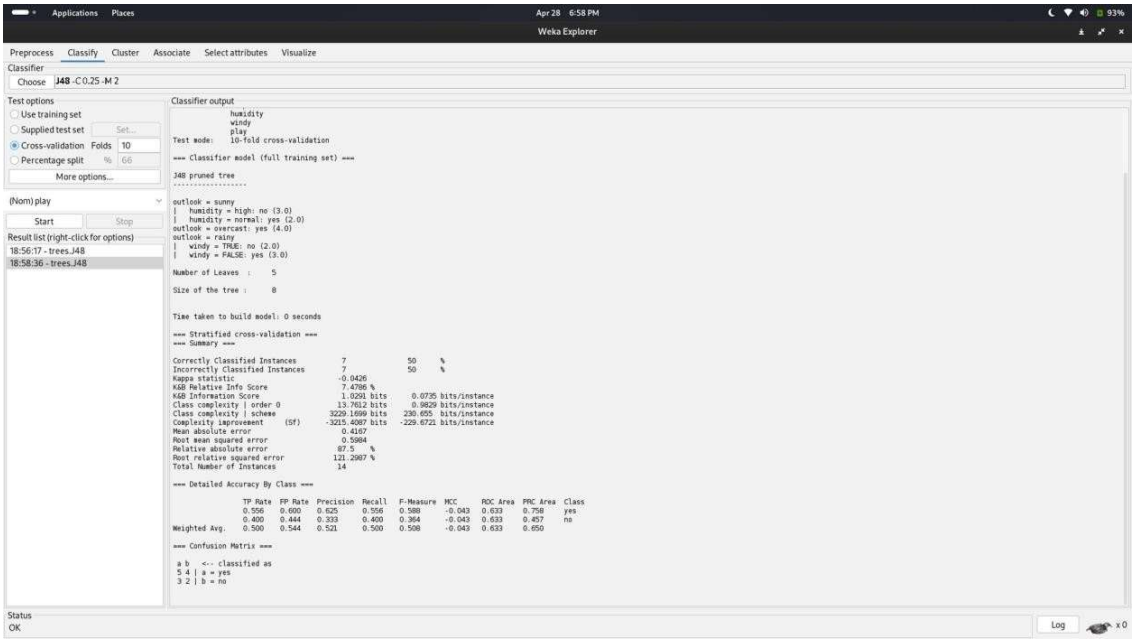
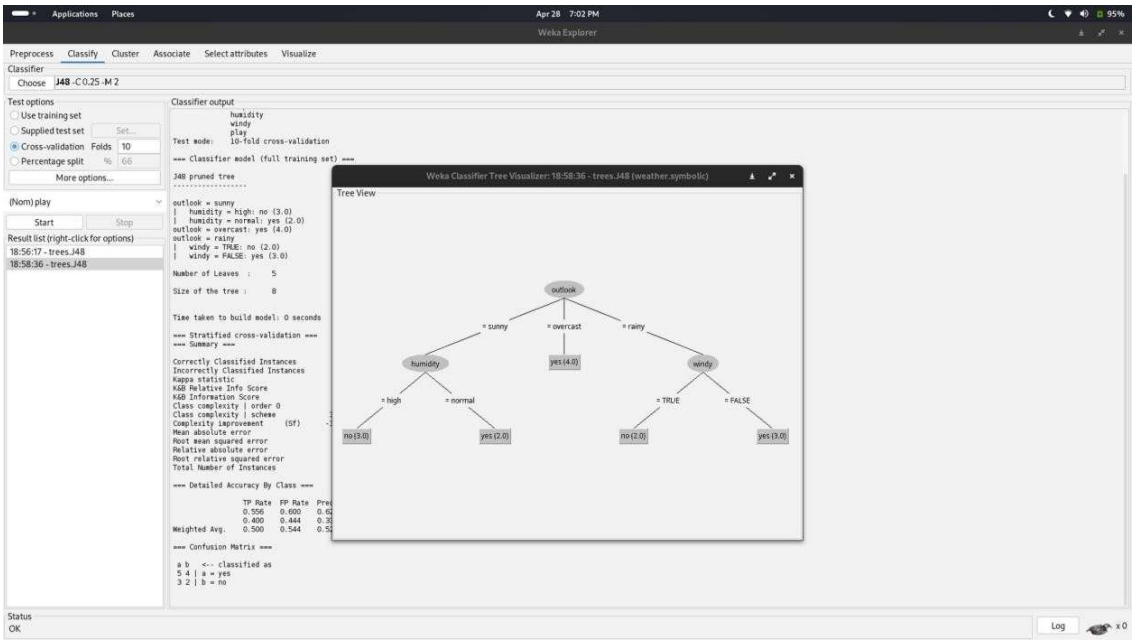
