In [1]:
```
import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
import apyori as apriori
```

In [2]:
```
df = pd.read_csv('CanteenDataSet.csv')
```

In [3]:
```
df.head()
```

Out[3]:

	Tea, Samosa, Sandwich
0	Samosa, Tea, Sandwich, Noodles
1	Samosa, Cold Coffee, French Fries
2	Pizza, Maggie,Samosa,Tea
3	Maggie,Cold Coffee,Sandwich
4	Samosa,Cold Coffee,French Fries

In [4]:
```
df.rename(columns = {'Tea, Samosa, Sandwich':'Items'} , inplace = True)
```

In [5]:
```
df.head()
```

Out[5]:

	Items
0	Samosa, Tea, Sandwich, Noodles
1	Samosa, Cold Coffee, French Fries
2	Pizza, Maggie,Samosa,Tea
3	Maggie,Cold Coffee,Sandwich
4	Samosa,Cold Coffee,French Fries

In [6]:
```
df['Items'].str.split(",")
```

Out[6]:
```
0            [Samosa,  Tea,  Sandwich,  Noodles]
1          [Samosa,  Cold Coffee,  French Fries]
2                  [Pizza,  Maggie, Samosa, Tea]
3                [Maggie, Cold Coffee, Sandwich]
4            [Samosa, Cold Coffee, French Fries]
5                 [Maggie, Cold Coffee, Noodles]
6        [Maggie, Samosa, Cold Coffee, Sandwich]
7           [Pizza, Maggie, Samosa, Cold Coffee]
8                                  [Samosa, Tea]
9     [Black Tea, Manchurian, Sandwich, Noodles]
10    [Black Tea, Manchurian, Sandwich, Noodles]
11       [Black Tea, Fried Maggie, French Fries]
12               [Samosa, Black Tea, Manchurian]
13              [Samosa, Fried Maggie, Sandwich]
14           [Black Tea, Fried Maggie, Sandwich]
15          [Samosa, Fried Maggie, French Fries]
16             [Samosa, Black Tea, Fried Maggie]
17             [Samosa, Black Tea, Fried Maggie]
18        [Cold Coffee, Tea, Black Tea, Noodles]
Name: Items, dtype: object
```

In [7]:
```
df= df['Items'].str.split(",", expand= True)
```

In [8]:
```
df.rename(columns={0: 'Item1', 1:'Item2', 2:'Item3', 3:'Item4'}, inplace = True)
```

In [9]:
```
df.head()
```

Out[9]:

	Item1	Item2	Item3	Item4
0	Samosa	Tea	Sandwich	Noodles
1	Samosa	Cold Coffee	French Fries	None
2	Pizza	Maggie	Samosa	Tea
3	Maggie	Cold Coffee	Sandwich	None
4	Samosa	Cold Coffee	French Fries	None

In [10]:
```
records = []
for i in range(19):
    records.append([str(df.values[i,j]) for j in range(0,4)])
```

In [11]:
```
print(type(records))
```

```
<class 'list'>
```

In [12]:
```
#from mlxtend.preprocessing import TransactionEncoder
from mlxtend.frequent_patterns import apriori, association_rules
```

In [13]:
```
items = set()
for col in df:
    items.update(df[col].unique())
print(items)
```

```
{'Sandwich', 'Samosa', 'Pizza', ' Sandwich', 'Noodles', ' Maggie', 'Black Tea', 'F
rench Fries', ' French Fries', 'Manchurian', ' Noodles', 'Maggie', 'Tea', 'Cold Co
ffee', ' Cold Coffee', ' Tea', 'Fried Maggie', None}
```

In [14]:
```
itemset = set(items)
```

In [15]:
```
encoded_value = []
for index, row in df.iterrows():
    rowset = set(row)
    labels = {}
    uncommons = list(itemset- rowset)
    commons = list(itemset.intersection(rowset))
    for uc in uncommons:
        labels[uc] = 0
    for com in commons:
        labels[com] = 1
    encoded_value.append(labels)
encoded_value[0]

df1 = pd.DataFrame(encoded_value)
```

In [16]:
```
frequent = apriori(df1, min_support = 0.2, use_colnames=True)
```

```
C:\Users\DELL\AppData\Local\Programs\Python\Python310\lib\site-packages\mlxtend\fr
equent_patterns\fpcommon.py:111: DeprecationWarning: DataFrames with non-bool type
s result in worse computationalperformance and their support might be discontinued
in the future.Please use a DataFrame with bool type
  warnings.warn(
```

In [17]:
```
frequent.head(7)
```

Out[17]:

	support	itemsets
0	0.315789	(Sandwich)
1	0.210526	(Noodles)
2	0.421053	(Black Tea)
3	0.210526	(Maggie)
4	0.315789	(Fried Maggie)
5	0.315789	(Cold Coffee)
6	0.631579	(None)

In [18]:
```
rules = association_rules(frequent, metric= 'confidence', min_threshold = 0.6)
```

In [19]:
```
rules.head()
```

Out[19]:

	antecedents	consequents	antecedent support	consequent support	support	confidence	lift	leverage
0	(Fried Maggie)	(Black Tea)	0.315789	0.421053	0.210526	0.666667	1.583333	0.077562
1	(Black Tea)	(None)	0.421053	0.631579	0.263158	0.625000	0.989583	-0.002770
2	(Maggie)	(Cold Coffee)	0.210526	0.315789	0.210526	1.000000	3.166667	0.144044
3	(Cold Coffee)	(Maggie)	0.315789	0.210526	0.210526	0.666667	3.166667	0.144044
4	(Fried Maggie)	(None)	0.315789	0.631579	0.315789	1.000000	1.583333	0.116343

In [ ]: