PESQUISA OPERACIONAL I

Prof. Dr. José Vicente Caixeta Filho
Depart. de Economia, Administração e Sociologia
ESALQ - Universidade de São Paulo
jose.caixeta@usp.br

MODELOS DE TRANSPORTE

- definir se uma determinada carga deve ser transportada
- identificação do destino final da carga a ser transportada
- seleção do veículo e/ou modalidade de transporte a serem utilizados
- identificação da melhor rota a ser seguida

FÁB.	DEPÓSITO 1	2	3	PROD.
1	8	5	6	120
2	15	10	12	80
3	3	9	10	80
CAP.	150	70	60	280

FÁB.	DEPÓSITO 1	2	3	PROD.
1	8	5	6	120
2	15	10	12	80
3	3	9	10	80
CAP.	150	70	60	**280**

FÁB.	DEPÓSITO 1	DEPÓSITO 2	DEPÓSITO 3	PROD.
1	8	5	6	120
2	15	10	12	80
3	3	9	10	~~80~~ 0
	80	---	---	
CAP.	~~150~~ 70	70	60	

FÁB.	DEPÓSITO 1	2	3	PROD.
1	8	5	6	~~120~~ 50
		70		
2	15	10	12	80

3	3	9	10	~~80~~ 0
	80	---	---	
CAP.	~~150~~ 70	~~70~~ 0	60	

FÁB.	DEPÓSITO 1	2	3	PROD.
1	8	5	6	~~120~~ ~~50~~ 0
	---	70	50	
2	15	10	12	80

3	3	9	10	~~80~~ 0
	80	---	---	
CAP.	~~150~~ 70	~~70~~ 0	~~60~~ 10	

FÁB.	DEPÓSITO 1	2	3	PROD.
1	8	5	6	~~120~~ ~~50~~ 0
	---	70	50	
2	15	10	12	~~80~~ 70
		---	10	
3	3	9	10	~~80~~ 0
	80	---	---	
CAP.	~~150~~ 70	~~70~~ 0	~~60~~ ~~10~~ 0	

FÁB.	DEPÓSITO 1	DEPÓSITO 2	DEPÓSITO 3	PROD.
1	8 ---	5 70	6 50	~~120~~ ~~50~~ 0
2	15 70	10 ---	12 10	~~80~~ ~~70~~ 0
3	3 80	9 ---	10 ---	~~80~~ 0
CAP.	~~150~~ ~~70~~ 0	~~70~~ 0	~~60~~ ~~10~~ 0	

FÁB.	DEPÓSITO 1	DEPÓSITO 2	DEPÓSITO 3	PROD.
1	8 ---	5 70	6 50	120
2	15 70	10 ---	12 10	80
3	3 80	9 ---	10 ---	80
CAP.	150	70	60	280

C = $ 2.060,00

FÁB.	DEPÓSITO 1	2	3	PROD.
1	8	5	6	120
2	15	10	12	80
3	3	9	10	80
CAP.	150	70	60	280

FÁB.	DEPÓSITO 1	2	3	PROD.
1	8	5	6	120
2	15	10	12	80
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FÁB.	DEPÓSITO 1	2	3	PROD.
1	8	5	6	120

