To find Minimum Spanning Tree using Prim's Algorithm

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***Abstract*—In this paper we will use Prim's Algorithm to find the Minimum Spanning Tree. Also in the later part of the paper we have discussed the space and time complexity of the devised algorithm.**

***Index Terms*—Algorithm, Graph's, Minimum Spanning Tree, Prim's Algorithm, Complexity**

I. Introduction

Prim's algorithm is a greedy algorithm that finds a minimum spanning tree for a weighted undirected graph. This means it finds a subset of the edges that forms a tree that includes every vertex, where the total weight of all the edges in the tree is minimized.

II. Algorithm Design

We have been given a weighted graph by the user whose MST(minimum spanning tree) we have to find. The following steps will help us to find the MST for a given graph.

1) Create a boolean flag array(initialized to false) which has size as number of vertices which will be used to track that which vertex is taken for MST and which not.
2) Create another vector namely, 'min_weight' of same size where we will store the weight of the minimum weighted edge its connected to, such that the other endpoint of the edge is already taken in flag array.