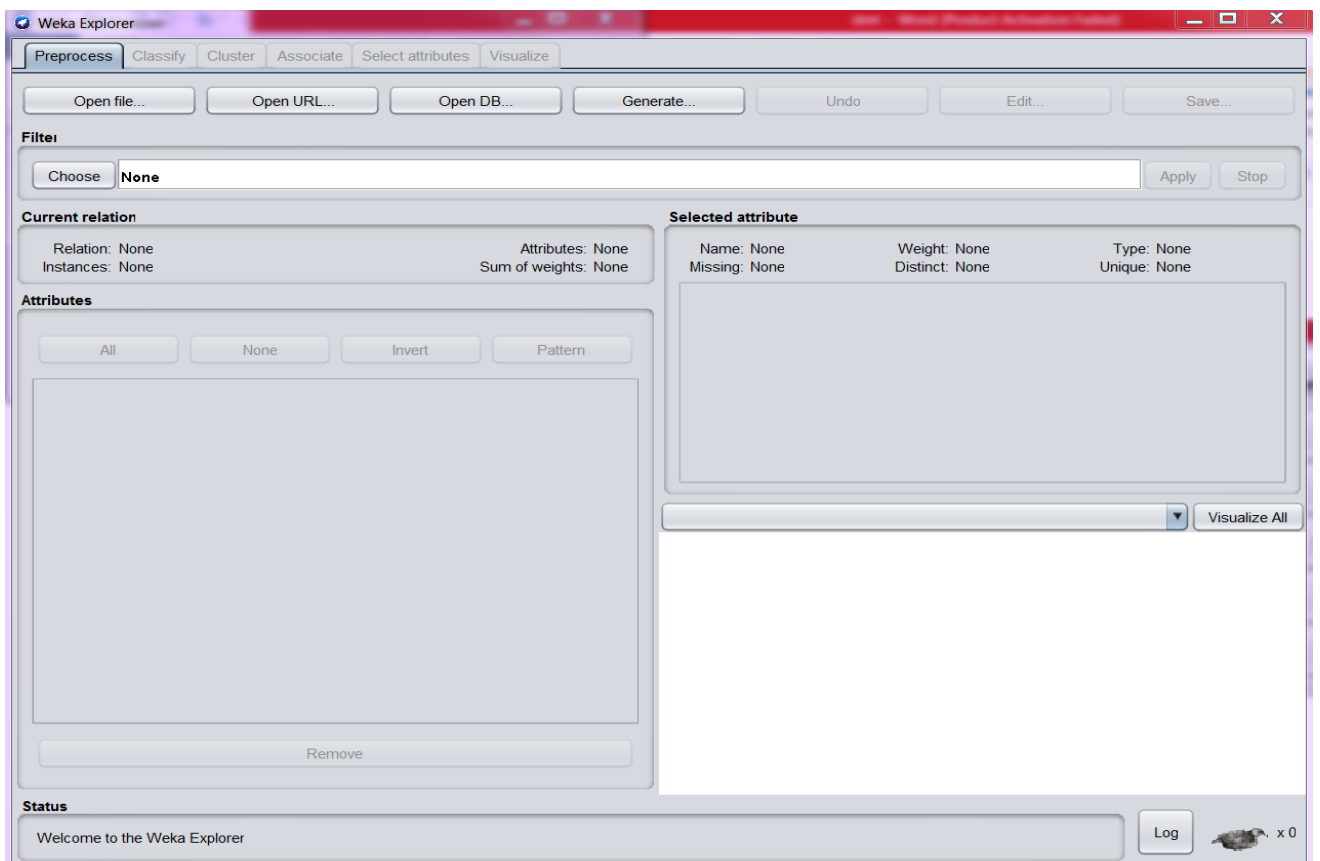
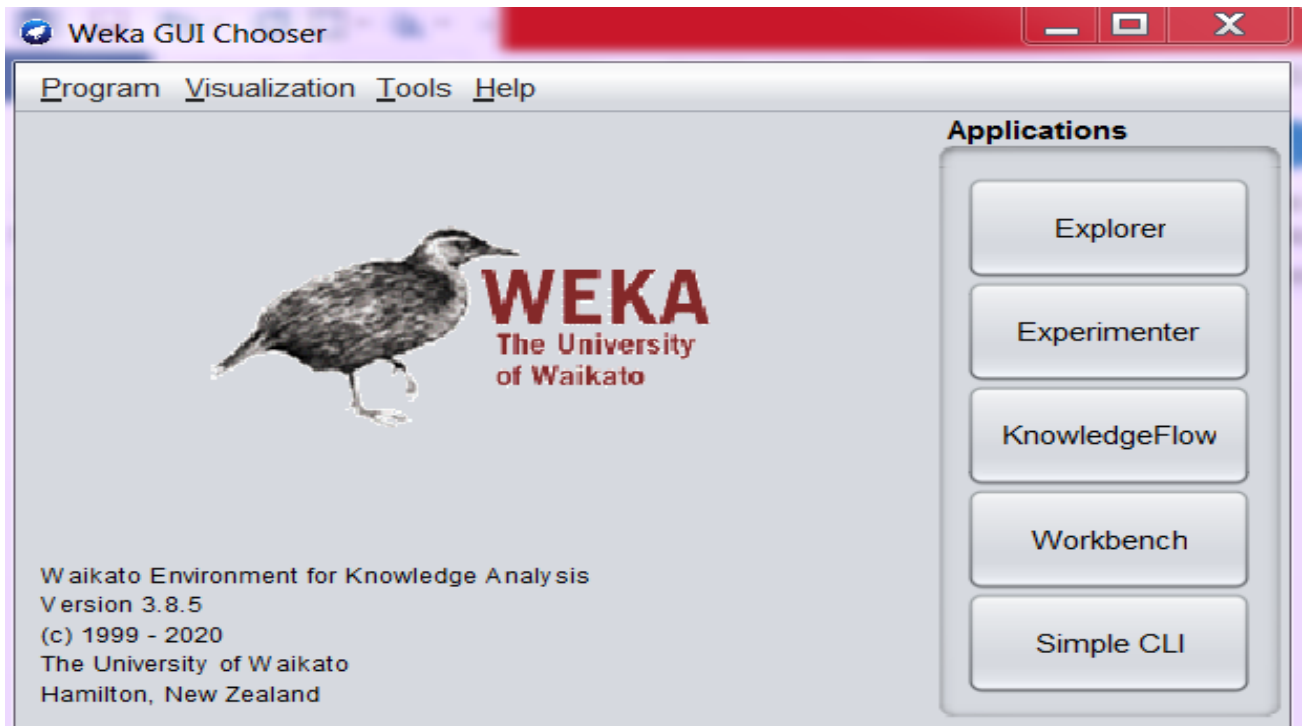


2)



