Lab-8

A. Generate the frequent Pattern Tree for given dataset min-support ≥ 3

Step-1:

1)

TID	items
1	EKMNOY
2	DEKNOY
3	AEKM
4	CKMUY
5	CEJKO

item	freq	
A	1	✗
C	2	✗
D	1	✗
E	4	✓
J	1	✗
K	5	✓
M	3	✗✓
N	2	✗
O	3	✓
U	1	✗
Y	3	✓

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

Step-2.

TID	sorted items
1	KEMOY
2	KEOY
3	KEM
4	KMY
5	KEO

→ KEMOY

KEOY
KEM
KMY
KEO

FP-Tree:
Null → K:5 → E:4 → M:2 → O:1 → Y:1
K:5 → M:1
E:4 → O:2 → Y:1
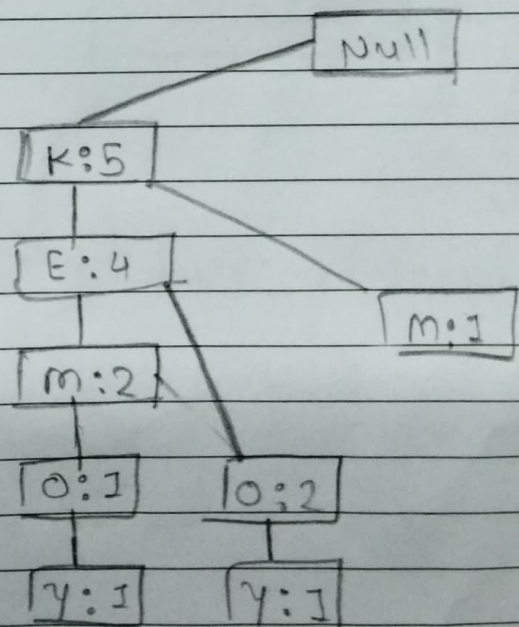
item	conditional Pattern Base
y	{KEMO:1} {KEO:1} {KM:1}
o	{KEM:1} {KE:2}
m	{KE:2} {K:1}
E	{K:4}
K	-

y	{KEMO:1} {KEO:1} {KM:1}	{K:3}
o	{KEM:1} {KE:1} {KE:2}	{K:3} {E:3}

Null

K:3
E:2
m:1   O:1   M:1
O:1

Null

K:3
E:3
m:1

m	{KE:2} {K:1}	{K:3}

E	{K:4}	{K:4}

Null

K:3
E:2

Null
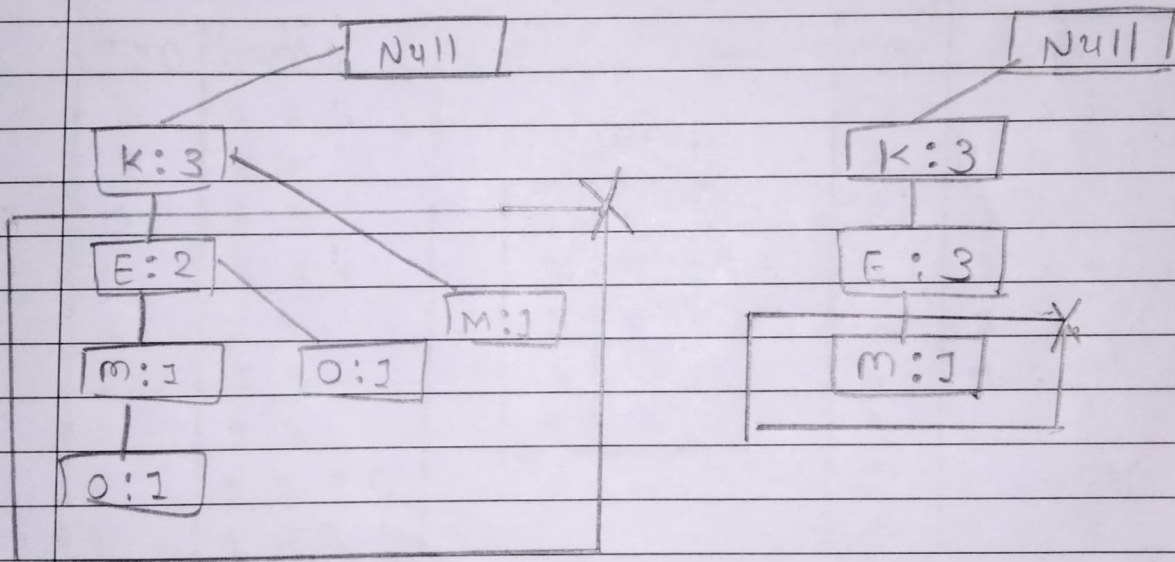
K:4
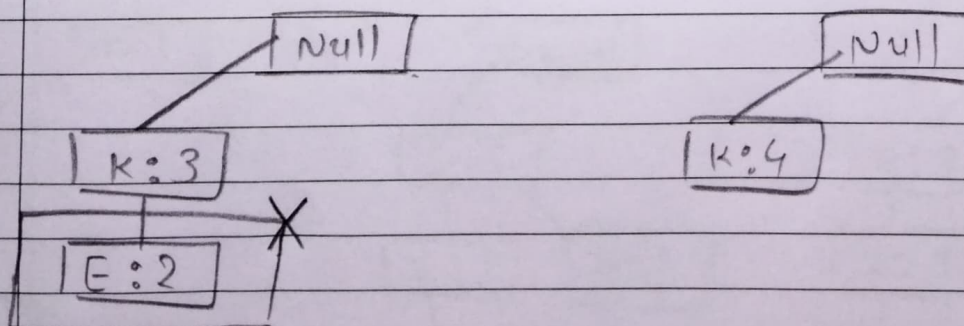
Conditional FP-Tree and Freq Pattern Generated

