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Number of factors: 4

Test for independence of all factors:

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3 3rd Male Child No 35

4 Crew Male Child No 0

5 1st Female Child No 0

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8 Crew Female Child No 0

9 1st Male Adult No 118

10 2nd Male Adult No 154

11 3rd Male Adult No 387

12 Crew Male Adult No 670

13 1st Female Adult No 4

14 2nd Female Adult No 13

15 3rd Female Adult No 89

16 Crew Female Adult No 3

17 1st Male Child Yes 5

18 2nd Male Child Yes 11

19 3rd Male Child Yes 13

20 Crew Male Child Yes 0

21 1st Female Child Yes 1

22 2nd Female Child Yes 13

23 3rd Female Child Yes 14

24 Crew Female Child Yes 0

25 1st Male Adult Yes 57

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3.2 3rd Male Child No

3.3 3rd Male Child No

3.4 3rd Male Child No

3.5 3rd Male Child No

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>nvmodel

$apriori

Y

No Yes

1490 711

$tables

$tables$Class

Class

Y 1st 2nd 3rd Crew

No 0.08187919 0.11208054 0.35436242 0.45167785

Yes 0.28551336 0.16596343 0.25035162 0.29817159

$tables$Sex

Sex

Y Male Female

No 0.91543624 0.08456376

Yes 0.51617440 0.48382560

$tables$Age

Age

Y Child Adult

No 0.03489933 0.96510067

Yes 0.08016878 0.91983122

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[1331] No No No No No No No No No No No No No No

[1345] No No No No No No No No No No No No No No

[1359] No No No No No No No No No No No No No No

[1373] No No No No No No No No No Yes Yes Yes Yes Yes

[1387] Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes

[1401] Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes

[1415] Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes

[1429] Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes

[1443] Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes

[1457] Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes

[1471] Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes

[1485] Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes No No No

[1499] No No No No No No No No No No No No No No

[1513] No No No No No No No Yes Yes Yes Yes Yes Yes Yes

[1527] Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes

[1541] Yes Yes Yes Yes Yes Yes Yes No No No No No No No

[1555] No No No No No No No No No No No No No No

[1569] No No No No No No No No No No No No No No

[1583] No No No No No No No No No No No No No No

[1597] No No No No No No No No No No No No No No

[1611] No No No No No No No No No No No No No No

[1625] No No No No No No No No No No No No No No

[1639] No No No No No No No No No No No No No No

[1653] No No No No No No No No No No No No No No

[1667] No No No No No No No No No No No No No No

[1681] No No No No No No No No No No No No No No

[1695] No No No No No No No No No No No No No No

[1709] No No No No No No No No No No No No No No

[1723] No No No No No No No No No No No No No No

[1737] No No No No No No No No No No No No No No

[1751] No No No No No No No No No No No No No No

[1765] No No No No No No No No No No No No No No

[1779] No No No No No No No No No No No No No No

[1793] No No No No No No No No No No No No No No

[1807] No No No No No No No No No No No No No No

[1821] No No No No No No No No No No No No No No

[1835] No No No No No No No No No No No No No No

[1849] No No No No No No No No No No No No No No

[1863] No No No No No No No No No No No No No No

[1877] No No No No No No No No No Yes Yes Yes Yes Yes

[1891] Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes

[1905] Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes

[1919] Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes

[1933] Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes

[1947] Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes

[1961] Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes

[1975] Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes

[1989] Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes

[2003] Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes

[2017] Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes

[2031] Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes

[2045] Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes

[2059] Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes

[2073] Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes

[2087] Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes

[2101] Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes

[2115] Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes

[2129] Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes

[2143] Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes

[2157] Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes

[2171] Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes

[2185] Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes

[2199] Yes Yes Yes

Levels: No Yes

> table(nvpred,titanicset$Survived)

nvpred No Yes

No 1364 362

Yes 126 349

**Confusion Matrix:**

Confusion matrix to check the accuracy.We have the results we are able to classify 1364 out of 1490 'NO ' cases correctly and 349 out of 711 'YES'cases.correctly this means the ability of naive bayes algorithm to predict 'NO'cases is about 91.5% but it falls down to only 49% of the 'YES'cases resulting overall accuracy of 77.8%

**Using Weka:**

**4.Demonstration of classification rule process on dataset weather nominal.arff using naïve bayes algorithm**

**Aim:** This experiment illustrates the use of naïve bayes classifier in weka. The sample data set used in this experiment is “weather nominal”data available at arff format. This document assumes that appropriate data pre processing has been performed.

Steps involved in this experiment:

Step1: We begin the experiment by loading the data (weather nominal.arff) into weka.

Step2: next we select the “classify” tab and click “choose” button to select the “naïve bayes”classifier.

Step3: now we specify the various parameters. These can be specified by clicking in the text box to the right of the chose button. In this example, we accept the default values his default version does perform some pruning but does not perform error pruning.

Step4: under the “text “options in the main panel. We select the 10-fold cross validation as our evaluation approach. Since we don’t have separate evaluation data set, this is necessary to get a reasonable idea of accuracy of generated model.

Step-5: we now click”start”to generate the model .the ASCII version of the tree as well as evaluation statistic will appear in the right panel when the model construction is complete.