C:\Program Files\Weka-3-8-5\data\iris.arff - Notepad++

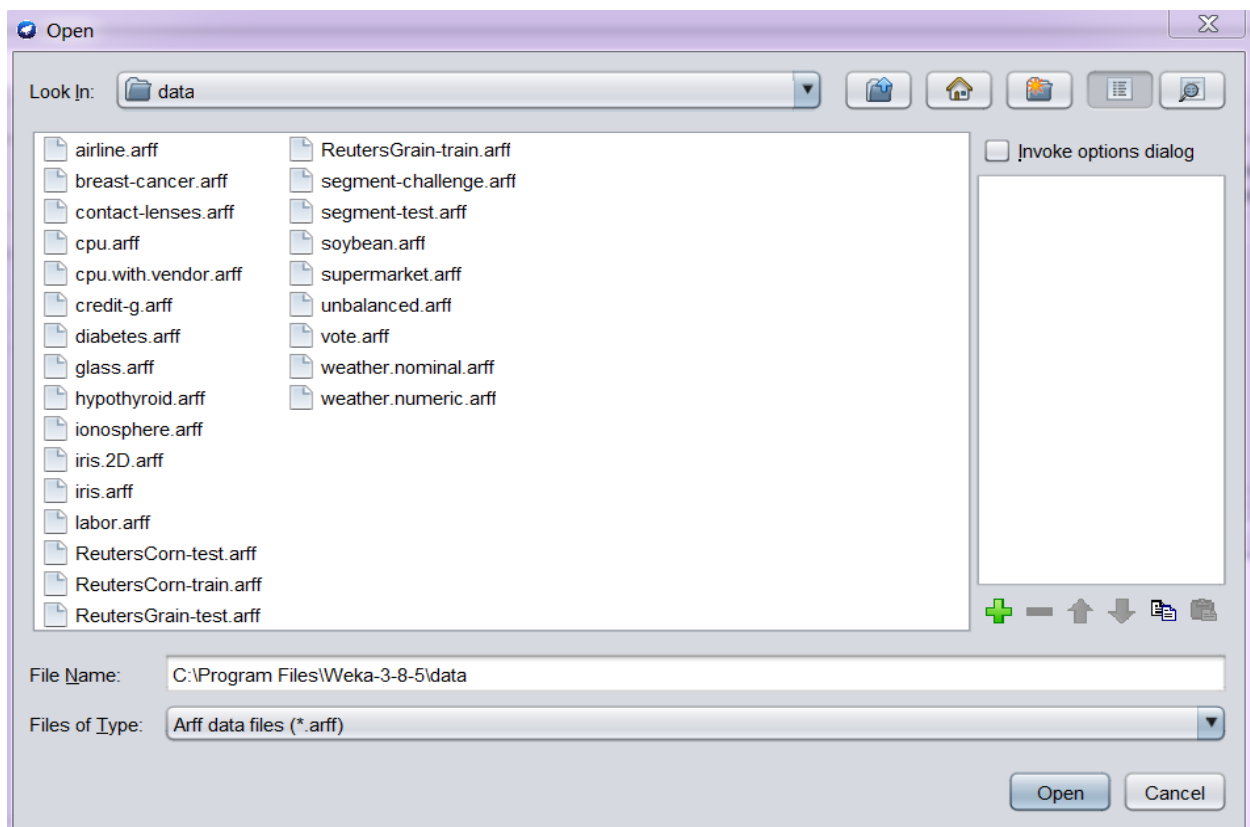
File Edit Search View Encoding Language Settings Tools Macro Run Plugins Window ?

