

Experiment-3.2

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Semester: 01

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Subject Code: 23CSH-621

Aim of the Experiment :

Aim of the Experiment is to finding Association Rules for the Crime data using Apriori Algorithm and perform the result analysis..

Objective of the Experiment :

Task to be done for this experiment is that we have to perform Apriori algorithm and perform the result analysis.

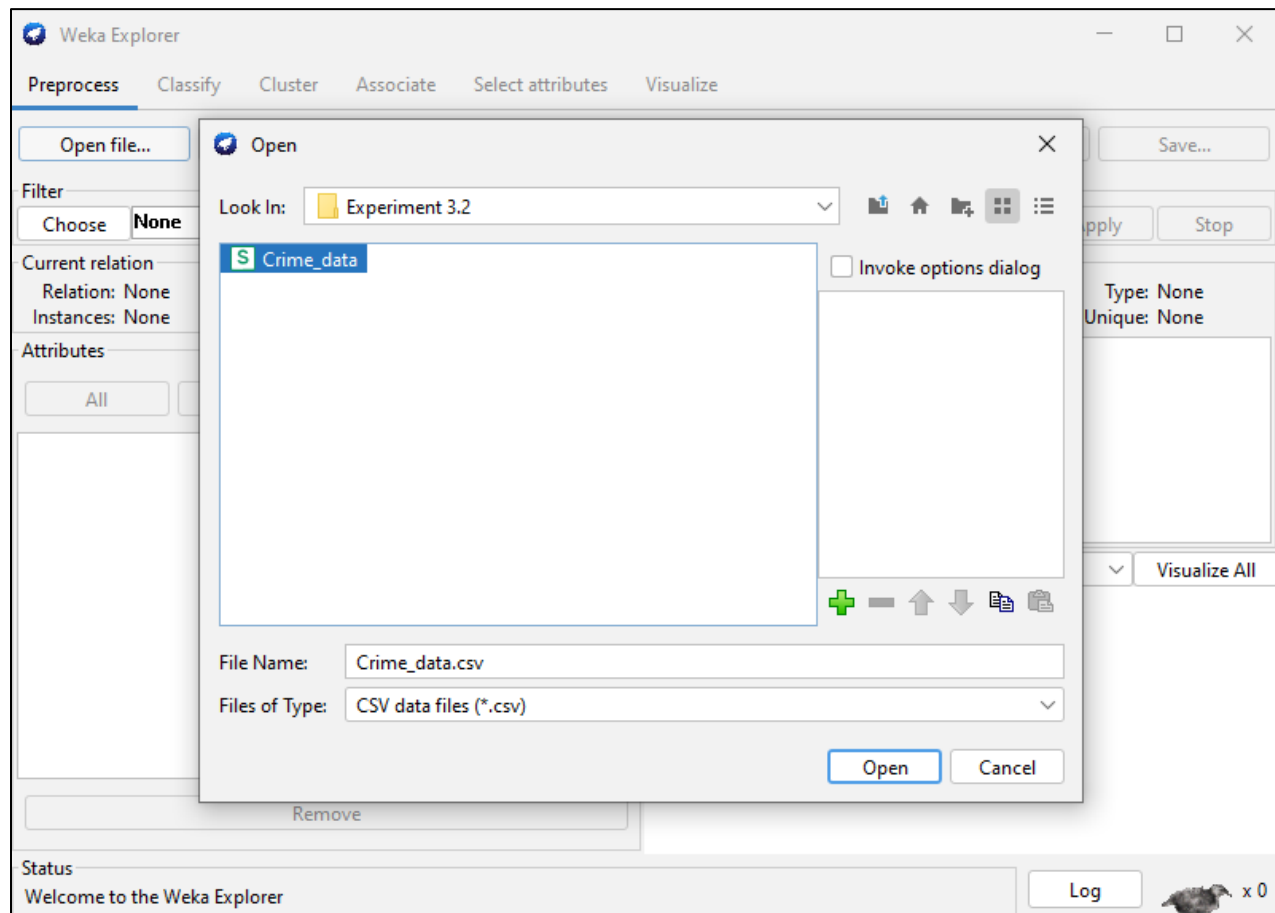
Algorithm/ Steps for Experiment :

Step 1: Download the Crime dataset from the Kaggle website.

