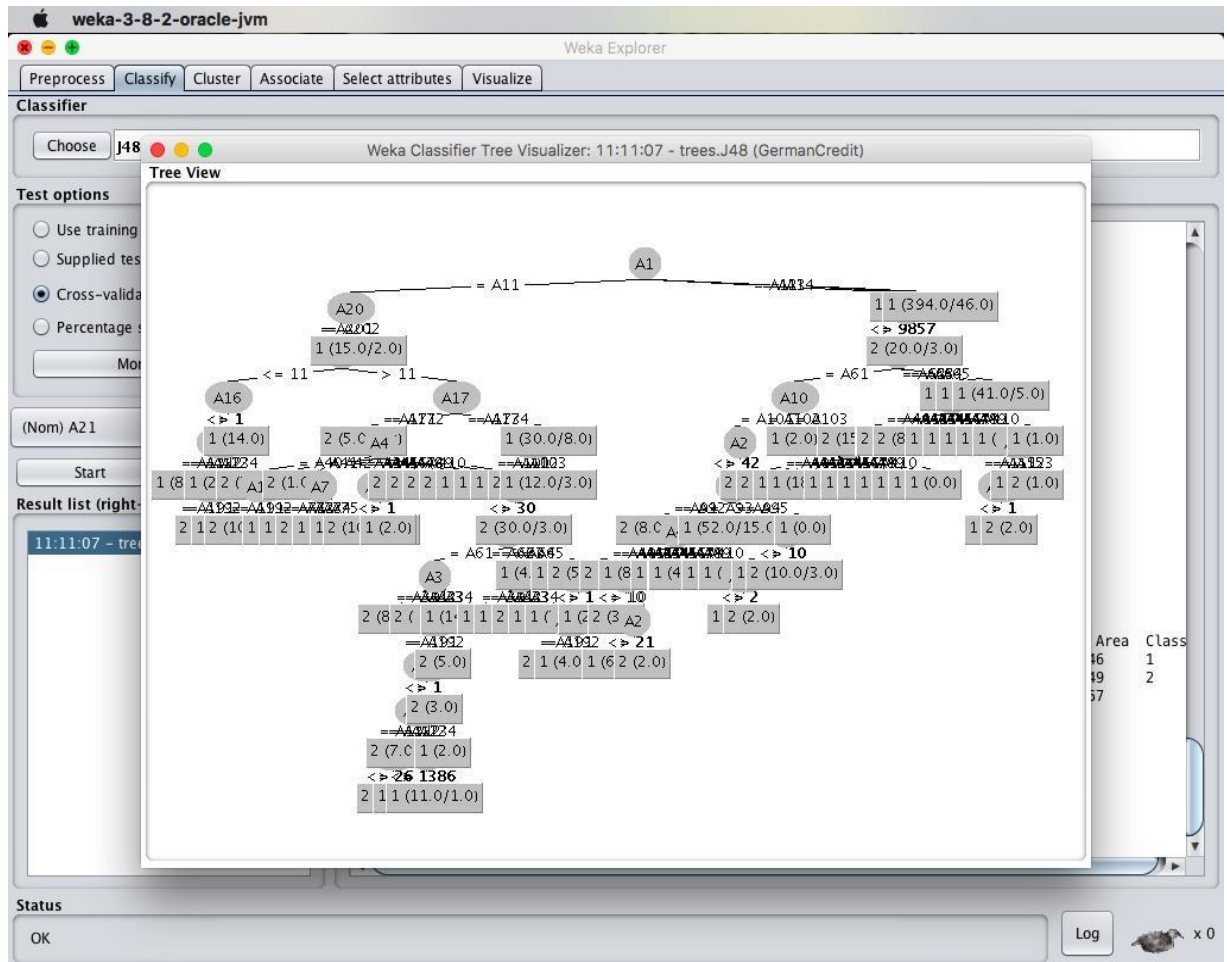
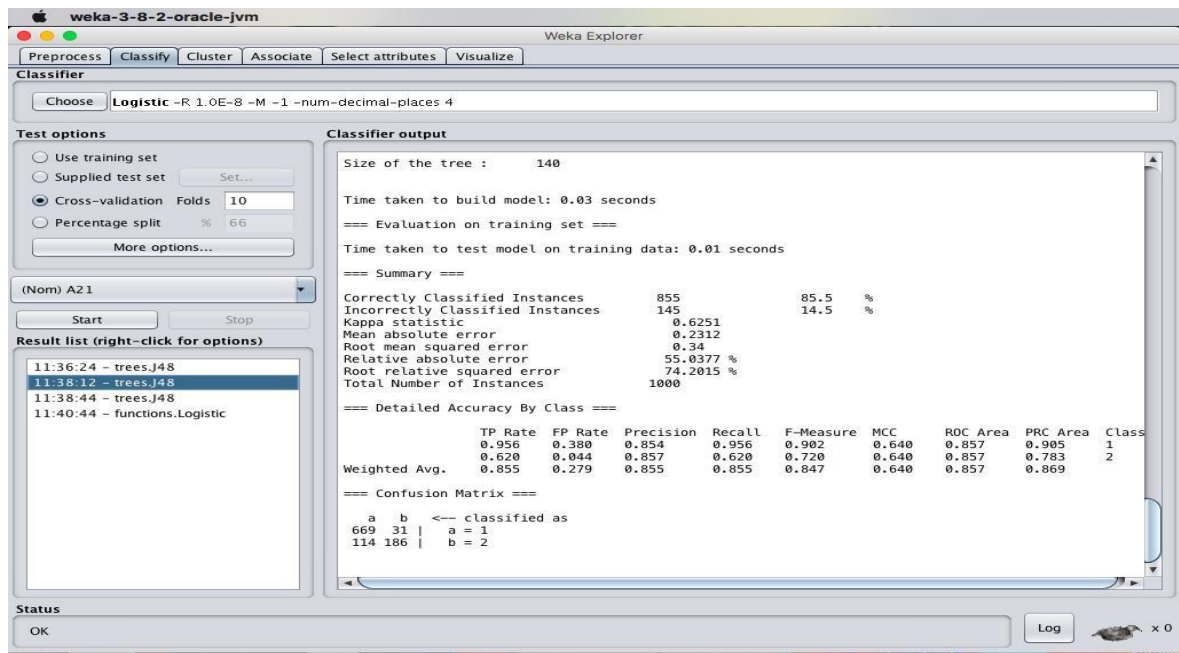