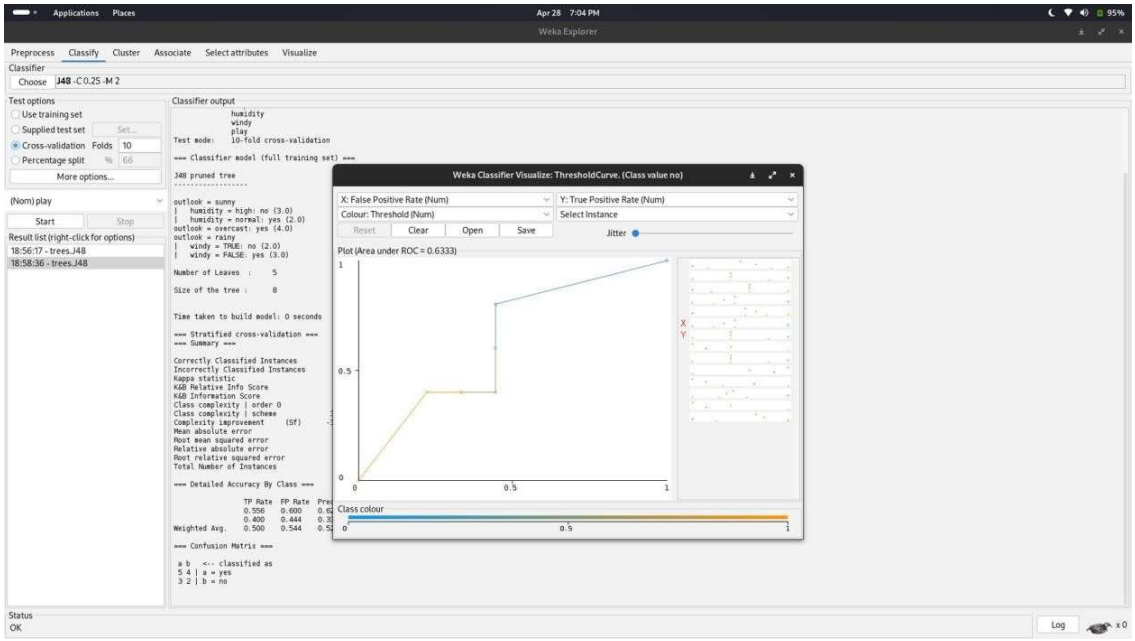
Name: Mohammad AsifReg no: 20214096Group: 6C

1.