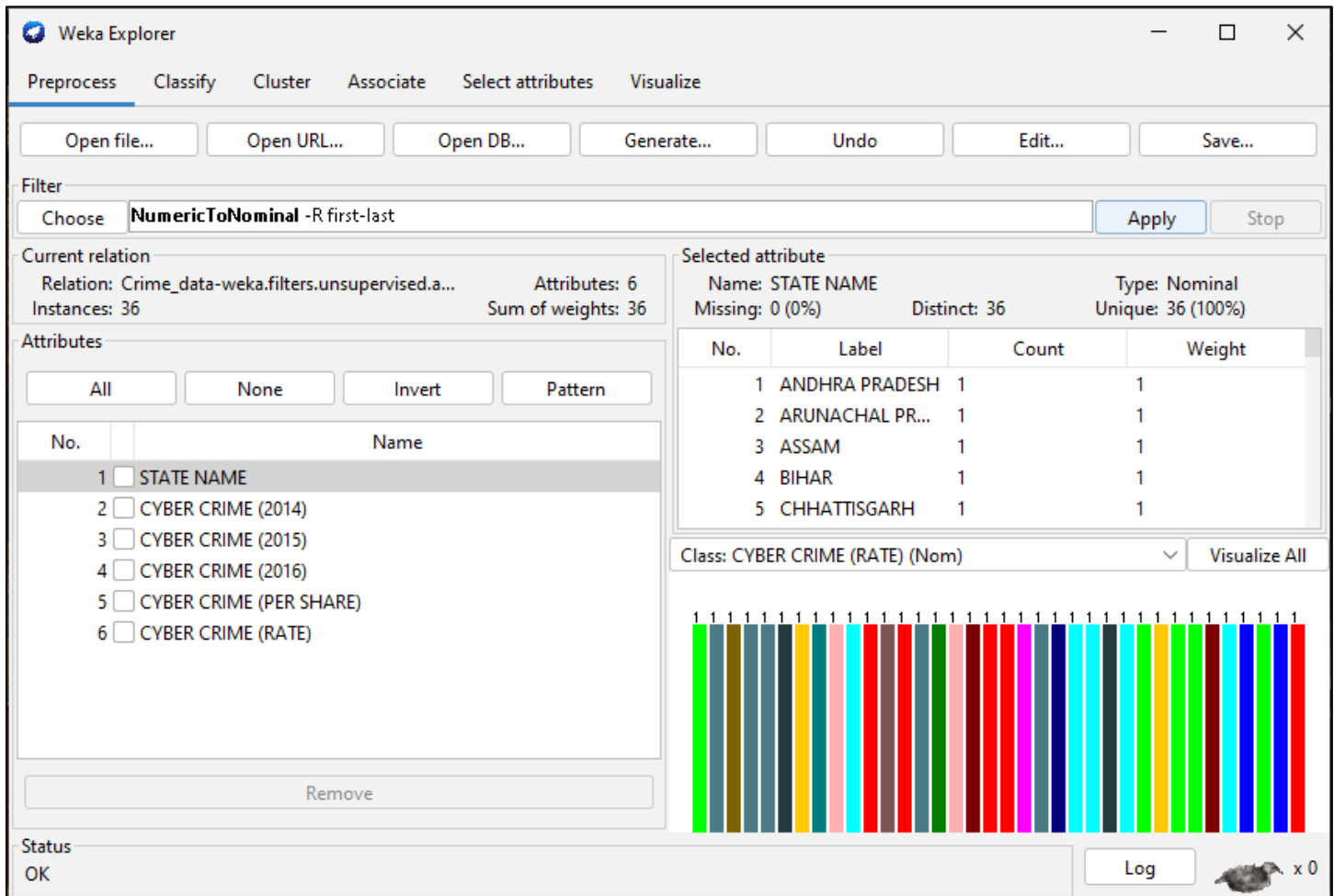
Step 2: Open the WEKA Tool and open the 'Explorer' tab.



