b'

Question in Amazon Interview

- Last Updated :\n29 Apr, 2015

I have gone through few rounds while rest of the round questions are standard ones and already in the internet, I couldn\xe2\x80\x99t find this problem and couldn\xe2\x80\x99t solve properly.

Problem:

There are Items[I1, I2, I3, I4] available in warehouses [W1, W2, W3, W4, W5] and serviceable by multiple partners with some shipping cost.

I1 available in W1
\xc2\xa0\xc2\xa0\xc2\xa0\xc2\xa0\xe2\x80\x93 serviceable by these partners S1[0.75 -shipping cost/selection cost], S2 [0.74], S3 [0.70]
\xc2\xa0\xc2\xa0\xc2\xa0\xc2\xa0available in W2
\xc2\xa0\xc2\xa0\xc2\xa0\xc2\xa0\xe2\x80\x93 serviceable by these partners S1[0.75], S2 [0.74], S3 [0.70]
\xc2\xa0\xc2\xa0\xc2\xa0\xc2\xa0available in W3
\xc2\xa0\xc2\xa0\xc2\xa0\xc2\xa0\xe2\x80\x93 serviceable by these partners S1[0.80], S2 [0.74], S3 [0.70]

I2 available in W4
\xc2\xa0\xc2\xa0\xc2\xa0\xc2\xa0\xe2\x80\x93 serviceable by these partners S2[0.85], S3 [0.94], S4[0.30]
\xc2\xa0\xc2\xa0\xc2\xa0\xc2\xa0available in W3
\xc2\xa0\xc2\xa0\xc2\xa0\xc2\xa0\xe2\x80\x93 serviceable by these partners S1[0.80], S2 [0.74], S3 [0.70]

I3 available in W1
\xc2\xa0\xc2\xa0\xc2\xa0\xc2\xa0\xe2\x80\x93 serviceable by these partners S1[0.85], S2 [0.55], S3 [0.70]
\xc2\xa0\xc2\xa0\xc2\xa0\xc2\xa0available in W2
\xc2\xa0\xc2\xa0\xc2\xa0\xc2\xa0\xe2\x80\x93 serviceable by these partners S1[0.80], S2 [0.54], S3 [0.70]

I4 available in W4
\xc2\xa0\xc2\xa0\xc2\xa0\xc2\xa0\xe2\x80\x93 serviceable by these partners S2 [0.74], S3 [0.70], S4[0.30]
\xc2\xa0\xc2\xa0\xc2\xa0\xc2\xa0available in W2
\xc2\xa0\xc2\xa0\xc2\xa0\xc2\xa0\xe2\x80\x93 serviceable by these partners S1[0.85], S2 [0.80], S3 [0.70]
\xc2\xa0\xc2\xa0\xc2\xa0\xc2\xa0available in W3
\xc2\xa0\xc2\xa0\xc2\xa0\xc2\xa0\xe2\x80\x93 serviceable by these partners S1[0.80], S2 [0.74], S3 [0.70]

You have to optimally select the items so that total cost will be minimum.

Ex: I can make a shipment from I1, I2, I4 fulfilled by W3 which will cost:
\xc2\xa0\xc2\xa0\xc2\xa0\xc2\xa0\xc2\xa0\xc2\xa0 for partner S1: 2.40
\xc2\xa0\xc2\xa0\xc2\xa0\xc2\xa0\xc2\xa0\xc2\xa0\xc2\xa0 for partner S2: 2.22
\xc2\xa0\xc2\xa0\xc2\xa0\xc2\xa0\xc2\xa0\xc2\xa0\xc2\xa0 for partner S3: 2.10
\xc2\xa0\xc2\xa0\xc2\xa0\xc2\xa0\xc2\xa0\xc2\xa0\xc2\xa0 Another Shipment I3 fulfilled by W2 which will

cost: S2 [0.54]

Total cost: 2.10+0.54 = 2.64 with Shipment SH1 {I1,I2,I4} By S3 and SH2 {I3} by S2

Another possible way
I1, I3, I4 serviceable by W2 by Provider S2 : 2.08
I2 serviceable by W4 by S4: 0.30
Total cost: 2.38

So the shipments with minimum cost can be delivered/selected.

Write a program for the same to get optimum minimum cost for the number of shipments can be delivered from warehouses with shipping cost?

\xe2\x80\x9cIf you ship multiple items in single packet, then the cost will be minimum. Assume Shipment Provider charges per packet and not on the weight and packing charges will be minimum. Idea is to consolidate/aggregate as many items as possible to one location so that packaging cost is minimum and on top of that you should consider warehouse selection cost.\xe2\x80\x9d

\xc2\xa0

'