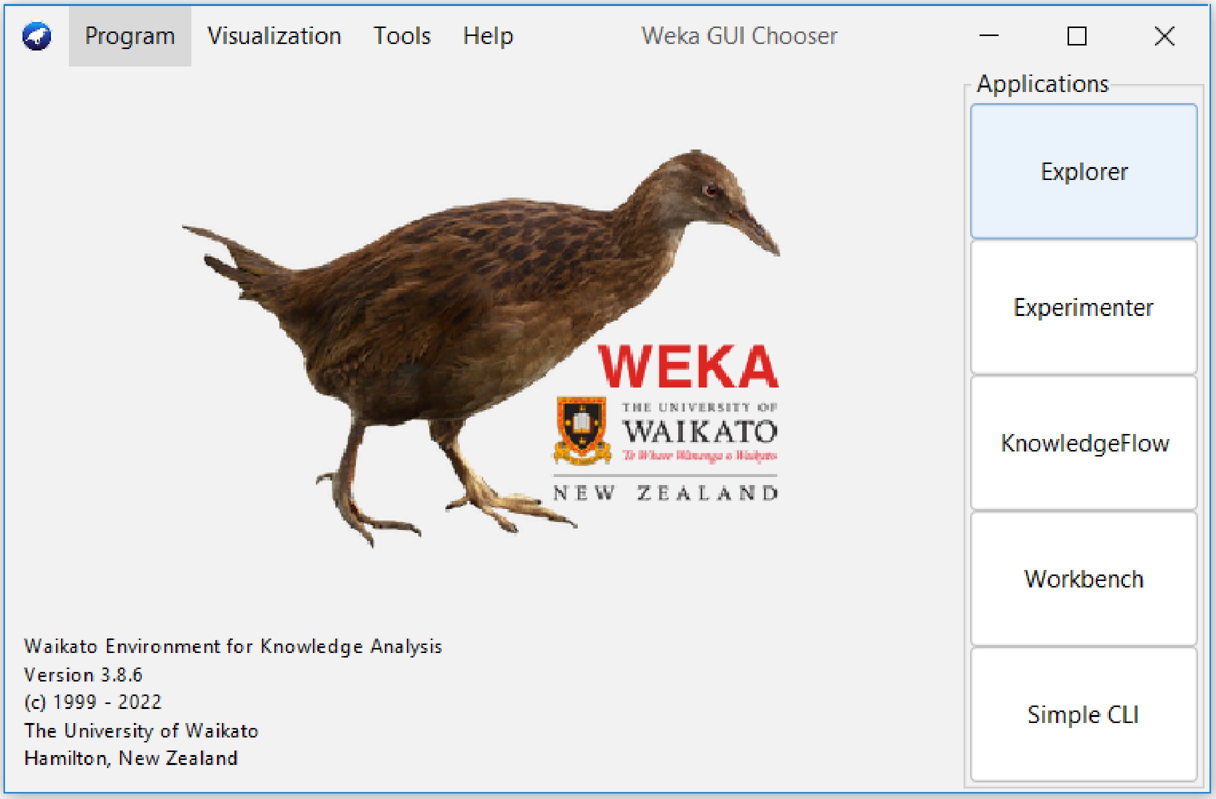
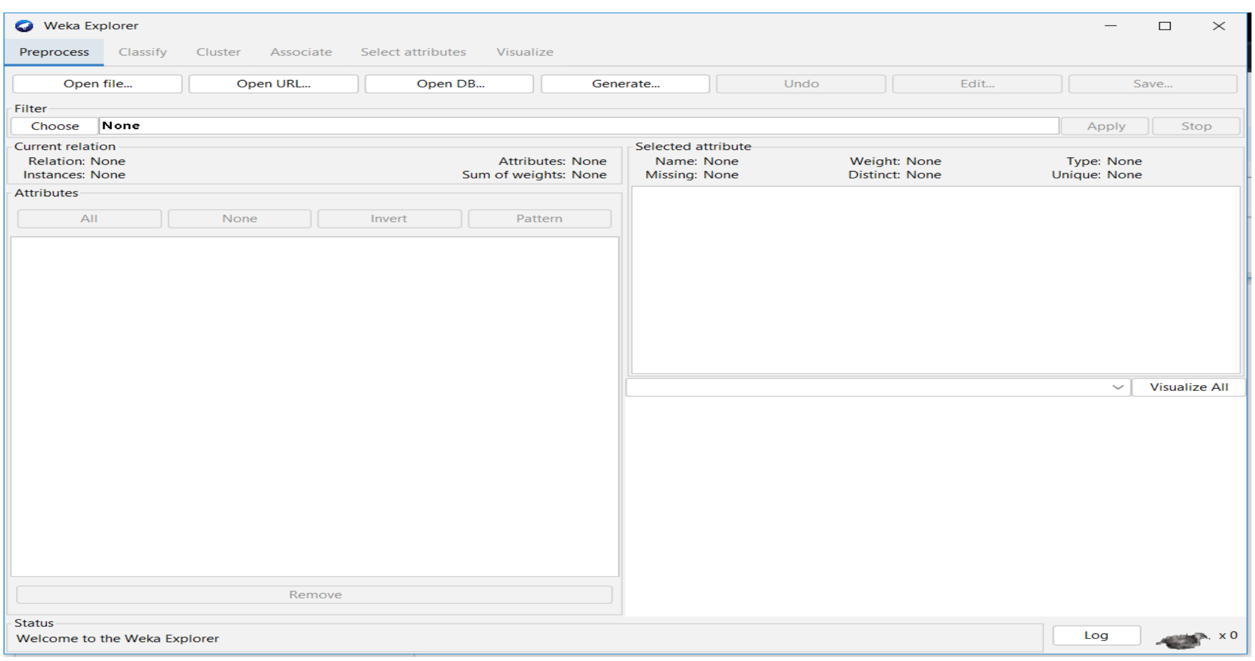