Step 3: Click on the 'Open file' Option >> Select Crime dataset >> Click on Open.



Step 4: Change the dataset from Numeric to Nominal.



The screenshot shows the Weka Explorer interface with the 'Preprocess' tab selected. The 'Filter' dropdown is set to 'NumericToNominal -R first-last'. The 'Current relation' is 'Crime_data-weka.filters.unsupervised.a...' with 6 attributes and 36 instances. The 'Attributes' list shows 6 attributes, with 'STATE NAME' selected. The 'Selected attribute' panel shows 'STATE NAME' with a type of 'Nominal', 36 distinct values, and 36 unique values (100%). The 'Class' is set to 'CYBER CRIME (RATE) (Nom)'. A bar chart at the bottom shows the distribution of the selected attribute.

Weka Explorer

Preprocess | Classify | Cluster | Associate | Select attributes | Visualize

Open file... | Open URL... | Open DB... | Generate... | Undo | Edit... | Save...

Filter: Choose **NumericToNominal -R first-last** [Apply] [Stop]

Current relation: Relation: Crime_data-weka.filters.unsupervised.a... Attributes: 6
Instances: 36 Sum of weights: 36

Attributes: All | None | Invert | Pattern

No.	Name
1	<input checked="" type="checkbox"/> STATE NAME
2	<input type="checkbox"/> CYBER CRIME (2014)
3	<input type="checkbox"/> CYBER CRIME (2015)
4	<input type="checkbox"/> CYBER CRIME (2016)
5	<input type="checkbox"/> CYBER CRIME (PER SHARE)
6	<input type="checkbox"/> CYBER CRIME (RATE)

[Remove]

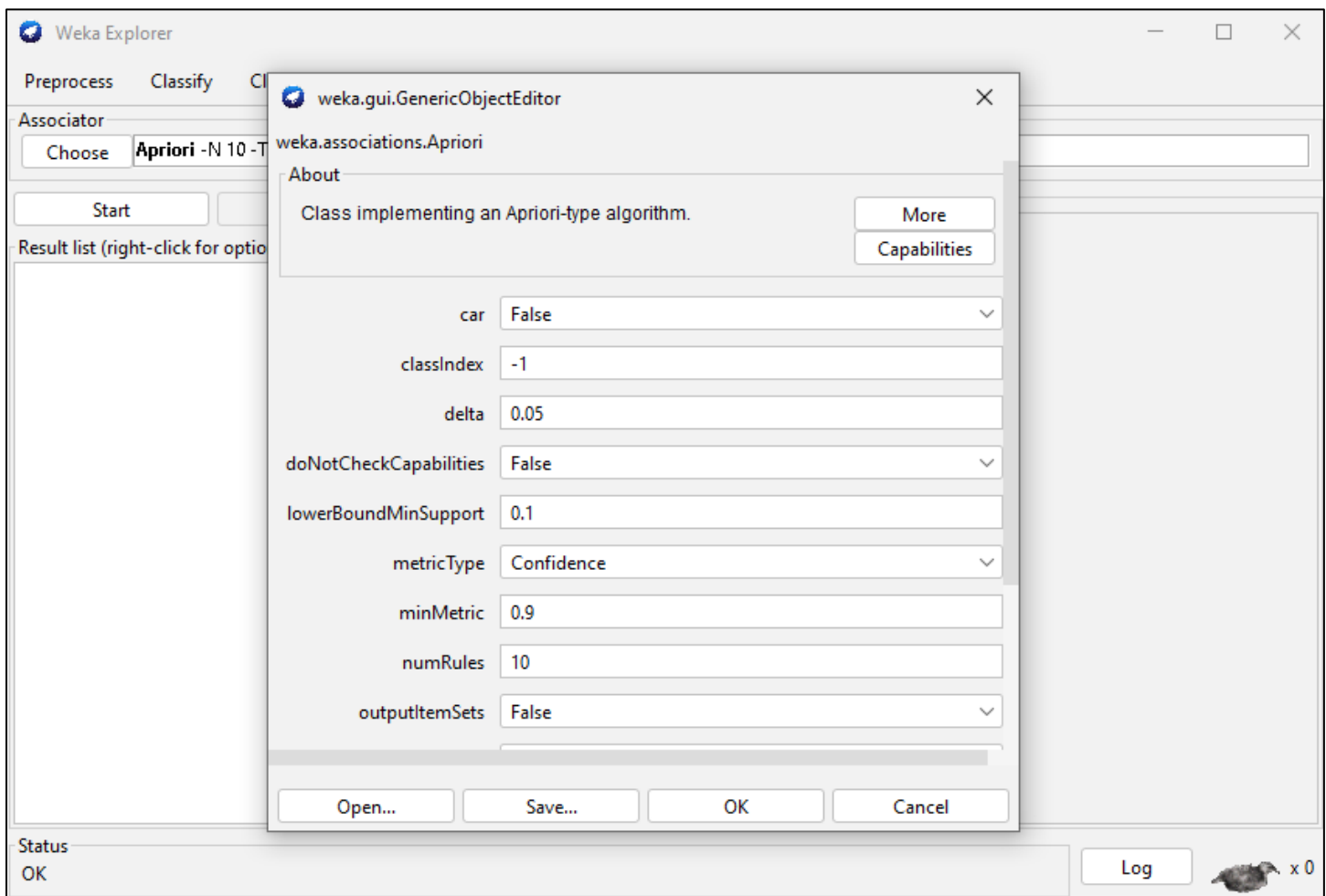
Selected attribute: Name: STATE NAME Type: Nominal
Missing: 0 (0%) Distinct: 36 Unique: 36 (100%)

