# Name- Manish Kumar

# Enrollment Number- 2020ITB007

# Assignment 12: Prim's Algorithm

Implement Prim's Algorithm.

#include <stdio.h>

#include <limits.h>

#define vertices 5

int minimum\_key(int k[], int mst[])

{

    int minimum = INT\_MAX, min, i;

    for (i = 0; i < vertices; i++)

        if (mst[i] == 0 && k[i] < minimum)

            minimum = k[i], min = i;

    return min;

}

void prim(int g[vertices][vertices])

{

    int parent[vertices];

    int k[vertices];

    int mst[vertices];

    int i, count, edge, v;

    for (i = 0; i < vertices; i++)

    {

        k[i] = INT\_MAX;

        mst[i] = 0;

    }

    k[0] = 0;

    parent[0] = -1;

    for (count = 0; count < vertices - 1; count++)

    {

        edge = minimum\_key(k, mst);

        mst[edge] = 1;

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

        {

            if (g[edge][v] && mst[v] == 0 && g[edge][v] < k[v])

            {

                parent[v] = edge, k[v] = g[edge][v];

            }

        }

    }

    printf("\n Edge \t  Weight\n");

    for (i = 1; i < vertices; i++)

        printf(" %d -> %d    %d \n", parent[i], i, g[i][parent[i]]);

}

int main()

{

    int g[vertices][vertices] = {

        {0, 0, 3, 0, 0},

        {0, 0, 10, 4, 0},

        {3, 10, 0, 2, 6},

        {0, 4, 2, 0, 1},

        {0, 0, 6, 1, 0},

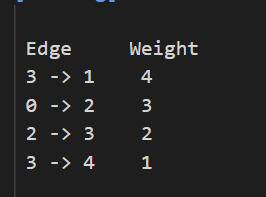
    };

    prim(g);

    return 0;

}

**OUTPUT**

****