LAB - 7.

Apriori algo.

Min. sup. = 2

①

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

→ C_1

ItemSet	Min. Sup.	
{1}	2	
{2}	3	
{3}	3	
{4}	1	*
{5}	3	

→ L_1

ItemSet	Min. Sup.
{1}	2
{2}	3
{3}	3
{5}	3

→ C_2

ItemSet	Min. Sup.	
{1 2}	1	*
{1 3}	2	
{1 5}	1	*
{2 3}	2	
{2 5}	3	
{3 5}	2	

→ L_2

ItemSet	Min. Sup
{1 3}	2
{2 3}	2
{2 5}	3
{3 5}	2

ItemSet	Min. Sup	
{1 2 3}	1	*
{1 3 5}	1	*
{2 3 5}	2	

Rules Generation

Association Rule	Support	Confidence	Confidence (%)
2 ^ 3 → 5	2	2/2 = 1	100 %
3 ^ 5 → 2	2	2/2 = 1	100 %
2 ^ 5 → 3	2	2/3 = 0.66	66 %
2 → 3 ^ 5	2	2/3 = 0.66	66 %
3 → 2 ^ 5	2	2/3 = 0.66	66 %
5 → 2 ^ 3	2	2/3 = 0.66	66 %

$$\frac{A \cup B}{A} = \frac{2\hat{}3\hat{}5}{5} = \frac{2}{3} = 0.66$$

⇒ (1) $2\hat{}3 \longrightarrow 5 = \frac{A \longrightarrow B}{A} = \frac{2\hat{}3\hat{}5}{2\hat{}3} = \frac{2}{2} = 1.$

- Similarly with others.

(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

C_1

IS	MS
{Br}	3
{M}	4
{Be}	3
{E}	1 ×
{D}	4
{C}	3

4 →

IS	MS
{Br}	3
{M}	4
{Be}	3
{D}	4
{C}	3

C_2

IS	MS
{Br, M}	2
{Br Be}	1
{Br D}	2
{Br C}	1
{M Be}	2
{M D}	3
{M C}	3
{Be D}	3
{Be C}	2
{D C}	3.

L_2

{Br, M}	2
{Br, D}	2
{M, Be}	2
{M D}	3
{M C}	3
{Be D}	3
{Be C}	2
{D C}	3

C_3

IS	MS
{Br M D}	1
{Br M Be}	0
{Br M C}	1
{Br Be D}	1
{Br D C}	1
{M Be D}	2
{M Be C}	2
{M D C}	3
{Be D C}	2

$L_3 \rightarrow$

IS	MS
{M Be D}	2
{M Be C}	2
{M D C}	3
{Be D C}	2

C_4

IS	MS
{M Be D C}	2

* Rules Generation

Association Rule	Support	Confidence	%
C ^ BE ^ D → M		2/2 = 1	100 %
M ^ BE ^ D → C		2/2 = 1	100 %
M ^ C ^ D → Be		2/3 = 0.66	66 %
M ^ Be ^ C → D		2/2 = 1	100 %
M ^ Be → D ^ C		2/2 = 1	100 %
M ^ D → Be ^ C		2/3 = 0.66	66 %
M ^ C → D ^ Be		2/3 = 0.66	66 %
M → C ^ Be ^ D	2/4 = 0.5	~~2/3 = 0.66~~	50 %
C → M ^ Be ^ D	2/3 = 0.66	~~2/4 = 0.5~~	66 %
Be → M ^ C ^ D		2/3 = 0.66	66 %
D → M ^ Be ^ C	2/4 = 0.5	~~2/3 = 0.66~~	50 %
D ^ C → M ^ Be		2/3 = 0.66	66 %
Be ^ C → M ^ D		2/2 = 1	100 %
D ^ Be → M ^ C		2/3 = 0.66	66 %

LAB - 8:

★ FP Tree

(1)

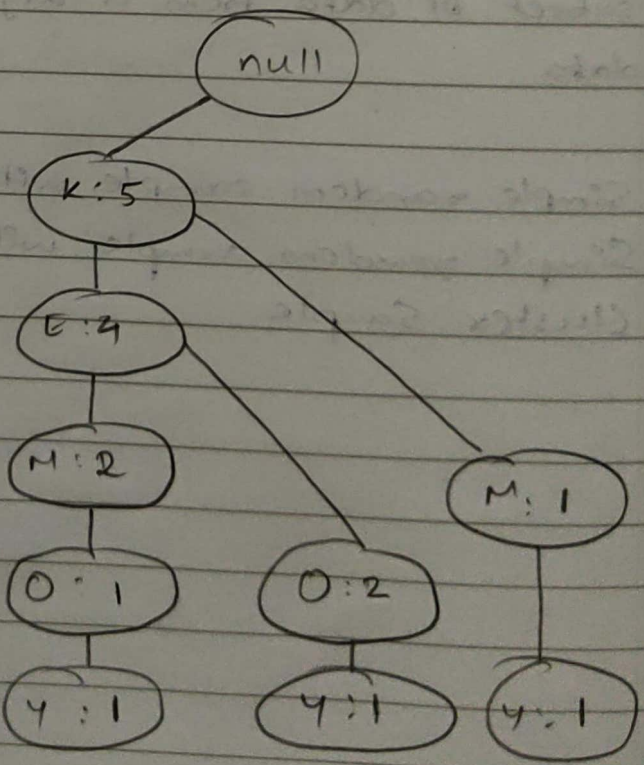
TID	Items
1	EKMNOY
2	DEKNOY
3	AEKM
4	CKMUY
5	CEIKO