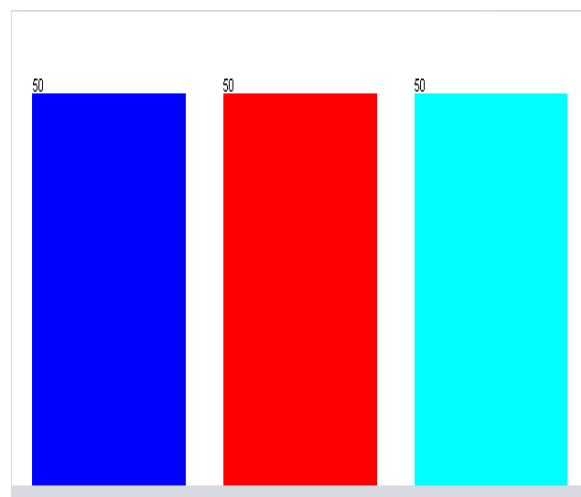
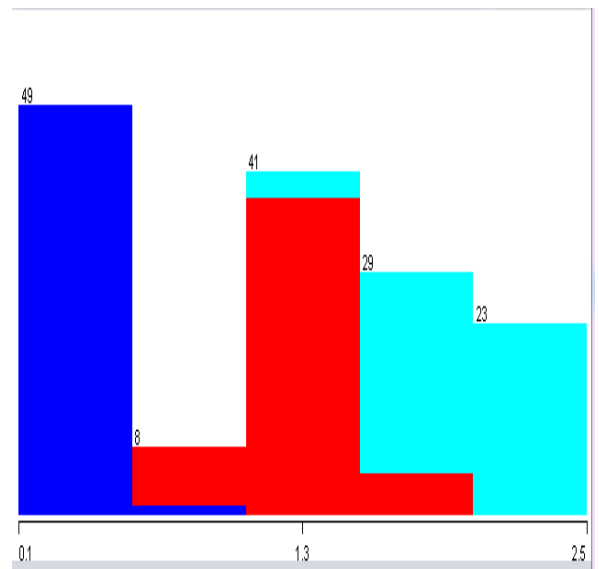
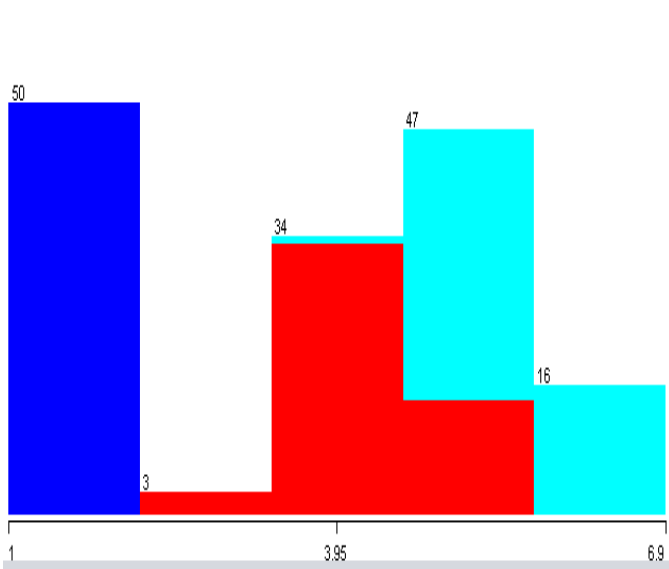
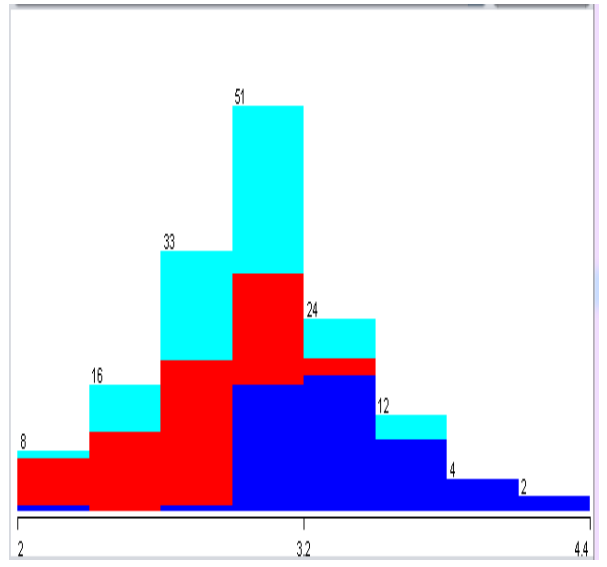
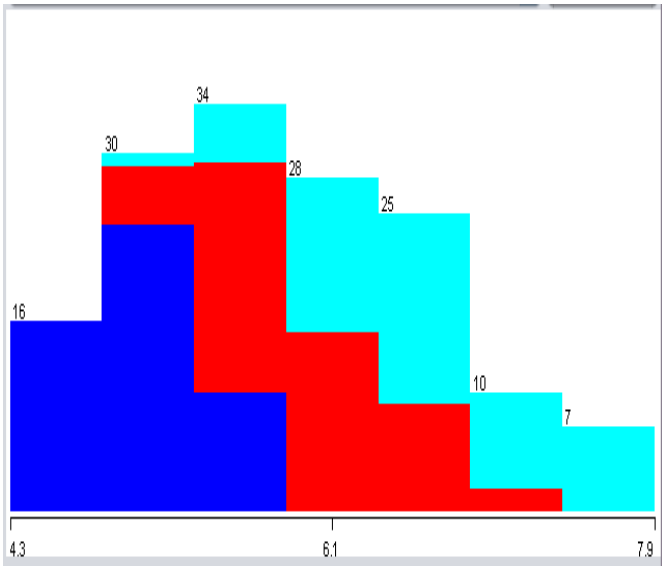
iris.arff

```

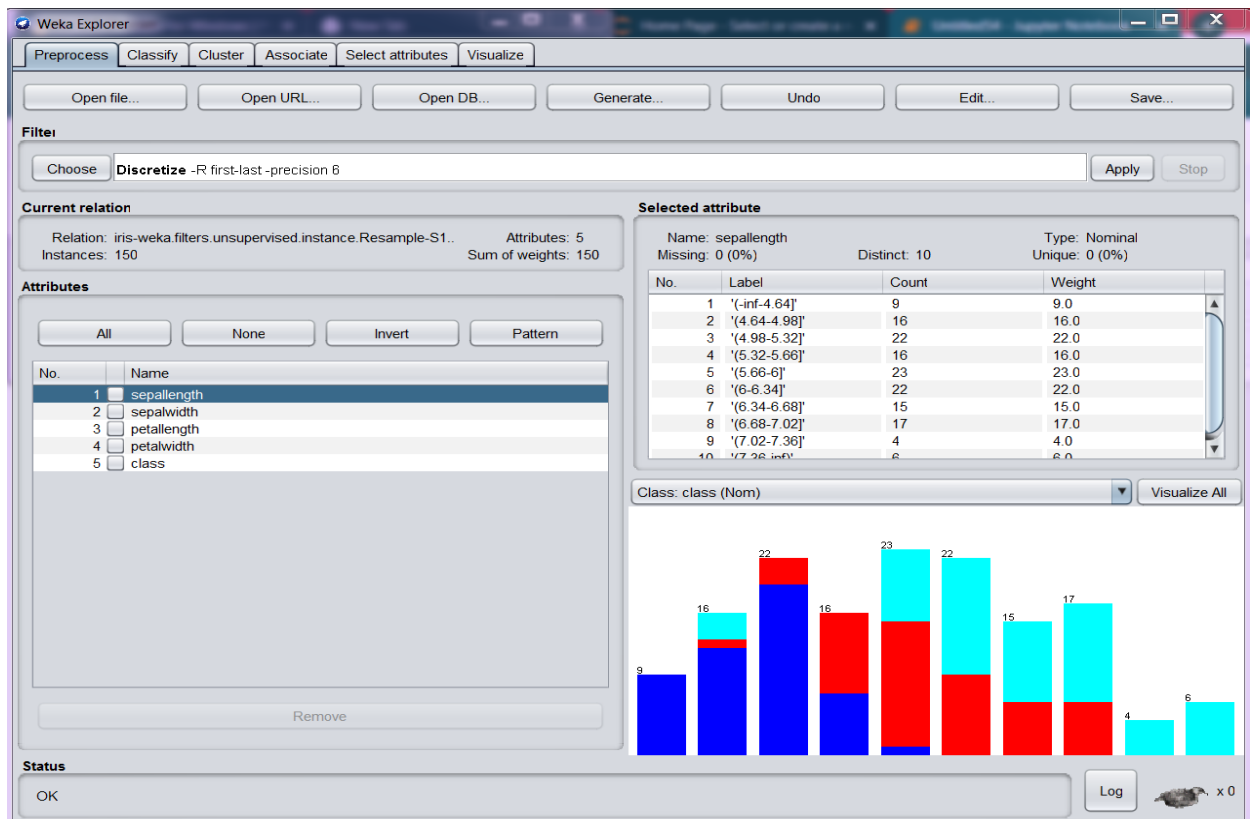
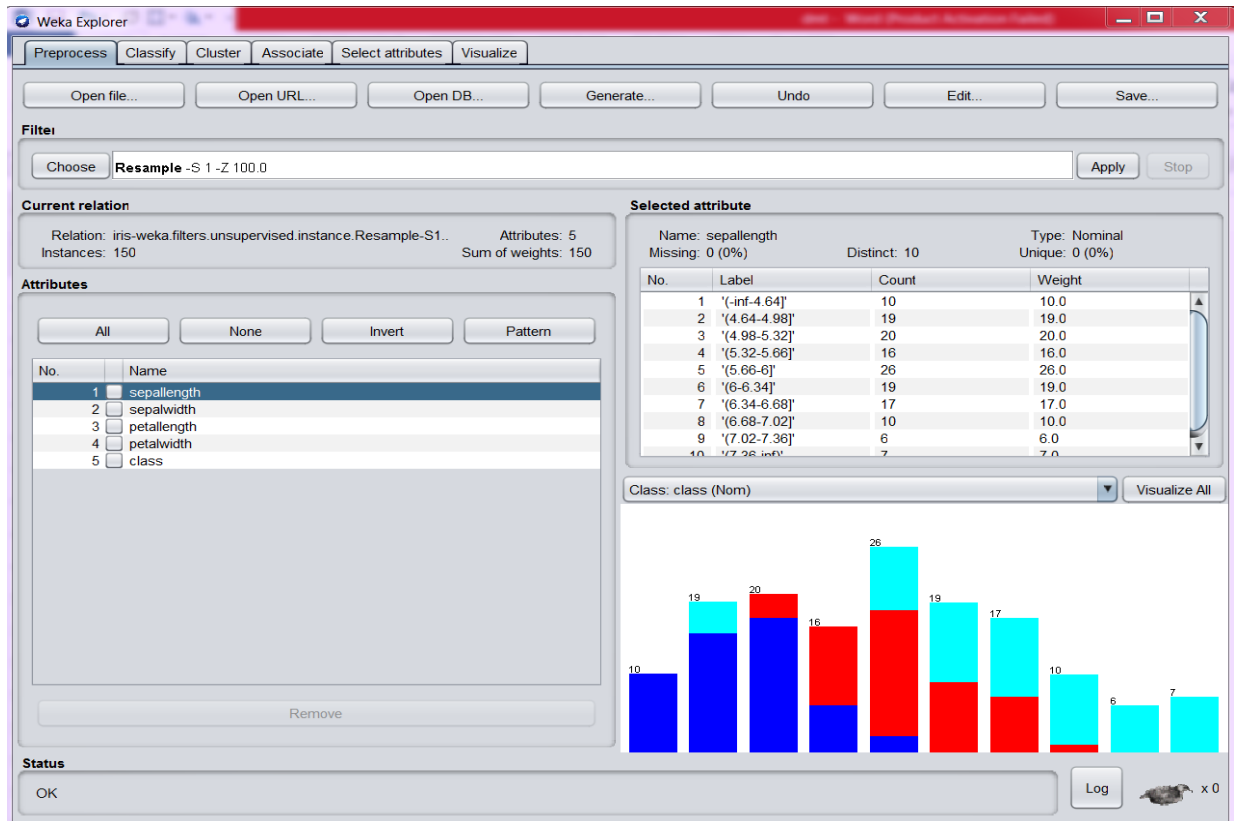
49 %      -- Iris Setosa
50 %      -- Iris Versicolour
51 %      -- Iris Virginica
52 %
53 % 8. Missing Attribute Values: None
54 %
55 % Summary Statistics:
56 %      Min  Max   Mean   SD   Class Correlation
57 %  sepal length: 4.3  7.9   5.84  0.83    0.7826
58 %  sepal width: 2.0  4.4   3.05  0.43   -0.4194
59 %  petal length: 1.0  6.9   3.76  1.76    0.9490 (high!)
60 %  petal width: 0.1  2.5   1.20  0.76    0.9565 (high!)
61 %
62 % 9. Class Distribution: 33.3% for each of 3 classes.
63
64 @RELATION iris
65
66 @ATTRIBUTE sepallength REAL
67 @ATTRIBUTE sepalwidth  REAL
68 @ATTRIBUTE petallength REAL
69 @ATTRIBUTE petalwidth  REAL
70 @ATTRIBUTE class       {Iris-setosa,Iris-versicolor,Iris-virginica}
71
72 @DATA
73 5.1,3.5,1.4,0.2,Iris-setosa
74 4.9,3.0,1.4,0.2,Iris-setosa
75 4.7,3.2,1.3,0.2,Iris-setosa
76 4.6,3.1,1.5,0.2,Iris-setosa
77 5.0,3.6,1.4,0.2,Iris-setosa

```





3)



Weka Explorer

Preprocess Classify Cluster Associate Select attributes Visualize

Associator

Choose Apriori -N 10 -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...)

