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Lab-7 (Part -1)

★ Apply Apriori Algorithm on given dataset calculate support and comfidence then find the association

1.)

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

Ans →

C_1

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

L_2

Item	min support
1	2
2	3
3	3
5	3

C_2

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

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	in (%)
$2 \rightarrow 3 \wedge 5$	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, Diaper, Beer, Eggs
3	Milk, Diaper, Beer, Cola
4	Milk, Diaper, Beer, Cola
5	Bread, Milk, Diaper, Cola

Ans ⇒

	item	min support	
1	Bread	3	
2	Milk	4	
3	Diaper	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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Item	min support	
{1,2,3}	1	×
{1,2,4}	0	×
{1,2,5}	1	×
{1,3,4}	1	×
{1,3,5}	1	×
{1,4,5}	1	×
{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 = 1.0	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%