Items	Freq.
A	1
C	2
D	1
E	4
K	5
M	3
N	2
O	3
Y	3
U	1
I	1

Frequent Patterns -

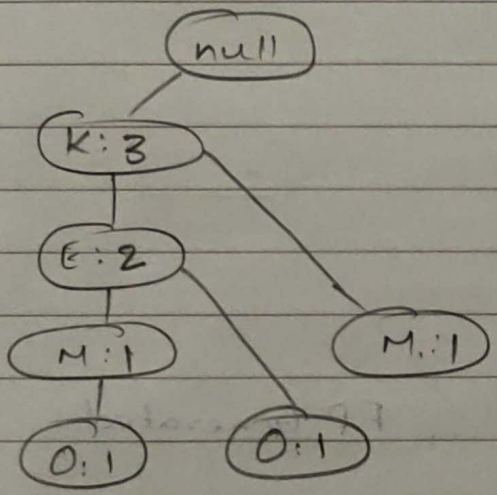
K : 5 , E : 4 , M : 3 , O : 3 , Y : 3

1	KEMOY
2	KEOY
3	KEM
4	KMY
5	KEO



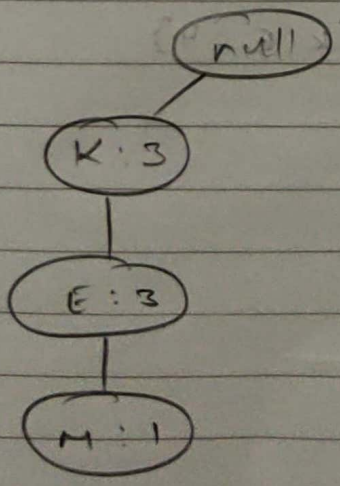
Item	Patterns
Y	{KEMO : 1}, {KEO : 1}, {KM : 1}
O	{KEM : 1}, {KE : 2}
M	{KE : 2}, {K : 1}
E	{K : 4}
K	—

1. Y {KEMO : 1}, {KEO : 1}, {KM : 1}



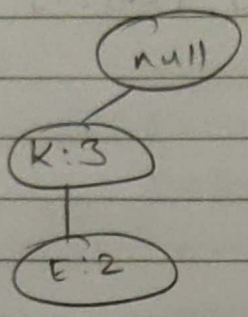
{K : 3}

2. O {KEM : 1} {KE : 2}



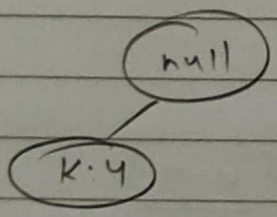
{K, E : 3}

3. M {KE:2} {K:1}



{K:3}

4. E {K:4}



{K:4}

- Items. FP obtained FP Generated

Y	{K:3}	{K,Y:3}
O	{K,E:3}	{K,O:3}, {E,O:3}, {K,E,O:3}
M	{K:3}	{K,M:3}
E	{K:4}	{K,E:4}

(2)

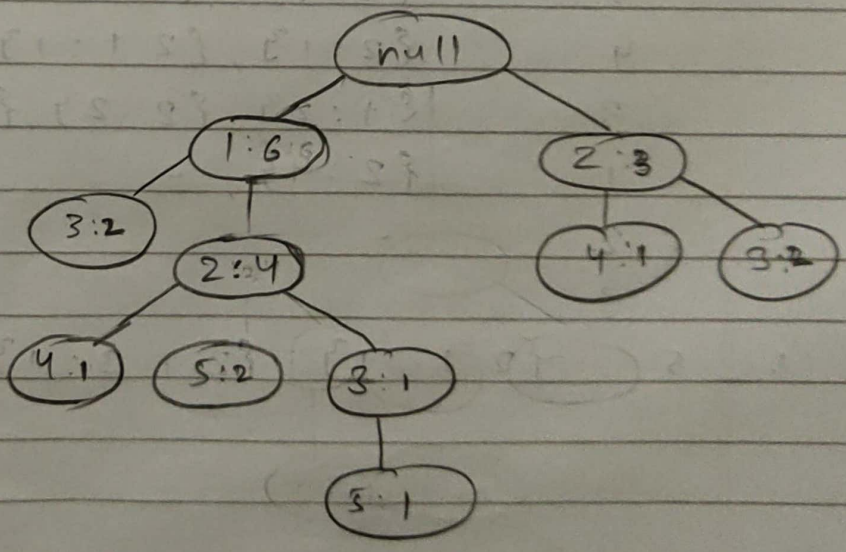
TID.	Items.
1	125
2	24
3	23
4	124
5	13
6	23
7	13
8	1235
9	123