15:03:21 - Apriori

Associator output

```

=====
Minimum support: 0.15 (2 instances)
Minimum metric <confidence>: 0.9
Number of cycles performed: 17

Generated sets of large itemsets:

Size of set of large itemsets L(1): 12

Size of set of large itemsets L(2): 47

Size of set of large itemsets L(3): 39

Size of set of large itemsets L(4): 6

Best rules found:

1. outlook=overcast 4 ==> play=yes 4 <conf:(1)> lift:(1.56) lev:(0.1) [1] conv:(1.43)
2. temperature=cool 4 ==> humidity=normal 4 <conf:(1)> lift:(2) lev:(0.14) [2] conv:(2)
3. humidity=normal windy=FALSE 4 ==> play=yes 4 <conf:(1)> lift:(1.56) lev:(0.1) [1] conv:(1.43)
4. outlook=sunny play=no 3 ==> humidity=high 3 <conf:(1)> lift:(2) lev:(0.11) [1] conv:(1.5)
5. outlook=sunny humidity=high 3 ==> play=no 3 <conf:(1)> lift:(2.8) lev:(0.14) [1] conv:(1.93)
6. outlook=rainy play=yes 3 ==> windy=FALSE 3 <conf:(1)> lift:(1.75) lev:(0.09) [1] conv:(1.29)
7. outlook=rainy windy=FALSE 3 ==> play=yes 3 <conf:(1)> lift:(1.56) lev:(0.08) [1] conv:(1.07)
8. temperature=cool play=yes 3 ==> humidity=normal 3 <conf:(1)> lift:(2) lev:(0.11) [1] conv:(1.5)
9. outlook=sunny temperature=hot 2 ==> humidity=high 2 <conf:(1)> lift:(2) lev:(0.07) [1] conv:(1)
10. temperature=hot play=no 2 ==> outlook=sunny 2 <conf:(1)> lift:(2.8) lev:(0.09) [1] conv:(1.29)

```

Status

OK Log x0

Weka Explorer

Preprocess Classify Cluster Associate Select attributes Visualize

Associator

Choose Apriori -N 10 -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...)

15:03:21 - Apriori
15:07:01 - Apriori

Associator output

```

Minimum support: 0.3 (45 instances)
Minimum metric <confidence>: 0.9
Number of cycles performed: 14

Generated sets of large itemsets:

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

Size of set of large itemsets L(2): 11

Size of set of large itemsets L(3): 5

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

Best rules found:

1. petalwidth='(-inf-0.8]' 50 ==> petallength='(-inf-2.45]' 50 <conf:(1)> lift:(3) lev:(0.22) [33] conv:(33.33)
2. petallength='(-inf-2.45]' 50 ==> petalwidth='(-inf-0.8]' 50 <conf:(1)> lift:(3) lev:(0.22) [33] conv:(33.33)
3. class=Iris-setosa 50 ==> petallength='(-inf-2.45]' 50 <conf:(1)> lift:(3) lev:(0.22) [33] conv:(33.33)
4. petallength='(-inf-2.45]' 50 ==> class=Iris-setosa 50 <conf:(1)> lift:(3) lev:(0.22) [33] conv:(33.33)
5. class=Iris-setosa 50 ==> petalwidth='(-inf-0.8]' 50 <conf:(1)> lift:(3) lev:(0.22) [33] conv:(33.33)
6. petalwidth='(-inf-0.8]' 50 ==> class=Iris-setosa 50 <conf:(1)> lift:(3) lev:(0.22) [33] conv:(33.33)
7. petalwidth='(-inf-0.8]' class=Iris-setosa 50 ==> petallength='(-inf-2.45]' 50 <conf:(1)> lift:(3) lev:(0.22)
8. petallength='(-inf-2.45]' class=Iris-setosa 50 ==> petalwidth='(-inf-0.8]' 50 <conf:(1)> lift:(3) lev:(0.22)
9. petallength='(-inf-2.45]' petalwidth='(-inf-0.8]' 50 ==> class=Iris-setosa 50 <conf:(1)> lift:(3) lev:(0.22)
10. class=Iris-setosa 50 ==> petallength='(-inf-2.45]' petalwidth='(-inf-0.8]' 50 <conf:(1)> lift:(3) lev:(0.22)

```

Status

OK Log x0

4)

Weka Explorer

Preprocess Classify Cluster Associate Select attributes Visualize

Classifier

Choose **J48 -C 0.25 -M 2**

Test options

☐ Use training set
☐ Supplied test set Set...
☒ Cross-validation Folds **10**
☐ Percentage split % **66**
 More options...

(Nom) class

Start Stop

Result list (right-click for options)

- 15:10:43 - trees.Id3
- 15:17:01 - trees.Id3
- 15:17:37 - trees.J48

Classifier output

Size of the tree : 4

Time taken to build model: 0.02 seconds

=== Stratified cross-validation ===
 === Summary ===

Correctly Classified Instances	141	94	%
Incorrectly Classified Instances	9	6	%
Kappa statistic	0.91		
Mean absolute error	0.0598		
Root mean squared error	0.193		
Relative absolute error	13.4523 %		
Root relative squared error	40.9465 %		
Total Number of Instances	150		

=== Detailed Accuracy By Class ===

	TP Rate	FP Rate	Precision	Recall	F-Measure	MCC	ROC Area	PRC Area	Cl
	1.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000	Ir
	0.920	0.050	0.902	0.920	0.911	0.866	0.938	0.857	Ir
	0.900	0.040	0.918	0.900	0.909	0.864	0.943	0.865	Ir
Weighted Avg.	0.940	0.030	0.940	0.940	0.940	0.910	0.960	0.907	

=== Confusion Matrix ===

a	b	c	<-- classified as
50	0	0	a = Iris-setosa
0	46	4	b = Iris-versicolor
0	5	45	c = Iris-virginica

Status

OK Log x 0

Weka Explorer

Preprocess Classify Cluster Associate Select attributes Visualize

Classifier

Choose **Id3**

Test options

☐ Use training set
☐ Supplied test set Set...
☒ Cross-validation Folds **10**
☐ Percentage split % **66**
 More options...

(Nom) class

Start Stop

Result list (right-click for options)

- 15:10:43 - trees.Id3

Classifier output

=== Stratified cross-validation ===
 === Summary ===

Correctly Classified Instances	141	94	%
Incorrectly Classified Instances	9	6	%
Kappa statistic	0.91		
Mean absolute error	0.0439		
Root mean squared error	0.176		
Relative absolute error	9.8778 %		
Root relative squared error	37.3376 %		
Total Number of Instances	150		

=== Detailed Accuracy By Class ===

	TP Rate	FP Rate	Precision	Recall	F-Measure	MCC	ROC Area	PRC Area	Cl
	1.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000	Ir
	0.960	0.070	0.873	0.960	0.914	0.871	0.959	0.897	Ir
	0.860	0.020	0.956	0.860	0.905	0.864	0.954	0.913	Ir
Weighted Avg.	0.940	0.030	0.943	0.940	0.940	0.912	0.971	0.937	

=== Confusion Matrix ===

a	b	c	<-- classified as
50	0	0	a = Iris-setosa
0	48	2	b = Iris-versicolor
0	7	43	c = Iris-virginica

Status

OK Log x 0

```

petalwidth = '(-inf-0.8]': Iris-setosa
petalwidth = '(0.8-1.75]'
| petallength = '(-inf-2.45]': null
| petallength = '(2.45-4.75]'
| | sepallength = '(-inf-5.55]'
| | | sepalwidth = '(-inf-2.95]': Iris-versicolor
| | | sepalwidth = '(2.95-3.35]': Iris-versicolor
| | | sepalwidth = '(3.35-inf)': null
| | sepallength = '(5.55-6.15]': Iris-versicolor
| | sepallength = '(6.15-inf)': Iris-versicolor
| petallength = '(4.75-inf)'
| | sepallength = '(-inf-5.55]': null
| | sepallength = '(5.55-6.15]': Iris-virginica
| | sepallength = '(6.15-inf)': Iris-versicolor
petalwidth = '(1.75-inf)'
| sepallength = '(-inf-5.55]': null
| sepallength = '(5.55-6.15]'
| | sepalwidth = '(-inf-2.95]': Iris-virginica
| | sepalwidth = '(2.95-3.35]': Iris-virginica
| | sepalwidth = '(3.35-inf)': null
| sepallength = '(6.15-inf)': Iris-virginica

```

Weka Explorer

Preprocess Classify Cluster Associate Select attributes Visualize

Classifier

Choose NaiveBayes

Test options

☐ Use training set

☐ Supplied test set Set...

