Exercises on Frequent Pattern Mining

Toon Calders (2009) Zaki & Meira (2014)

Exercise 1

- **Build an FP-tree**

TID	Items
1	A, B, C, D, E
2	B, C, D, F
3	A, C, D, G
4	B, C, F
5	D, E, G, H, I

Exercise 1

- **Build an FP-tree**

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1	A, B, C, D, E
2	B, C, D, F
3	A, C, D, G
4	B, C, F
5	D, E, G, H, I

- **Sort its elements by support counts**

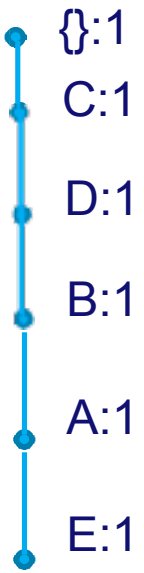
  C:4, D:4, B:3, A:2, E:2, F:2, G:2, H:1, I:1

Exercise 1

TID	Items
1	A, B, C, D, E
2	B, C, D, F
3	A, C, D, G
4	B, C, F
5	D, E, G, H, I

C, D, B, A, E, F, G, H, I

Let us add CDBAE in the FP-tree:



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1	A, B, C, D, E
2	B, C, D, F
3	A, C, D, G
4	B, C, F
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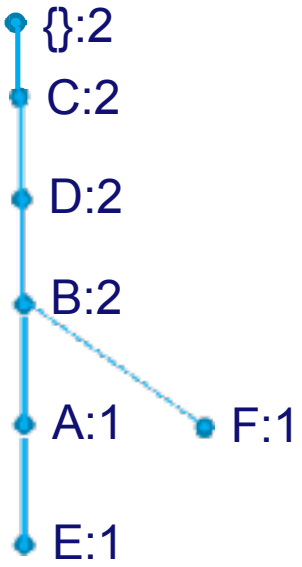
C, D, B, A, E, F, G, H, I

Let us add CDBF in the FP-tree:



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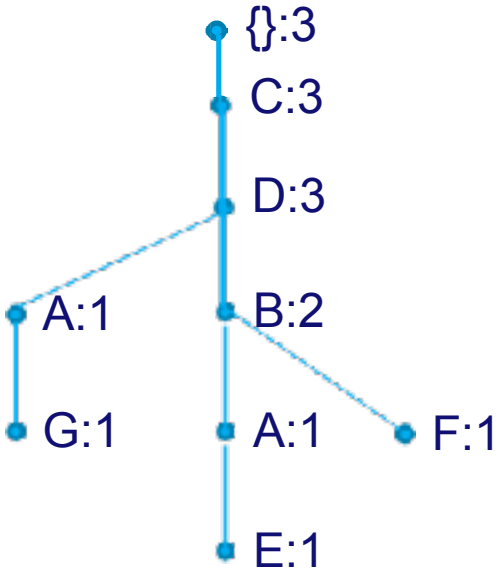
TID	Items
1	A, B, C, D, E
2	B, C, D, F
3	A, C, D, G
4	B, C, F
5	D, E, G, H, I

C, D, B, A, E, F, G, H, I

Let us add CDAG in the FP-tree:

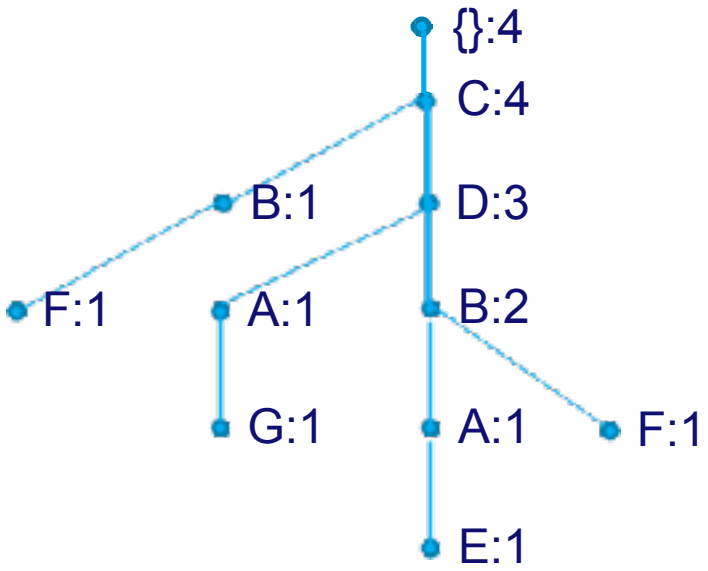


Exercise 1

TID	Items
1	A, B, C, D, E
2	B, C, D, F
3	A, C, D, G
4	B, C, F
5	D, E, G, H, I

C, D, B, A, E, F, G, H, I

Let us add CBF in the FP-tree:

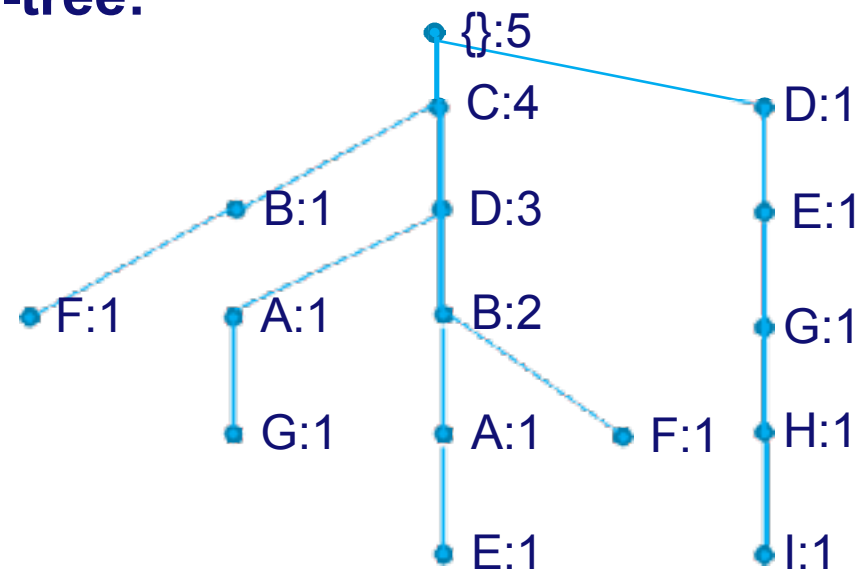


Exercise 1

TID	Items
1	A, B, C, D, E
2	B, C, D, F
3	A, C, D, G
4	B, C, F
5	D, E, G, H, I

C, D, B, A, E, F, G, H, I

Let us add DEGHI in the FP-tree:



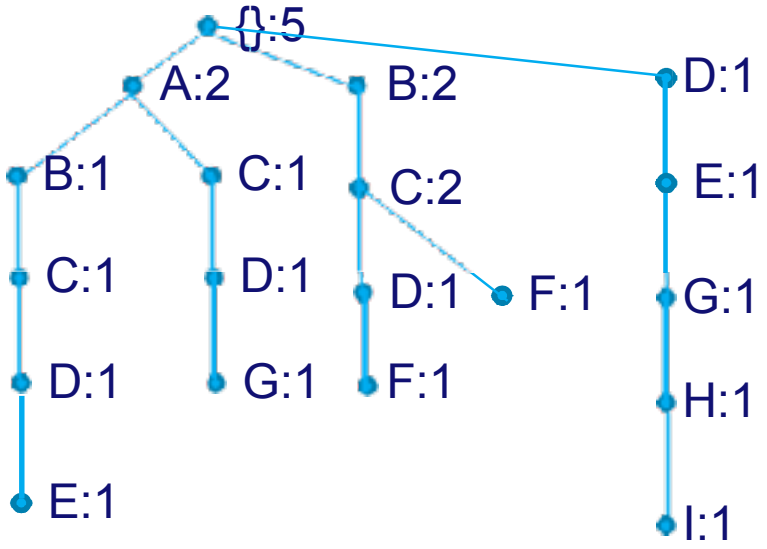
Exercise 2

- **Build an FP-tree with the current (alphabetic) order**

TID	Items
1	A, B, C, D, E
2	B, C, D, F
3	A, C, D, G
4	B, C, F
5	D, E, G, H, I

Exercise 2

TID	Items
1	A, B, C, D, E
2	B, C, D, F
3	A, C, D, G
4	B, C, F
5	D, E, G, H, I



19 nodes vs. 16 nodes

Exercise 3

- **Build an FP-tree for elements with minsupp=3**

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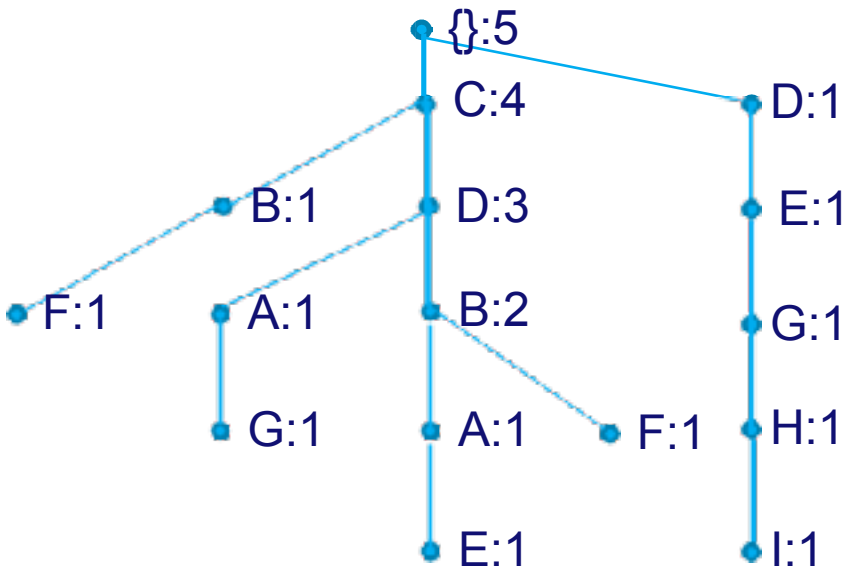
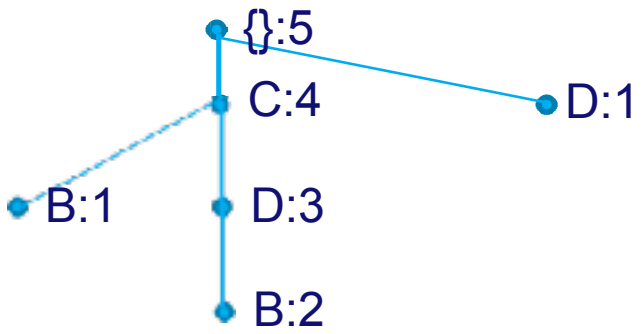


