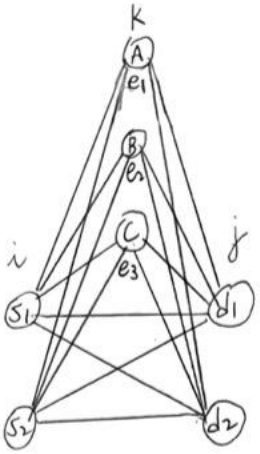
HW6

R12521601 詹承諺



$$\min \sum_{i,k} c_{ik} x_{ik}(P_k) + \sum_{k,j} r_{kj} y_{kj}(P_k) + \sum_{i,j} w_{ij} z_{ij} + \sum_{k} m_k P_k$$

s.t.

$$\sum_{k} x_{ik}(P_k) + \sum_{j} z_{ij} \le s_i, \text{ for all } i$$

$$\sum_{k} y_{kj}(P_k) + \sum_{i} z_{ij} \ge d_j, \text{ for all } j$$

$$\sum_{k} P_k \le 1$$

$$\sum_{i} x_{ik}(P_k) \le e_k, \text{ for all } k$$

$$\sum_{i} x_{ik}(P_k) \ge \sum_{j} y_{kj}(P_k)$$

$$x_{ik}, y_{kj}, z_{ij} \ge 0$$

$$P_k \in (0,1)$$

c_{ik}: the cost per unit transportation of products from supply point i to warehouse k

r_{kj}: the cost per unit transportation of products from warehouse k to demand location j

w_{ij}: the cost per unit transportation of products from supply point i to demand location j

x_{ik}: the decision of how many units of products to be transported from supply location i to warehouse k

y_{kj}: the decision of how many units of products to be transported from warehouse k to demand location j
z_{ij}: the decision of how many units of products to be transported from supply point i to demand location j
e_k: the annual capacity of products that warehouse k can store
m_k: warehouse 1-year cost
P_k: rent the warehouse or not (0 or 1)

Answer(by gurobi):
x_{11}: 0
x_{12}: 0
x_{13}: 0
x_{21}: 0
x_{22}: 0
x_{23}: 70
y_{11}: 0
y_{12}: 0
y_{21}: 0
y_{22}: 0
y_{31}: 20
y_{32}: 50
z_{11}: 50
z_{12}: 0
z_{21}: 5
z_{22}: 0
p_1: 0
p_2: 0
p_3: 1
Obj: 623