Applications Places
Apr 28 6:58 PM
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) play
Start Stop
Result list (right-click for options)
18:56:17 - trees.J48
18:58:36 - trees.J48
Classifier output
humidity
windy
play
Test mode: 10-fold cross-validation
=== Classifier model (full training set) ===
J48 pruned tree
outlook = sunny
| humidity = high: no (3.0)
| humidity = normal: yes (2.0)
outlook = overcast: yes (4.0)
outlook = rainy
| windy = TRUE: no (2.0)
| windy = FALSE: yes (3.0)
Number of Leaves : 5
Size of the tree : 8
Time taken to build model: 0 seconds
=== Stratified cross-validation ===
=== Summary ===
Correctly Classified Instances 7 50 %
Incorrectly Classified Instances 7 50 %
Kappa statistic -0.0426
K&B Relative Info Score 7.4786 %
K&B Information Score 1.0291 bits 0.0735 bits/instance
Class complexity | order 0 13.7612 bits 0.9829 bits/instance
Class complexity | scheme 3229.1699 bits 230.655 bits/instance
Complexity improvement (Sf) -3215.4087 bits -229.6721 bits/instance
Mean absolute error 0.4167
Root mean squared error 0.5904
Relative absolute error 87.5 %
Root relative squared error 121.2987 %
Total Number of Instances 14
=== Detailed Accuracy By Class ===
TP Rate FP Rate Precision Recall F-Measure MCC ROC Area PRC Area Class
0.556 0.600 0.625 0.556 0.588 -0.043 0.633 0.758 yes
0.400 0.444 0.333 0.400 0.364 -0.043 0.633 0.457 no
Weighted Avg. 0.500 0.544 0.521 0.500 0.508 -0.043 0.633 0.650
=== Confusion Matrix ===
a b <-- classified as
5 4 | a = yes
3 2 | b = no
Status
OK
Log
x 0


Applications Places
Apr 28 7:02 PM
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) play
Start Stop
Result list (right-click for options)
18:56:17 - trees.J48
18:58:36 - trees.J48
Classifier output
Weka Classifier Tree Visualizer: 18:58:36 - trees.J48 (weather.symbolic)
Tree View
outlook
= sunny
= overcast
= rainy
humidity
yes (4.0)
windy
= high
= normal
= TRUE
= FALSE
no (3.0)
yes (2.0)
no (2.0)
yes (3.0)
Status
OK
Log
x 0


Applications
Places
Apr 28 7:04 PM
95%
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) play
Start
Stop
Result list (right-click for options)
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18:58:36 - trees.J48
Classifier output
humidity
windy
play
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Size of the tree : 8
Time taken to build model: 0 seconds