2	15	10	12	~~80~~ 10
		70		
3	3	9	10	80

CAP.	150	~~70~~ 0	60	

FÁB.	DEPÓSITO 1	2	3	PROD.
1	8	5	6	120

2	15	10	12	~~80~~ ~~10~~ 0
	---	70	10	
3	3	9	10	80

CAP.	150	~~70~~ 0	~~60~~ 50	

FÁB.	DEPÓSITO 1	2	3	PROD.
1	8	5	6	120

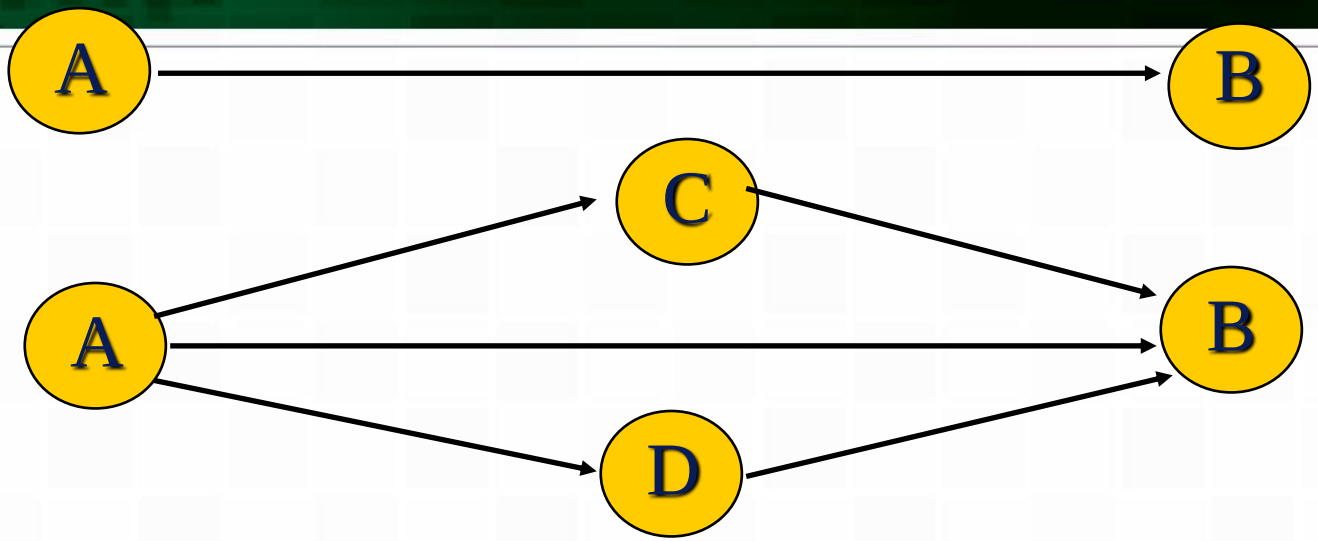
2	15	10	12	~~80~~ ~~10~~ 0
	---	70	10	
3	3	9	10	~~80~~ 0
	80	---	---	
CAP.	~~150~~ 70	~~70~~ 0	~~60~~ 50	

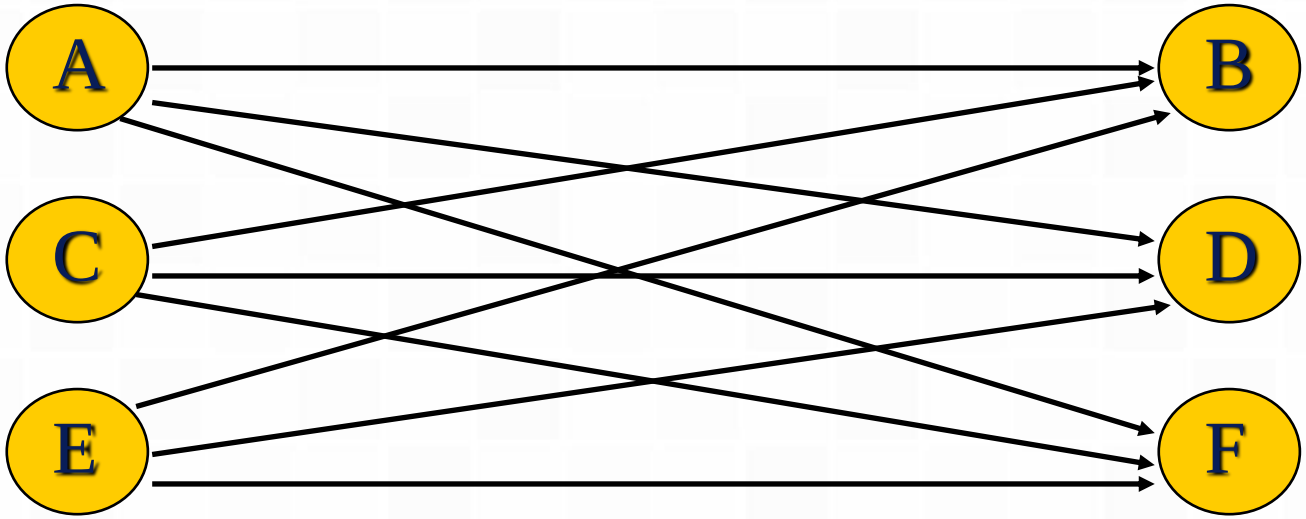
FÁB.	DEPÓSITO 1	2	3	PROD.
1	8	5	6	~~120~~ 70
		---	50	
2	15	10	12	~~80~~ ~~10~~ 0
	---	70	10	
3	3	9	10	~~80~~ 0
	80	---	---	
CAP.	~~150~~ 70	~~70~~ 0	~~60~~ ~~50~~ 0	

