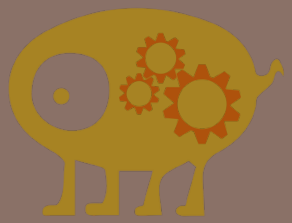


Data Mining
資料探勘

FP-Growth Example

Hung-Yu Kao, Fall 2019

FP-Growth Example

TID	Items
1	Milk, Bread, Beer
2	Bread, Coffee
3	Bread, Egg
4	Milk, Bread, Coffee
5	Milk, Egg
6	Bread, Egg
7	Milk, Egg
8	Milk, Bread, Egg, Beer
9	Milk, Bread, Egg

minsup = 2

Find each item with its corresponding frequency

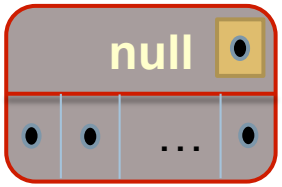
FIRST SCAN!

Sort the list in decreasing order!

Milk : 6	Bread : 7	Beer : 2	Coffee : 2	Egg : 6

Construct FP-Tree

Create the root of the tree, labeled with "null"



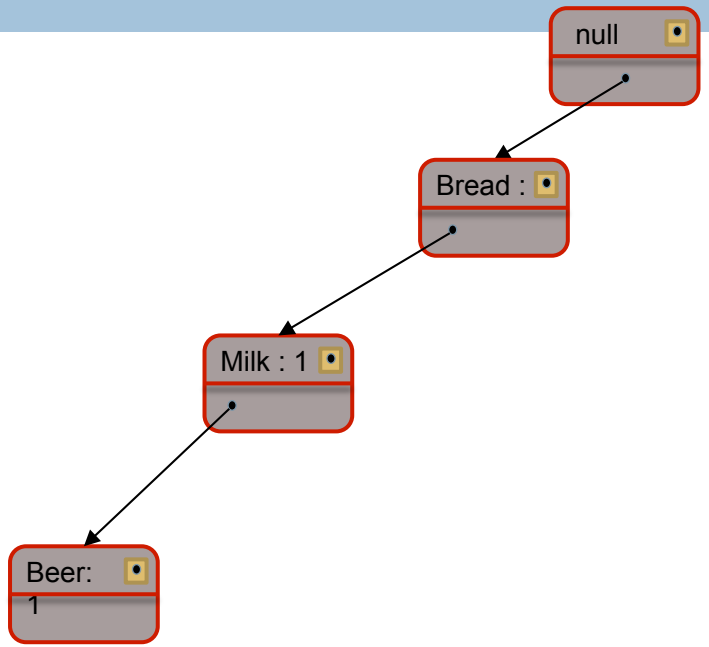
Sort the items of each transaction

TID	Items
1	Bread, Milk, Beer
2	Bread, Coffee
3	Bread, Egg
4	Bread, Milk, Coffee
5	Milk, Egg
6	Bread, Egg
7	Milk, Egg
8	Bread, Milk, Egg, Beer
9	Bread, Milk, Egg

minsup = 2

Construct FP-Tree

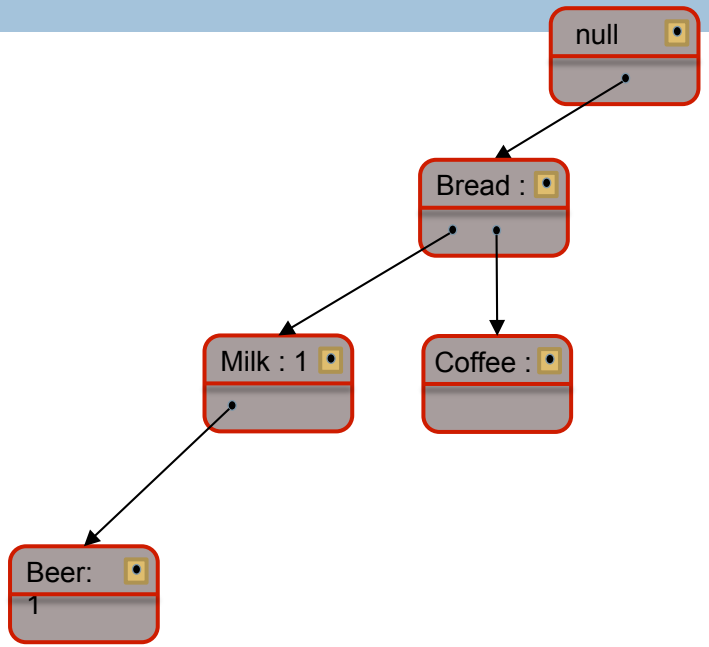
TID	Items
1	Bread, Milk, Beer
2	Bread, Coffee
3	Bread, Egg
4	Bread, Milk, Coffee
5	Milk, Egg
6	Bread, Egg
7	Milk, Egg
8	Bread, Milk, Egg, Beer
9	Bread, Milk, Egg



minsup = 2

Construct FP-Tree

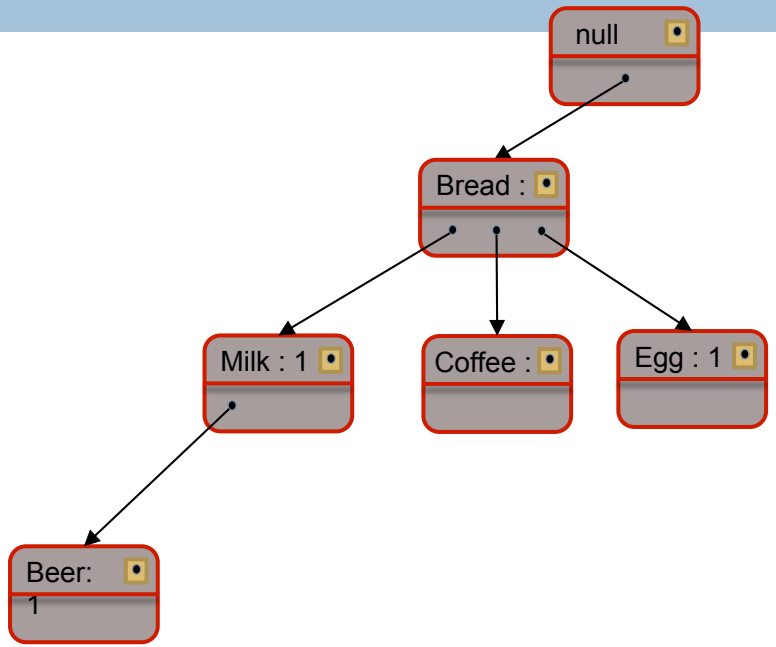
TID	Items
1	Bread, Milk, Beer
2	Bread, Coffee
3	Bread, Egg
4	Bread, Milk, Coffee
5	Milk, Egg
6	Bread, Egg
7	Milk, Egg
8	Bread, Milk, Egg, Beer
9	Bread, Milk, Egg