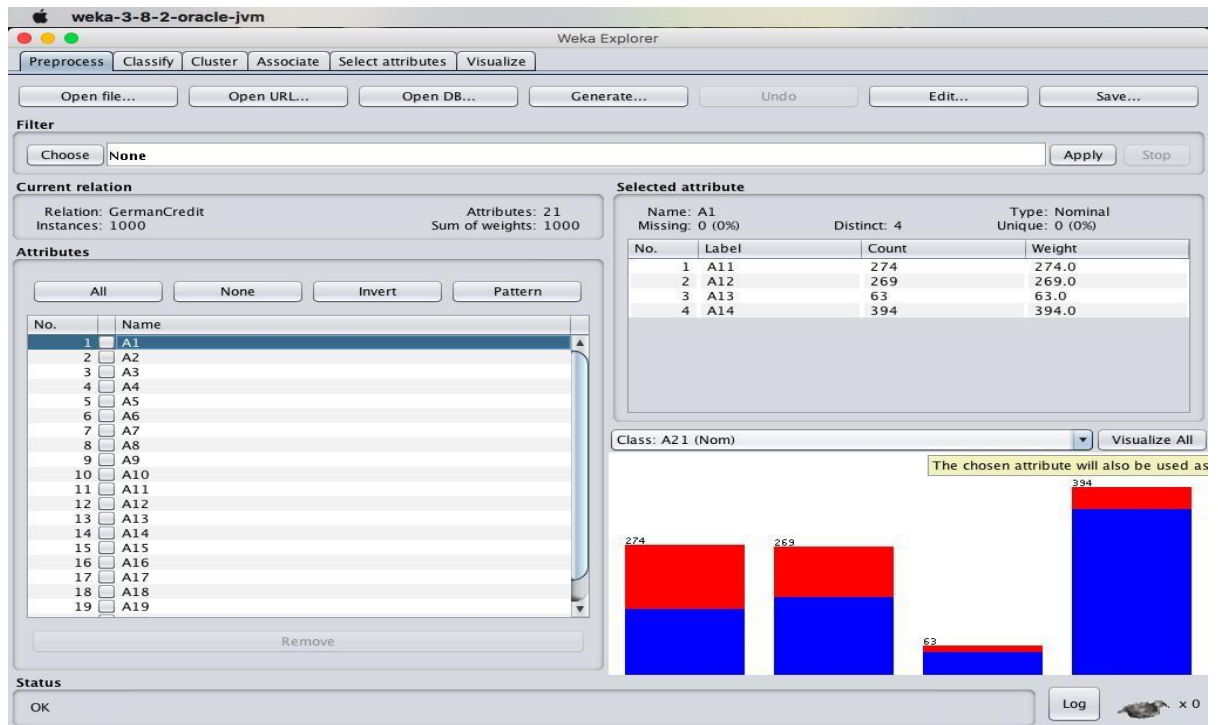


