



Week - 10

Write a Python program to generate frequent item sets / association rules using Apriori algorithm.

AIM: To write a Python program to generate frequent item sets / association rules using Apriori algorithm.

DECRIPTION:

The algorithm is used to finding frequent itemset in a dataset for boolean association rule.

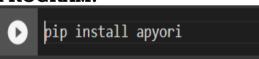
Name of the algorithm is Apriori because it uses prior knowledge of frequent itemset properties. We apply an iterative approach or levelwise search where k-frequent itemsets are used to find k+1 itemsets.

To improve the efficiency of level-wise generation of frequent itemsets, an important property is used called **Apriori property** which helps by reducing the search space.

Apriori Property: All non-empty subset of frequent itemset must be frequent. The key concept of Apriori algorithm is its anti-monotonicity of support measure.

Frequent Itemset: The itemset that occurs frequently is called frequent itemset.

PROGRAM:



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

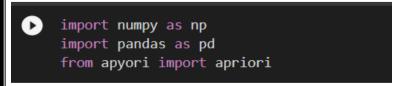
Created wheel for apyori: filename=apyori-1.1.2-py3-none-any.whl size=5975 sha256=15a6583e7917bfeb62bedbd6532e8c18b988a87105cfc6715453f07cc4ac0198

Stored in directory: /root/.cache/pip/wheels/cb/f6/e1/57973c631d27efd1a2f375bd6a83b2a616c4021f24aab84080

Successfully built apyori

Installing collected packages: apyori

Successfully installed apyori-1.1.2







```
data=pd.read csv('/apri.csv')
     print(data)
             Chips
                            Butter
       Wine
                     Bread
                                    Milk
                                          Apple
₽
   0
       Wine
             Chips
                    Bread
                           Butter
                                    Milk
                                            NaN
                                    Milk
   1
        NaN
               NaN
                   Bread
                            Butter
                                            NaN
   2
        NaN
             Chips
                     NaN
                              NaN
                                    NaN Apple
       Wine
             Chips Bread Butter Milk
                                         Apple
                                    Milk
       Wine
             Chips
   4
                    NaN
                              NaN
                                            NaN
       Wine Chips
                    Bread
                                   NaN
                            Butter
                                         Apple
   6
                              NaN Milk
       Wine Chips
                     NaN
                                            NaN
                              NaN
       Wine
               NaN Bread
                                    NaN Apple
   8
       Wine
               NaN Bread Butter Milk
                                            NaN
   9
       NaN Chips
                   Bread Butter NaN Apple
   10
       Wine
              NaN
                    NaN Butter
                                    Milk
                                          Apple
   11
       Wine
             Chips
                    Bread
                           Butter
                                   Milk
                                            NaN
   12
       Wine
             NaN Bread
                               NaN Milk
                                          Apple
   13
       Wine
               NaN Bread Butter
                                    Milk Apple
                    Bread Butter
                                    Milk
   14
       Wine
             Chips
                                          Apple
   15
        NaN
             Chips
                   Bread Butter
                                   Milk
                                          Apple
                                    Milk
   16
        NaN
             Chips
                     NaN Butter
                                          Apple
                                    Milk
   17
       Wine
             Chips
                    Bread
                           Butter
                                          Apple
   18
       Wine
                                    Milk
               NaN
                    Bread Butter
                                          Apple
     data.shape
     (19, 6)
   records=[]
   for i in range(0,19):
     records.append([str(data.values[i,j]) for j in range(0,6)])
   ass rules=apriori(records,min support=0.5,confidence=0.7)
   result=list(ass rules)
    print(len(result))
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```





print((result))

OUTPUT:

[RelationRecord(items=frozenset({'Apple'}), support=0.6842105263157895, ordered_statistics=[OrderedStatistic(items_base=frozenset(), items_add=frozenset({'Apple'}), confidence=0.6842105263157895, lift=1.0)]), RelationRecord(items=frozenset({'Bread'}), support=0.7368421052631579, ordered_statistics=[OrderedStatistic(items_base=frozenset(), items_add=frozenset({'Bread'}), confidence=0.7368421052631579, lift=1.0)]), RelationRecord(items=frozenset({'Butter'}), support=0.7368421052631579, ordered_statistics=[OrderedStatistic(items_base=frozenset(), items_add=frozenset({'Butter'}), confidence=0.7368421052631579, lift=1.0)]), RelationRecord(items=frozenset({'Chips'}), support=0.631578947368421, ordered_statistics=[OrderedStatistic(items_base=frozenset(), items_add=frozenset({'Chips'}), confidence=0.631578947368421, lift=1.0)]), RelationRecord(items=frozenset({'Milk'}), support=0.7894736842105263, ordered statistics=[OrderedStatistic(items base=frozenset(), items add=frozenset(fMilk), confidence=0.7894736842105263, lift=1.0)]), RelationRecord(items=frozenset({'Wine'}), support=0.7368421052631579, ordered_statistics=[OrderedStatistic(items_base=frozenset(), items_add=frozenset({'Wine'}), confidence=0.7368421052631579, lift=1.0)]), RelationRecord(items=frozenset(\{\text{'nan'}\}\), support=0.8421052631578947, ordered_statistics=[OrderedStatistic(items_base=frozenset(), items_add=frozenset({'nan'}), confidence=0.8421052631578947, lift=1.0)]), RelationRecord(items=frozenset({'Bread', 'Apple'}), support=0.5263157894736842, ordered_statistics=[OrderedStatistic(items_base=frozenset(), items_add=frozenset({'Bread', 'Apple'}), confidence=0.5263157894736842, lift=1.0), OrderedStatistic(items_base=frozenset({'Apple'}), items_add=frozenset({'Bread'}), confidence=0.7692307692307692, lift=1.043956043956044), OrderedStatistic(items_base=frozenset({'Bread'}), items_add=frozenset({'Apple'}), confidence=0.7142857142857143, lift=1.043956043956044)]), RelationRecord(items=frozenset({'Butter', 'Apple'}), support=0.5263157894736842, ordered_statistics=[OrderedStatistic(items_base=frozenset(), items_add=frozenset({Butter', 'Apple'}), confidence=0.5263157894736842, lift=1.0), OrderedStatistic(items_base=frozenset({'Apple'}), items_add=frozenset({'Butter'}), confidence=0.7692307692307692, lift=1.043956043956044), OrderedStatistic(items_base=frozenset({'Butter'}), items_add=frozenset({'Apple'}),



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1