FÁB.	DEPÓSITO 1	2	3	PROD.
1	8	5	6	~~120~~ ~~70~~ 0
	70	---	50	
2	15	10	12	~~80~~ ~~10~~ 0
	---	70	10	
3	3	9	10	~~80~~ 0
	80	---	---	
CAP.	~~150~~ ~~70~~ 0	~~70~~ 0	~~60~~ ~~50~~ 0	

FÁB.	DEPÓSITO 1	DEPÓSITO 2	DEPÓSITO 3	PROD.
1	8 | 70	5 | -----	6 | 50	120
2	15 | -----	10 | 70	12 | 10	80
3	3 | 80	9 | -----	10 | -----	80
CAP.	150	70	60	280

C = $ 1.920,00


A
B
C
A
B
D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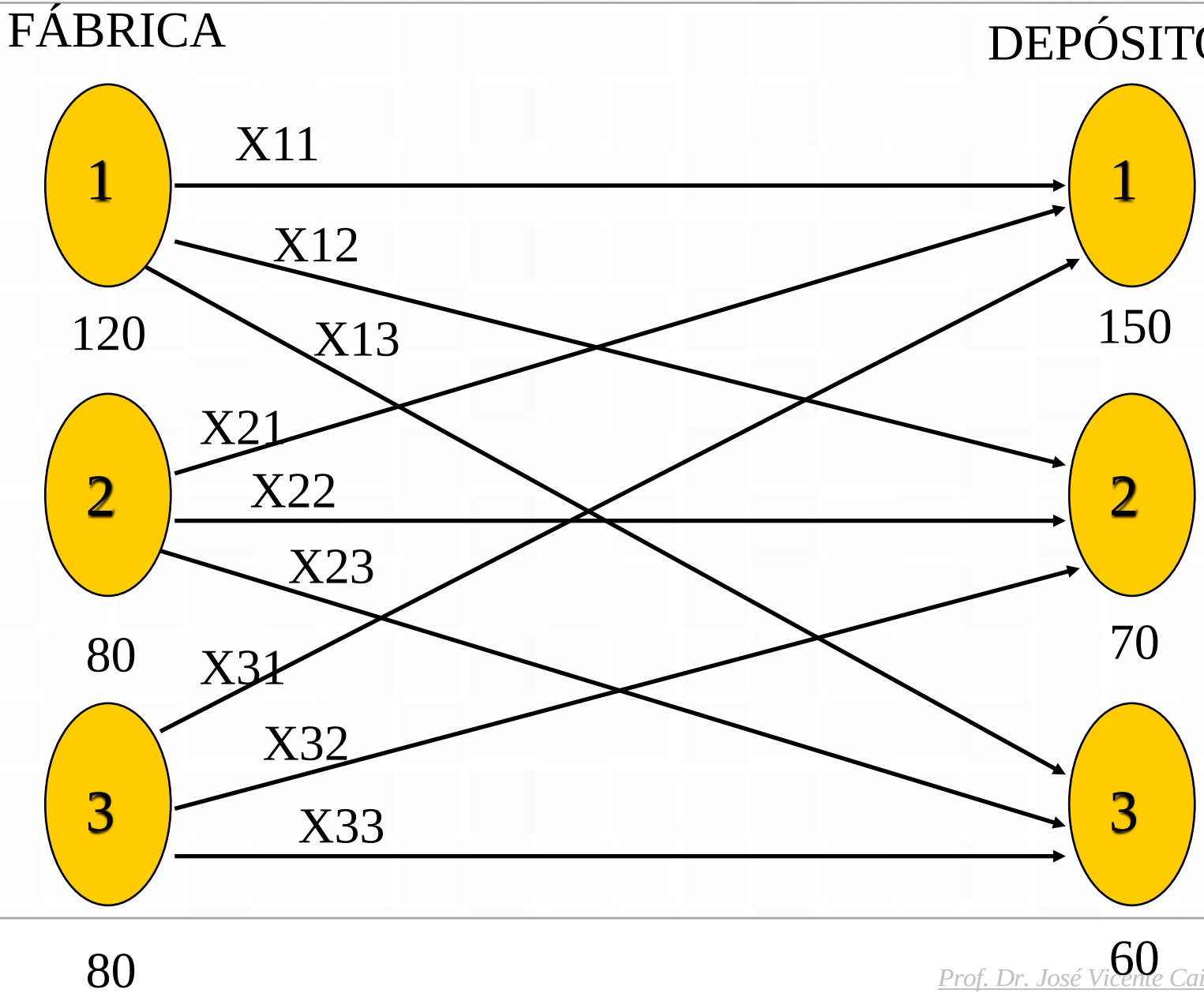
FÁBRICA
DEPÓSITO
1
2
3
1
2
3
X11
X12
X13
X21
X22
X23
X31
X32
X33
120
80
80
150
70
60