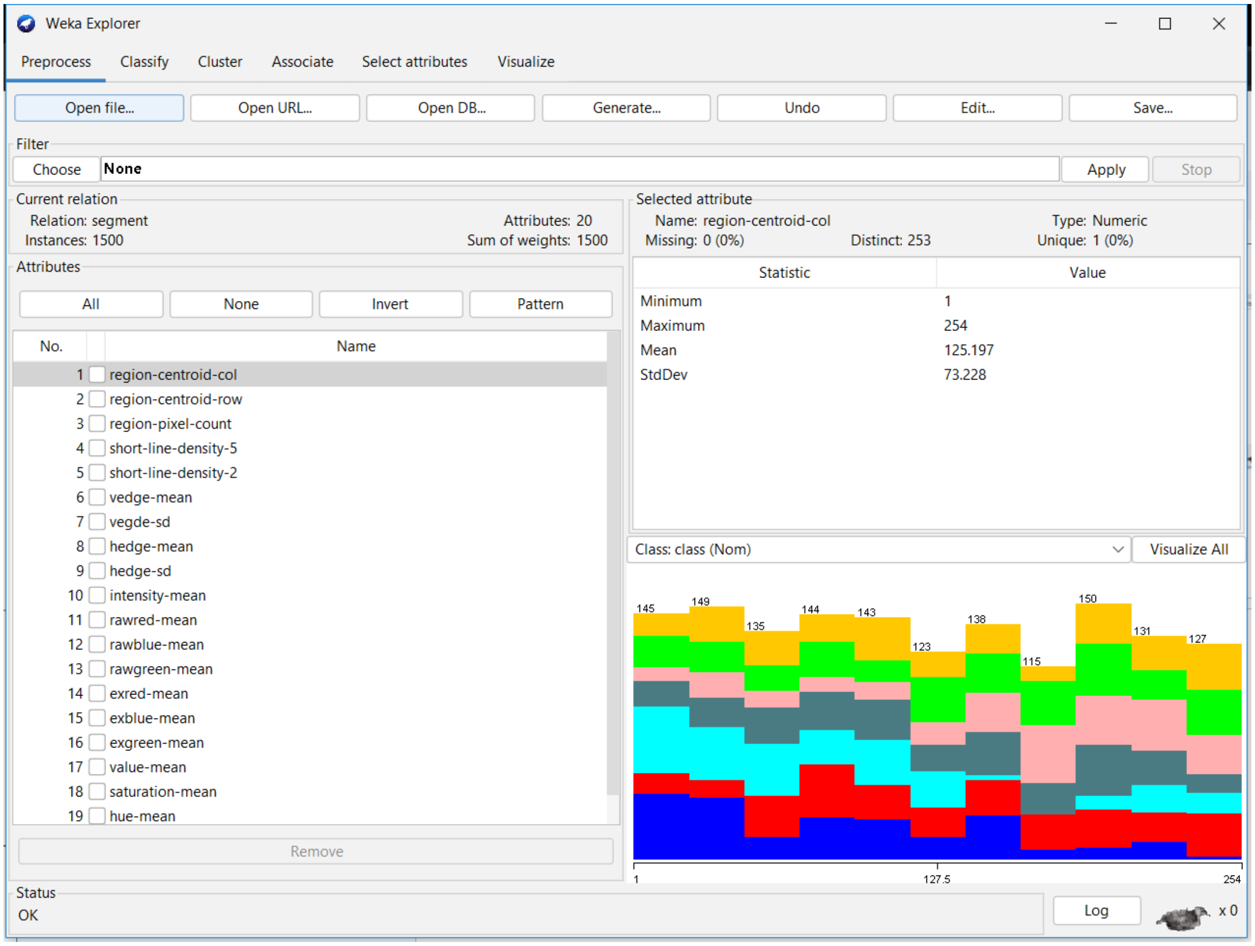
