Min Support = 3

Transaction ID	Items
T1	{E,K,M,N,O,Y}
T2	{D,E,K,N,O,Y}
T3	{A,E,K,M}
T4	{C,K,M,U,Y}
T5	{C,E,I,K,O,O}

$$C_1 = \{ \overset{1}{A}, \overset{2}{C}, \overset{1}{D}, \overset{4}{E}, \overset{1}{I}, \overset{5}{K}, \overset{3}{M}, \overset{2}{N}, \overset{3}{O}, \overset{1}{U}, \overset{3}{Y} \}$$

$$L_1 = \{E, K, M, O, Y\}$$

$$C_2 = L_1 \bowtie L_1$$

$$C_2 = \{ \{E,K\}^4, \{E,M\}^2, \{E,O\}^3, \{E,Y\}^2,$$
$$\{K,M\}^3, \{K,O\}^3, \{K,Y\}^3, \{M,O\}^1, \{M,Y\}^2,$$
$$\{O,Y\}^2 \}$$

$$L_2 = \{ \{E,K\}, \{E,O\}, \{K,M\}, \{K,O\}, \{K,Y\} \}$$

$$L_2 = \{ \{E,K\}, \{E,O\}, \{K,M\}, \{K,O\}, \{K,Y\} \}.$$

$$L_2 = \{ \{E,K\}, \{E,O\}, \{K,M\}, \{K,O\}, \{K,Y\}.$$

$$C_3 = L_2 \bowtie L_2$$

$$C_3 = \{ \{E,K,O\}, \{K,M,O\}, \{K,M,Y\}, \{K,O,Y\} \}.$$

$$L_3 = \{\{E,K,O\}.$$

Frequent Itemset $= \{ L_1, L_2, L_3 \}.$

FP Growth

$$L = \{ i_2:7, i_1:6, i_3:6, i_4:2 \ i_5:2 \}$$

T Id	Itemset	Tid	Ordered Itemset
1	i_1, i_2, i_5	1	i_2, i_1, i_5
2	i_2, i_4	2	i_2, i_4
3	i_2, i_3	3	i_2, i_3
4	i_1, i_2, i_4	4	i_2, i_1, i_4
5	i_1, i_3	5	i_1, i_3
6	i_2, i_3	6	i_2, i_3
7	i_1, i_3	7	i_1, i_3
8	i_1, i_2, i_3, i_5	8	i_2, i_1, i_3, i_5
9	i_1, i_2, i_3	9	i_2, i_1, i_3

Tree Data Structure
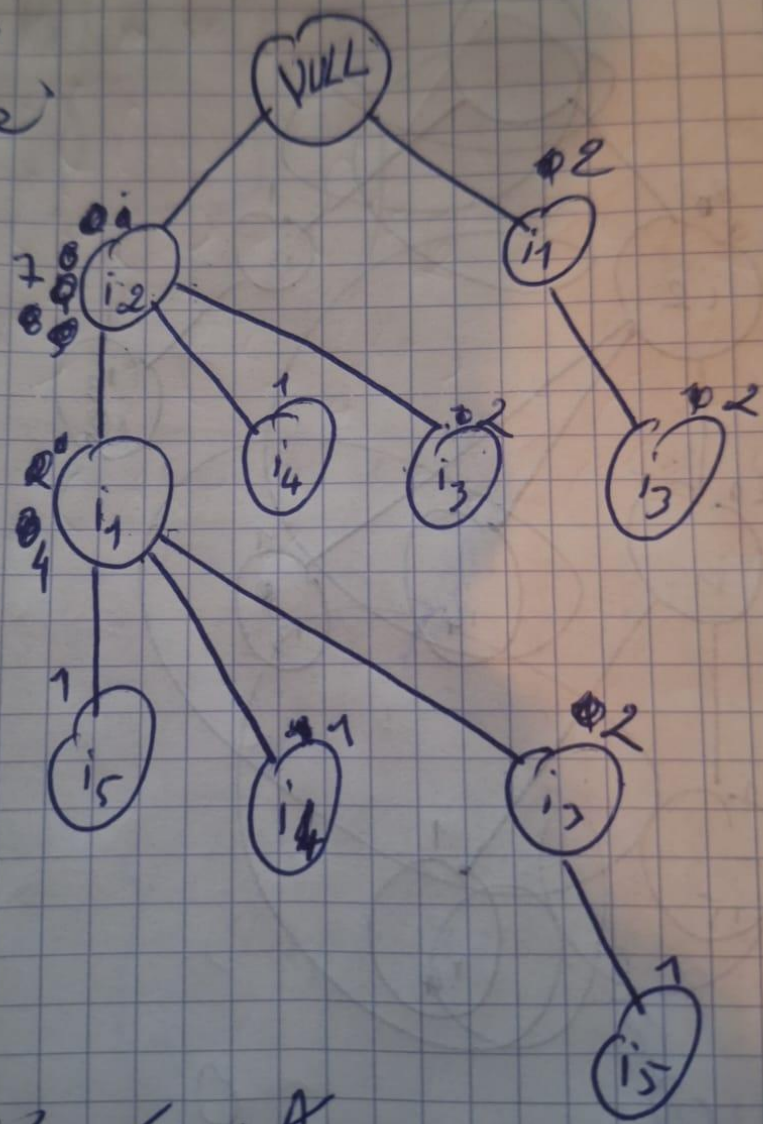
Header Table.