☒ Cross-validation Folds 10

☐ Percentage split % 66

More options...

(Nom) class

Start Stop

Result list (right-click for options)

- 15:10:43 - trees.Id3
- 15:17:01 - trees.Id3
- 15:17:37 - trees.J48
- 15:22:40 - bayes NaiveBayes

Classifier output

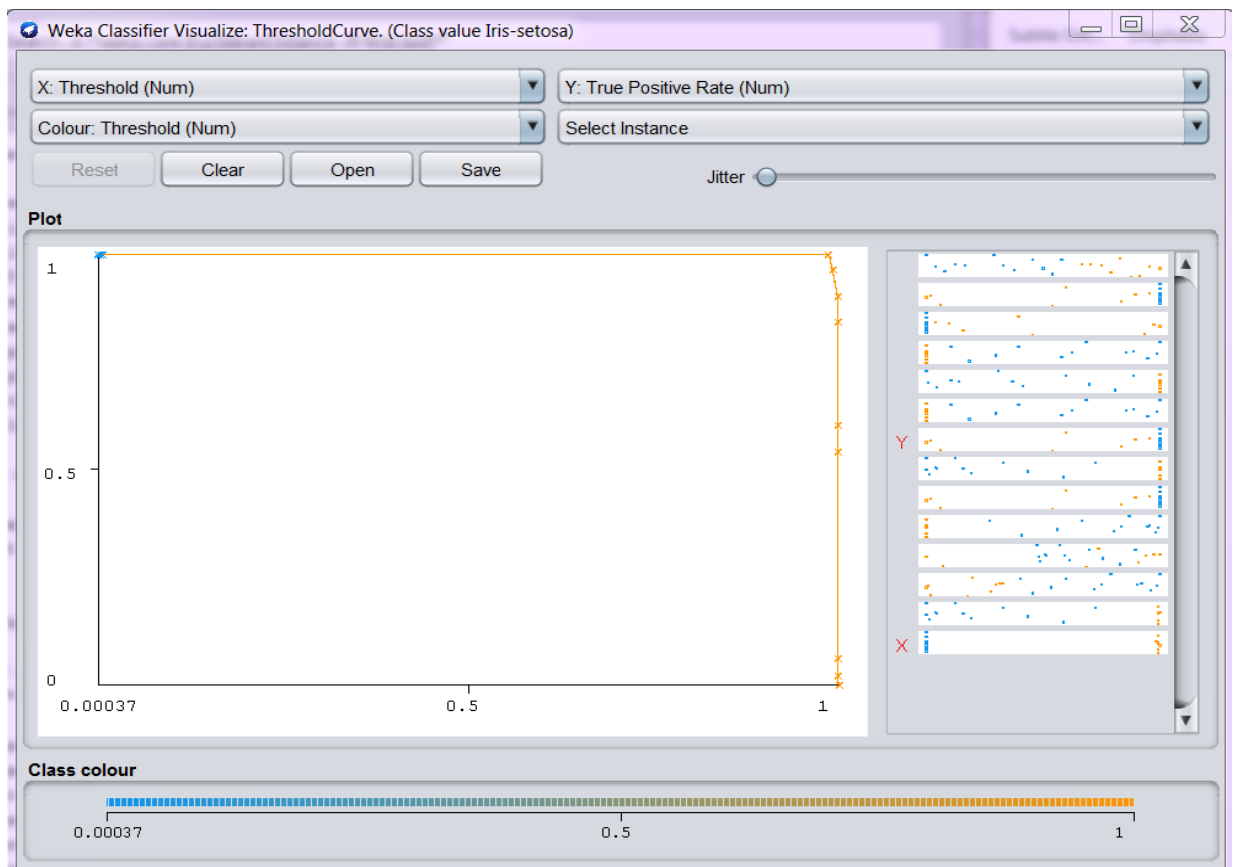
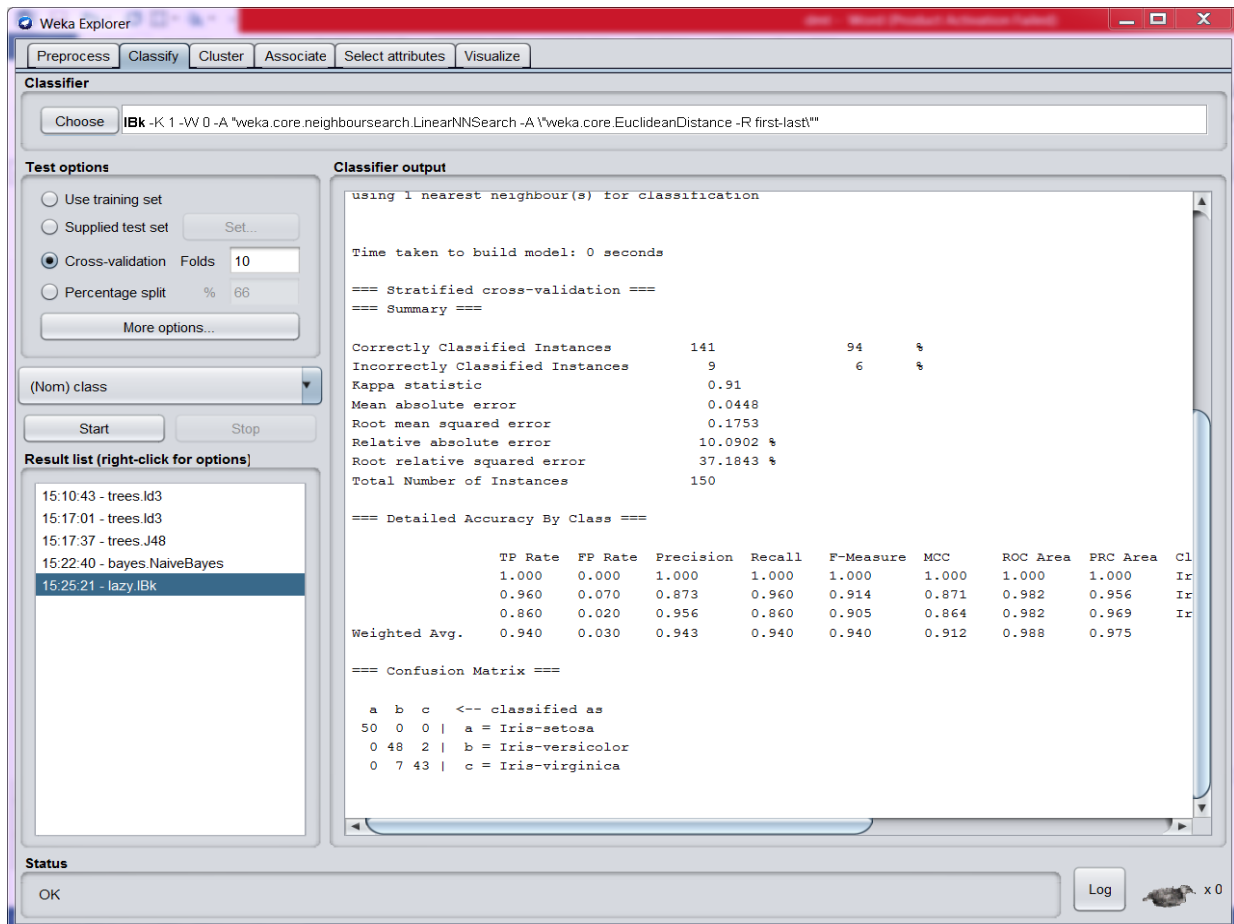
Naive Bayes Classifier

Attribute	Class		
	Iris-setosa (0.33)	Iris-versicolor (0.33)	Iris-virginica (0.33)
sepallength			
'(-inf-5.55]'	48.0	12.0	2.0
'(5.55-6.15]'	4.0	24.0	11.0
'(6.15-inf)'	1.0	17.0	40.0
[total]	53.0	53.0	53.0
sepalwidth			
'(-inf-2.95]'	3.0	35.0	22.0
'(2.95-3.35]'	19.0	16.0	25.0
'(3.35-inf)'	31.0	2.0	6.0
[total]	53.0	53.0	53.0
petallength			
'(-inf-2.45]'	51.0	1.0	1.0
'(2.45-4.75]'	1.0	45.0	2.0
'(4.75-inf)'	1.0	7.0	50.0
[total]	53.0	53.0	53.0
petalwidth			
'(-inf-0.8]'	51.0	1.0	1.0
'(0.8-1.75]'	1.0	50.0	6.0
'(1.75-inf)'	1.0	2.0	46.0
[total]	53.0	53.0	53.0