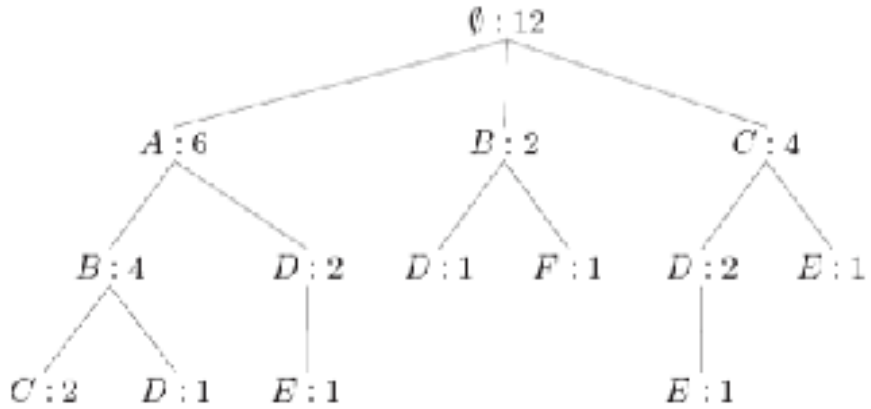
Exercise 3

- **Build an FP-tree for elements with minsupp=3**



Exercise 4

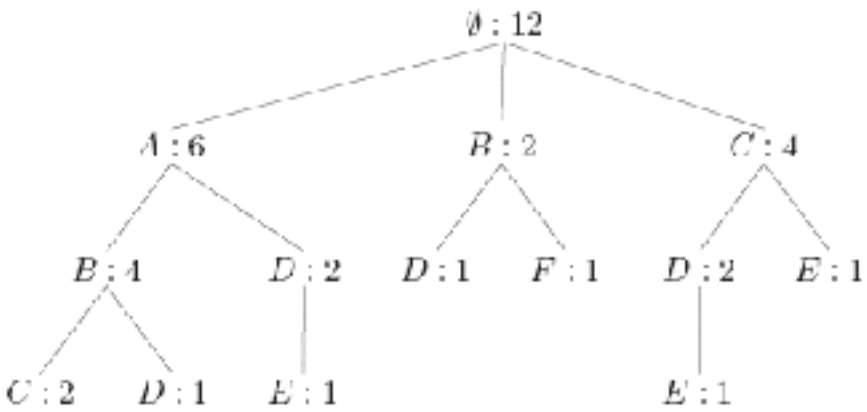
- **Let us consider an FP-tree**



- **Recover the original transaction table**
- **Find support of AB, AD, CDE, and DE**

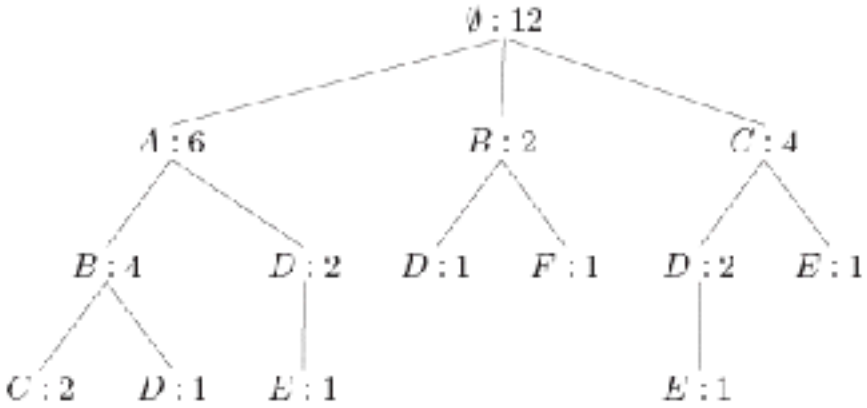
Exercise 4

- **Recover the original transaction table**



1	A, B, C
2	A, B, C
3	A, B, D
4	A, B
5	A, D, E
6	A, D
7	B, D
8	B, F
9	C, D, E
10	C, D
11	C, E
12	C

Exercise 4



- **Find support of AB, AD, CDE, and DE**
  - **AB:4**
  - **AD:3**
  - **CDE:1**
  - **DE:2**

Exercise 5

- **Use FP-Growth to find frequent itemsets with minsupp=3**

1	A, B, C
2	A, B, C
3	A, B, D
4	A, B
5	A, D, E
6	A, D
7	B, D
8	B, F
9	C, D, E
10	C, D
11	C, E
12	C

Exercise 5

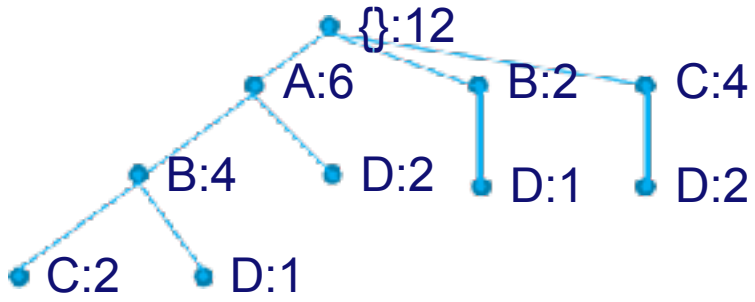
- **Count support of the elements:**
  - **A:6, B:6, C:6, D:6, E:3, F:1**