items	Cond. Patt. Base.	Cond. Freq. Patt. tree
i_4	$\{i_2, i_1 : 1\} \{i_2 : 1\}$.	$\{i_2 : 2\}$
i_5	$\{i_2, i_1 : 1\} \{i_2, i_1, i_3 : 1\}$.	$\{i_1, i_2 : 2\}$.
i_1	$\{i_2 : 4\}$	$\{i_2 : 4\}$.
i_3	$\{i_1 : 2\} \{i_2 : 2\} \{i_2, i_1 : 2\}$	$\{i_1, i_2 : 4\}$.
i_2	NULL.	

Cond freq Pattern tree for i_3.

Adding $\{i_1 : 2\}$
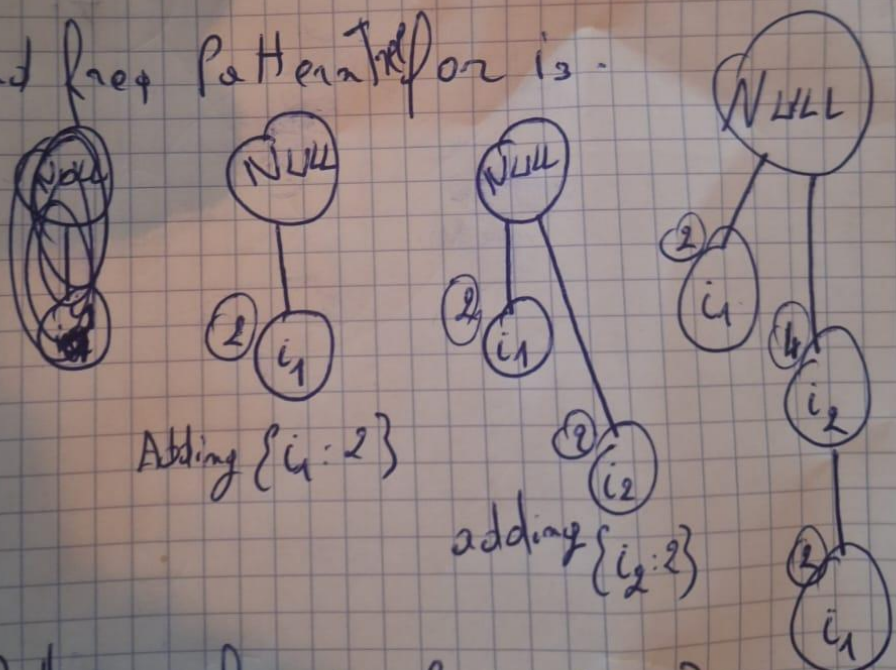
adding $\{i_2 : 2\}$

$\{$Cond. Freq. Patt. Base for $i_3 = \{\{i_1 : i_1\} : 4.\}$ adding $\{i_2, i_1 : 2\}$.

Frequent K item sets :

1 itemset = $\{\ \{i_1\};\ \{i_2\};\ \{i_3\};\ \{i_4\};\ \{i_5\ \}\}$.

2. itemset: $\{\ \{i_4,i_2\};\ \{i_5,i_1\};\ \{i_5;i_2\};$
$\underset{2}{\qquad\quad}\quad\underset{2}{\qquad}\quad\underset{2}{\qquad}$

$\{i_1;i_2\};\ \{i_3;i_1\};\ \{i_3;i_2\}\ \}$
$\underset{4}{\qquad}\quad\underset{4}{\qquad}\quad\underset{4}{\qquad}$

3 - itemsets : $\{\ \{i_5;i_1;i_2\};\{i_3;i_1;i_2\}\ \}$.
$\underset{2}{\qquad\qquad}\qquad\underset{4}{\qquad\qquad}$