No.	Label	Count	Weight
1	ANDHRA PRADESH	1	1
2	ARUNACHAL PR...	1	1
3	ASSAM	1	1
4	BIHAR	1	1
5	CHHATTISGARH	1	1

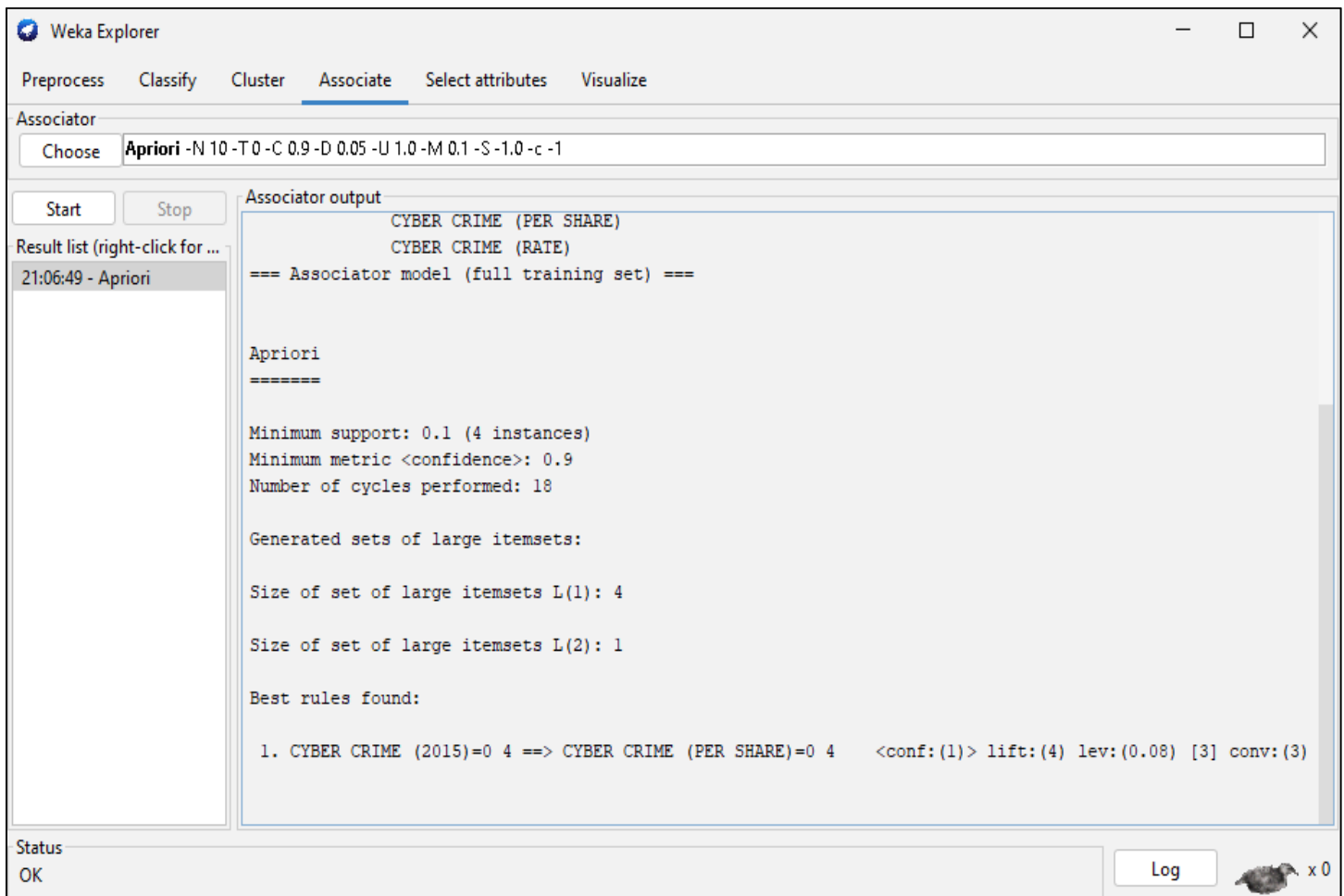
Class: CYBER CRIME (RATE) (Nom) [Visualize All]