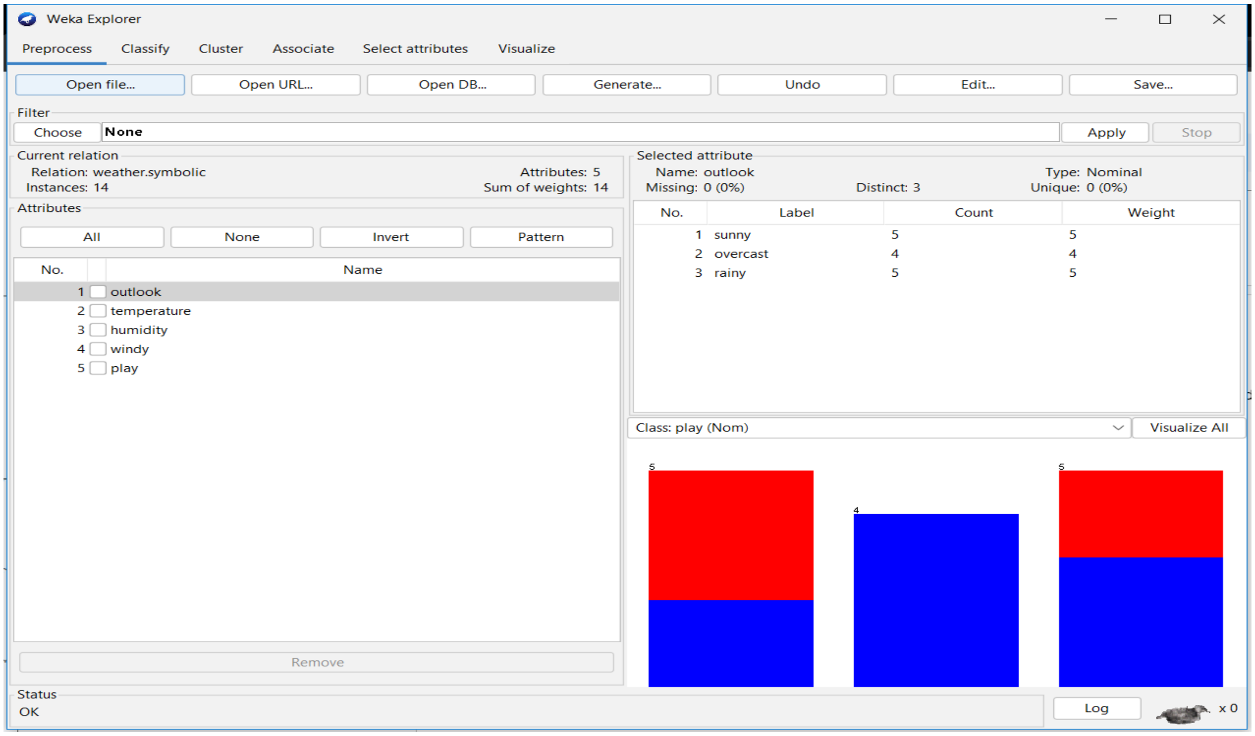
BUILD DATA WAREHOUSE AND EXPLORE WEKA



