Wonder Market

Sets

S   Stores
D   Distribution centres

Data

CT_{ds} The Cost of Transport from each distribution centre to each store $ds \in DS$
WD_s Weekly Demand at each store, in truckloads $s \in S$
CD_d Capacity Limitation at each distribution centre $d \in D$

Variables

X_{sd} The number of truckloads delivered to each store s, from each Distribution centre d

$$sd \in SD$$

Objective

$$\min \sum_{d \in D} \sum_{s \in S} CT_{ds} X_{sd}$$

Constraints

$$\sum_{d \in D} X_{sd} = WD_s \qquad \forall s \in S$$

$$\sum_{s \in S} X_{sd} \leqslant CD_d \qquad \forall d \in D$$

$$\sum_{d \in \{1,2\}} \sum_{s \in S} X_{ds} \leqslant 85 \qquad \text{where } d \in \{1,2\} \text{ are the distribution centres north of the river}$$

$$X_{sd} \geqslant 0 \qquad \forall s \in S, \forall d \in D \quad \text{and} \quad X_{sd} \text{ is an integer}$$