COSC 364 – Assignment 2

Isaac Foster – 64555890

Zachary Sanson – 58520526

# Formulas (check/re-do formulas)

**Minimize Function:**

This is our minimization function which we will introduce a new variable for the utilization of load on each transit node. In doing so we will also need to introduce a new constraint where so that is not smaller than the total load on each transit node.

**Demand Volume Constraint:**

This defines the constraint where the sum of the path flows () between the source and destination nodes () should add up to the given demand volume ().

* Expand on this?

**Capacity Constraint:**

*Capacity 1:*

*Capacity 2:*

Each path flow () between the nodes should not exceed the given capacity of a link between; the source nodes transit nodes () or transit nodes destination nodes (). To optimise this, we must get the capacity between these links to be as close to / equal to the demand volume ().

**Transit Load Constraint:**

**Binary Variable Constraint:**

Our problem describes that each demand volume must be split over exactly two different paths. To do so we check whether the demand flow is used over a given path or note. This is expressed by where means that the path between is already used and meaning the path isn’t used.

**Path Flow:**

**Bounds:**

We require that all variables that have been introduced to meet the non-negativity constraints. *(Expand on why?)* To do so the path flows from must be non-negative or .

**Binaries:**

# Results