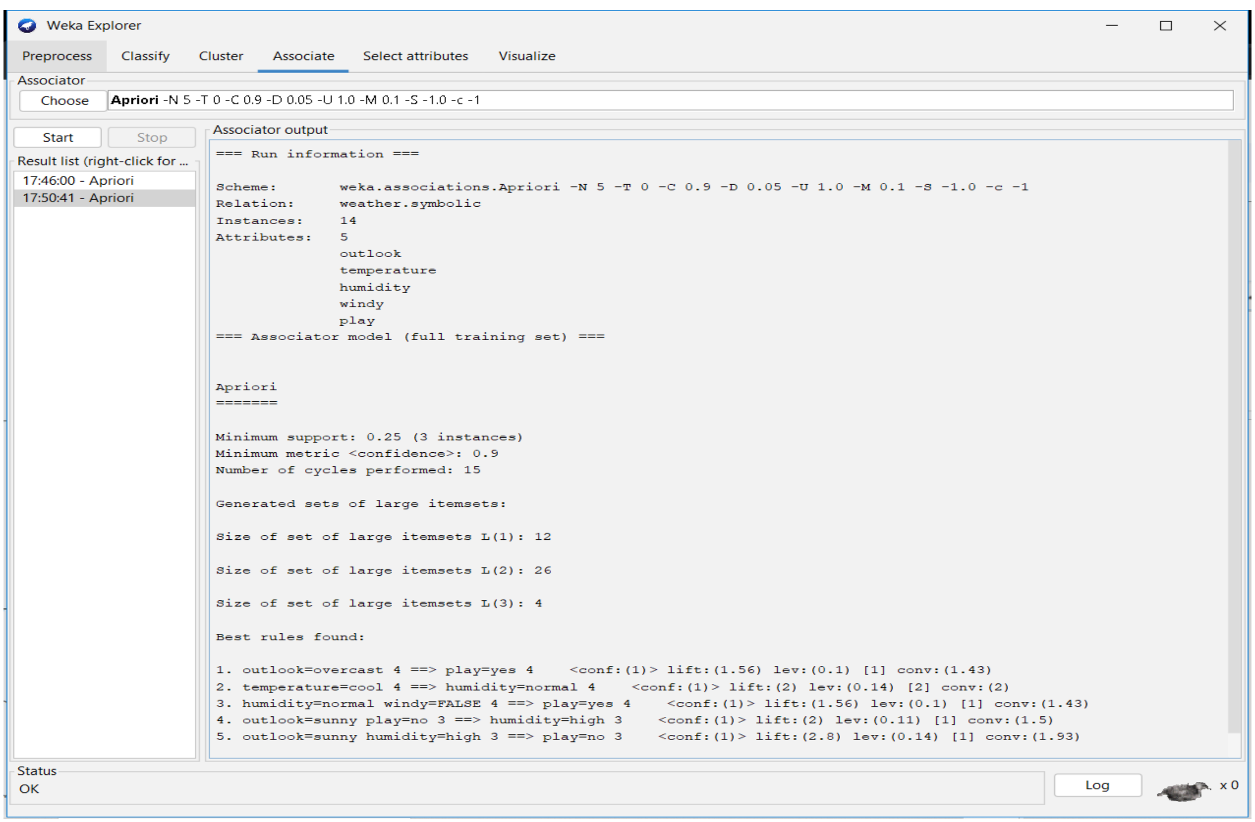



Weka Explorer
Preprocess
Classify
Cluster
Associate
Select attributes
Visualize
Open file...
Open URL...
Open DB...
Generate...
Undo
Edit...
Save...
Filter
Choose
None
Apply
Stop
Current relation
Relation: segment
Instances: 1500
Attributes: 20
Sum of weights: 1500
Attributes
All
None
Invert
Pattern
No.
Name
1 region-centroid-col
2 region-centroid-row
3 region-pixel-count
4 short-line-density-5
5 short-line-density-2
6 vedge-mean
7 vegde-sd
8 hedge-mean
9 hedge-sd
10 intensity-mean
11 rawred-mean
12 rawblue-mean
13 rawgreen-mean
14 exred-mean
15 exblue-mean
16 exgreen-mean
17 value-mean
18 saturation-mean
19 hue-mean
Remove
Selected attribute
Name: region-centroid-col
Missing: 0 (0%)
Distinct: 253
Type: Numeric
Unique: 1 (0%)
Statistic
Value
Minimum
1
Maximum
254
Mean
125.197
StdDev
73.228
Class: class (Nom)
Visualize All
145
149
135
144
143
123
138
115
150
131
127
1
127.5
254
Status
OK
Log
x 0