Assim sendo, tem-se:

Min 8X11 + 5X12 + 6X13 + 15X21 + 10X22 + 12X23 + 3X31 + 9X32 + 10X33

sujeito a

FAB1) X11 + X12 + X13 = 120
FAB2) X21 + X22 + X23 = 80
FAB3) X31 + X32 + X33 = 80

DEP1) X11 + X21 + X31 = 150
DEP2) X12 + X22 + X32 = 70
DEP3) X13 + X23 + X33 = 60

X11, X12, X13, X21, X22, X23, X31, X32, X33 >= 0

$$Min\ Z = \sum_{i=1}^{m}\sum_{j=1}^{n} c_{ij}\, x_{ij}$$

sujeito a

$$\sum_{j=1}^{n} x_{ij} \leq s_i \quad , \quad para \quad i = 1,..., m$$

$$\sum_{i=1}^{m} x_{ij} \geq d_j \quad , \quad para \quad j = 1,..., n$$

$$x_{ij} \geq 0 \quad , \quad para \quad i = 1,..., m \quad e \quad j = 1,..., n$$

onde: c_{ij} = custo do transporte entre *i* e *j*;

x_{ij} = quantidade a ser movimentada de *i* até *j*;

s_i = quantidade ofertada em *i*;

d_j = quantidade demandada em *j*.

