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Lab-7 (Part I)

4 Apply Apriori Algorithm on given dataset calculate support and confidence then find the association

1.

TID	Items
100	1 3 4
200	2 3 5
300	1 2 3 5
400	2 5

Ans →

C1

Item set	set
1	2
2	3
3	3
4	1 → Exclude
5	3

L2

Itemset	min support
1	2
2	3
3	3
5	3

C2

Itemset
{1,2}
{1,3}
{1,5}
{2,3}
{2,5}
{3,5}

C2

Itemset	min support	
{1,2}	1	X
{1,3}	2	
{1,5}	1	X
{2,3}	2	
{2,5}	3	
{3,5}	2	

L2

itemset	min support
{1,3}	2
{2,3}	2
{2,5}	3
{3,5}	2

C3

itemset	min support	
{1,2,3}	1	X
{1,3,5}	1	X
{2,3,5}	2	

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⇒ confidence :-

$A \rightarrow B$

$2 \wedge 3 \rightarrow 5$

$$\frac{\text{support count } (2 \wedge 3 \wedge 5)}{\text{support count } (2 \wedge 3)} = \frac{2}{2} = 1$$

⇒ Association Rules

Association Rule	support	confidence	inc(%)
$2 \rightarrow 3 \wedge 5$	2	2/3 = 0.66	66%
$3 \rightarrow 2 \wedge 5$	2	2/3 = 0.66	66%
$5 \rightarrow 2 \wedge 3$	2	2/3 = 0.66	66%
$2 \wedge 3 \rightarrow 5$	2	2/2 = 1	100%
$2 \wedge 5 \rightarrow 3$	2	2/3 = 0.66	66%
$3 \wedge 5 \rightarrow 2$	2	2/2 = 1	100%

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2.

TID	Items
1	Bread, milk
2	Bread, Diapes, Beer, Eggs
3	milk, Diapes, Beer, cola
4	milk, Diapes, Beer, cola
5	Bread, milk, Diapes, cola

Ans ⇒)

	item	min support
1	Bread	3
2	milk	4
3	Diapes	4
4	Beer	3
5	cola	3
6	Eggs	1 ✗

itemset	min support
1	3
2	4
3	4
4	3
5	3

itemset	min support	
{1,2}	2	
{1,3}	2	
{1,4}	1	✗
{1,5}	1	✗
{2,3}	3	
{2,4}	2	
{2,5}	3	
{3,4}	3	
{3,5}	3	
{4,5}	2	

itemset	min. support
{1,2}	2
{1,3}	2
{2,3}	3
{2,4}	2
{2,5}	3
{3,4}	3
{3,5}	3
{4,5}	2

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Itemset	min support	
{1,2,3}	1	x
{1,2,4}	0	x
{1,2,5}	1	x
{1,3,4}	1	x
{1,3,5}	1	x
{1,4,5}	1	x
{2,3,4}	2	
{2,3,5}	3	
{2,4,5}	2	
{3,4,5}	2	

Itemset	minsupport
{2,3,4}	2
{2,3,5}	3
{2,4,5}	2
{3,4,5}	2

Itemset	minsupport
{2,3,4,5}	2

Association Rule	support	confidence	in(%)
2 → 3^4^5	2	2/4 = 0.50	50%
3 → 2^4^5	2	2/4 = 0.50	50%
4 → 2^3^5	2	2/3 = 0.66	66%
5^2^3^4	2	2/3 = 0.66	66%
2^3 → 4^5	2	2/3 = 0.66	66%
2^4 → 3^5	2	2/2 = 1	100%
~~2^5 → 3^4~~	~~2~~	2/3 = 0.66	66%
3^4 → 2^5	2	2/3 = 0.66	66%
3^5 → 2^4	2	2/3 = 0.66	66%
4^5 → 2^3	2	2/2 = 1	100%
2^3^4 → 5	2	2/2 = 1	100%
3^4^5 → 2	2	2/2 = 1	100%
2^4^5 → 3	2	2/2 = 1	100%
2^3^5 → 4	2	2/3 = 0.66	66%