minsup = 2

Construct FP-Tree

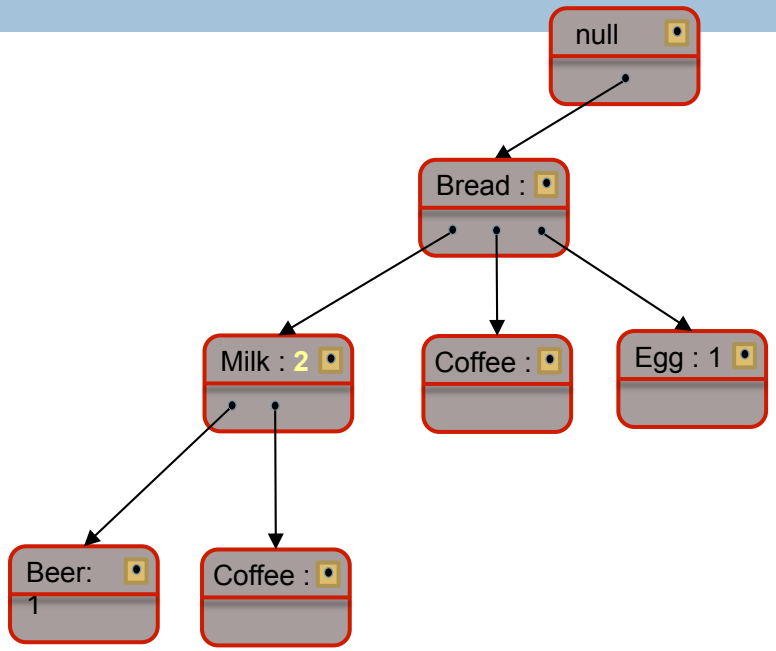
TID	Items
1	Bread, Milk, Beer
2	Bread, Coffee
3	Bread, Egg
4	Bread, Milk, Coffee
5	Milk, Egg
6	Bread, Egg
7	Milk, Egg
8	Bread, Milk, Egg, Beer
9	Bread, Milk, Egg



minsup = 2

Construct FP-Tree

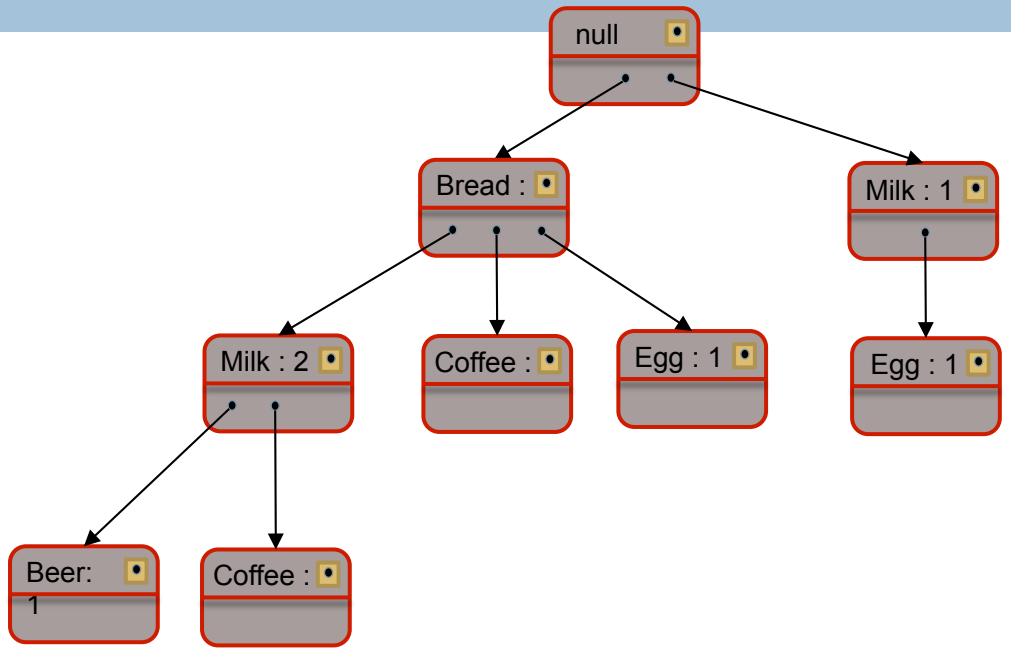
TID	Items
1	Bread, Milk, Beer
2	Bread, Coffee
3	Bread, Egg
4	Bread, Milk, Coffee
5	Milk, Egg
6	Bread, Egg
7	Milk, Egg
8	Bread, Milk, Egg, Beer
9	Bread, Milk, Egg



minsup = 2

Construct FP-Tree

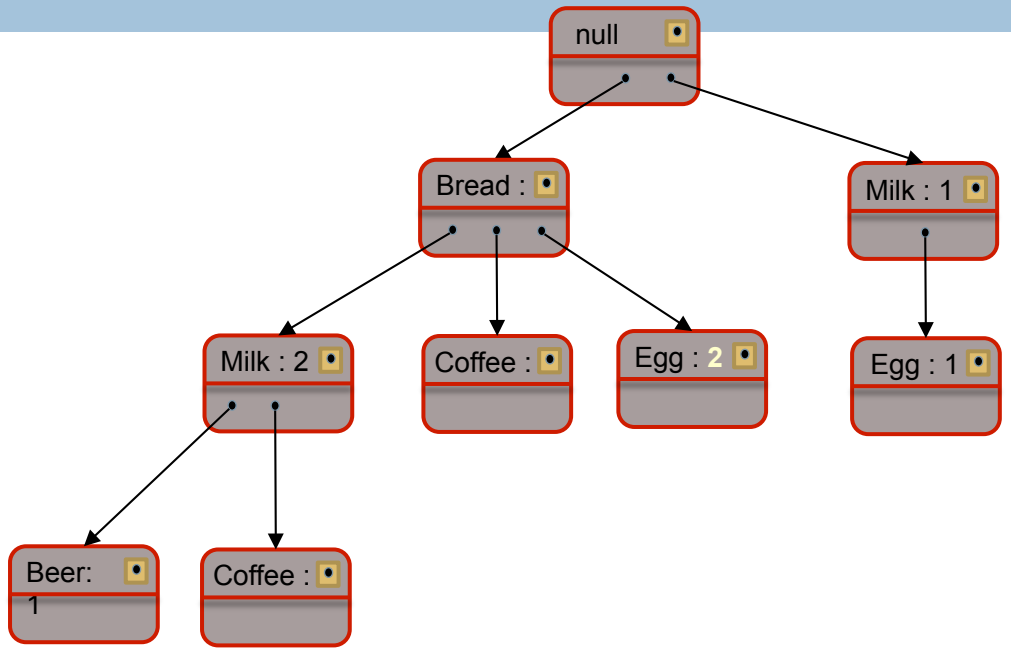
TID	Items
1	Bread, Milk, Beer
2	Bread, Coffee
3	Bread, Egg
4	Bread, Milk, Coffee
5	Milk, Egg
6	Bread, Egg
7	Milk, Egg
8	Bread, Milk, Egg, Beer
9	Bread, Milk, Egg



