**Assignment 5 (Section28 Team 2)**

**Decision Variable**:

X (w) = the amount of furniture stored in warehouse w

X (w, r) = the amount of furniture sent from warehouse w to location r

F (w) = the binary variable that represents whether a warehouse is rented

* w = atl, buf, chi, cin, det, pit, ric, stl
* r = 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21,22

**Objective Function**:

FC (w) = the fixed cost of renting a warehouse w

VC (w) = the variable cost of renting a warehouse w

TC (w, r) = the cost of sending a unit of furniture from warehouse w to location r

Minimize ∑ FC (w) \* F (w) + VC (w) \* X (w) + TC (w, r) \* X (w, r)

**Constraints**:

X (r) = the amount of furniture sent to location r.

D (r) = the amount of furniture demanded in location r.

U (w) = the maximum allowed amount of furniture stored in warehouse w

L (w) = the minimum allowed amount of furniture stored in warehouse w

* X (r) >= D(r)
* X (w) >= ∑ X (w, r)
* X (w) >= F (w) \* L (w)
* X (w) <= F (w) \* U (w)
* X (w) >= 0

**Optimal Solution**:

The Optimal Cost is 61475

* Rent the warehouse in atl, buf, ric, and stl.
* Store 1325 furniture in atl, 1250 in buf, 1000 in ric, and 1500 in stl.