Association Rule Mining Homework
Points: 100 points

Cosmetics Purchases

The data shown in the following table are a subset of a dataset on cosmetic purchase given in a binary matrix form. The store wants to analyze associations among purchases of these items for purposes of point-of-sale display, guidance to sales personnel in promoting cross sales, and guidance for piloting an eventual time-of-purchase electronic recommender system to boost cross sales.

Trans. #	Bag	Blush	Nail Polish	Brushes	Concealer	Eyebrow Pencils	Bronzer
1	0	1	1	1	1	0	1
2	0	0	1	0	1	0	1
3	0	1	0	0	1	1	1
4	0	0	1	1	1	0	1
5	0	1	0	0	1	0	1
6	0	0	0	0	1	0	0
7	0	1	1	1	1	0	1
8	0	0	1	1	0	0	1
9	0	0	0	0	1	0	0
10	1	1	1	1	0	0	0
11	0	0	1	0	0	0	1
12	0	0	1	1	1	0	1

Data on cosmetics purchases in binary matrix form

Based on the data available,

a) Find all frequent itemsets from the above-given dataset subset with min_support as 30%. Please adopt Apriori algorithm and show your steps.
b) Consider the results of the association rules analysis shown in the result table and for the first and second rows,
    a. Explain the "Conf. %" output and how it is calculated.
    b. Explain the "Support(X)", "Support(Y)" and "Support(X,Y)" output and how it is calculated.
    c. Explain the "Lift ratio" of the rules in the table and how it is calculated.
    d. Explain the rules in the table in words.

Rule #	Conf. %	X	Y	Support(X)	Support(Y)	Support(X,Y)	Lift Ratio
1	81.58	Bronzer, Concealer, Nail Polish	Brushes	76	110	62	3.708
2	80.52	Brushes, Concealer	Bronzer, Nail Polish	77	103	62	3.909