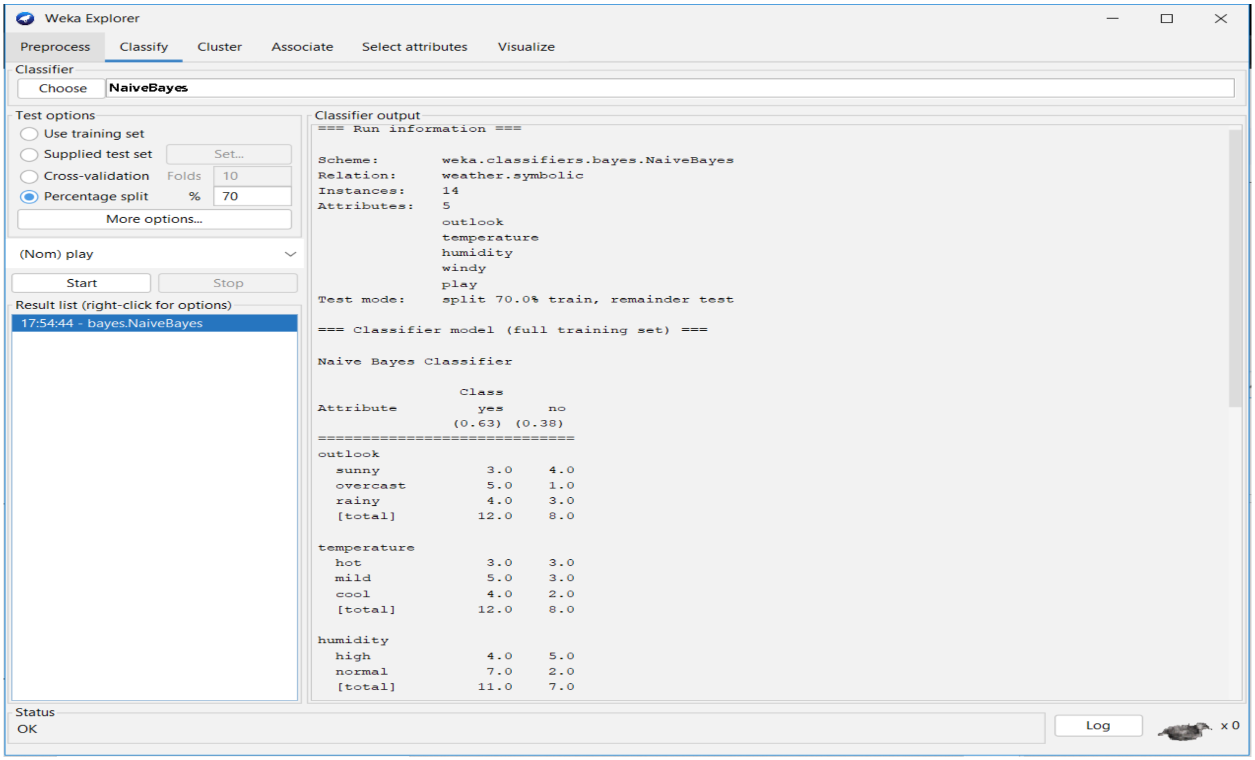
Perform data preprocessing task and demonstrate performing association rule mining on data sets