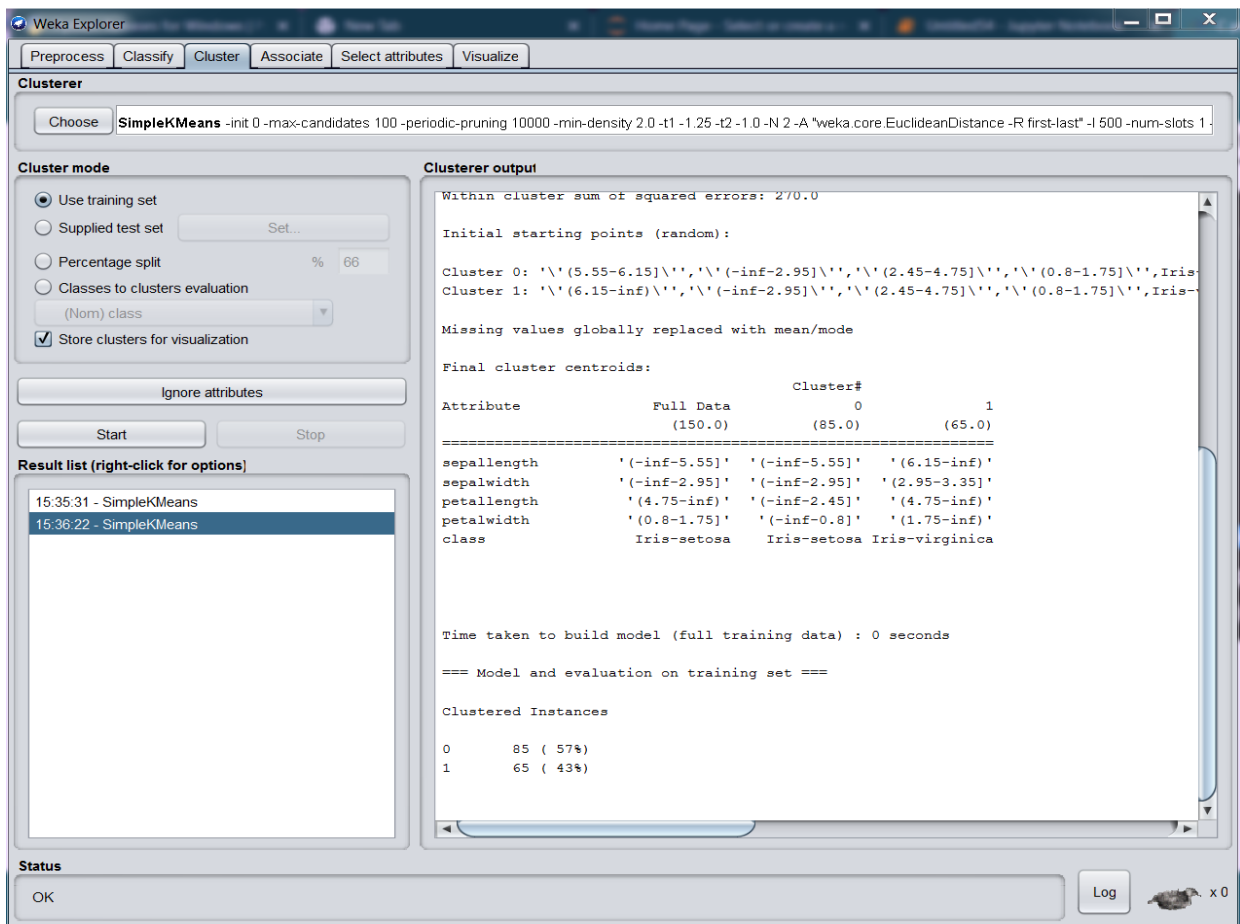
Time taken to build model: 0 seconds

Status

OK Log x 0



5)



Number of iterations: 3

Within cluster sum of squared errors: 270.0

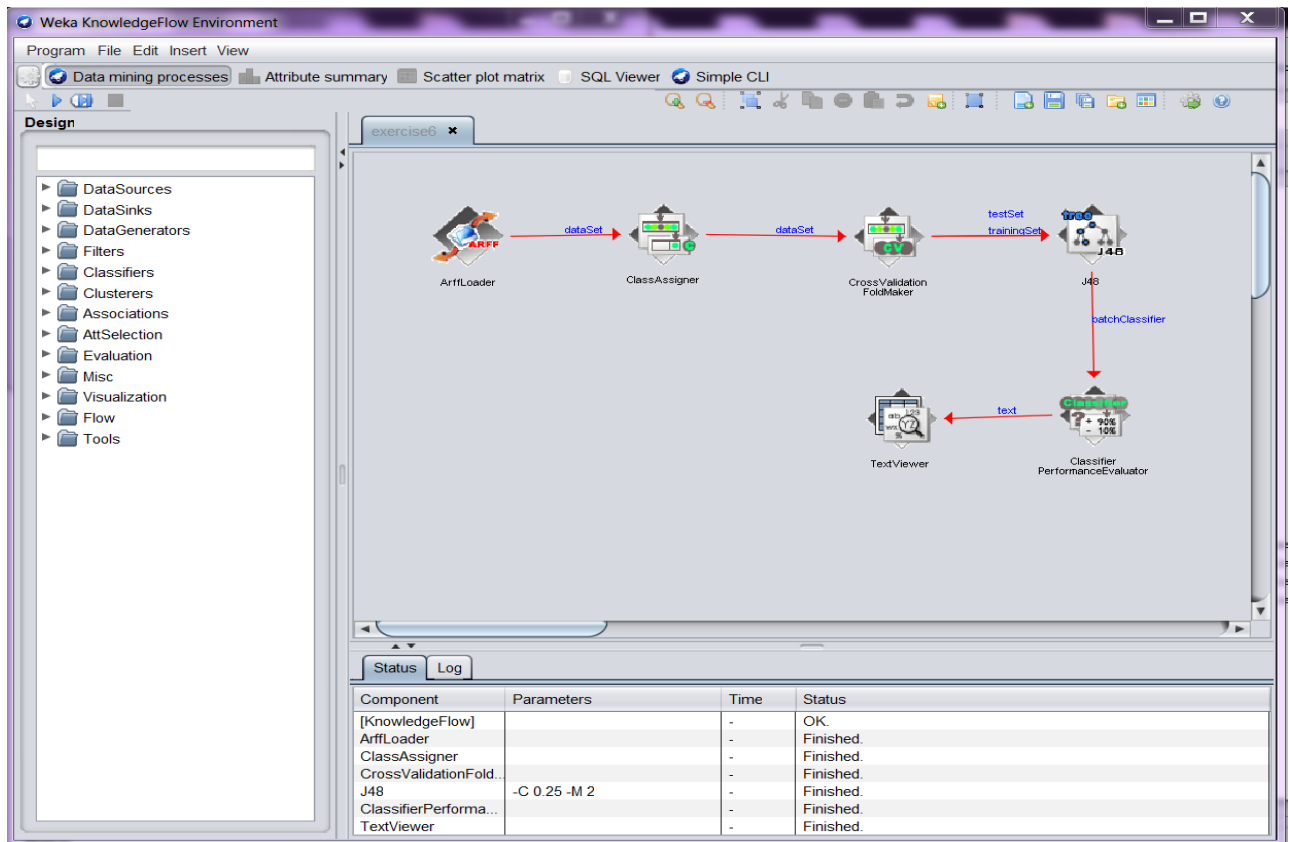
Initial starting points (random):

Cluster 0: '(5.55-6.15]','', '(-inf-2.95]','', '(2.45-4.75]','', '(0.8-1.75]','', Iris-versicolor

Cluster 1: '(6.15-inf]','', '(-inf-2.95]','', '(2.45-4.75]','', '(0.8-1.75]','', Iris-versicolor

