

Quiz 4: Frequent Itemsets (10 points), 15 minutes

Consider the baskets shown on the right (e.g., the first basket has items: 1, 2, and 3). Suppose the support threshold is 3.

1,2,3
1,2,5
1,3,4
2,3,4
1,2,3,4
2,3,5
1,2,4
1,2
1,2,3
2,3,4,5

1. [7 points] Discover all frequent itemsets. Show the candidate itemsets generated during the discovery.

Candidate: 1, 2, 3, 4, 5

Frequent 1-itemsets (singleton): 1, 2, 3, 4, 5 (0.5 point per singleton)

Candidate: (1, 2), (1, 3), (1, 4), (1, 5),

(2, 3), (2, 4), (2, 5),

(3, 4), (3, 5),

(4, 5)

Frequent 2-itemsets: (1, 2), (1, 3), (1, 4), (2, 3), (2, 4), (2, 5), (3, 4) (0.5 point per itemset)

Candidate: (1, 2, 3), (1, 2, 4), (1, 3, 4), (2, 3, 4)

Frequent 3-itemsets: (1, 2, 3), (2, 3, 4) (0.5 point per itemset)

2. [3 points] What is a maximally frequent itemset? Which frequent itemsets discovered above are maximally frequent?

I is maximally frequent if I is frequent and none of I's supersets (if any) is frequent. (1 point)

(1, 2, 3), (2, 3, 4), (1, 4), (2, 5) (0.5 point per itemset)