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! T & P Transportation problem in LINGO form;
! copy and paste this document into LINGO;

SETS:

! The simple/primitive sets- these set will eventually be the parameters;
! Unlike the previous problem, each of these sets have two defining
characteristics: Total number of shipments and resource constraints;

Cannery: CanProduce, Output;
Warehouse: WarProduce, Allocation;

! A derived set maps the warehouses to the canneries, creating the matrix
given in the original problem;
! makes sure to get the order right--> row then colum;
! notice that each matrix term has both a cost and an amount;
Links(Cannery, Warehouse): ShipCost, Ship;


ENDSETS

DATA:

! Input the Canneries and their constraints;
Cannery, Output =
     C1 75
     C2 125
     C3 100;

! Input the Warehouses and their constraints;
Warehouse, Allocation =
    W1 80
    W2 65
    W3 70
    W4 85;


! Input the shipping costs per truckload as given in the original shipping
cost matrix;
ShipCost = 464 513 654 867
           352 416 690 791
           995 682 388 685;

ENDDATA


! Minimize total cost;
MIN = @SUM(Links: ShipCost*Ship);


! cannery restraints;
! For each cannery i;
@FOR(Cannery(i):
! sum the warehouse truckloads for every warehouse and set them equal to the
output constraint (output);
@SUM(Warehouse(j): Ship(i,j)) = Output(i));
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! Warehouse constraints;
! For each machine i;
@FOR(Warehouse(j):
! sum the cannery truckloads for every cannery and set them equal to the
output constraint (allocation);
@SUM(Cannery(i): Ship(i,j)) = Allocation(j));
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