EXPERIMENT-11

PREDICTION OF CATEGORICAL DATA USING DECISION TREE ALGORITHM THROUGH WEKA

OUTPUT:





When cross validation folds are 10 :

The screenshot shows the Weka Explorer interface with the 'Classify' tab selected. The classifier chosen is 'J48 -C 0.25 -M 2'. Under 'Test options', 'Cross-validation' is selected with 'Folds' set to 10. The '(Nom) A2 1' dropdown is visible. The 'Classifier output' pane displays the 'J48 pruned tree' structure. The tree starts with a root node 'A1 = A11', which splits on 'A20 = A201'. The left branch leads to 'A2 ≤ 11', which further splits on 'A16 ≤ 1'. The right branch leads to 'A2 > 11', which splits on 'A17 = A171: 2 (5.0/1.0)'. The tree continues with various internal nodes and leaf nodes, each showing the class and its distribution. The 'Result list' on the left shows a single entry: '10:54:18 - trees.J48'. The 'Status' bar at the bottom indicates 'OK'.

This screenshot shows the same Weka Explorer interface as the first, but with a different classifier output. The 'Classifier output' pane displays a different 'J48 pruned tree' structure. The root node is 'A1 = A11', which splits on 'A20 = A201'. The left branch leads to 'A2 ≤ 11', which further splits on 'A16 ≤ 1'. The right branch leads to 'A2 > 11', which splits on 'A17 = A171: 2 (5.0/1.0)'. The tree continues with various internal nodes and leaf nodes, each showing the class and its distribution. The 'Result list' on the left shows a single entry: '10:54:18 - trees.J48'. The 'Status' bar at the bottom indicates 'OK'.

When cross validation folds are : 05

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 **05**

☐ Percentage split % **66**

More options...

(Nom) A21

Start Stop

Result list (right-click for options)

10:54:18 - trees.J48

10:54:52 - trees.J48

Classifier output

J48 pruned tree

```

A1 = A11
|
| A20 = A201
| |
| | A2 <= 11
| | |
| | | A16 <= 1
| | | |
| | | | A12 = A121: 1 (8.0/1.0)
| | | | A12 = A122
| | | | |
| | | | | A19 = A191: 2 (2.0)
| | | | | A19 = A192: 1 (4.0)
| | | | | A12 = A123: 1 (2.0/1.0)
| | | | | A12 = A124: 2 (3.0)
| | | | |
| | | | A16 > 1: 1 (14.0)
| | |
| | | A2 > 11
| | | |
| | | | A17 = A171: 2 (5.0/1.0)
| | | | A17 = A172
| | | | |
| | | | | A4 = A40
| | | | | |
| | | | | | A19 = A191: 2 (10.0/2.0)
| | | | | | A19 = A192: 1 (2.0)
| | | | | A4 = A41: 2 (1.0)
| | | | | A4 = A42
| | | | | |
| | | | | | A7 = A71: 1 (0.0)
| | | | | | A7 = A72: 2 (3.0)
| | | | | | A7 = A73: 1 (4.0)
| | | | | | A7 = A74: 1 (1.0)
| | | | | | A7 = A75: 1 (2.0)
| | | | |
| | | | | A4 = A43
| | | | | |
| | | | | | A16 <= 1: 2 (10.0/3.0)
| | | | | | A16 > 1: 1 (2.0)
| | | | | A4 = A44: 2 (1.0)
| | | | | A4 = A45: 2 (1.0)
| | | | | A4 = A46: 2 (1.0)
| | | | | A4 = A47: 2 (0.0)
| | | |
| | | A4 = A43
| | | |
| | | | A16 <= 1: 2 (10.0/3.0)
| | | | A16 > 1: 1 (2.0)
| | | | A4 = A44: 2 (1.0)
| | | | A4 = A45: 2 (1.0)
| | | | A4 = A46: 2 (1.0)
| | | | A4 = A47: 2 (0.0)
| | |
| | A4 = A43
| | |
| | | A16 <= 1: 2 (10.0/3.0)
| | | A16 > 1: 1 (2.0)
| | | A4 = A44: 2 (1.0)
| | | A4 = A45: 2 (1.0)
| | | A4 = A46: 2 (1.0)
| | | A4 = A47: 2 (0.0)
| |
| A4 = A43
| |
| | A16 <= 1: 2 (10.0/3.0)
| | A16 > 1: 1 (2.0)
| | A4 = A44: 2 (1.0)
| | A4 = A45: 2 (1.0)
| | A4 = A46: 2 (1.0)
| | A4 = A47: 2 (0.0)
|
A4 = A43
|
| A16 <= 1: 2 (10.0/3.0)
| A16 > 1: 1 (2.0)
| A4 = A44: 2 (1.0)
| A4 = A45: 2 (1.0)
| A4 = A46: 2 (1.0)
| A4 = A47: 2 (0.0)

```

Status

OK Log x 0

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 **05**

☐ Percentage split % **66**

More options...

