

}

}

prims(cost, n);

printf("Edges of the minimal spanning tree:\n");

for (i = 0; i < n - 1; i++)

{

printf("(%d, %d) ", t[i][0], t[i][1]);

}

printf("\nSum of minimal spanning tree: %d\n", sum);

return 0;

}

void prims(int cost[10][10], int n)

{

int i, j, u, v;

int min, source;

int p[10], d[10], s[10];

min = 999;

source = 0;

for (i = 0; i < n; i++)

{

d[i] = cost[source][i];

s[i] = 0;

p[i] = source;

}

s[source] = 1;

sum = 0;

int k = 0;

for (i = 0; i < n - 1; i++)

{

min = 999;

u = -1;

for (j = 0; j < n; j++)

{

if (s[j] == 0 && d[j] < min)

{

min = d[j];

u = j;

}

}

if (u != -1)

{

t[k][0] = u;

t[k][1] = p[u];

k++;

sum += cost[u][p[u]];

s[u] = 1;

for (v = 0; v < n; v++)

{

if (s[v] == 0 && cost[u][v] < d[v])

{

d[v] = cost[u][v];

p[v] = u;

}

}

}

}

}

**OUTPUT-**

