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")
```

:

:

:

```
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	l 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))
```

```
48
```

```
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("====================================")
```

```
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
```

```
====================================
Rule: frozen vegetables -> shrimp
Support: 0.007199040127982935
Confidence: 0.30508474576271183
Lift: 3.200616332819722
====================================
Rule: olive oil -> frozen vegetables
Support: 0.005732568990801226
Confidence: 0.20574162679425836
Lift: 3.1240241752707125
====================================
Rule: frozen vegetables -> shrimp
Support: 0.005999200106652446
Confidence: 0.21531100478468898
Lift: 3.0131489680782684
====================================
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
====================================
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
```