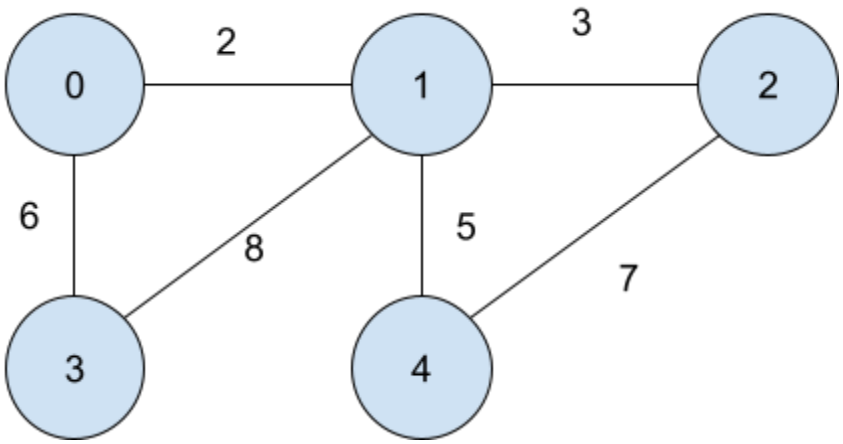
Minimum Spanning Tree - Theory

Given :

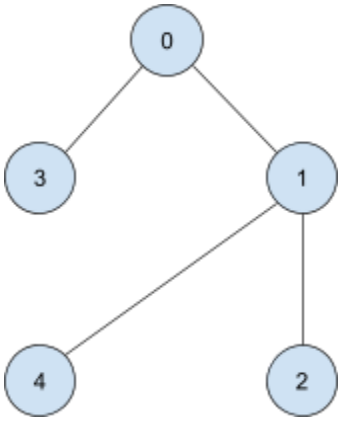
- Undirected Graph
- M edges
- N edges

Eg.



M = 6
N = 5

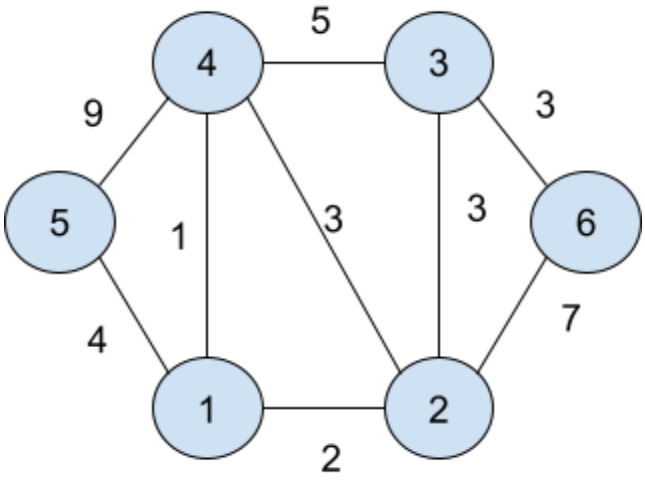
Definition : A tree in which we have N nodes and M-1 edges and all nodes are reachable to each other.



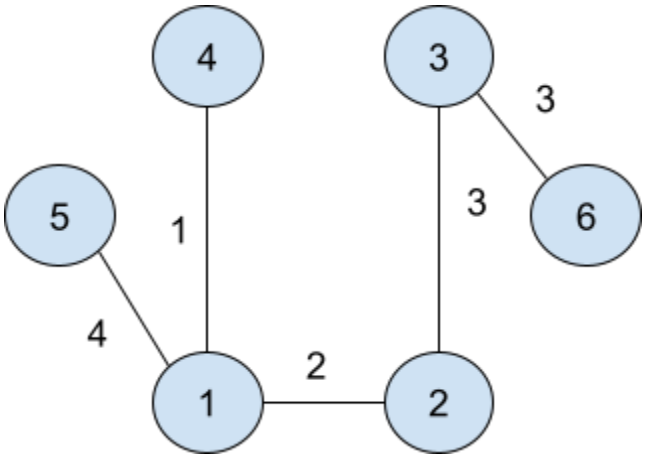
This is a possible spanning tree of the above example, A graph can have multiple Spanning Trees.
There are no restrictions on the number of spanning trees possible in a graph; it solely depends on the graph.

Now there will be some cost associated with the spanning trees as we traverse them, so the spanning tree with the least sum is the Minimum Spanning Tree for that graph. It can also be multiple but all of them will have the minimum cost.

Eg.



MST :



There are two algorithms that are mainly used for solving MST problems :

- Prims
- Kruskal