1.Import Libraries

In [44]:
```
from mlxtend.preprocessing import TransactionEncoder
from mlxtend.frequent_patterns import apriori,association_rules
```

2.Datasets

In [ ]:
```
list=[["milk","onion","nutmeg","kidney beans","eggs","yogurts"],
      ["dill","onion","nutmeg","kidney beans","eggs","yogurts"],
      ["milk","apple","kidney beans","eggs"],
      ["milk","apple","corn","kidney beans","yogurts"],
      ['onion',"onion","kidney beans","ice cream","eggs"]]
```

3.Transaction Encoder

In [51]:
```
te=TransactionEncoder()
te_array=te.fit(list).transform(list)
df=pd.DataFrame(te_array,columns=te.columns_)
df
```

Out[51]:

	apple	corn	dill	eggs	ice cream	kidney beans	milk	nutmeg	onion	yogurts
0	False	False	False	True	False	True	True	True	True	True
1	False	False	True	True	False	True	False	True	True	True
2	True	False	False	True	False	True	True	False	False	False
3	True	True	False	False	False	True	True	False	False	True
4	False	False	False	True	True	True	False	False	True	False

4.Apiriori

In [56]:
```
frequant_items=apriori(df,min_support=0.3,use_colnames=True)
frequant_items['lenght']=frequant_items['itemsets'].apply(lambda x:len(x))
frequant_items
```

Out[56]:

	support	itemsets	lenght
0	0.4	(apple)	1
1	0.8	(eggs)	1
2	1.0	(kidney beans)	1
3	0.6	(milk)	1
4	0.4	(nutmeg)	1
5	0.6	(onion)	1
6	0.6	(yogurts)	1
7	0.4	(apple, kidney beans)	2
8	0.4	(milk, apple)	2
9	0.8	(eggs, kidney beans)	2
10	0.4	(milk, eggs)	2
11	0.4	(nutmeg, eggs)	2
12	0.6	(onion, eggs)	2
13	0.4	(yogurts, eggs)	2
14	0.6	(milk, kidney beans)	2
15	0.4	(nutmeg, kidney beans)	2
16	0.6	(onion, kidney beans)	2
17	0.6	(yogurts, kidney beans)	2
18	0.4	(milk, yogurts)	2
19	0.4	(nutmeg, onion)	2
20	0.4	(nutmeg, yogurts)	2
21	0.4	(onion, yogurts)	2
22	0.4	(milk, apple, kidney beans)	3
23	0.4	(milk, eggs, kidney beans)	3
24	0.4	(nutmeg, eggs, kidney beans)	3
25	0.6	(onion, eggs, kidney beans)	3

	support	itemsets	lenght
26	0.4	(yogurts, eggs, kidney beans)	3
27	0.4	(nutmeg, onion, eggs)	3
28	0.4	(nutmeg, yogurts, eggs)	3
29	0.4	(onion, yogurts, eggs)	3
30	0.4	(milk, yogurts, kidney beans)	3
31	0.4	(nutmeg, onion, kidney beans)	3
32	0.4	(nutmeg, yogurts, kidney beans)	3
33	0.4	(onion, yogurts, kidney beans)	3
34	0.4	(nutmeg, onion, yogurts)	3
35	0.4	(nutmeg, onion, eggs, kidney beans)	4
36	0.4	(nutmeg, yogurts, eggs, kidney beans)	4
37	0.4	(onion, yogurts, eggs, kidney beans)	4
38	0.4	(nutmeg, onion, yogurts, eggs)	4
39	0.4	(nutmeg, onion, yogurts, kidney beans)	4
40	0.4	(eggs, yogurts, onion, kidney beans, nutmeg)	5

5.Association Rules

In [66]:
```
rules=association_rules(frequant_items,min_threshold=1)
rules.sort_values(['lift'],ascending=False).head()
```

Out[66]:

	antecedents	consequents	antecedent support	consequent support	support	confidence	lift	leverage	conviction
103	(nutmeg)	(onion, yogurts, eggs, kidney beans)	0.4	0.4	0.4	1.0	2.5	0.24	inf
82	(nutmeg)	(onion, yogurts, kidney beans)	0.4	0.4	0.4	1.0	2.5	0.24	inf
80	(nutmeg, kidney beans)	(onion, yogurts)	0.4	0.4	0.4	1.0	2.5	0.24	inf
27	(yogurts, eggs)	(nutmeg)	0.4	0.4	0.4	1.0	2.5	0.24	inf
28	(nutmeg)	(yogurts, eggs)	0.4	0.4	0.4	1.0	2.5	0.24	inf