Missing values globally replaced with mean/mode

6)



Text Viewer

Result list

16:08:20.238 - J48

Text

```

Relation: iris

=== Summary ===

Correctly Classified Instances      144           96  %
Incorrectly Classified Instances     6            4  %
Kappa statistic                    0.94
Mean absolute error                 0.035
Root mean squared error             0.1586
Relative absolute error             7.8705 %
Root relative squared error        33.6353 %
Total Number of Instances         150

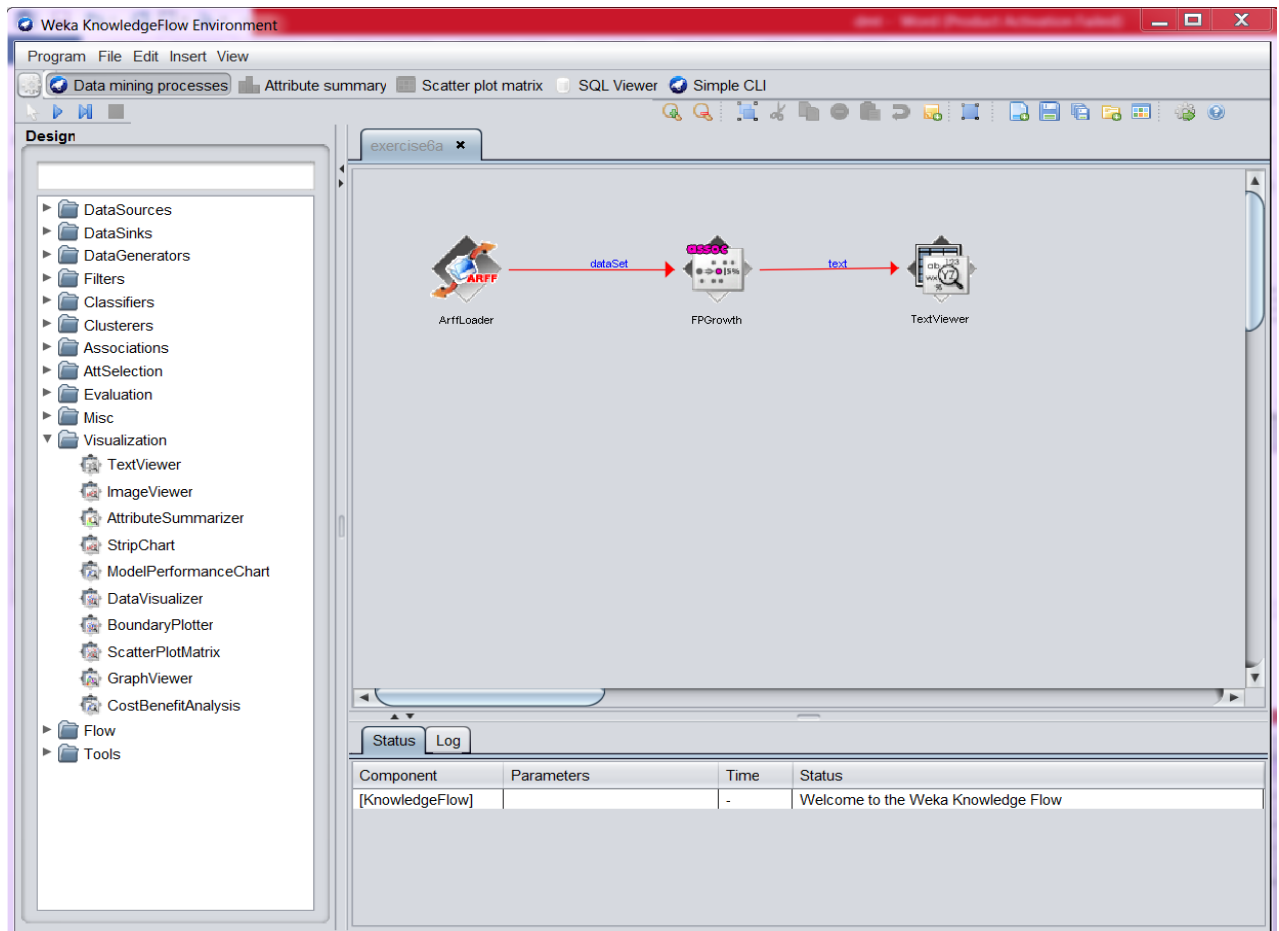
=== Detailed Accuracy By Class ===

      TP Rate  FP Rate  Precision  Recall   F-Measure  MCC      ROC Area  PRC Area  Class
      0.980    0.000    1.000     0.980    0.990     0.985    0.990    0.987    Iris-s
      0.940    0.030    0.940     0.940    0.940     0.910    0.952    0.880    Iris-v
      0.960    0.030    0.941     0.960    0.950     0.925    0.961    0.905    Iris-v
Weighted Avg.   0.960    0.020    0.960     0.960    0.960     0.940    0.968    0.924

=== Confusion Matrix ===

  a  b  c  <-- classified as
49  1  0 | a = Iris-setosa
 0 47  3 | b = Iris-versicolor
 0  2 48 | c = Iris-virginica
  
```

Close Settings Clear results



Text Viewer

Result list

16:09:50.172 - Model:

Text

=== Associator model ===

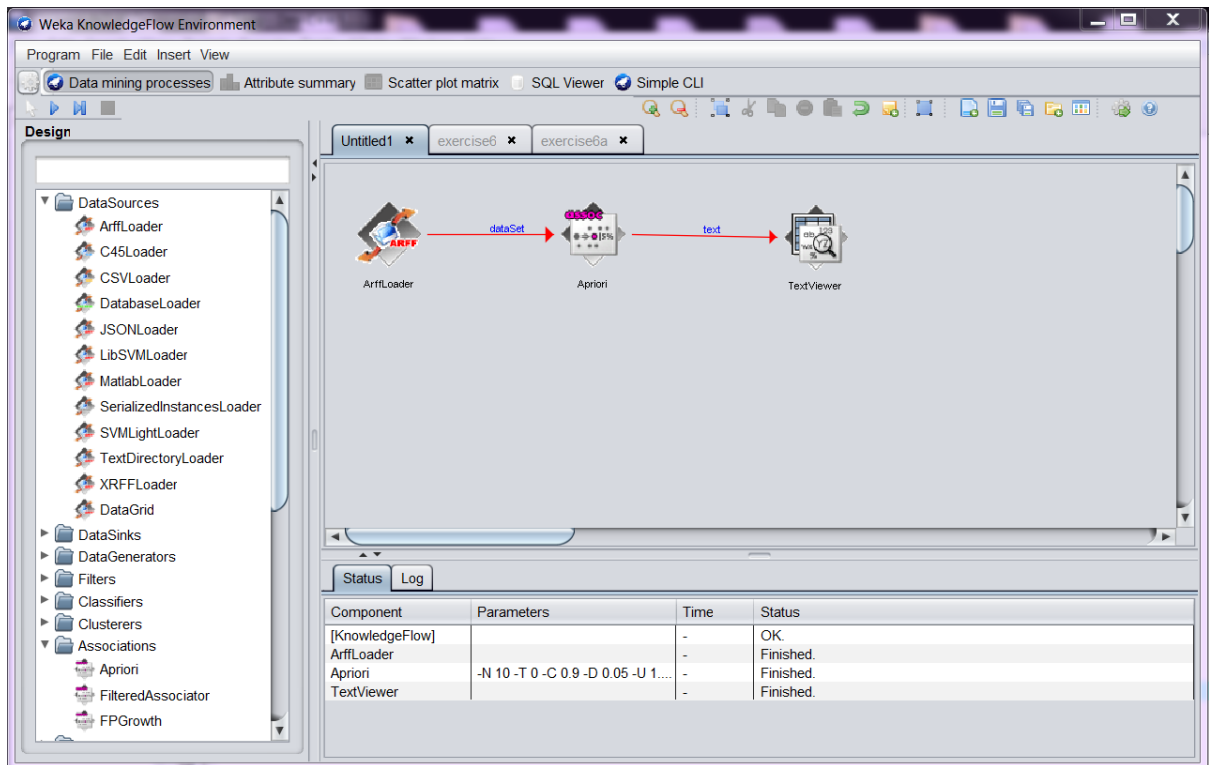
Scheme: FPGrowth

Relation: supermarket

FPGrowth found 16 rules (displaying top 10)

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

Close Settings Clear results



Text Viewer

Result list

11:13:04.546 - Model: ...