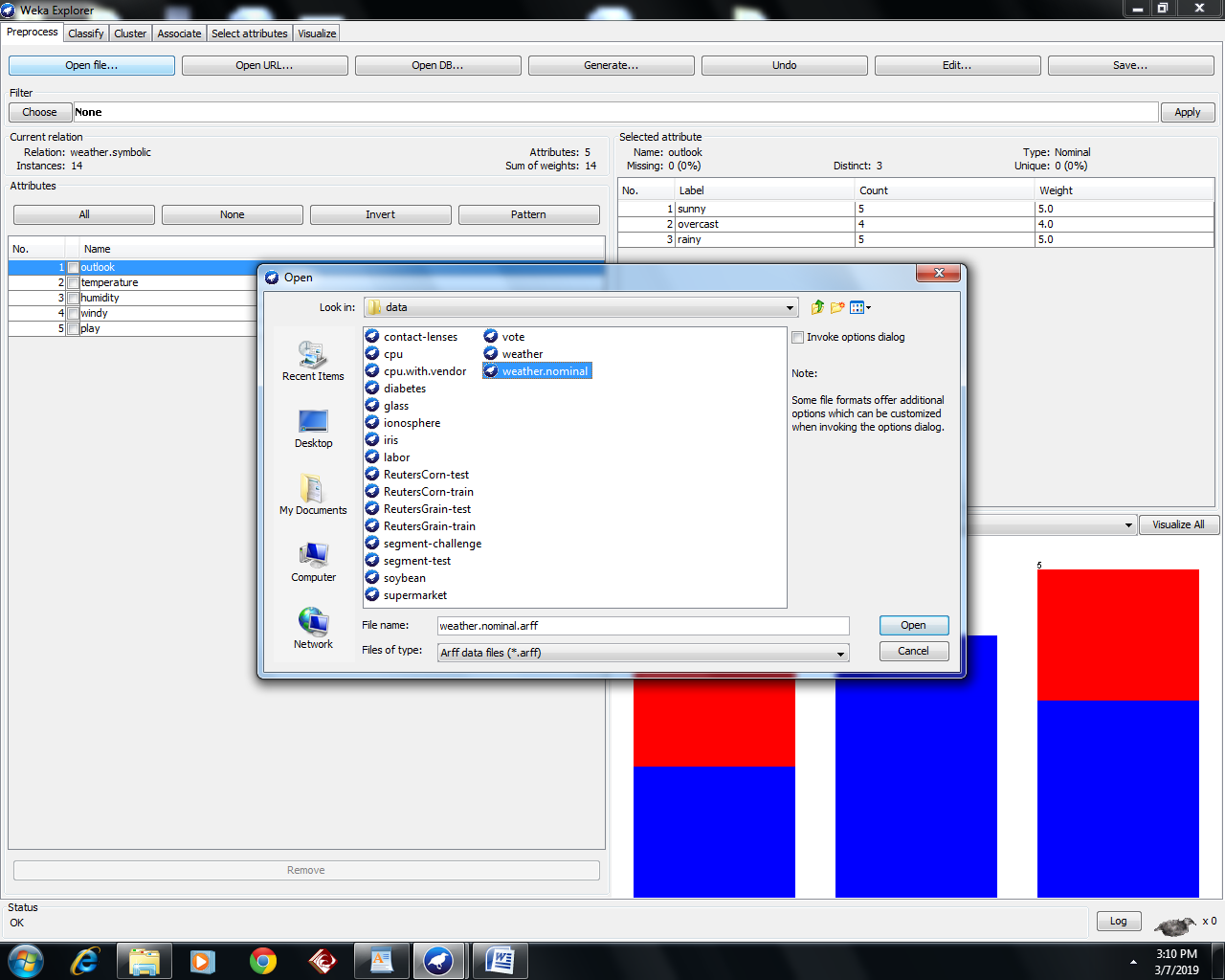
Step-6: note that the classification accuracy of model is about 69%.this indicates that we may find more work. (Either in preprocessing or in selecting current parameters for the classification)

Step-7: now weka also lets us a view a graphical version of the classification tree. This can be done by right clicking the last result set and selecting “visualize tree” from the pop-up menu.

