**Assignment**: Your town doesn’t have any donut shops and a nearby town has two. Everyone in your town loves donuts but dread the idea of going to the nearby town just to get a donut. You figure out that you can buy in bulk from these two shops and resell them in your town. After conducting a survey, you find out that, oddly enough, if you were to buy 500 glazed, 500 powdered, and 500 filled donuts you could meet the demand. The problem is that one donut shop has a limit of 1000 donuts per customer each day and the other shop has a limit of 600. Develop a network model to determine how to minimize the daily cost of buying the donuts.

|  |  |  |  |
| --- | --- | --- | --- |
| Donuts |  |  |  |
| Cost per Donut |  |  |  |
|  | **Glazed** | **Powdered** | **Filled** |
| Donut Shop 1 | $0.20 | $0.40 | $0.50 |
| Donut Shop 2 | $0.50 | $0.40 | $0.30 |

**Discussion:**

This is an example of an assignment problem where donuts are bought from 2 different donut shops based on how many you’re allowed to buy at each shop. The decision is hence how many donuts of each type to get from each shop. The constraints must endure the total number of checks assigned to a site does not exceed how many you’re allowed to buy, and you meet the demand for the town. The objective is to minimize the daily cost.

**Model.**

Parameters:

: *Demand of donut ,*

: *Donuts allowed to buy at shop ,*

: *Cost of buying donut ,*

Decisions:

: *Number of donuts that I should by at shop , ,*

Objective: *Minimize Cost*

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Constraints:

Can’t buy more donuts allowed at location

2) Buying of donuts to meet demand

(3) Non- negative number donuts bought

Excel solution:

