```
[4]:  import numpy as np
      import pandas as pd
      from apyori import apriori

[11]: store_data=pd.read_csv('Day1.csv',header=None)

[14]: print(store_data)

          0      1      2       3     4      5
      0   Wine   Chips  Bread   Butter  Milk  Apple
      1   Wine   NaN    Bread   Butter  Milk  NaN
      2   NaN    NaN    Bread   Butter  Milk  NaN
      3   NaN    Chips  NaN     NaN     NaN   Apple
      4   Wine   Chips  Bread   Butter  Milk  Apple
      5   Wine   Chips  NaN     NaN     Milk  NaN
      6   Wine   Chips  Bread   Butter  NaN   Apple
      7   Wine   Chips  NaN     NaN     Milk  NaN
      8   Wine   NaN    Bread   NaN     NaN   Apple
      9   Wine   NaN    Bread   Butter  Milk  NaN
      10  NaN    Chips  Bread   Butter  NaN   Apple
      11  Wine   NaN    NaN     Butter  Milk  Apple
      12  Wine   Chips  Bread   Butter  Milk  NaN
      13  Wine   NaN    Bread   NaN     Milk  Apple
      14  Wine   NaN    Bread   Butter  Milk  Apple
      15  Wine   Chips  Bread   Butter  Milk  Apple
      16  NaN    Chips  Bread   Butter  Milk  Apple
      17  NaN    Chips  NaN     Butter  Milk  Apple
      18  Wine   Chips  Bread   Butter  Milk  Apple
      19  Wine   NaN    Bread   Butter  Milk  Apple
      20  Wine   Chips  Bread   NaN     Milk  Apple
      21  NaN    Chips  NaN     NaN     NaN   NaN

[19]: store_data.shape

[19]: (22, 6)

[23]: records=[]
      for i in range(0,22):
          records.append([str(store_data.values[i,j]) for j in range(0,6)])
```

```
[25]: records

[25]: [['Wine', 'Chips', 'Bread', 'Butter', 'Milk', 'Apple'],
       ['Wine', 'nan', 'Bread', 'Butter', 'Milk', 'nan'],
       ['nan', 'nan', 'Bread', 'Butter', 'Milk', 'nan'],
       ['nan', 'Chips', 'nan', 'nan', 'nan', 'Apple'],
       ['Wine', 'Chips', 'Bread', 'Butter', 'Milk', 'Apple'],
       ['Wine', 'Chips', 'nan', 'nan', 'Milk', 'nan'],
       ['Wine', 'Chips', 'Bread', 'Butter', 'nan', 'Apple'],
       ['Wine', 'Chips', 'nan', 'nan', 'Milk', 'nan'],
       ['Wine', 'nan', 'Bread', 'nan', 'nan', 'Apple'],
       ['Wine', 'nan', 'Bread', 'Butter', 'Milk', 'nan'],
       ['nan', 'Chips', 'Bread', 'Butter', 'nan', 'Apple'],
       ['Wine', 'nan', 'nan', 'Butter', 'Milk', 'Apple'],
       ['Wine', 'Chips', 'Bread', 'Butter', 'Milk', 'nan'],
       ['Wine', 'nan', 'Bread', 'nan', 'Milk', 'Apple'],
       ['Wine', 'nan', 'Bread', 'Butter', 'Milk', 'Apple'],
       ['Wine', 'Chips', 'Bread', 'Butter', 'Milk', 'Apple'],
       ['nan', 'Chips', 'Bread', 'Butter', 'Milk', 'Apple'],
       ['nan', 'Chips', 'nan', 'Butter', 'Milk', 'Apple'],
       ['Wine', 'Chips', 'Bread', 'Butter', 'Milk', 'Apple'],
       ['Wine', 'nan', 'Bread', 'Butter', 'Milk', 'Apple'],
       ['Wine', 'Chips', 'Bread', 'nan', 'Milk', 'Apple'],
       ['nan', 'Chips', 'nan', 'nan', 'nan', 'nan']]

[35]: association_rules = apriori(records,min_support=0.50,min_confidence=0.7,min_lift=1.2,min_length=2)
      association_results = list(association_rules)

[37]: print(len(association_results))

      1

[39]: print(association_results)

      [RelationRecord(items=frozenset({'Bread', 'Milk', 'Butter'}), support=0.5, ordered_statistics=[OrderedStatistic(items_base=frozenset({'Butter'}), items_add=frozenset({'Brea
      d', 'Milk'}), confidence=0.7333333333333334, lift=1.241025641025641), OrderedStatistic(items_base=frozenset({'Bread', 'Milk'}), items_add=frozenset({'Butter'}), confidence=
      0.8461538461538461, lift=1.241025641025641)])]
```

The support value for the first rule is 0.5. This number is calculated by dividing the number of transactions containing 'Milk', 'Bread' and 'Butter' by the total number of transactions.

The confidence level for the rule is 0.846 which shows that out of all the transactions that contain 'Milk' and 'Bread', 84.6% contain 'Butter' too.

The lift of 1.241 tells us that 'Butter' is 1.241 times more likely to be bought by the customer who buy both 'Milk' and 'Butter' compared to the default likelihood sale of 'Butter'.