minsup = 2

Construct FP-Tree

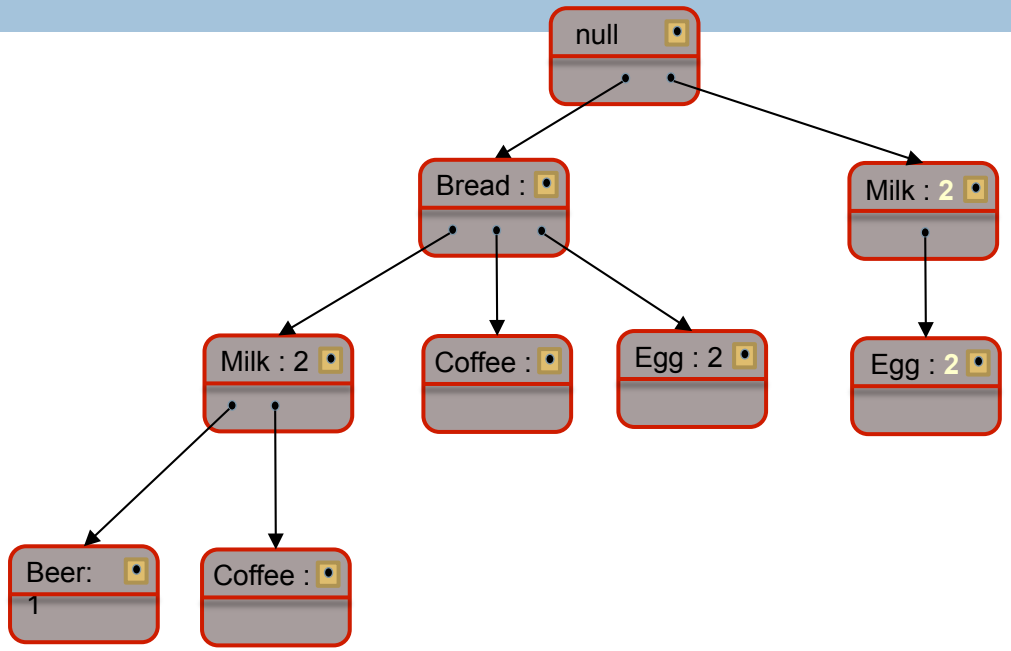
TID	Items
1	Bread, Milk, Beer
2	Bread, Coffee
3	Bread, Egg
4	Bread, Milk, Coffee
5	Milk, Egg
6	Bread, Egg
7	Milk, Egg
8	Bread, Milk, Egg, Beer
9	Bread, Milk, Egg



minsup = 2

Construct FP-Tree

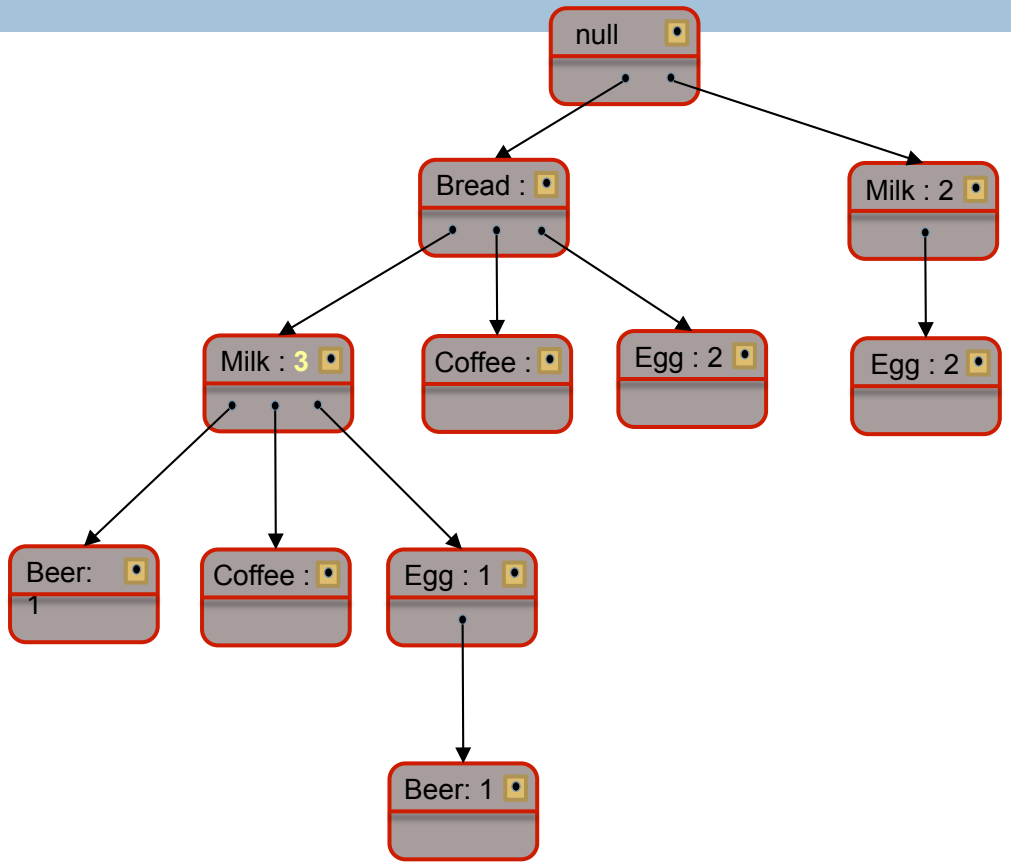
TID	Items
1	Bread, Milk, Beer
2	Bread, Coffee
3	Bread, Egg
4	Bread, Milk, Coffee
5	Milk, Egg
6	Bread, Egg
7	Milk, Egg
8	Bread, Milk, Egg, Beer
9	Bread, Milk, Egg



minsup = 2

Construct FP-Tree

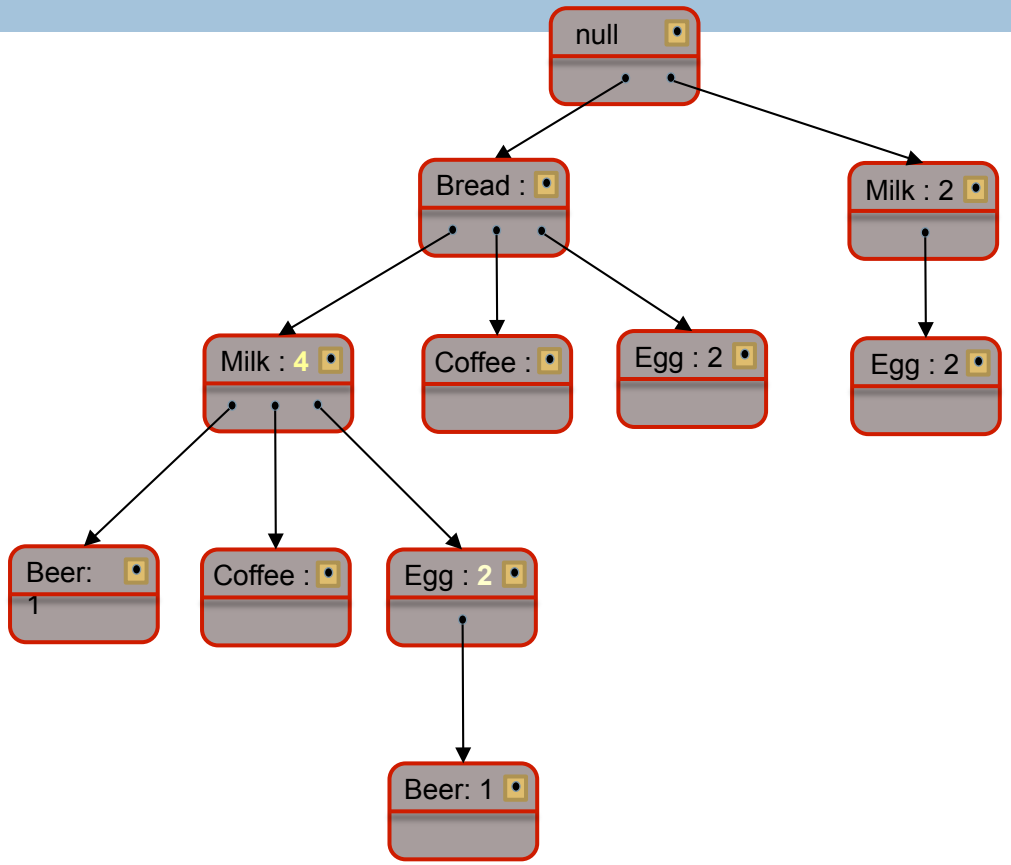
TID	Items
1	Bread, Milk, Beer
2	Bread, Coffee
3	Bread, Egg
4	Bread, Milk, Coffee
5	Milk, Egg
6	Bread, Egg
7	Milk, Egg
8	Bread, Milk, Egg, Beer
9	Bread, Milk, Egg



minsup = 2

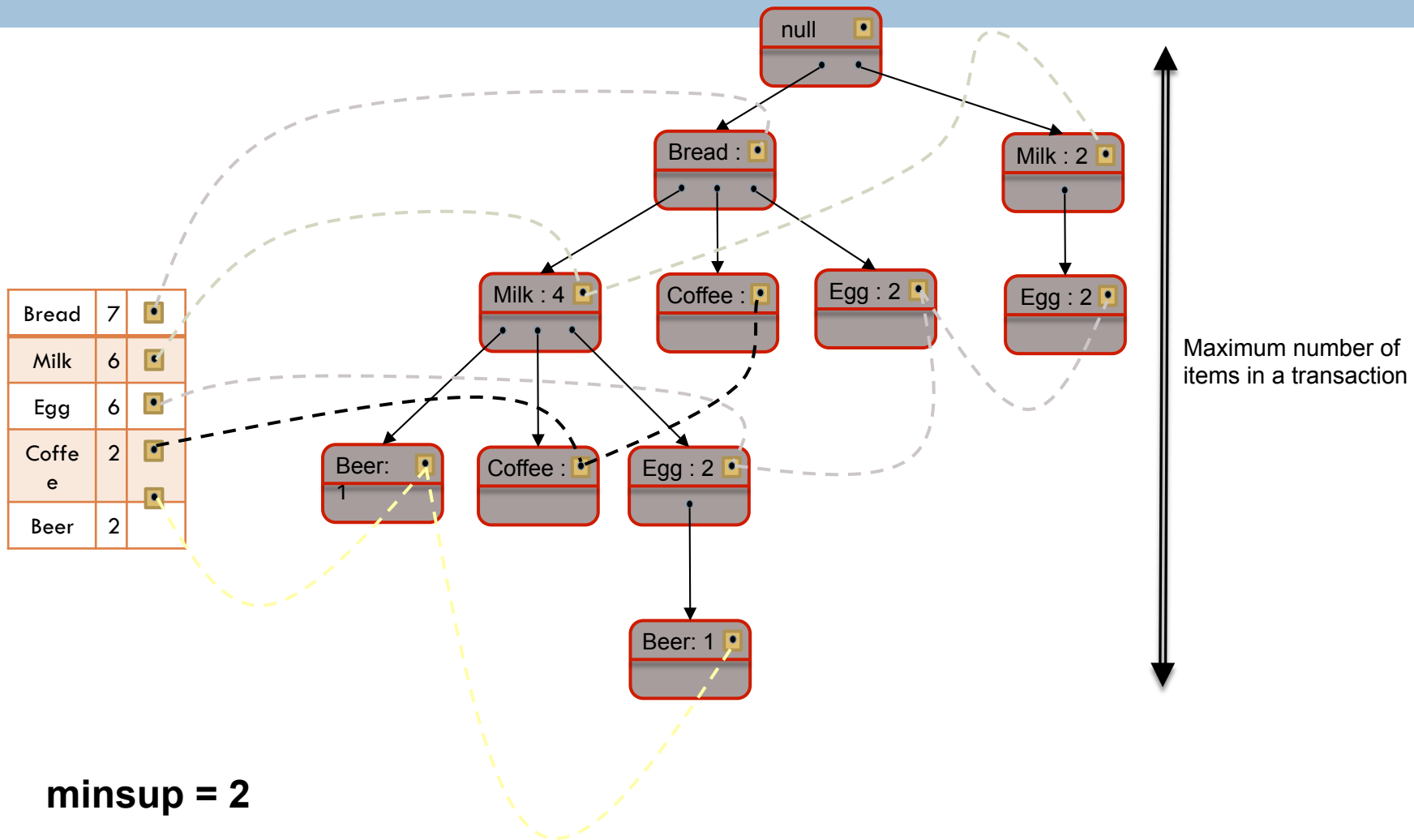
Construct FP-Tree

TID	Items
1	Bread, Milk, Beer
2	Bread, Coffee
3	Bread, Egg
4	Bread, Milk, Coffee
5	Milk, Egg
6	Bread, Egg
7	Milk, Egg
8	Bread, Milk, Egg, Beer
9	Bread, Milk, Egg



