**Nithin Das, CWID: 10422784, Date: 10/17/19 Assignment W&A 4th Edition, Ch 5, Q 30, Page 266**

I pledge on my honor that I have not given or received any unauthorized assistance on this

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Signature: NITHIN DAS

Date: 10/17/2019

**Management Overview**

* **Problem Statement**

To specialize the general network flow model so that a shortest path from node 1 to node 10 can be achieved.

* **Data Sources**

Network structure and arc distance

* **Model Approach**
* Enter all the nodes for the Origin and Destination, and respective distances
* Calculate the net outflow for reach node as SUMIF(Origin, node, Flow)- SUMIF(Destination, node, Flow )
* Add flow balance constraint with node 1 being 1 ,node 10 being -1 and all other nodes as 0.
* Calculate the total distance as the SUMPRODUCT(Distance, Flow)
* Use Solver to minimize the total distance
* **Solution**

Results:

The total distance to be travelled is 198 miles.

Yes, the optimal solution of the total distance to be travelled is the same as original model.

* **Recommendations**

Even if Maude walks either directions of the arcs for all the nodes, the optimal solution will not change