Status: OK [Log] x 0

Step 5: Click on the 'Associate' Tab >> Choose and select Apriori algorithm from 'Associator' Section.



Step 6: Click Start to build the model. Associator output shows the model evaluation parameters.



The screenshot shows the Weka Explorer application window. The 'Associate' tab is selected. The 'Choose' button is clicked, and the 'Apriori' algorithm is selected. The 'Start' button is also visible. The 'Associator output' pane displays the following text:

```

      CYBER CRIME (PER SHARE)
      CYBER CRIME (RATE)
=== Associator model (full training set) ===

Apriori
=====

Minimum support: 0.1 (4 instances)
Minimum metric <confidence>: 0.9
Number of cycles performed: 18

Generated sets of large itemsets:

Size of set of large itemsets L(1): 4

Size of set of large itemsets L(2): 1

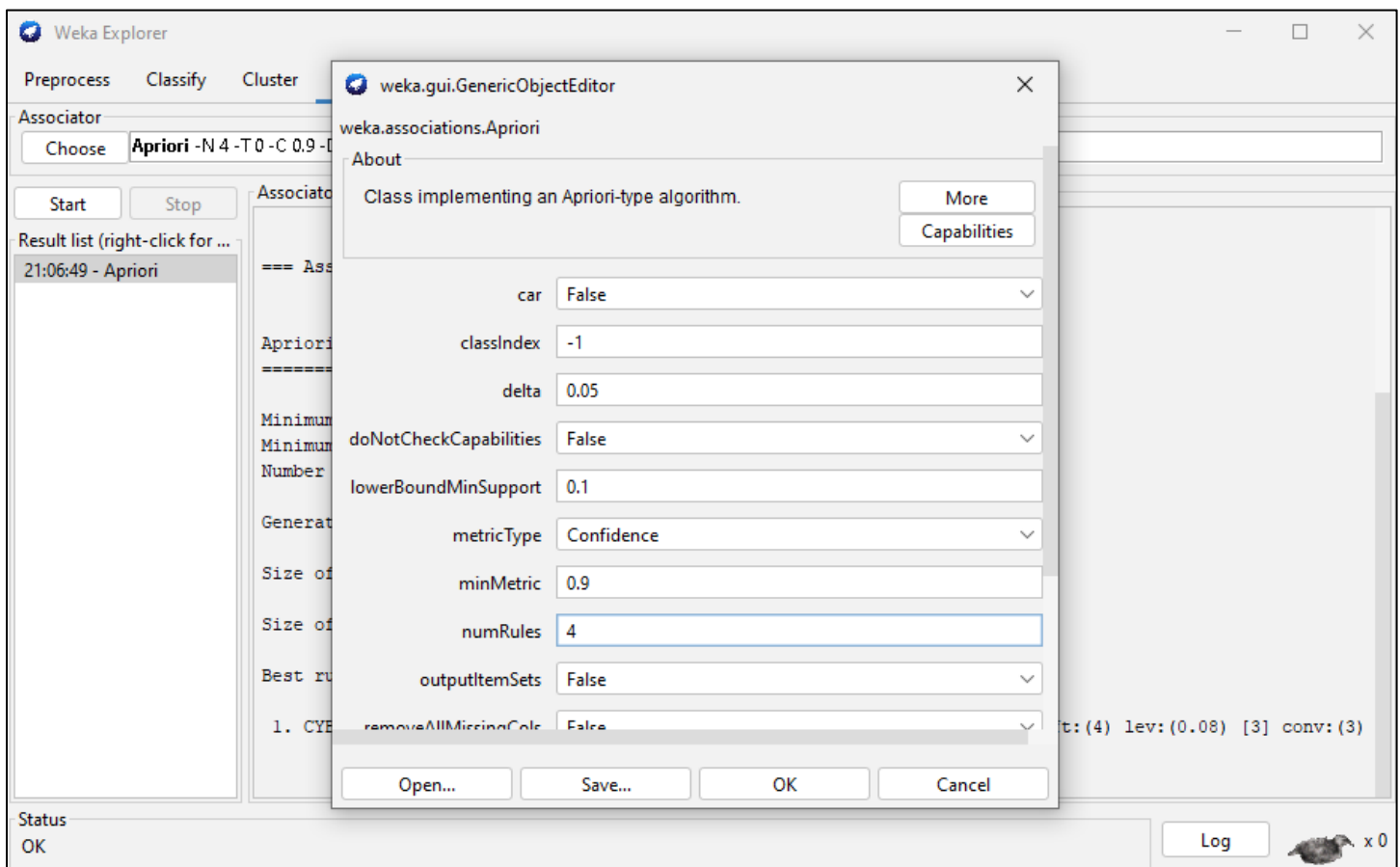
Best rules found:

1. CYBER CRIME (2015)=0 4 ==> CYBER CRIME (PER SHARE)=0 4    <conf:(1)> lift:(4) lev:(0.08) [3] conv:(3)

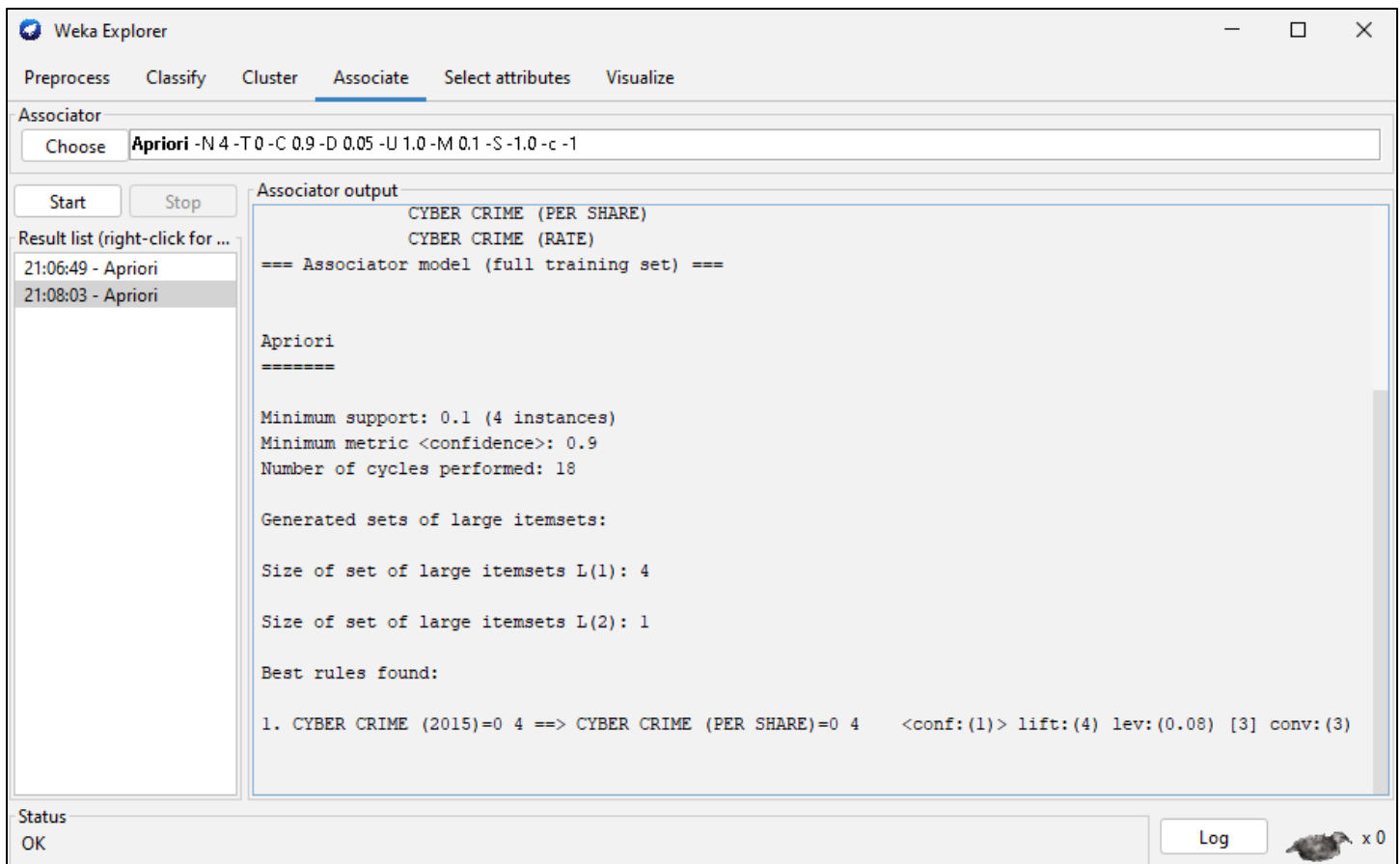
```

