Algorithms : Assignment 3

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Problem

The assignment is to implement travelling salesman problem algorithm for the given graph in Figure 1. The final output should be the minimum cost path starting from **A** and minimum cost value.

Solution

This is a slightly different version of the Travelling Salesman Problem(TSP) discussed in the class. In textbook and class a complete graph is chosen for simplicity. Complete graph means every node is connected to every other node. But given graph is not a complete graph. Also we need to print the path by means we have to store the path and finally backtrack.

By taking the pseudo-code from the textbook and with a bit experimentation, arrived at an rough implementation. The main changes here are

1. Converting a Un-complete graph to a complete graph by setting edge length $= \infty$ when there is no edge between two nodes.

2. Implementing book keeping for path construction.

Code can also be found here : Assignment3

Final Output

As I start from my home **A** and visit the friends home in the following order.

$$A \rightarrow C \rightarrow F \rightarrow G \rightarrow E \rightarrow D \rightarrow B \rightarrow A$$
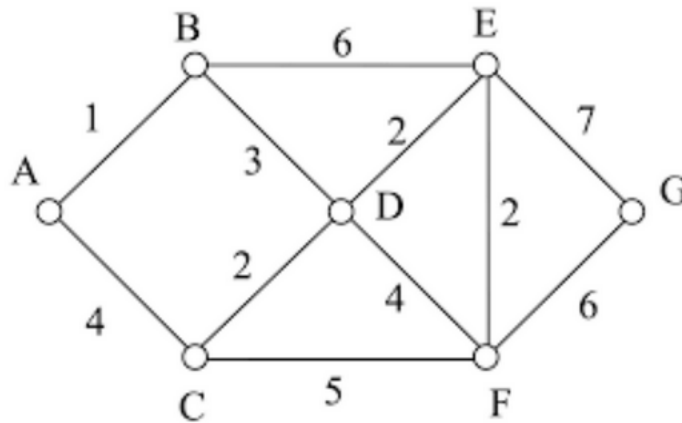$$Pathcost = 4 + 5 + 6 + 7 + 2 + 3 + 1 = 28$$

Figure 1: Given friends home connected graph