Items	Freq.
1	6
2	7
3	6
4	2
5	2

Frequent Patterns-

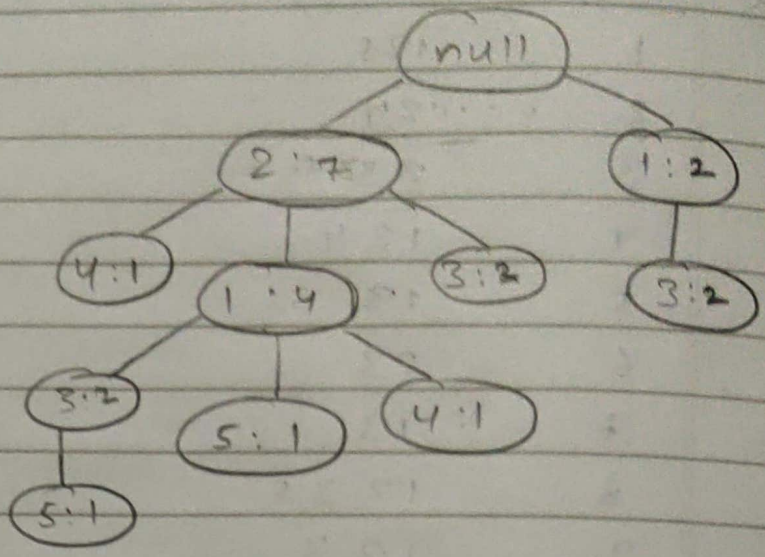
2:7, 1:6, 3:6, 4:2, 5:2

1	125
2	24
3	23
4	124
5	13
6	23
7	13
8	1235
9	123



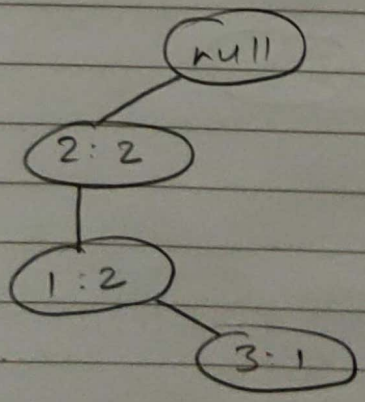
Frequent Patterns:

1	2 1 5
2	2 4
3	2 3
4	2 1 4
5	1 3
6	2 3
7	1 3
8	2 1 3 5
9	2 1 3



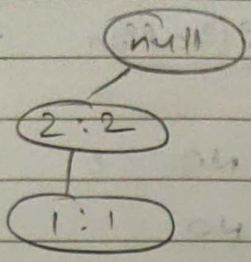
Items.	Patterns.
5	{2 1 : 1}, {2 1 3 : 1}
4	{2 : 1}, {2 1 : 1}
3	{1 : 2}, {2 : 2}, {2 1 : 2}
1	{2 : 4}, -
2	-

1. 5 {2 1 : 1}, {2 1 3 : 1}



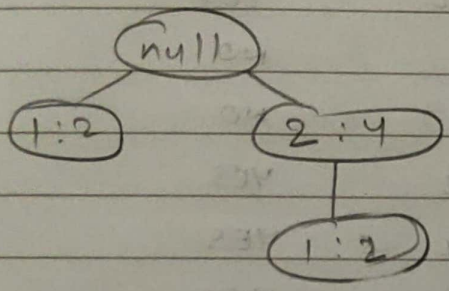
{2 : 2, 1 : 2}

2. 4 {2:1}, {2 1:1}



{2:2}

3. 3 {1:2}, {2:2}, {2 1:2}



{1:2, 2:4, 1:2}

4. {2:4}

Items.	FP obtained	FP generated
5	{2:2, 1:2}	{2,5:2}, {1,5:2}
4	{2:2}	{2,4:2}
3	{1:2, 2:4, 1:2}	{1,3:2}, {2,3:4}, {1,3:2}
1	{2:4}	{1,2:4}