# Association Rule Mining via Apriori Algorithm in Python

## Installing Apyori package

```
!pip install apyori

Looking in indexes: https://pypi.org/simple, https://us-python.pkg.dev/colab-wheels/pub
Collecting apyori
    Downloading apyori-1.1.2.tar.gz (8.6 kB)
Building wheels for collected packages: apyori
    Building wheel for apyori (setup.py) ... done
    Created wheel for apyori: filename=apyori-1.1.2-py3-none-any.whl size=5974 sha256=f19
    Stored in directory: /root/.cache/pip/wheels/cb/f6/e1/57973c631d27efd1a2f375bd6a83b2a
Successfully built apyori
Installing collected packages: apyori
Successfully installed apyori-1.1.2
```

## **Import the Libraries**

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

#### **Importing the Dataset**

```
store_data = pd.read_csv("store_data.csv")

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store data.head()
```

	shrimp	almonds	avocado	vegetables mix	green grapes	whole weat flour	yams	cottage cheese	energy drink	tomato juice
0	burgers	meatballs	eggs	NaN	NaN	NaN	NaN	NaN	NaN	NaN
1	chutney	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
2	turkey	avocado	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
3	mineral water	milk	energy bar	whole wheat rice	green tea	NaN	NaN	NaN	NaN	NaN
4	low fat yogurt	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN

store\_data = pd.read\_csv('store\_data.csv', header=None)

store\_data.head()

	0	1	2	3	4	5	6	7	8	9	
0	shrimp	almonds	avocado	vegetables mix	green grapes	whole weat flour	yams	cottage cheese	energy drink	tomato juice	yog
1	burgers	meatballs	eggs	NaN	NaN	NaN	NaN	NaN	NaN	NaN	N
2	chutney	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	N
3	turkey	avocado	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	N
4	mineral water	milk	energy bar	whole wheat rice	green tea	NaN	NaN	NaN	NaN	NaN	N;



# **Data Proprocessing**

```
records = []
for i in range(0, 7501):
    records.append([str(store_data.values[i,j]) for j in range(0, 20)])
```

# **Applying Apriori**

association\_rules = apriori(records, min\_support=0.0045, min\_confidence=0.2, min\_lift=3, min\_ association\_results = list(association\_rules)

```
print(len(association_results))

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print(association_results[0])

RelationRecord(items=frozenset({'light cream', 'chicken'}), support=0.00453272896947073
```

# Viewing the Results

```
for item in association results:
   # first index of the inner list
   # Contains base item and add item
   pair = item[0]
   items = [x for x in pair]
   print("Rule: " + items[0] + " -> " + items[1])
   #second index of the inner list
   print("Support: " + str(item[1]))
   #third index of the list located at 0th
   #of the third index of the inner list
   print("Confidence: " + str(item[2][0][2]))
   print("Lift: " + str(item[2][0][3]))
   print("======="")
    CONTINUENCE: 0.0/17200/17200/17
    Lift: 3.2819951870487856
    Rule: escalope -> nan
    Support: 0.005732568990801226
    Confidence: 0.3006993006993007
    Lift: 3.790832696715049
    Rule: escalope -> nan
    Support: 0.005865884548726837
    Confidence: 0.3728813559322034
    Lift: 4.700811850163794
    _____
    Rule: frozen vegetables -> ground beef
    Support: 0.008665511265164644
    Confidence: 0.31100478468899523
    Lift: 3.165328208890303
    Rule: olive oil -> frozen vegetables
    Support: 0.004799360085321957
    Confidence: 0.20338983050847456
    Lift: 3.088314005352364
```

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Rule: frozen vegetables -> shrimp Support: 0.007199040127982935 Confidence: 0.30508474576271183

Lift: 3.200616332819722

Support: 0.005732568990801226 Confidence: 0.20574162679425836

Lift: 3.1240241752707125

Lift: 3.0131489680782684

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Rule: frozen vegetables -> tomatoes Support: 0.006665777896280496 Confidence: 0.23923444976076558

Lift: 3.4980460188216425

Rule: grated cheese -> ground beef

Support: 0.005332622317024397 Confidence: 0.3225806451612903

Lift: 3.283144395325426

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Rule: ground beef -> herb & pepper Support: 0.006665777896280496 Confidence: 0.39062500000000006

Lift: 3.975682666214383

Rule: nan -> ground beef Support: 0.015997866951073192 Confidence: 0.3234501347708895

Lift: 3.2919938411349285

Rule: ground beef -> herb & pepper