item	Conditional Base Pattern	Conditional FP	Frequent Patterns Generated
ky	{KEMO:1} {KEO:1} {Km:1}	{K:3}	{KY:3}
O	{KEM:1} {KE:2}	{K:3, E:3}	{K,0:3}, {E0:3} {K,E0:3}
m	{KE:2} {K:1}	{K:3}	{K,m:3}
E	{K:4}	{K:4}	{K,E:4}
K	—	—	—

2

TID	items
1	I 2 5
2	2 4
3	2 3
4	I 2 4
5	I 3
6	2 3
7	I 3
8	I 2 3 5
9	I 2 3

Step-1

1	6
2	7
3	6
4	2
5	2

Step 2

TID	items
1	2 I 5
2	2 4
3	2 3
4	2 I 4
5	1 3
6	2 3
7	I 3
8	2 I 3 5
9	2 I 3

| 2 I 5 | | 2 4 | | 2, 3 |

Null

2:1

I:1

5:1

Null

2:2

1:1   4:1

5:1

Null

2:3   3:1

2:I

4:1

5:1

1 2 I 4 and all ... !

```
                        ┌─────────┐
                        │  Null   │────────────────┐
                        └─────────┘                 │
        ┌──────┐                                ┌──────┐
        │ 2:7  │                                │ I:2  │
        └──────┘                                └──────┘
          │      ┌──────┐   ┌──────┐            ┌──────┐
        ┌──────┐ │ 3:2  │   │ 4:2  │            │ 3:2  │
        │ I:4  │ └──────┘   └──────┘            └──────┘
        └──────┘
          │   ┌──────┐
          │   │ 3:2  │
          │   └──────┘
          │       ┌──────┐
          │       │ 4:I  │
          │       └──────┘
        ┌──────┐   ┌──────┐
        │ 5:I  │   │ 5:I  │
        └──────┘   └──────┘
```