Text

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

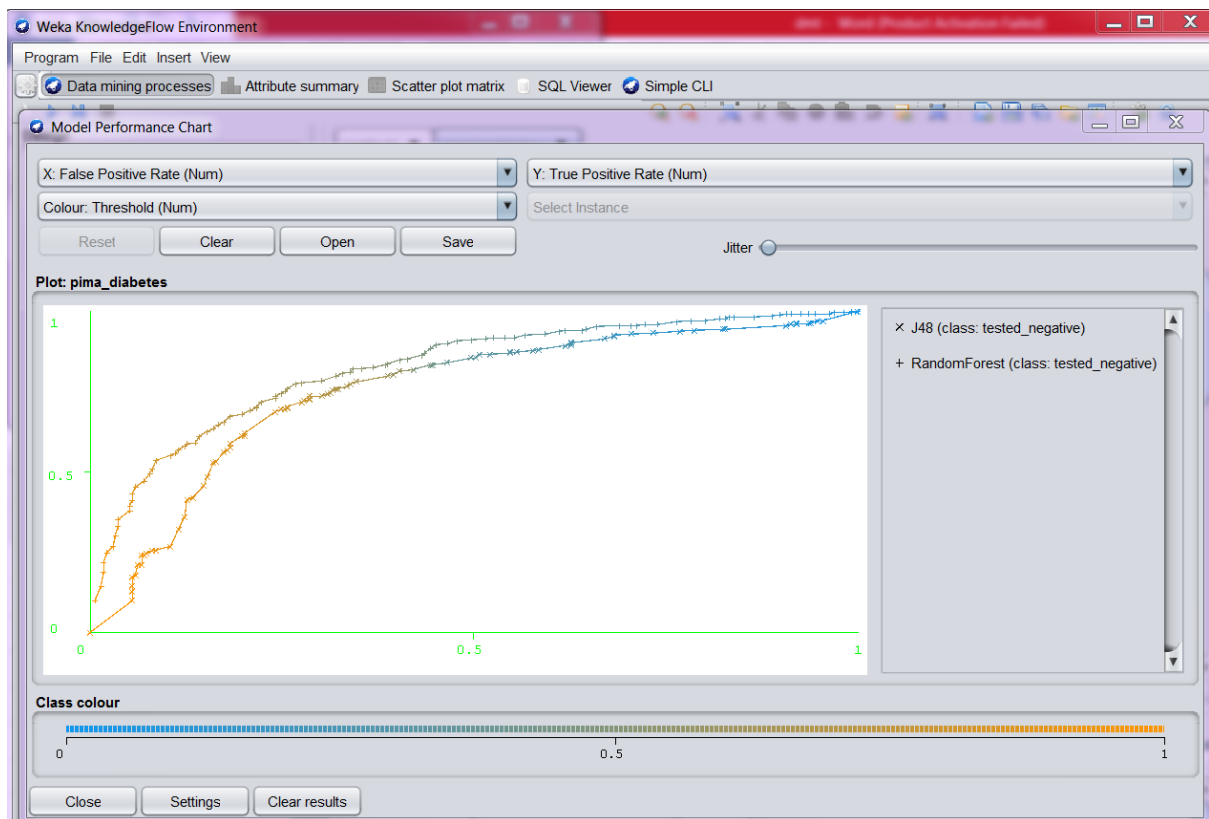
Size of set of large itemsets L(5): 105

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:(
2. baking needs=t biscuits=t fruit=t total=high 760 ==> bread and cake=t 696 <conf:(0.92)> lift:(
3. baking needs=t frozen foods=t fruit=t total=high 770 ==> bread and cake=t 705 <conf:(0.92)> li
4. biscuits=t fruit=t vegetables=t total=high 815 ==> bread and cake=t 746 <conf:(0.92)> lift:(1.
5. party snack foods=t fruit=t total=high 854 ==> bread and cake=t 779 <conf:(0.91)> lift:(1.27)
6. biscuits=t frozen foods=t vegetables=t total=high 797 ==> bread and cake=t 725 <conf:(0.91)> 1
7. baking needs=t biscuits=t vegetables=t total=high 772 ==> bread and cake=t 701 <conf:(0.91)> 1
8. biscuits=t fruit=t total=high 954 ==> bread and cake=t 866 <conf:(0.91)> lift:(1.26) lev:(0.04
9. frozen foods=t fruit=t vegetables=t total=high 834 ==> bread and cake=t 757 <conf:(0.91)> lift
10. frozen foods=t fruit=t total=high 969 ==> bread and cake=t 877 <conf:(0.91)> lift:(1.26) lev:(

Close Settings Clear results



7)

Weka Explorer

Preprocess Classify Cluster Associate Select attributes Visualize

Classifier

Choose ZeroR

Test options

☐ Use training set

☐ Supplied test set Set...

☒ Cross-validation Folds 10

☐ Percentage split % 66

More options...

(Nom) class

Start Stop

Result list (right-click for options)

- 15:10:43 - trees.Id3
- 15:17:01 - trees.Id3
- 15:17:37 - trees.J48
- 15:22:40 - bayes.NaiveBayes
- 15:25:21 - lazy.IBk
- 15:32:18 - lazy.IBk
- 15:59:24 - rules.ZeroR

Classifier output

```

=== Run information ===

Scheme:      weka.classifiers.rules.ZeroR
Relation:     iris-weka.filters.supervised.attribute.Discretize-Rfirst-last-precision6-weka.filters.supervised.att
Instances:    150
Attributes:   5
              sepalwidth
              sepalwidth
              petalwidth
              petalwidth
              class
Test mode:    10-fold cross-validation

=== Classifier model (full training set) ===

ZeroR predicts class value: Iris-setosa

Time taken to build model: 0 seconds

=== Stratified cross-validation ===
=== Summary ===

Correctly Classified Instances      50           33.3333 %
Incorrectly Classified Instances    100           66.6667 %
Kappa statistic                    0
Mean absolute error                 0.4444
Root mean squared error             0.4714
Relative absolute error             100 %
Root relative squared error         100 %
Total Number of Instances          150

=== Detailed Accuracy By Class ===

```

Status

OK Log x0

Weka Explorer

Preprocess Classify Cluster Associate Select attributes Visualize

Classifier

Choose ZeroR

Test options

☐ Use training set

☐ Supplied test set Set...

☒ Cross-validation Folds 10

☐ Percentage split % 66

More options...

(Nom) class

Start Stop

Result list (right-click for options)

- 15:10:43 - trees.Id3
- 15:17:01 - trees.Id3
- 15:17:37 - trees.J48
- 15:22:40 - bayes.NaiveBayes
- 15:25:21 - lazy.IBk
- 15:32:18 - lazy.IBk
- 15:59:24 - rules.ZeroR

Classifier output

```

ZeroR predicts class value: Iris-setosa

Time taken to build model: 0 seconds

=== Stratified cross-validation ===
=== Summary ===

Correctly Classified Instances      50           33.3333 %
Incorrectly Classified Instances    100           66.6667 %
Kappa statistic                    0
Mean absolute error                 0.4444
Root mean squared error             0.4714
Relative absolute error             100 %
Root relative squared error         100 %
Total Number of Instances          150

=== Detailed Accuracy By Class ===

              TP Rate  FP Rate  Precision  Recall  F-Measure  MCC      ROC Area  PRC Area  Class
              1.000    1.000    0.333     1.000    0.500     ?       0.500    0.333    Iris-setosa
              0.000    0.000    ?         0.000    ?         ?       0.500    0.333    Iris-versicolor
              0.000    0.000    ?         0.000    ?         ?       0.500    0.333    Iris-virginica
Weighted Avg.   0.333    0.333    ?         0.333    ?         ?       0.500    0.333

=== Confusion Matrix ===

  a  b  c  <-- classified as
50  0  0 | a = Iris-setosa
50  0  0 | b = Iris-versicolor
50  0  0 | c = Iris-virginica

```

Status

OK Log x0