Implementation of Minimum Spanning Tree Algorithms

Submitted by Group 12

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Executive summary

A spanning tree T of a graph G is a subgraph that is a tree which includes all of the vertices of G. A minimum spanning tree is a spanning tree with the minimal total weighting for its edges.

Problem statement

Develop a program that finds the minimum spanning tree of a graph using Prims algorithm and Kruskal algorithm.

Pseudocode

static int PrimMST(Graph g): This function calculates weight of the MST based on Prim's algorithm

static int PrimIndexedMST(Graph g): This function calculates weight of the MST based on Indexed Priority queue

public long kruskal(List<Edge> edges, int numVertices) : This functions calculates weight of the MST based on kruskal’s algorithm.

Test results

Sample Outputs

```
Enter File Path
src/test.txt
Shortest path using Kruskal
(7,6)
(4,1)
(1,2)
(3,4)
(4,7)
(5,7)
total length is 16

Prim2Driver :

Enter File Path
src/test.txt
total length is 16

Prim1Driver :

Enter File Path
src/test.txt
Primes 1 path is
(4,1)
(1,2)
(3,4)
(4,7)
(7,6)
(5,7)
total length is 16
```