I	5	{ 2,I : I} { 2,I,3 : I}	{2:2}{I:2}
2	4	{2,I : I} { 2:I}	{2:2}

```
         ┌──────┐                    ┌──────┐
         │ Null │                    │ Null │
         └──────┘                    └──────┘
        ┌──────┐                    ┌──────┐
        │ 2:2  │                    │ 2:2  │
        └──────┘                    └──────┘  X
          │                           │
        ┌──────┐                  ┌──────────┐
        │ I:2  │                  │  │ I:I │  │
        └──────┘  X               └──────────┘
          │
    ┌──────────┐
    │ │ 3:I │  │  X
    └──────────┘
```
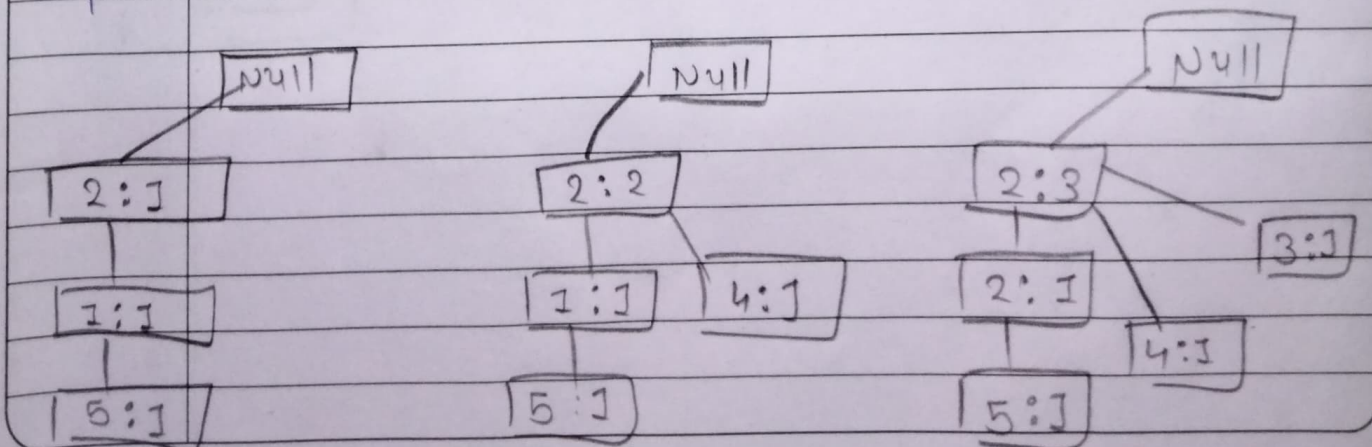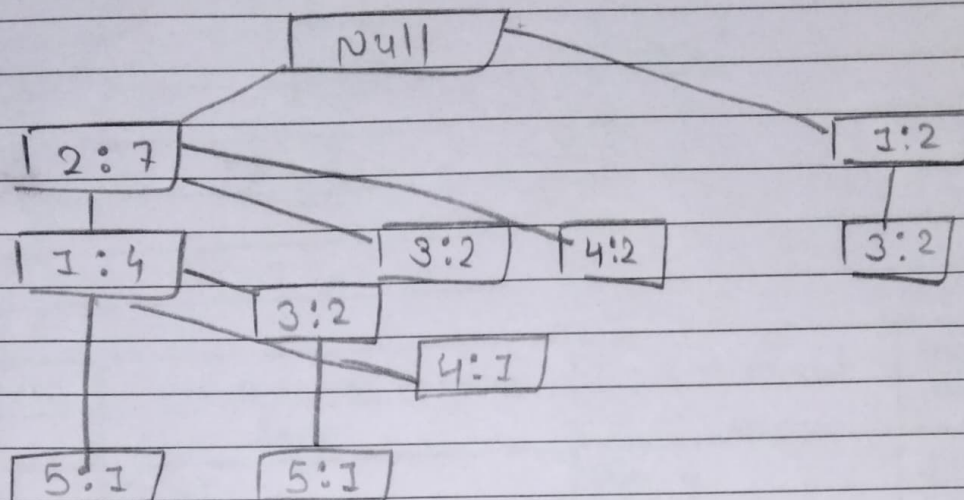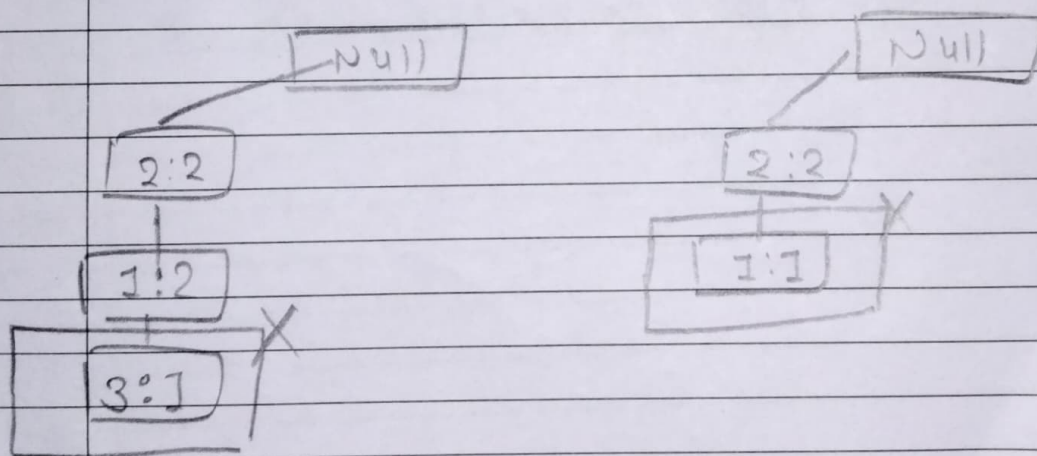
3	3	{2,J:2} {2:2} {J:2}		{2:4} {J:3}	
4	J	{2:4}		{2:4}	
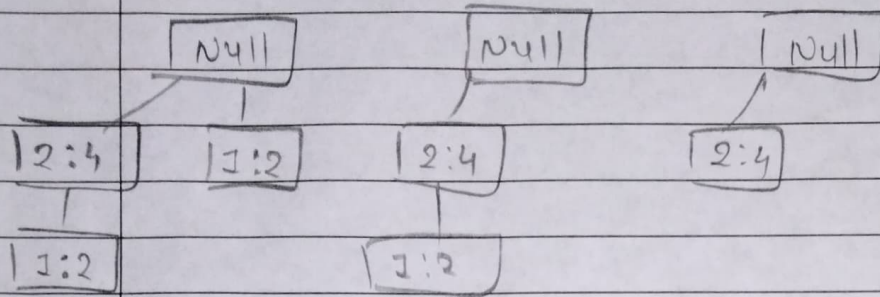
Item	conditional Pattern Base	conditional FP-tree	Frequent Pattern Generated
J	{2:4}	{2:4}	{J,2:4}
2	—	—	—
3	{2:2}, {J:2} {2,J:2}	{2:4} {J:4}	{2,3:2}, {J,3:2} {2,J,3:2}
4	{2:J} {2,J:J}	{2:2}	{2,4:2}
5	{2,J:J} {2,J,3:J}	{2:2} {J:2}	{2,5:2} {J,5:2}