minsup = 2

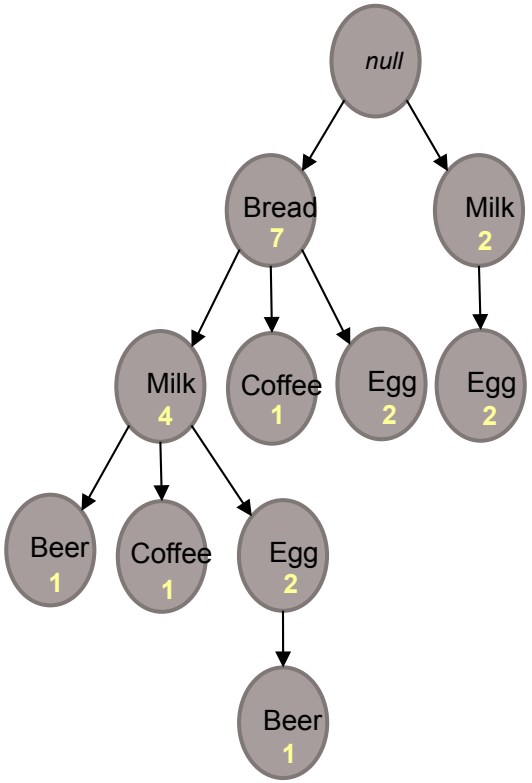
Construct FP-Tree



minsup = 2

FP-Tree Mining

Bread : 7	Milk : 6	Egg : 6	Coffee : 2	Beer : 2



minsup = 2

Start from frequent pattern with the lowest frequency in the list

For each item ***i*** in the list:

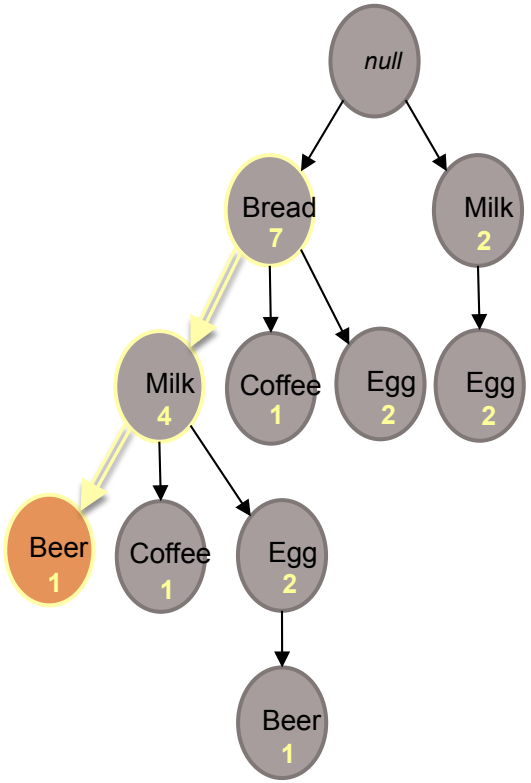
Extract prefix patterns of paths to the item ***i***

Construct its Conditional Pattern Base

The pattern growth is achieved by the concatenation of the suffix pattern
with the frequent patterns generated from a Conditional Pattern Base

FP-Tree Mining

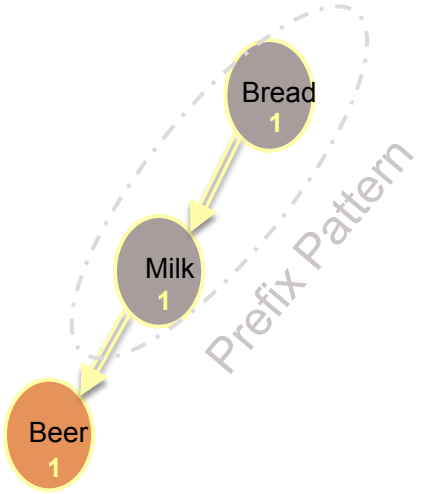
Bread : 7	Milk : 6	Egg : 6	Coffee : 2	Beer : 2