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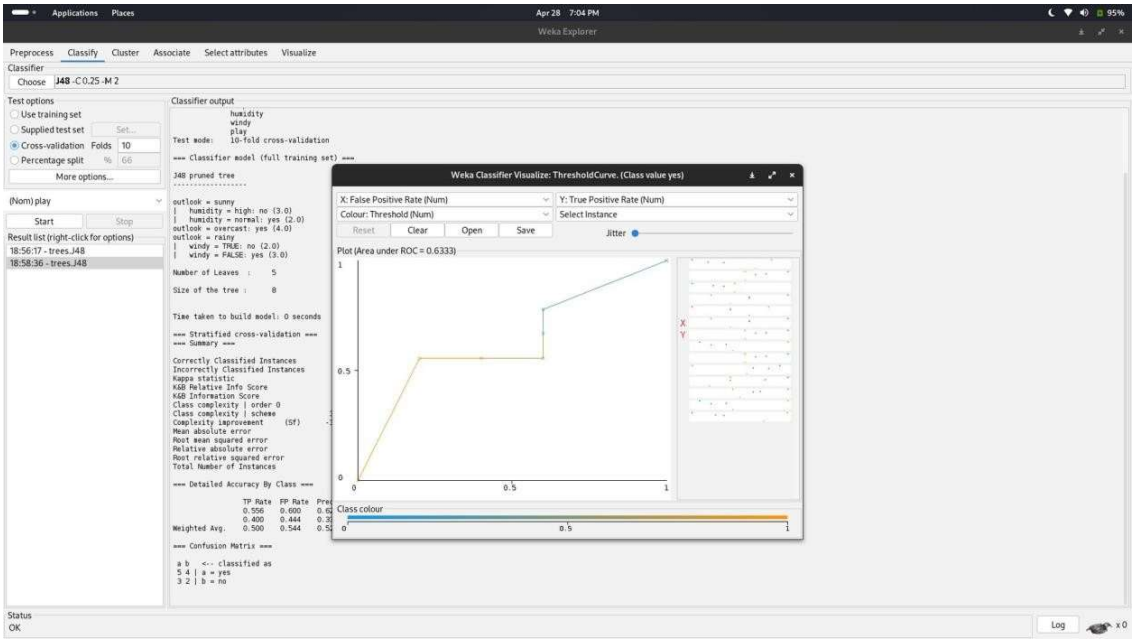
=== Summary ===
Correctly Classified Instances
Incorrectly Classified Instances
Kappa statistic
K&B Relative Info Score
K&B Information Score
Class complexity | order 0
Class complexity | scheme
Complexity improvement (Sf)
Mean absolute error
Root mean squared error
Relative absolute error
Root relative squared error
Total Number of Instances
=== Detailed Accuracy By Class ===
TP Rate FP Rate
0.556 0.600
0.400 0.444
Weighted Avg. 0.500 0.544
=== Confusion Matrix ===
a b <-- classified as
5 4 | a = yes
3 2 | b = no
Weka Classifier Visualize: ThresholdCurve. (Class value no)
X: False Positive Rate (Num)
Y: True Positive Rate (Num)
Colour: Threshold (Num)
Select Instance
Reset
Clear
Open
Save
Jitter
Plot (Area under ROC = 0.6333)
Class colour
Status
OK
Log
x 0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Places
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Classify
Cluster
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Select attributes
Visualize
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Test options
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Cross-validation Folds 10
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=== Summary ===
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Kappa statistic
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Class complexity | order 0
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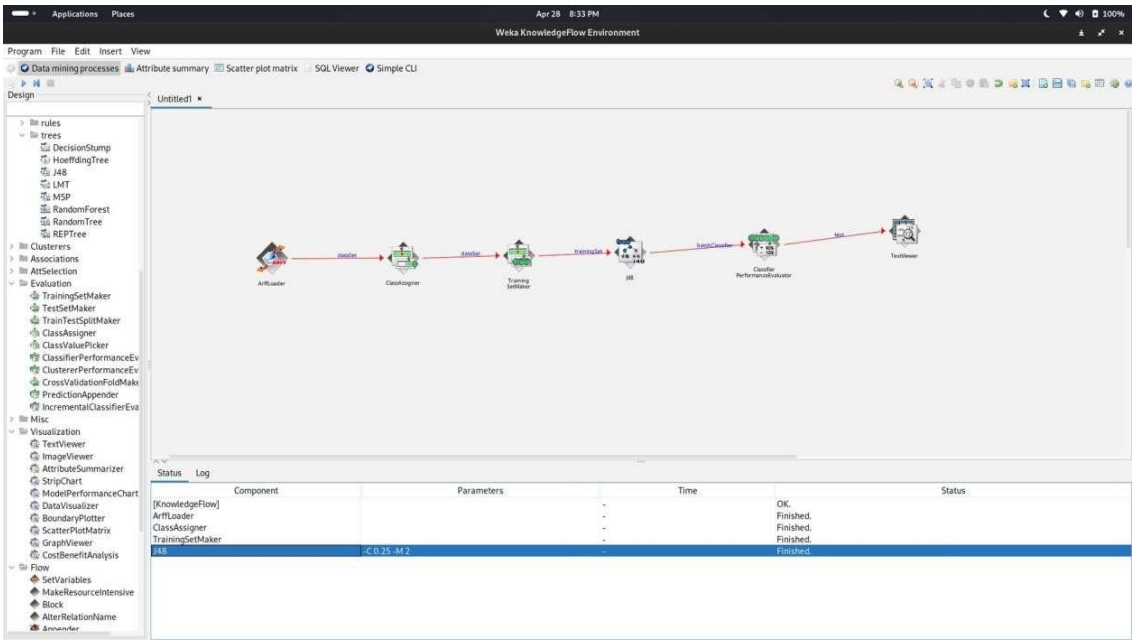
Y: True Positive Rate (Num)
Colour: Threshold (Num)
Select Instance
Reset
Clear
Open
Save
Jitter
Plot (Area under ROC = 0.6333)
Class colour
Status
OK
Log
x 0

2.



3. Code:

```
from sklearn import datasets
from sklearn.model_selection import train_test_split
from sklearn.preprocessing import OneHotEncoder
from sklearn import tree

# Load dataset
weather = datasets.load_weather_nominal()

# Preprocess dataset
enc = OneHotEncoder()
enc.fit(weather.data)
X = enc.transform(weather.data)

# Split dataset into training set and test set
X_train, X_test, y_train, y_test = train_test_split(X, weather.target, test_size=0.3)

# Create Decision Tree classifer object
clf = tree.DecisionTreeClassifier()
```

```
# Train Decision Tree Classifer
clf = clf.fit(X_train,y_train)

# Predict the response for test dataset
y_pred = clf.predict(X_test)
```