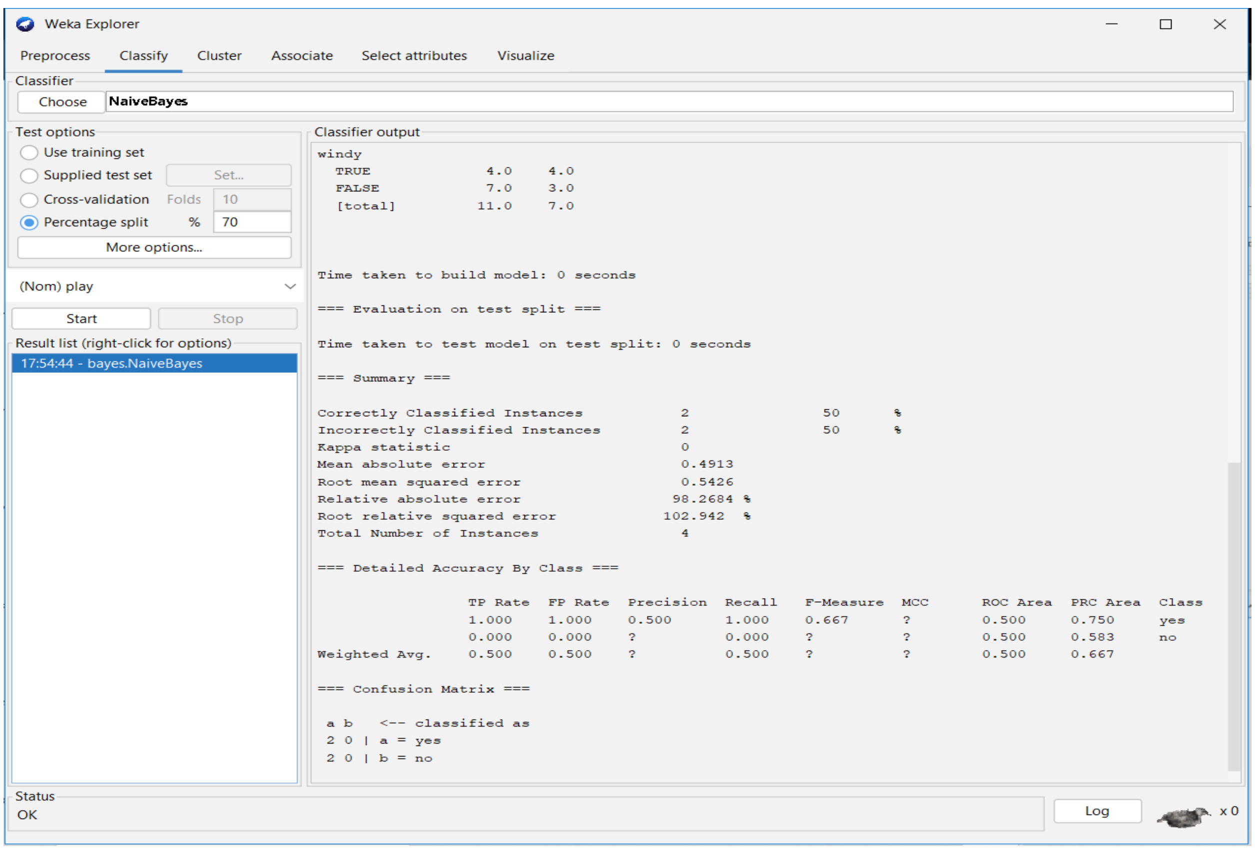


Association rule

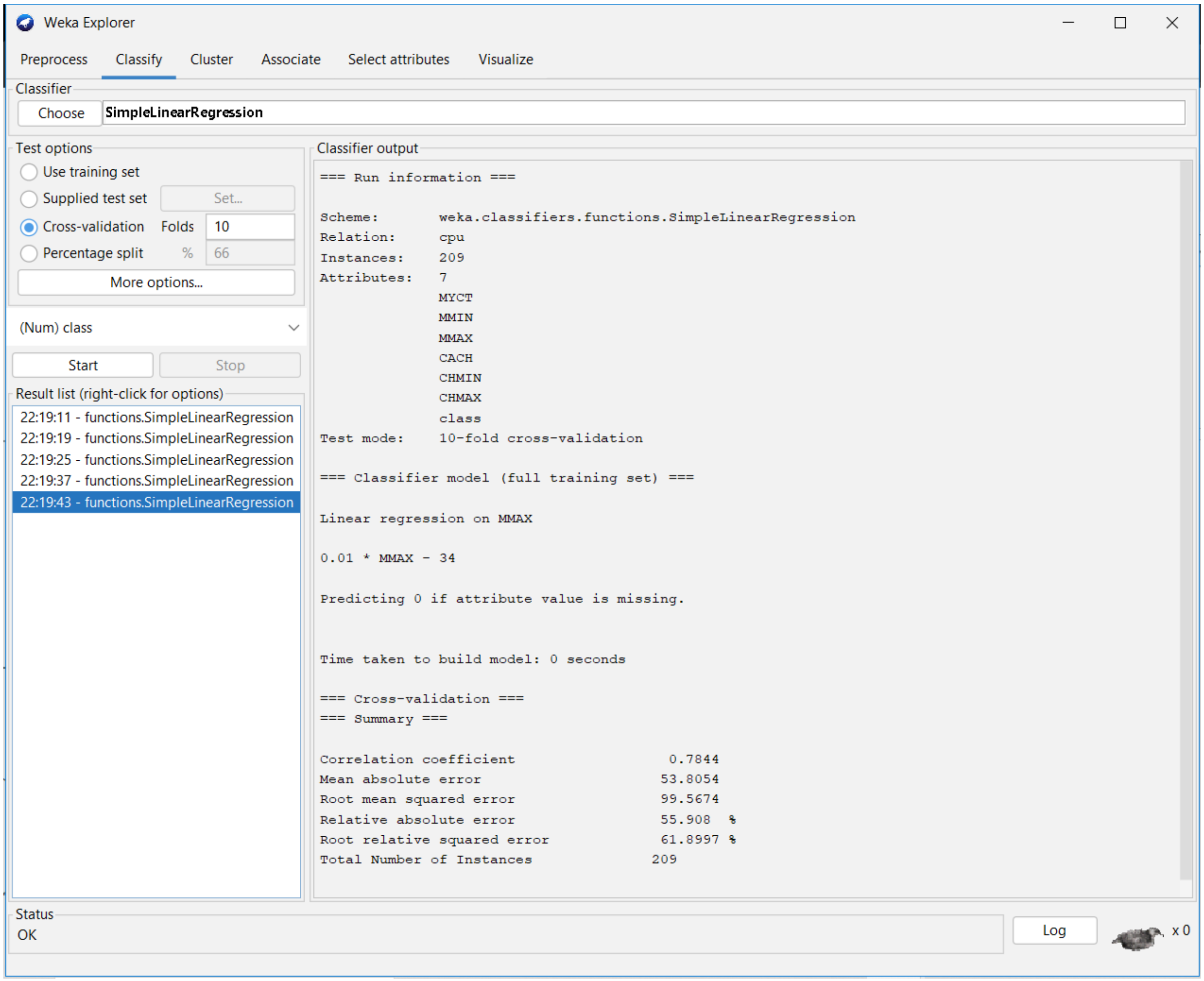


Demonstrate of classification rule process on weka data set using naive bayes algorithm

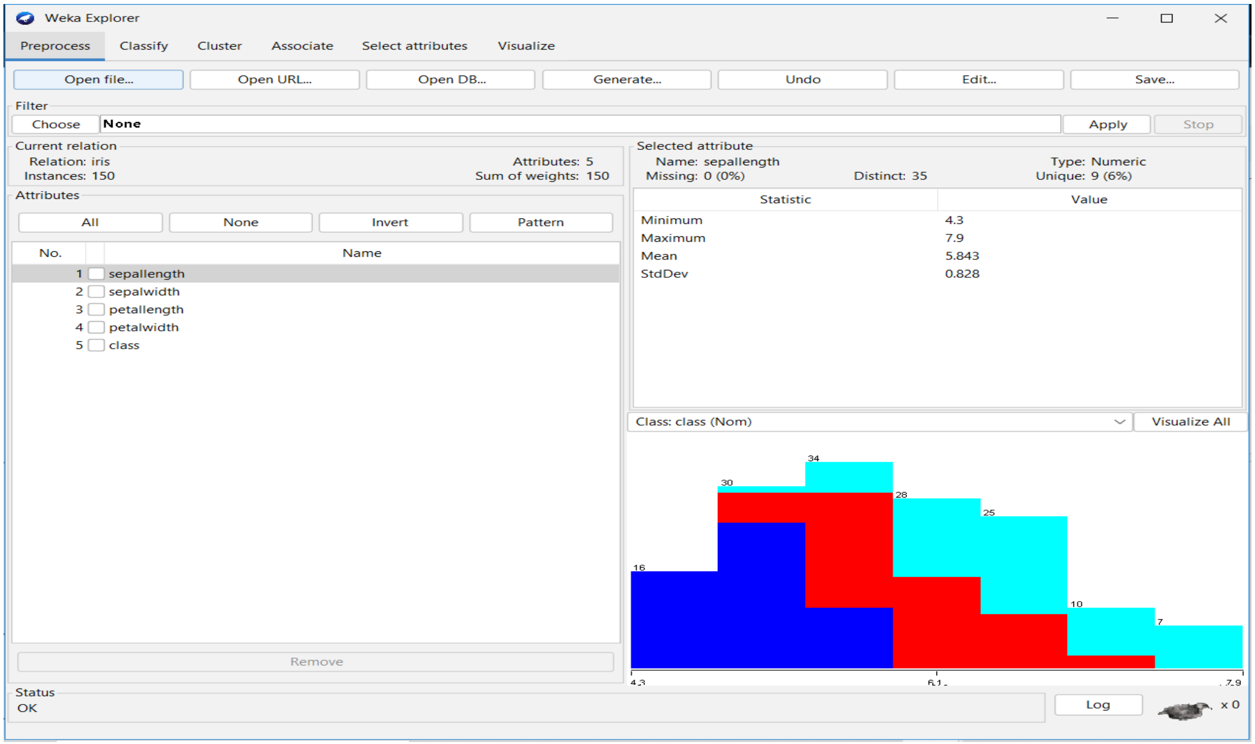




Demonstrate performing Regression on datasets



Demonstrate of clustering rule process on data set iris.arff using simple k-mean



=== Run information ===

Scheme: weka.clusterers.SimpleKMeans -init 0 -max-candidates 100 -periodic-pruning 10000 -min-density 2.0 -t1 -1.25 -t2 -1.0 -N 3 -A "weka.core.EuclideanDistance -R first-last" -I 500 -num-slots 1 -S 10

