

Lab: 7  
Date: 14/6/25

## Unit - 3

1. Apriori Algorithm:

Support :  $\frac{x \cup B}{|T|}$  (Total item)

Confidence :  $C = \frac{A \cup B}{A}$

Que :

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

minimum support = 2

↓ scan 0

C <sub>1</sub>	Item set	Min. support	(2) IS	M.S
	{1}	2	{1}	2
	{2}	3	{2}	3
	{3}	3	{3}	3
	{4}	1 ×	{4}	1
	{5}	3	{5}	3

↓ L<sub>1</sub> ≥ 2 → scan 0 →

C <sub>2</sub>	Item set	Min. sup	(4) IS	M.S.
	{1, 2}	1 ×	{1, 2}	1
	{1, 3}	2	{1, 3}	2
	{1, 5}	1 ×	{1, 5}	1
	{2, 3}	2	{2, 3}	2
	{2, 5}	3	{2, 5}	3
	{3, 5}	2	{3, 5}	2

↓ L<sub>2</sub> → scan 0 →

(3 nij pain one ej lesi)

Item set      Min sup

{1, 2, 3}      1      \*

{1, 3, 5}      1      \*

{2, 3, 5}      2

⇒ Rules Generation

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

↓

$$A \cup B = 2 \wedge 3 \wedge 5 = 2 \quad \text{(support count)} = 0.66$$

$$A \rightarrow B (A \cup B)$$

$$= \frac{2 \wedge 3 \wedge 5}{2 \wedge 3} = \frac{2}{2} = 1$$

$$(1) \quad 2 \wedge 3 \rightarrow 5 = \frac{A \rightarrow B}{A} = \frac{2 \wedge 3 \wedge 5}{2 \wedge 3} = \frac{2}{2} = 1$$

$$(2) \quad 3 \wedge 5 \rightarrow 2 = \frac{A \rightarrow B}{A} = \frac{3 \wedge 5 \wedge 2}{3 \wedge 5} = \frac{2}{2} = 1$$

$$(3) \quad 2 \wedge 5 \rightarrow 3 = \frac{A \rightarrow B}{A} = \frac{2 \wedge 5 \wedge 3}{2 \wedge 5} = \frac{2}{3} = 0.66$$

$$(4) \quad 2 \rightarrow 3 \wedge 5 = \frac{A \rightarrow B}{A} = \frac{2 \wedge 3 \wedge 5}{2} = \frac{2}{3} = 0.66$$



$$(5) \quad 3 \rightarrow 2^1 5 = \frac{A \rightarrow B}{A} = \frac{3^1 2^1 5}{3} = \frac{2}{3} = 0.66$$

$$(6) \quad 5 \rightarrow 2^1 3 = \frac{A \rightarrow B}{A} = \frac{5^1 2^1 3}{5} = \frac{2}{3} = 0.66$$

Que:

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

C <sub>1</sub>	Item Set	Min Support	IS	MS
	{Br}	3	{Br}	3
	{M}	4	{M}	4
	{Be}	3	{Be}	3
	{E}	1	{D}	4
	{D}	4	{C}	3
	{C}	3		

C <sub>2</sub>	IS	MS
	{Br, M}	2
	{Br, Be}	1
	{Br, D}	2
	{Br, C}	1
	{M, Be}	2
	{M, D}	3
	{M, C}	3

L2	{Br, H}	2
	{Br, O}	2
	{H, Be}	2
	{H, O}	3
	{H, C}	3
	{Be, O}	3
	{Be, C}	2
	{O, C}	3

C3	IS	M.S		IS	MS
	{Br, H, O}	1		{H, Be, O}	2
	{Br, H, Be}	0		{H, Be, C}	2
	{Br, H, C}	1	$\xrightarrow{L3}$	{H, O, C}	3
	{Br, Be, O}	1		{Be, O, C}	2
	{Br, H, O, C}	1			
	{H, Be, O}	2			
	{H, Be, C}	2			
	{H, O, C}	3			
	{Be, O, C}	2			

C4	IS	MS
	{H, Be, O, C}	2
	1	



⇒ Rules Generation	support	confidence	%
$C \wedge BE \wedge D \rightarrow M$		$2/2 = 1$	100%
$M \wedge BE \wedge D \rightarrow C$		$2/2 = 1$	100%
$M \wedge C \wedge D \rightarrow BE$		$2/3 = 0.66$	66%
$M \wedge BE \wedge C \rightarrow D$		$2/2 = 0.661$	100%
$M \wedge BE \rightarrow D \wedge C$		$2/2 = 1$	100%
$M \wedge D \rightarrow BE \wedge C$		$2/3 = 0.66$	66%
$M \wedge C \rightarrow D \wedge BE$		$2/3 = 0.66$	66%
$M \rightarrow C \wedge BE \wedge D$		$2/4 = 0.5$	50%
$C \rightarrow M \wedge BE \wedge D$		$2/3 = 0.66$	66%
$BE \rightarrow M \wedge C \wedge D$		$2/3 = 0.66$	66%
$D \rightarrow M \wedge BE$		$2/4 = 0.5$	50%
$D \wedge C \rightarrow M \wedge BE$		$2/3 = 0.66$	66%
$BE \wedge C \rightarrow M \wedge D$		$2/2 = 1$	100%
$D \wedge BE \rightarrow M \wedge C$		$2/3 = 0.66$	66%