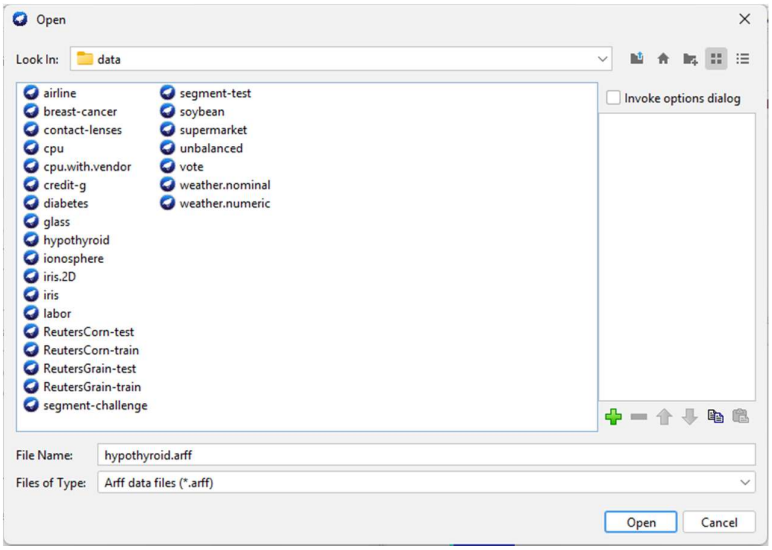
WEEK-5

Demonstration of Association rules using Apriori algorithm.

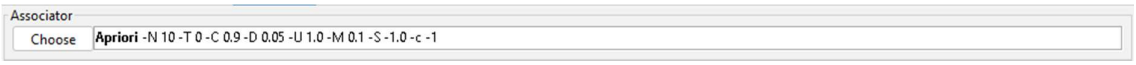
Procedure for applying Apriori Algorithm for supermarket.arff

Step 1: Load the **supermarket.arff** data file



Step 2: Go to **Associate** tab

Then click on choose, under the associator, and select **Apriori**



Click on the start. **(Output for Apriori – numRules=10, support=0.1, metricType=confidence)**

```
Minimum support: 0.15 (694 instances)
Minimum metric <confidence>: 0.9
Number of cycles performed: 17

Generated sets of large itemsets:

Size of set of large itemsets L(1): 44

Size of set of large itemsets L(2): 380

Size of set of large itemsets L(3): 910

Size of set of large itemsets L(4): 633

Size of set of large itemsets L(5): 105

Size of set of large itemsets L(6): 1

Best rules found:

 1. biscuits=t frozen foods=t fruit=t total=high 788 ==> bread and cake=t 723    <conf:(0.92)> lift:(1.27) lev:(0.03) [155] conv:(3.35)
 2. baking needs=t biscuits=t fruit=t total=high 760 ==> bread and cake=t 696    <conf:(0.92)> lift:(1.27) lev:(0.03) [149] conv:(3.28)
 3. baking needs=t frozen foods=t fruit=t total=high 770 ==> bread and cake=t 705    <conf:(0.92)> lift:(1.27) lev:(0.03) [150] conv:(3.27)
 4. biscuits=t fruit=t vegetables=t total=high 815 ==> bread and cake=t 746    <conf:(0.92)> lift:(1.27) lev:(0.03) [159] conv:(3.26)
 5. party snack foods=t fruit=t total=high 854 ==> bread and cake=t 779    <conf:(0.91)> lift:(1.27) lev:(0.04) [164] conv:(3.15)
 6. biscuits=t frozen foods=t vegetables=t total=high 797 ==> bread and cake=t 725    <conf:(0.91)> lift:(1.26) lev:(0.03) [151] conv:(3.06)
 7. baking needs=t biscuits=t vegetables=t total=high 772 ==> bread and cake=t 701    <conf:(0.91)> lift:(1.26) lev:(0.03) [145] conv:(3.01)
 8. biscuits=t fruit=t total=high 954 ==> bread and cake=t 866    <conf:(0.91)> lift:(1.26) lev:(0.04) [179] conv:(3)
 9. frozen foods=t fruit=t vegetables=t total=high 834 ==> bread and cake=t 757    <conf:(0.91)> lift:(1.26) lev:(0.03) [156] conv:(3)
10. frozen foods=t fruit=t total=high 969 ==> bread and cake=t 877    <conf:(0.91)> lift:(1.26) lev:(0.04) [179] conv:(2.92)
```

Output for Apriori – numRules=15, support=0.5, metricType=lift

```
=== Run information ===

Scheme:       weka.associations.Apriori -N 15 -T 1 -C 1.1 -D 0.05 -U 1.0 -M 0.5 -S -1.0 -c -1
Relation:     supermarket
Instances:    4627
Attributes:   217
              [list of attributes omitted]
=== Associator model (full training set) ===


Apriori
=======

Minimum support: 0.5 (2314 instances)
Minimum metric <lift>: 1.1
Number of cycles performed: 10

Generated sets of large itemsets:

Size of set of large itemsets L(1): 10

Size of set of large itemsets L(2): 2

Best rules found:

 1. bread and cake=t 3330 ==> milk-cream=t 2337    conf:(0.7) < lift:(1.1)> lev:(0.05) [221] conv:(1.22)
 2. milk-cream=t 2939 ==> bread and cake=t 2337    conf:(0.8) < lift:(1.1)> lev:(0.05) [221] conv:(1.37)
```

Output for Apriori – numRules=5, support=0.4, metricType=lift

```
=== Run information ===

Scheme:       weka.associations.Apriori -N 5 -T 1 -C 1.1 -D 0.05 -U 1.0 -M 0.4 -S -1.0 -c -1
Relation:     supermarket
Instances:    4627
Attributes:   217
              [list of attributes omitted]
=== Associator model (full training set) ===


Apriori
=======

Minimum support: 0.45 (2082 instances)
Minimum metric <lift>: 1.1
Number of cycles performed: 11

Generated sets of large itemsets:

Size of set of large itemsets L(1): 13

Size of set of large itemsets L(2): 7

Best rules found:

1. vegetables=t 2961 ==> fruit=t 2207    conf:(0.75) < lift:(1.16)> lev:(0.07) [311] conv:(1.41)
2. fruit=t 2962 ==> vegetables=t 2207    conf:(0.75) < lift:(1.16)> lev:(0.07) [311] conv:(1.41)
3. bread and cake=t 3330 ==> biscuits=t 2083    conf:(0.63) < lift:(1.11)> lev:(0.04) [208] conv:(1.17)
4. biscuits=t 2605 ==> bread and cake=t 2083    conf:(0.8) < lift:(1.11)> lev:(0.04) [208] conv:(1.4)
5. bread and cake=t 3330 ==> milk-cream=t 2337    conf:(0.7) < lift:(1.1)> lev:(0.05) [221] conv:(1.22)
```