

Ques: implementation of minimum spanning tree using prim's Algorithm.

Aim: to implementation of minimum spanning tree using prim's Algorithm.

Algorithm:

- * start.
- * input no. of vertices and adjacency matrix.
- * select an arbitrary vertex as starting point.
- * find the minimum edge connecting visited and unvisited nodes.
- * add edge to MST.
- * repeat until all vertices are included.
- * print MST and cost.
- * stop.

program:

```
#include <stdio.h>
#define V 5
#define INF 999

int main() {
    int g[V][V] = {
        {0, 2, 0, 6, 0},
        {2, 0, 3, 8, 1},
        {0, 3, 0, 0, 7},
        {6, 8, 0, 0, 4},
        {0, 5, 7, 9, 0}
    };

    int key[V], vis[V] = {0}, parent[V], u;

    for (int i = 0; i < V; i++) key[i] = INF;
    key[0] = 0; parent[0] = -1;

    for (int c = 0; c < V - 1; c++) {
        int min = INF;
        for (int i = 0; i < V; i++)
            if (!vis[i] && key[i] < min) { min = key[i]; u = i; }
```

vis[u] = 1;

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

if (g[u][v] > 0, vis[v] == 0, g[u][v] < key[v]) {

parent[v] = u;

key[v] = g[u][v];

}

}

printf("MST edges: \n");

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

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

}

Output:

MST edges:

0 - 1

1 - 2

0 - 3

1 - 4

Result: Thus, the program executed successfully.