The manager of a retail store is trying to find out an association rule between 6 items, to figure out which items are more often bought together so that he can keep the items in order to increase the sales

```
!pip install apyori
```

```
Collecting apyori
  Downloading apyori-1.1.2.tar.gz (8.6 kB)
  Preparing metadata (setup.py) ... done
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=5954 sha256=8313752d9870ea3f90cd0a0e51d1d072b2449d2be317a3aa4fed684f577e36eb
  Stored in directory: /root/.cache/pip/wheels/77/3d/a6/d317a6fb32be58a602b1e8c6b5d6f31f79322da554cad2a5ea
Successfully built apyori
Installing collected packages: apyori
Successfully installed apyori-1.1.2
```

```
import numpy as np
import pandas as pd
from apyori import apriori
```

```
store_data = pd.read_csv('Day1.csv', header=None)
```

```
store_data.head()
```

	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

Next steps: Generate code with `store_data` View recommended plots New interactive sheet

```
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
```

```
store_data.shape
```

```
(22, 6)
```

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

```
records
```

```
[['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']]
```

```
association_rules = apriori(records, min_support=0.50, min_confidence=0.7, min_lift=1.2, min_length=2)
association_results = list(association_rules)
```

```
print(len(association_results))
```

```
1
```

```
print(association_results)
```

```
[RelationRecord(items=frozenset({'Bread', 'Butter', 'Milk'}), support=0.5, ordered_statistics=[OrderedStatistic(items_base=frozenset({'Butter'}), it
```