Module 07 – Maximal Flow

Exploratory Data Analysis

*In this section, you should perform some data analysis on the data provided to you. Please format your findings in a visually pleasing way and please be sure to include these cuts:*

* *Make a visual graph of your data like what we saw for the sample problem*
  + <https://excalidraw.com>
  + <https://mermaid.live>
  + <https://dreampuf.github.io/GraphvizOnline>
  + Powerpoint/Word

A diagram of a network

AI-generated content may be incorrect.

Model Formulation

*Write the formulation of the model into here prior to implementing it in your Excel model. Be explicit with the definition of the decision variables, objective function, and constraints.*

126X 01+103X 06+121X 15+154X 23 +152X 25 +205X 26+202X 37 +253X 45 +47 +243X 57 +301X 52 +203X 72

​Node 0: X 01+X 06=S

Node 1: X 01=X 12+X 15

Node 2: X 12​+X 52=X 23+X 25+X 26

Node 3: X 23+X 63=X 34+X 37

Node 4: 34+X 54=X 45+X 47

Node 5: 15+X 25+X 45=X 52+X 57

Node 6: 06+X 26=X 63

Node 7: =X 37+X 47+X 57 =S

Model Optimized for Maximal Flow

*Implement your formulation into Excel and be sure to make it neat. This section should include:*

* *A screenshot of your optimized final model (formatted nicely, of course)*

*A screenshot of a computer

AI-generated content may be incorrect.*

* *A text explanation of what your model is recommending, especially any identified bottlenecks*

*Each node has balanced inflow and outflow, meaning the network is correctly distributing the available flow.*

* *Update your graph from the EDA section to bold/color the links being used (and show how much is going through that link)*

A screenshot of a computer

AI-generated content may be incorrect.

*Model Stipulation Alternative*

*Identify the bottleneck*

*-Using a copy of the network, show how many units reach each node*

*-Identify the nodes that are underutilized and those that are at capacity with different colors*

*-Write a brief statement on what would help increase the optimal solution*

Minimize Hedge Cost Edges

*A diagram of a network

AI-generated content may be incorrect.*