The 'Result list' on the left shows '21:06:49 - Apriori'. The 'Status' bar at the bottom indicates 'OK'. A 'Log' button and a small icon are also present in the bottom right corner.

Step 7: Click on the Apriori algorithm and change numrules from 10 to 4.



Step 8: Click Start to build the model. Associator output shows the model evaluation parameters.



The screenshot shows the Weka Explorer application window. The 'Associate' tab is selected. The 'Choose' button is clicked, and the 'Apriori' algorithm is selected. The 'Start' button is clicked, and the 'Associator output' window displays the results of the Apriori algorithm.

Weka Explorer

Preprocess Classify Cluster **Associate** Select attributes Visualize

Associator

Choose **Apriori** -N 4 -T 0 -C 0.9 -D 0.05 -U 1.0 -M 0.1 -S -1.0 -c -1

Start Stop

Result list (right-click for ...)

21:06:49 - Apriori

21:08:03 - Apriori

Associator output

```

CYBER CRIME (PER SHARE)
CYBER CRIME (RATE)
=== Associator model (full training set) ===

Apriori
=====

Minimum support: 0.1 (4 instances)
Minimum metric <confidence>: 0.9
Number of cycles performed: 18

Generated sets of large itemsets:

Size of set of large itemsets L(1): 4

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Best rules found:

1. CYBER CRIME (2015)=0 4 ==> CYBER CRIME (PER SHARE)=0 4    <conf:(1)> lift:(4) lev:(0.08) [3] conv:(3)
```

Status
OK

Log x 0

Learning outcomes (What I have learnt):

1. I learnt about the WEKA Tool and its applications.
2. I learnt about how to use Explorer Tab in WEKA Tool.
3. I learnt about how to change attributes from Numeric to Nominal.



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4. I learnt about how to perform Apriori algorithm on the dataset.
 5. I learnt about how to change numrules in Apriori algorithm.