Experiment-24 : Prim’s Algorithm

24.Write a C Program For Implementation Of Minimum Spanning Tree Using Prim’s Algorithm.

Code :

#include <stdio.h>

#include <limits.h>

#define V 5 // Number of vertices (you can adjust this as needed)

int minKey(int key[], int mstSet[]) {

int min = INT\_MAX, min\_index;

for (int v = 0; v < V; ++v) {

if (!mstSet[v] && key[v] < min) {

min = key[v];

min\_index = v;

}

}

return min\_index;

}

void printMST(int parent[], int graph[V][V]) {

printf("Edge \tWeight\n");

for (int i = 1; i < V; ++i)

printf("%d - %d \t%d\n", parent[i], i, graph[i][parent[i]]);

}

void primMST(int graph[V][V]) {

int parent[V];

int key[V];

int mstSet[V];

for (int i = 0; i < V; ++i) {

key[i] = INT\_MAX;

mstSet[i] = 0;

}

key[0] = 0;

parent[0] = -1;

for (int count = 0; count < V - 1; ++count) {

int u = minKey(key, mstSet);

mstSet[u] = 1;

for (int v = 0; v < V; ++v) {

if (graph[u][v] && !mstSet[v] && graph[u][v] < key[v]) {

parent[v] = u;

key[v] = graph[u][v];

}

}

}

printMST(parent, graph);

}

int main() {

int graph[V][V] = {

{0, 2, 0, 6, 0},

{2, 0, 3, 8, 5},

{0, 3, 0, 0, 7},

{6, 8, 0, 0, 9},

{0, 5, 7, 9, 0}

};

primMST(graph);

return 0;

}

Output :