Relation: iris

Instances: 150

Attributes: 5

sepallength
sepalwidth
petallength
petalwidth
class

Test mode: split 66% train, remainder test

=== Clustering model (full training set) ===

kMeans
======

Number of iterations: 3

Within cluster sum of squared errors: 7.817456892309574

Initial starting points (random):

Cluster 0: 6.1,2.9,4.7,1.4,Iris-versicolor
Cluster 1: 6.2,2.9,4.3,1.3,Iris-versicolor
Cluster 2: 6.9,3.1,5.1,2.3,Iris-virginica

Missing values globally replaced with mean/mode

Final cluster centroids:

		Cluster#		
Attribute	Full Data	0	1	2
	(150.0)	(50.0)	(50.0)	(50.0)
sepallength	5.8433	5.936	5.006	6.588
sepalwidth	3.054	2.77	3.418	2.974
petallength	3.7587	4.26	1.464	5.552
petalwidth	1.1987	1.326	0.244	2.026
class	Iris-setosa	Iris-versicolor	Iris-setosa	Iris-virginica

Time taken to build model (full training data) : 0 seconds

=== Model and evaluation on test split ===

kMeans
======

Number of iterations: 3
Within cluster sum of squared errors: 5.344375826509504

Initial starting points (random):

Cluster 0: 4.8,3,1.4,0.3,Iris-setosa
Cluster 1: 6.7,3.1,4.7,1.5,Iris-versicolor
Cluster 2: 5.6,3,4.1,1.3,Iris-versicolor

Missing values globally replaced with mean/mode

Final cluster centroids:

Cluster#

```
Attribute            Full Data           0            1            2
                      (99.0)        (35.0)       (33.0)       (31.0)
================================================================================
==========
sepallength            5.8313       5.0514       6.6061       5.8871
sepalwidth             3.0586       3.4543       2.9576       2.7194
petallength            3.6848       1.4771       5.5697        4.171
petalwidth             1.1657       0.2571       1.9879       1.3161
class             Iris-setosa  Iris-setosa  Iris-virginica Iris-versicolor
```

Time taken to build model (percentage split) : 0 seconds

Clustered Instances

0   15 (29%)
1   17 (33%)
2   19 (37%)

Visualization:

Write a program of Apriori algorithm using any programming language (implemented in Python)

```
#import required library
import pandas as pd
import numpy as np
from mlxtend.frequent_patterns import association_rules, apriori

#read the data from csv
df = pd.read_csv('bread_basket.csv')

# cleaning the item column
df['Item'] = df['Item'].str.strip()
df['Item'] = df['Item'].str.lower()

#reset index and group together
transactions_str = df.groupby(['Transaction',
'Item'])['Item'].count().reset_index(name ='Count')

# making a mxn matrice where m=transaction and n=items and each row
represents whether the item was in the transaction or not
my_basket = transactions_str.pivot_table(index='Transaction',
columns='Item', values='Count', aggfunc='sum').fillna(0)

# making a function which returns 0 or 1
# 0 means item was not in that transaction, 1 means item present in that
transaction
def encode(x):
    if x<=0:
        return 0
    if x>=1:
        return 1

# applying the function to the dataset
my_basket_sets = my_basket.applymap(encode)

# using the 'apriori algorithm' with min_support=0.01 (1% of 9465)
# It means the item should be present in atleast 94 transaction out of
9465 transactions only when we considered that item in frequent itemset
frequent_items = apriori(my_basket_sets, min_support = 0.01, use_colnames
= True)
```

```
# now making the rules from frequent itemset generated above
rules = association_rules(frequent_items, metric = "lift", min_threshold =
1)
rules.sort_values('confidence', ascending = False, inplace = True)

# arranging the data from highest to lowest with respect to 'confidence'
rules.sort_values('confidence', ascending=False)
```

Output:

index	antecedents	consequents	support	confidence	lift
30	frozenset({'toast'})	frozenset({'coffee'})	0.023666138	0.704402516	1.472431495
28	frozenset({'spanish brunch'})	frozenset({'coffee'})	0.010882198	0.598837209	1.2517655
19	frozenset({'medialuna'})	frozenset({'coffee'})	0.03518225	0.569230769	1.189878364
23	frozenset({'pastry'})	frozenset({'coffee'})	0.047543582	0.552147239	1.154168202
1	frozenset({'alfajores'})	frozenset({'coffee'})	0.019651347	0.540697674	1.130234869