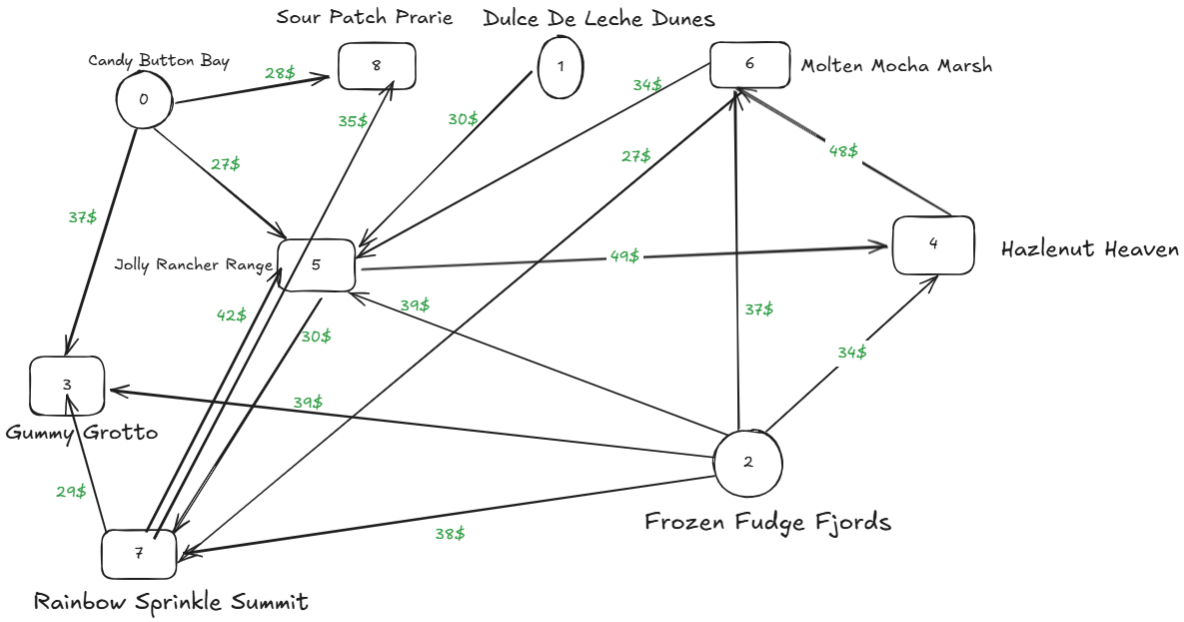
Module 06 – Transshipment Problem

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:

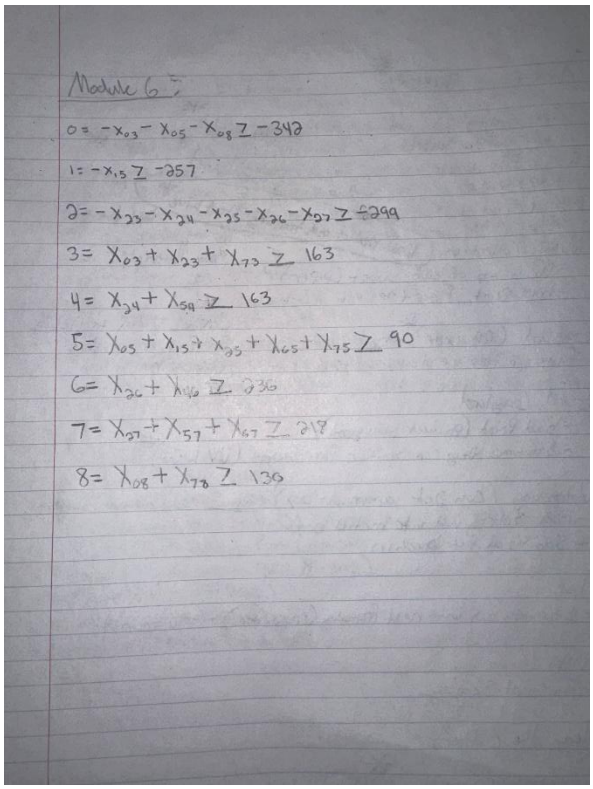
- *Make a visual graph of your data like what we saw for the sample problem*
    - https://excalidraw.com
    - https://mermaid.live
    - https://dreampuf.github.io/GraphvizOnline
    - Powerpoint



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.
Hint: This one differs a bit from the sample problem in terms of Balance-of-Flow

MIN =
37x03+27x05+25x08+30x15+39x23+34x24+39x25+37x26+38x+27+48X46+49x54 +30x57+34x65+27x67+29x73+42x75+35x78



Total Transportation Cost ->	$	35,368.00

Ship	From		To	Unit Cost
163	0 Candy Button Bay	3	Gummy Grotto	$ 37.00
49	0 Candy Button Bay	5	Jolly Rancher Range	$ 27.00
130	0 Candy Button Bay	8	Sour Patch Prairie	$ 25.00
257	1 Dulce de Leche Dunes	5	Jolly Rancher Range	$ 30.00
0	2 Frozen Fudge Fjords	3	Gummy Grotto	$ 39.00
163	2 Frozen Fudge Fjords	4	Hazelnut Haven	$ 34.00
0	2 Frozen Fudge Fjords	5	Jolly Rancher Range	$ 39.00
136	2 Frozen Fudge Fjords	6	Molten Mocha Marsh	$ 37.00
0	2 Frozen Fudge Fjords	7	Rainbow Sprinkle Summit	$ 38.00
0	4 Hazelnut Haven	6	Molten Mocha Marsh	$ 48.00
0	5 Jolly Rancher Range	4	Hazelnut Haven	$ 49.00
216	5 Jolly Rancher Range	7	Rainbow Sprinkle Summit	$ 30.00
0	6 Molten Mocha Marsh	5	Jolly Rancher Range	$ 34.00
0	6 Molten Mocha Marsh	7	Rainbow Sprinkle Summit	$ 27.00
0	7 Rainbow Sprinkle Summit	3	Gummy Grotto	$ 29.00
0	7 Rainbow Sprinkle Summit	5	Jolly Rancher Range	$ 42.00
0	7 Rainbow Sprinkle Summit	8	Sour Patch Prairie	$ 35.00

	Nodes	Inflow	Outflow	Net Flow	Supply/Demand
0	Candy Button Bay	0	342	-342	-342
1	Dulce de Leche Dunes	0	257	-257	-257
2	Frozen Fudge Fjords	0	299	-299	-299
3	Gummy Grotto	163	0	163	163
4	Hazelnut Haven	163	0	163	163
5	Jolly Rancher Range	306	216	90	90
6	Molten Mocha Marsh	136	0	136	236
7	Rainbow Sprinkle Summit	216	0	216	218
8	Sour Patch Prairie	130	0	130	130

Model Optimized for Minimal Transportation Cost

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

- *A text explanation of what your model is recommending*

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

Model with Stipulation

Please copy the tab of your original model before continuing with the next part to avoid messing up your original solution.

Follow these steps to complete this section:

1. *Describe the necessity of the Balance-of-Flow for this problem type*
2. *What happens when you change your model to make Total Supply > Total Demand (i.e. add 115 units to one of the sources)*
3. *What happens when you rerun your model?*
4. *What do you need to change to make your model work again?*
5. *Make the changes and report on your findings.*
    a. *PS there is a small chance that the source you added 115 to may make your model infeasible. If so, add the 115 units to a different source.*