

**CSE3212 Data Mining
Tutorial Week 5
Association Rules Mining**

1. Given the following L2, what will be the members of C3 according to Apriori algorithm?
L2={{A,B},{A,C},{A,X},{B,X},{X,Y},{X,Z}}

2. Given the following L3, what would be the members of C3 according to Apriori algorithm?
L3={{A,B,C}{A,B,D}, {A,C,D}}

3. Consider the following transactions for association rules analysis:

Transid	Date	Items
100	10/1/2000	bread, milk, juice, cheese
200	12/1/2000	bread, milk, cheese
300	20/2/2000	bread, milk
400	25/2/2000	bread, cheese, juice

- (a) Use the Apriori algorithm for finding frequently itemsets with minimum support of 90% and minimum confidence of 90%.
- (b) Repeat the algorithm for minimum support of 40% and minimum confidence of 90%.

4. A transaction database D contains the transactions:

TID	Items
1	1,3,4
2	2,3,5
3	1,2,3,5
4	2,5

- (a) Use apriori algorithm to find frequently itemsets with minimum support of 70%.
- (b) Generate association rules that have 70% support and 70% confidence from the itemsets in (a).

5. Given the following association rules A->CD and PQ-> R which of the following are true?
- A->C
 - A->D
 - P->R
 - Q->R
 - Q->PR

f. AD->

6. Table 1 shows the students data from week 4 exercise. The data has been coded using coding methods as follow:

Grade: HD into 5, D into 4, C into 3, P into 2 and N into 1.

Database unit and Data mining unit: Pass into 1, Fail into 0.

Gender: Female into 0, Male into 1.

Work: Yes into 1, No into 0.

Age: < 25 into 1, between 26 and 30 into 2, > 30 into 3.

Record Number	Year	Average Grade	Database unit	Data Mining Unit	Gender	Work	AGE
1	2	2	1	0	0	1	2
2	2	5	1	1	1	0	1
3	2	4	0	1	0	1	3
4	3	4	1	1	1	1	2
5	3	2	0	0	0	1	2
6	3	3	0	1	1	1	2
7	3	3	1	1	1	0	2
8	3	4	1	1	0	1	2
9	3	5	1	1	1	1	3
10	3	4	1	1	1	0	2

Table 1. Students data

Fill in the transaction database in table 2 by converting each of the rows in table 1 into a 'transaction' record in a transaction database. To do this, you need to assume that item of a transaction is represented by an instance of an attribute in table 1. For example, year=2 (Y2), gender=1(Ge1), gender=0(Ge0) are items.

TID	Items
1	Y=2, G=2,DB=1,DM=0,Ge=0,W=1,A=2
2	...

Table 2. Transaction database