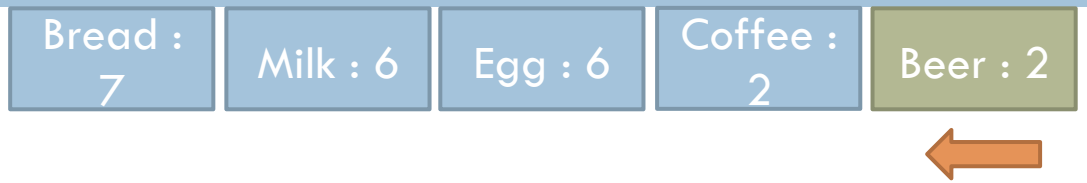
minsup = 2

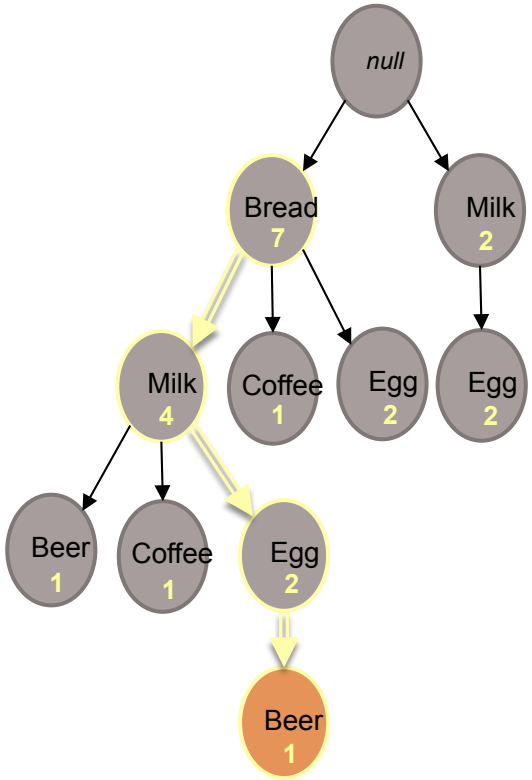
Find all paths to **Beer**

Path No.1 (Bread, Milk, Beer): 1



FP-Tree Mining



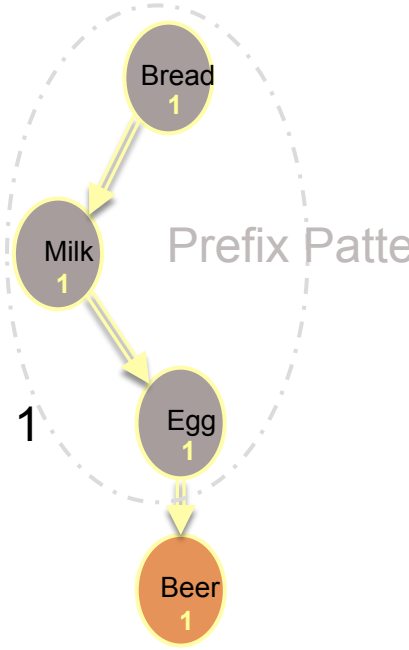


minsup = 2

Find all paths to **Beer**

Path No.1 (Bread, Milk, Beer): 1

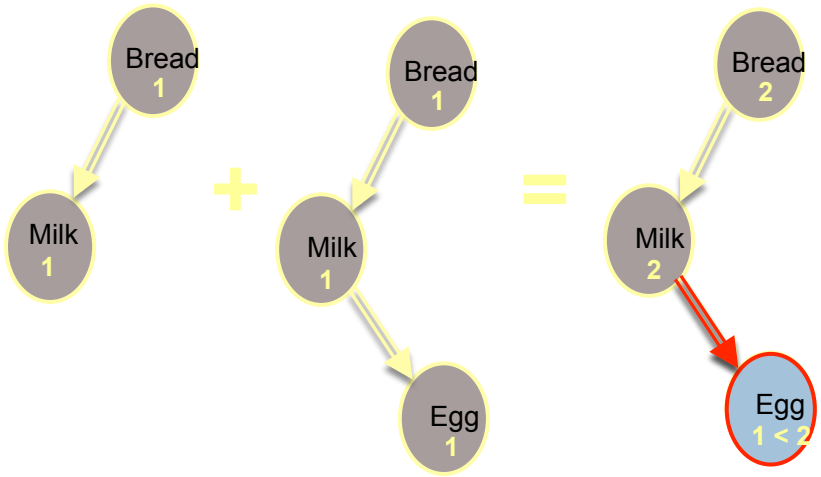
Path No.2 (Bread, Milk, Egg, Beer): 1

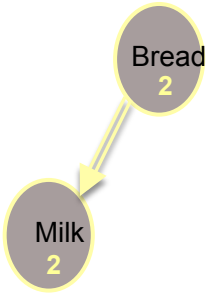


FP-Tree Mining

Bread : 7	Milk : 6	Egg : 6	Coffee : 2	Beer : 2

Combination of prefix patterns



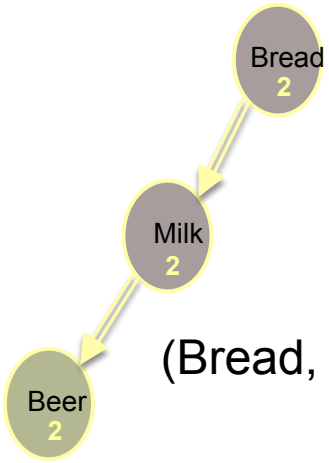


Conditional Pattern Base

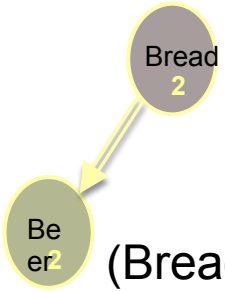
FP-Tree Mining

Bread : 7	Milk : 6	Egg : 6	Coffee : 2	Beer : 2

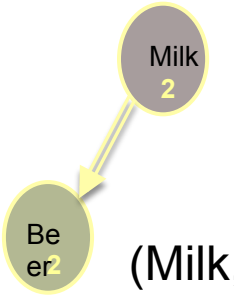
All possible combination of Conditional Pattern Base with the frequent item



(Bread, Milk, Beer): 2



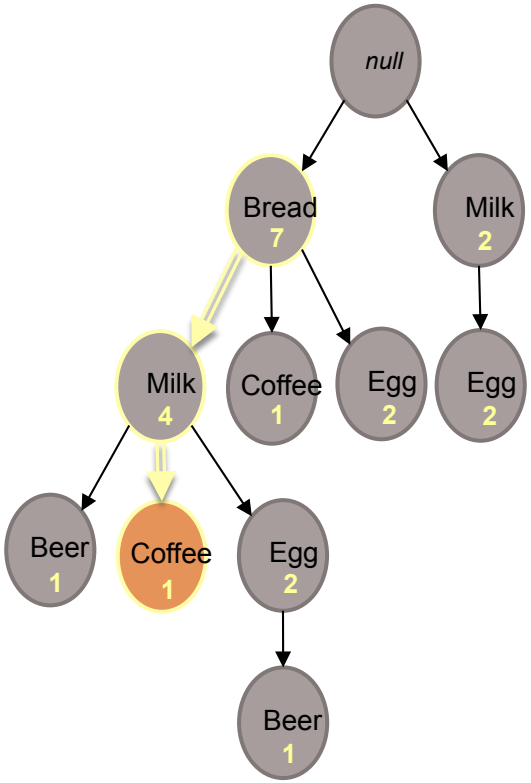
(Bread, Beer): 2

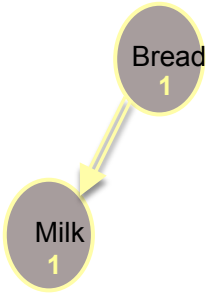


(Milk, Beer): 2

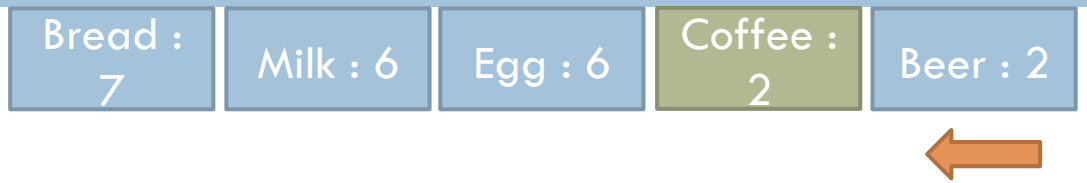
FP-Tree Mining

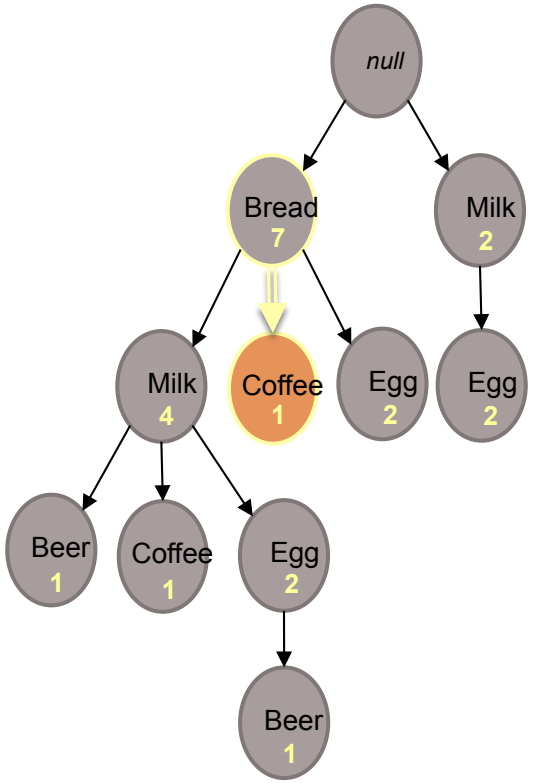
Bread : 7	Milk : 6	Egg : 6	Coffee : 2	Beer : 2