1	A, B, C
2	A, B, C
3	A, B, D
4	A, B
5	A, D, E
6	A, D
7	B, D
8	B, F
9	C, D, E
10	C, D
11	C, E
12	C

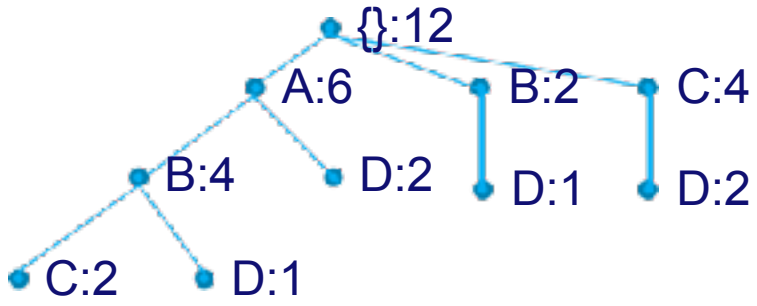
Exercise 5

1	A, B, C
2	A, B, C
3	A, B, D
4	A, B
5	A, D, E
6	A, D
7	B, D
8	B, F
9	C, D, E
10	C, D
11	C, E
12	C

- **Count support of the elements:**
  - **A:6, B:6, C:6, D:6, ~~E:3, F:1~~**
- **Build the FP-tree for frequent ones only**

