INSTITUTE OF QUALITY & TECHNOLOGY MANAGEMENT
UNIVERSITY OF THE PUNJAB

Class: BSc Industrial Engineering & Management **Subject:** Operations Research – 1
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Lab Activity: Transportation Problem

Problem # 1:

Punjab Flour Mill has four branches A, B, C & D and four warehouses 1, 2, 3, and 4. Production, demand and transportation costs are given below:

PRODUCTION (TONES)	DEMAND (TONES)
A – 35	1 – 70
B – 50	2 – 30
C – 80	3 – 75
D – 65	4 – 55

Transportation Costs (in Rs):

	1	**2**	**3**	**4**
A	10	7	6	4
B	8	8	5	7
C	4	3	6	9
D	7	5	4	3

find the optimal solution using Excel Solver and Python PuLP.

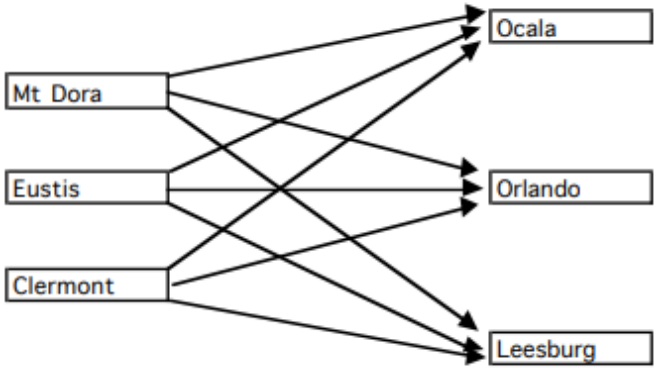
Problem # 2:

Tropicsun is a leading grower and distributor of fresh citrus products with three large citrus groves scattered around central Florida in the cities of Mt. Dora, Eustis, and Clermont. Tropicsun currently has 275,000 bushels of citrus at the grove in Mt. Dora, 400,000 bushels at the grove in Eustis, and 300,000 at the grove in Clermont.

Tropicsun has citrus processing plants in Ocala, Orlando, and Lessburg with processing capacities to handle 200,000, 600,000, and 225,000 bushels, respectively. Tropicsun contracts with a local trucking company to transport its fruit from the groves to the processing plants. The trucking company charges a flat rate for every mile that each bushel of fruit must be transported. Each mile a bushel of fruit travels is known as a bushel-mile. The following table summarizes the distances (in miles) between the groves and processing plants:

	to Ocala	to Orlando	to Leesburg
from Mt. Dora	21	50	40
from Eustis	35	30	22
from Clermont	55	20	25

Tropicsun wants to determine how many bushels to ship from each grove to each processing plant in order to minimize the total number of bushel-miles.



find the optimal solution using Excel Solver and Python PuLP.