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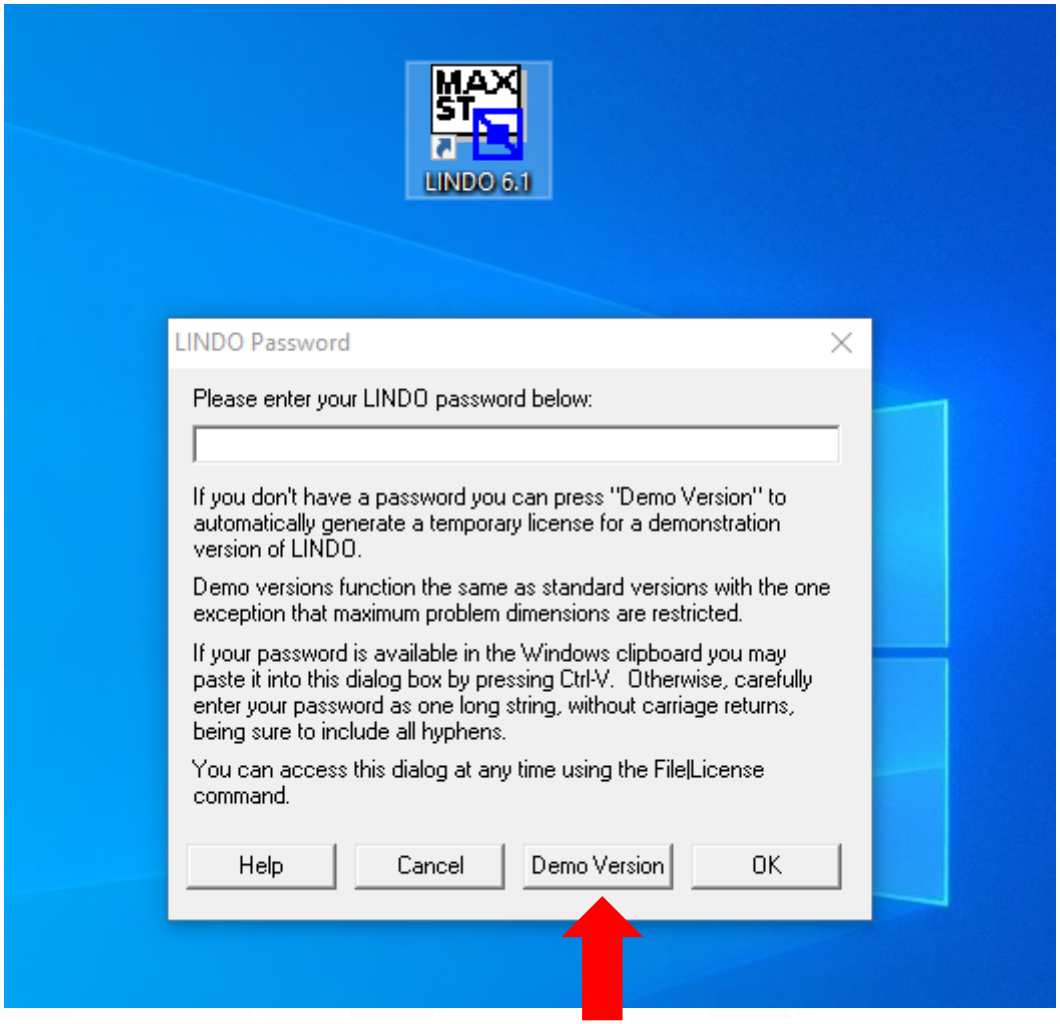
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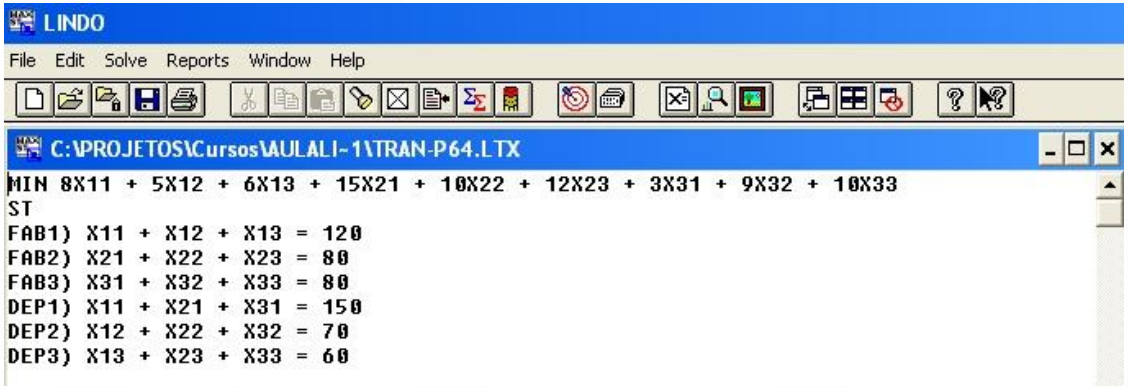

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