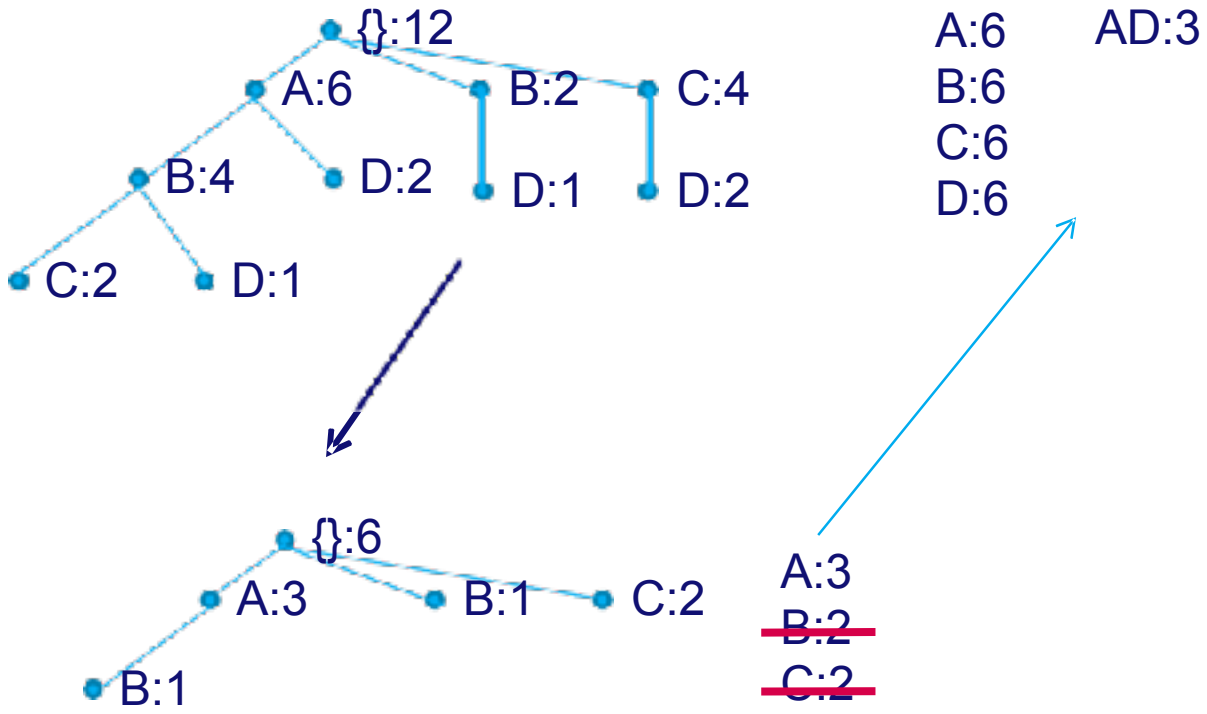


Exercise 5

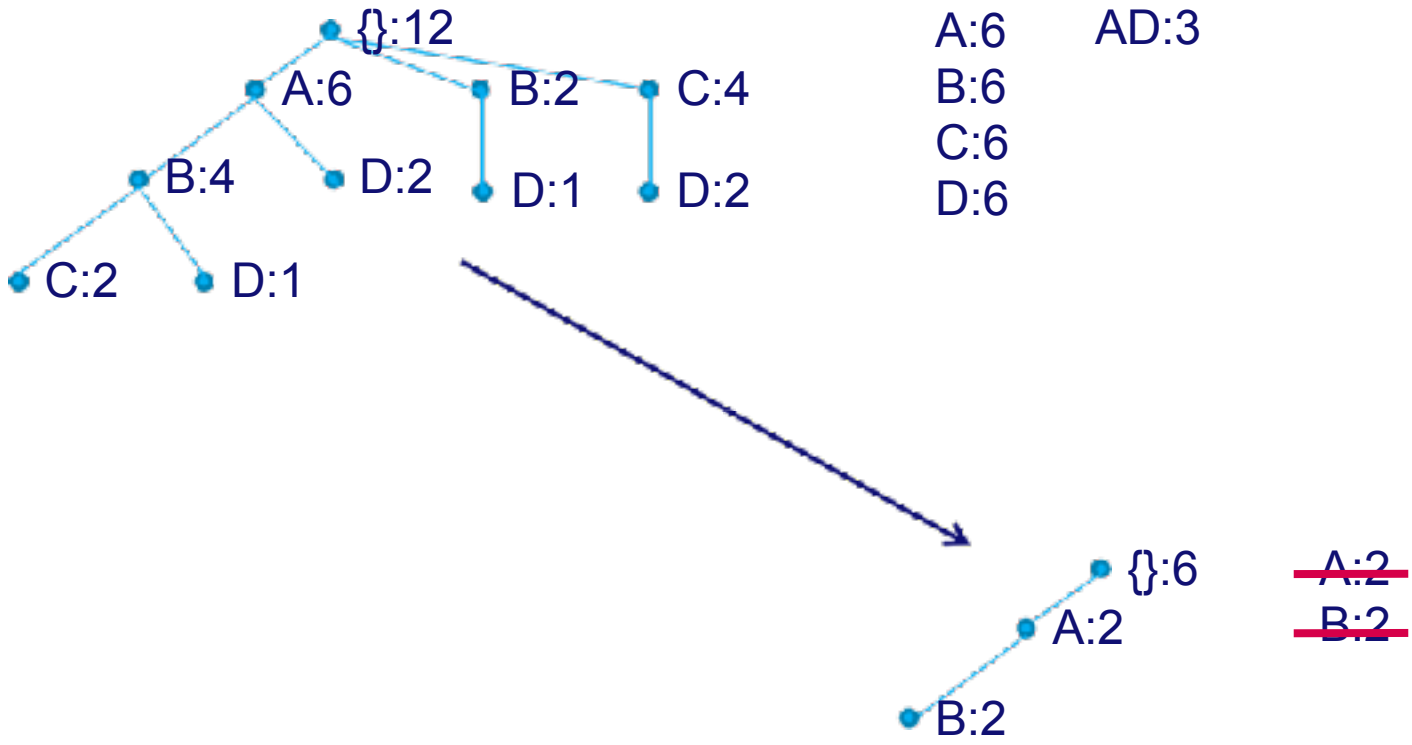


A:6
B:6
C:6
D:6

Exercise 5



Exercise 5



Exercise 5