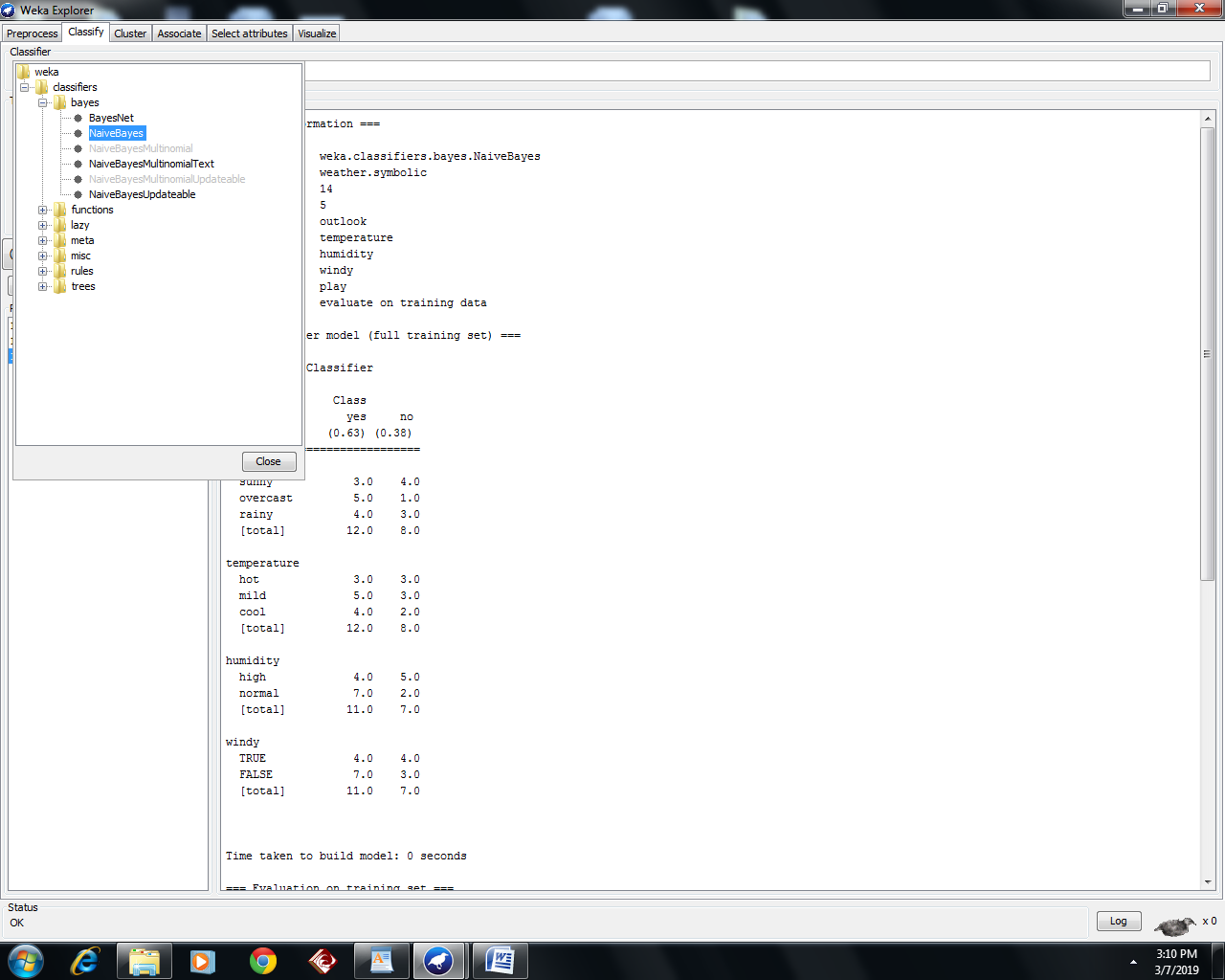
Step-8: we will use our model to classify the new instances.

Step-9: In the main panel under “text “options click the “supplied test set” radio button and then click the “set” button. This will show pop-up window which will allow you to open the file containing test instances

**Step1:**

****

**Step2:**

****

**Step3:**

**Output:**

=== Run information ===

Scheme: weka.classifiers.bayes.NaiveBayes

Relation: weather.symbolic

Instances: 14

Attributes: 5

outlook

temperature

humidity

windy

play

Test mode: evaluate on training data

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

Naive Bayes Classifier

Class

Attribute yes no

(0.63) (0.38)

=============================

outlook

sunny 3.0 4.0

overcast 5.0 1.0

rainy 4.0 3.0

[total] 12.0 8.0

temperature

hot 3.0 3.0

mild 5.0 3.0

cool 4.0 2.0

[total] 12.0 8.0

humidity

high 4.0 5.0

normal 7.0 2.0

[total] 11.0 7.0

windy

TRUE 4.0 4.0

FALSE 7.0 3.0

[total] 11.0 7.0

Time taken to build model: 0 seconds

=== Evaluation on training set ===

Time taken to test model on training data: 0 seconds

=== Summary ===

Correctly Classified Instances 13 92.8571 %

Incorrectly Classified Instances 1 7.1429 %

Kappa statistic 0.8372

Mean absolute error 0.2917

Root mean squared error 0.3392

Relative absolute error 62.8233 %

Root relative squared error 70.7422 %

Coverage of cases (0.95 level) 100 %

Mean rel. region size (0.95 level) 100 %

Total Number of Instances 14

=== Detailed Accuracy By Class ===

TP Rate FP Rate Precision Recall F-Measure MCC ROC Area PRC Area Class

1 0.2 0.9 1 0.947 0.849 0.922 0.947 yes

0.8 0 1 0.8 0.889 0.849 0.911 0.911 no

Weighted Avg. 0.929 0.129 0.936 0.929 0.926 0.849 0.918 0.934

=== Confusion Matrix ===

a b <-- classified as

9 0 | a = yes