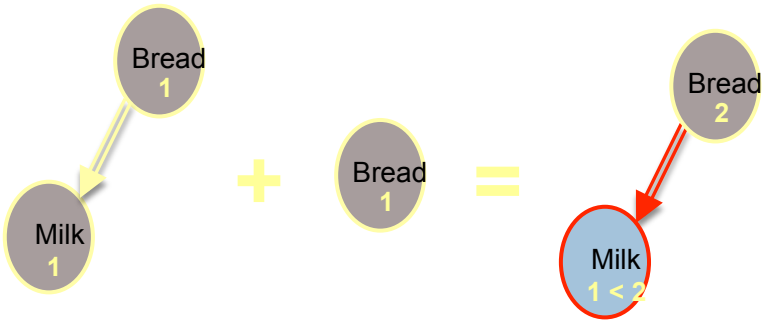


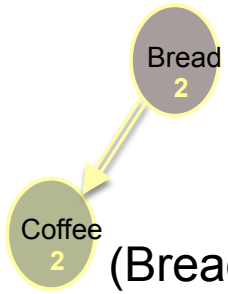


FP-Tree Mining





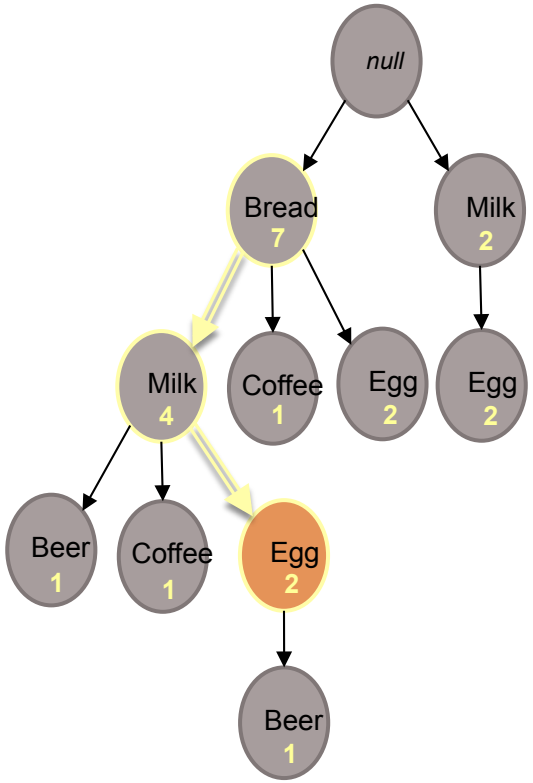


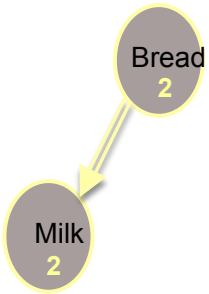


(Bread, Coffee): 2

FP-Tree Mining

Bread : 7	Milk : 6	Egg : 6	Coffee : 2	Beer : 2

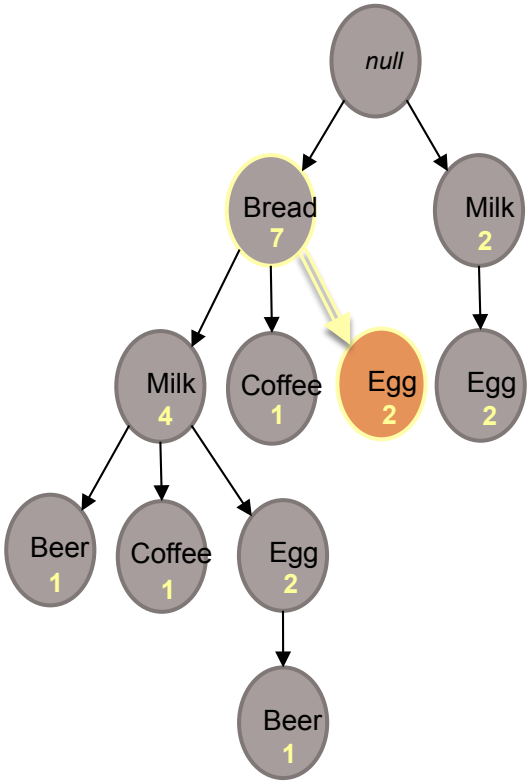


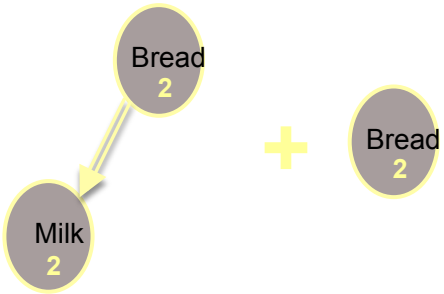


minsup = 2

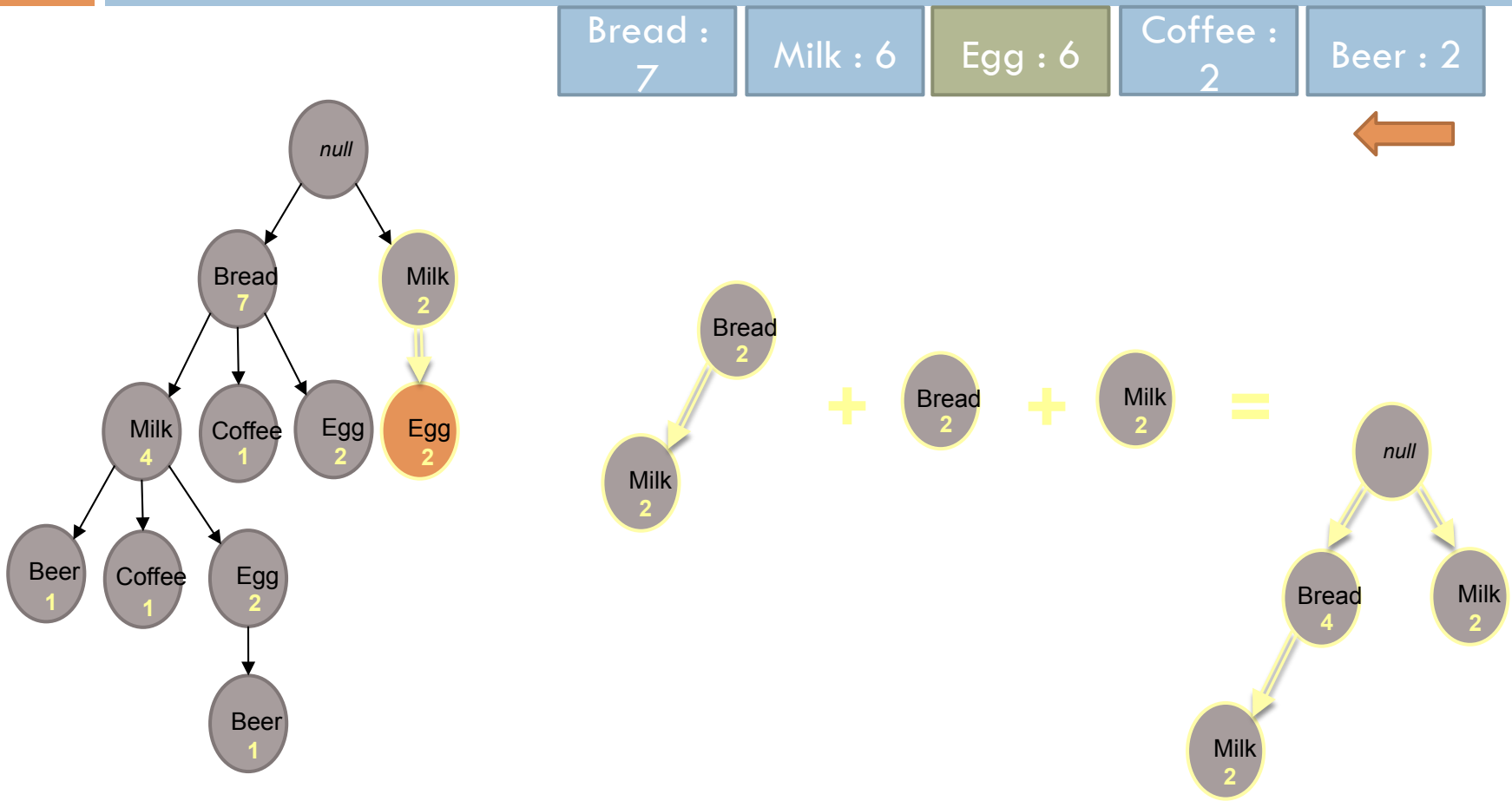
FP-Tree Mining

Bread : 7	Milk : 6	Egg : 6	Coffee : 2	Beer : 2



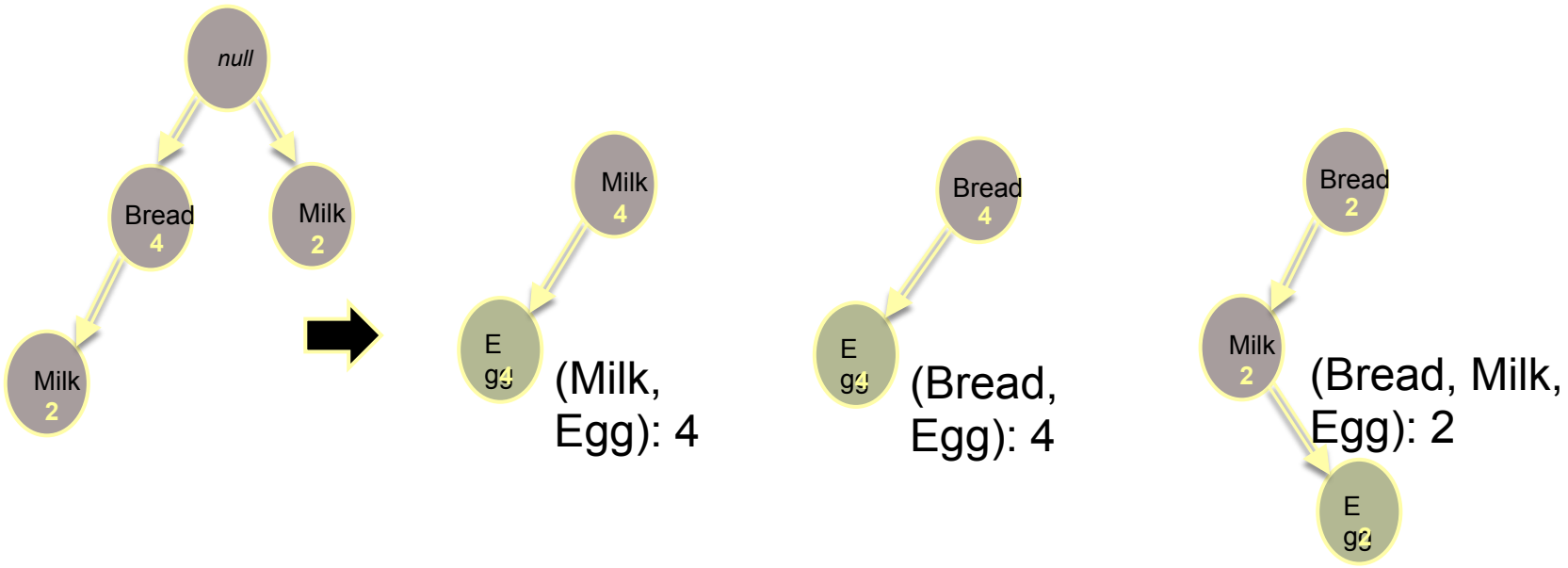


