Association rule learning is a rule-based method for discovering relations between variables in large datasets. In the case of retail POS (point-of-sale) transactions analytics, our variables are going to be the retail products. It essentially discovers strong associations (rules) with some “strongness” level, which is represented by several parameters.

Apriori Algorithm

The Apriori algorithm (originally proposed by Agrawal) is one of the most common techniques in Market Basket Analysis. It is used to analyze the frequent itemsets in a transactional database, which then is used to generate association rules between the products. Install the **apyori** library using the command line by running the following pip command.

```
import matplotlib.pyplot as plt
import pandas as pd
import numpy as np
from apyori import apriori
```

```
In [1]: import numpy as np
        import pandas as pd
        df=pd.read_csv('GroceryStoreDataSet.csv'
        df
```

Out[1]:

	MILK,BREAD,BISCUIT
0	BREAD,MILK,BISCUIT,CORNFLAKES
1	BREAD,TEA,BOURNVITA
2	JAM,MAGGI,BREAD,MILK
3	MAGGI,TEA,BISCUIT
4	BREAD,TEA,BOURNVITA
5	MAGGI,TEA,CORNFLAKES
6	MAGGI,BREAD,TEA,BISCUIT
7	JAM,MAGGI,BREAD,TEA
8	BREAD,MILK
9	COFFEE,COCK,BISCUIT,CORNFLAKES
10	COFFEE,COCK,BISCUIT,CORNFLAKES

In [2]:
```
df.isnull().sum()
```

Out[2]:
```
MILK,BREAD,BISCUIT    0
dtype: int64
```

In [3]:
```
pip install apyori
```

```
Requirement already satisfied: apyori in c:\users\bhavana\anaconda3\lib\site-packages (1.1.2)
Note: you may need to restart the kernel to use updated packages.
```

In [8]:
```
from apyori import apriori
rules=apriori(df,min_support=0.01,min_confidence=0.02,min_lift=1,min_length=1)
```

In [9]:
```
m=list(rules)
m
```

```
=frozenset(), items_add=frozenset({'M'}), confidence=1.0, lift=1.0)]),
 RelationRecord(items=frozenset({'R'}), support=1.0, ordered_statistics=[OrderedStatistic(items_base
=frozenset(), items_add=frozenset({'R'}), confidence=1.0, lift=1.0)]),
 RelationRecord(items=frozenset({'S'}), support=1.0, ordered_statistics=[OrderedStatistic(items_base
=frozenset(), items_add=frozenset({'S'}), confidence=1.0, lift=1.0)]),
 RelationRecord(items=frozenset({'T'}), support=1.0, ordered_statistics=[OrderedStatistic(items_base
=frozenset(), items_add=frozenset({'T'}), confidence=1.0, lift=1.0)]),
 RelationRecord(items=frozenset({'U'}), support=1.0, ordered_statistics=[OrderedStatistic(items_base
```

In [10]:
```
print(len(m))
```

```
16383
```

In [11]:
```
print(m[0])
```

```
RelationRecord(items=frozenset({','}), support=1.0, ordered_statistics=[OrderedStatistic(items_base=f
rozenset(), items_add=frozenset({','}), confidence=1.0, lift=1.0)])
```