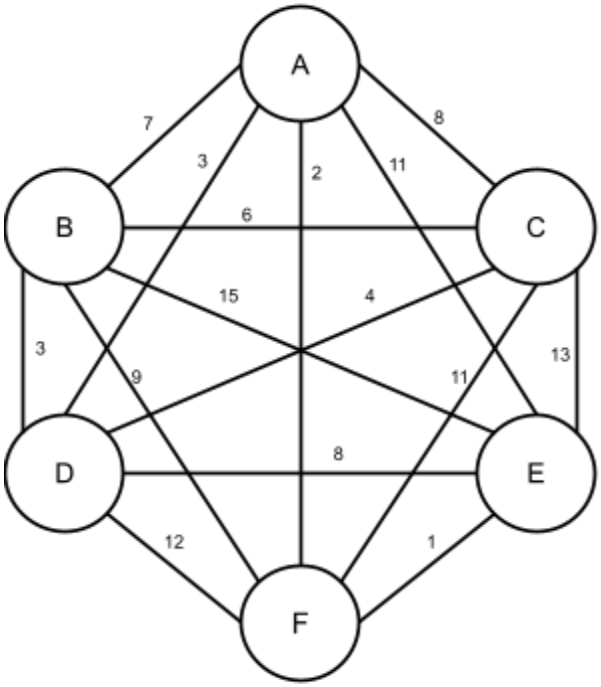
ENSF 338 - Lab 8: Exercise 3

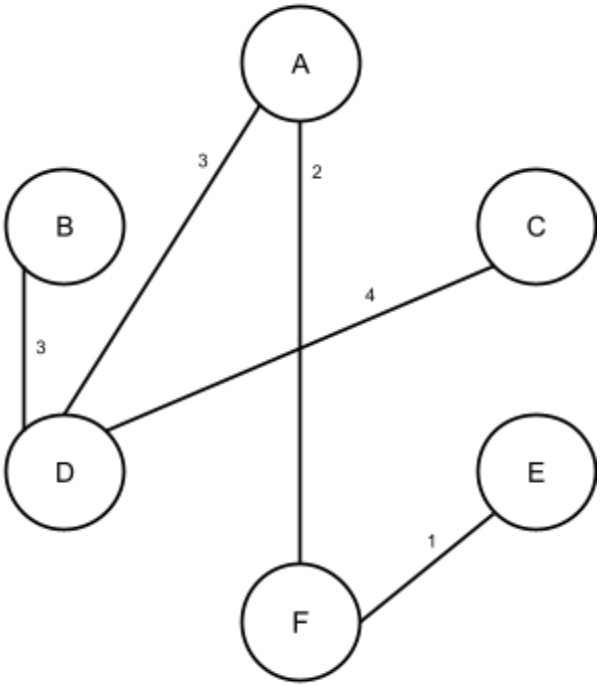
1. *Explain what a minimum spanning tree is, with an example (a simple graph with 5 to 10 nodes is sufficient)*

A Minimum Spanning Tree (MST) is a subset of edges from a given undirected graph. The goal is to find a tree that connects all the vertices together while minimizing the total weight of the edges. The algorithm works by iteratively selecting the shortest edge that connects a vertex not yet included in the MST to a vertex already in the MST. This process continues until all vertices are included, forming a tree without any cycles. There are various algorithms to find an MST, such as Prim's algorithm and Kruskal's algorithm. Both algorithms guarantee the construction of an MST, though they may produce different trees for the same input graph.

Full Undirected Graph:



Minimum Spanning Tree:



Cost = 3 + 2 + 3 + 4 + 1 = 13