FP-Tree Mining



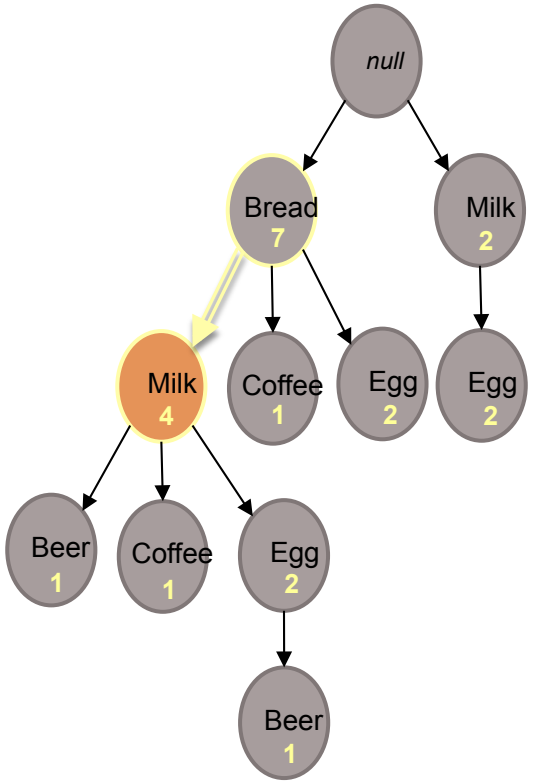
FP-Tree Mining

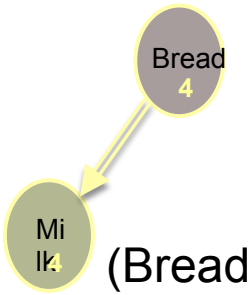
Bread : 7	Milk : 6	Egg : 6	Coffee : 2	Beer : 2



FP-Tree Mining

Bread : 7	Milk : 6	Egg : 6	Coffee : 2	Beer : 2





(Bread, Milk): 4

Frequent Patterns

(Bread, Milk, Beer): **2**

(Bread, Beer): **2**

(Milk, Beer): **2**

(Bread, Coffee): **2**

(Milk,Egg): **4**

(Bread, Egg): **4**

(Bread, Milk, Egg): **2**

(Bread, Milk): **4**

(Beer): **2**

(Coffee): **2**

(Egg): **6**

(Milk): **6**

(Bread): **7**