(Nom) A21

Start Stop

Result list (right-click for options)

10:54:18 - trees.J48

10:54:52 - trees.J48

Classifier output

```

A1 = A11
|
| A20 = A201
| |
| | A2 <= 11
| | |
| | | A16 <= 1
| | | |
| | | | A12 = A121: 1 (8.0/1.0)
| | | | A12 = A122
| | | | |
| | | | | A19 = A191: 2 (2.0)
| | | | | A19 = A192: 1 (4.0)
| | | | | A12 = A123: 1 (2.0/1.0)
| | | | | A12 = A124: 2 (3.0)
| | | | |
| | | | A16 > 1: 1 (14.0)
| | |
| | | A2 > 11
| | | |
| | | | A17 = A171: 2 (5.0/1.0)
| | | | A17 = A172
| | | | |
| | | | | A4 = A40
| | | | | |
| | | | | | A19 = A191: 2 (10.0/2.0)
| | | | | | A19 = A192: 1 (2.0)
| | | | | A4 = A41: 2 (1.0)
| | | | | A4 = A42
| | | | | |
| | | | | | A7 = A71: 1 (0.0)
| | | | | | A7 = A72: 2 (3.0)
| | | | | | A7 = A73: 1 (4.0)
| | | | | | A7 = A74: 1 (1.0)
| | | | | | A7 = A75: 1 (2.0)
| | | | |
| | | | | A4 = A43
| | | | | |
| | | | | | A16 <= 1: 2 (10.0/3.0)
| | | | | | A16 > 1: 1 (2.0)
| | | | | A4 = A44: 2 (1.0)
| | | | | A4 = A45: 2 (1.0)
| | | | | A4 = A46: 2 (1.0)
| | | | | A4 = A47: 2 (0.0)
| | | |
| | | A4 = A43
| | | |
| | | | A16 <= 1: 2 (10.0/3.0)
| | | | A16 > 1: 1 (2.0)
| | | | A4 = A44: 2 (1.0)
| | | | A4 = A45: 2 (1.0)
| | | | A4 = A46: 2 (1.0)
| | | | A4 = A47: 2 (0.0)
| | |
| | A4 = A43
| | |
| | | A16 <= 1: 2 (10.0/3.0)
| | | A16 > 1: 1 (2.0)
| | | A4 = A44: 2 (1.0)
| | | A4 = A45: 2 (1.0)
| | | A4 = A46: 2 (1.0)
| | | A4 = A47: 2 (0.0)
| |
| A4 = A43
| |
| | A16 <= 1: 2 (10.0/3.0)
| | A16 > 1: 1 (2.0)
| | A4 = A44: 2 (1.0)
| | A4 = A45: 2 (1.0)
| | A4 = A46: 2 (1.0)
| | A4 = A47: 2 (0.0)
|
A4 = A43
|
| A16 <= 1: 2 (10.0/3.0)
| A16 > 1: 1 (2.0)
| A4 = A44: 2 (1.0)
| A4 = A45: 2 (1.0)
| A4 = A46: 2 (1.0)
| A4 = A47: 2 (0.0)

```

Status

OK Log x 0

PreprocessClassifyClusterAssociateSelect attributesVisualize

Weka Explorer

Classifier

ChooseJ48 -C 0.25 -M 2

Test options

Use training set

Supplied test set

Cross-validation

Folds05

Percentage split

More options...

(Nom) A21

StartStop

Result list (right-click for options)

10:54:18 - trees.J48

10:54:52 - trees.J48

Left-click to edit properties for this object, right-click/Alt+Shift+left-click for menu

A1 = A14: 1 (394.0/46.0)

Number of Leaves : 103

Size of the tree : 140

Time taken to build model: 0.03 seconds

=== Stratified cross-validation ===

=== Summary ===

Correctly Classified Instances73373.3%

Incorrectly Classified Instances26726.7%

Kappa statistic0.3264

Mean absolute error0.3293

Root mean squared error0.4579

Relative absolute error78.3705%

Root relative squared error99.914%

Total Number of Instances1000

=== Detailed Accuracy By Class ===

| | TP Rate | FP Rate | Precision | Recall | F-Measure | MCC | ROC Area | PRC Area | Class |
|---------------|---------|---------|-----------|--------|-----------|-------|----------|----------|-------|
| | 0.851 | 0.543 | 0.785 | 0.851 | 0.817 | 0.330 | 0.685 | 0.789 | 1 |
| | 0.457 | 0.149 | 0.568 | 0.457 | 0.506 | 0.330 | 0.685 | 0.463 | 2 |
| Weighted Avg. | 0.733 | 0.425 | 0.720 | 0.733 | 0.724 | 0.330 | 0.685 | 0.697 | |

=== Confusion Matrix ===

a b <-- classified as

596 104 | a = 1

163 137 | b = 2

Status

OK

Log

x 0