



Project Explorer

- authentication.ml (in oracle buildthon)
 - src/main/java
 - src/main/resources
 - src/test/java
 - src/test/resources
 - JRE System Library [J2SE-1.5]
 - Maven Dependencies
 - src
 - main
 - java
 - authentication
 - ml
 - a_test.arff
 - a_train.arff
 - Authentication.java
 - cross_validation.arff
 - cross_validation2.arff
 - cross2.arff
 - cross3.arff
 - data_banknote_authentication.csv
 - Data.arff
 - test_data.arff
 - testingdata.arff
 - train_data.arff
 - trainingdata.arff
 - resources
 - test
 - target
 - testoutput
 - pom.xml
 - CRUD
 - Grievance
 - Grievance Handling System Code
 - HelloWorld
 - Ritin
 - Servers
 - Test

Authentication.java authentication.ml/pom.xml

```
<?xml version="1.0" encoding="UTF-8" ?>
<project xmlns="http://maven.apache.org/POM/4.0.0" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:schemaLocation="http://maven.apache.org/POM/4.0.0 http://maven.apache.org/xsd/maven-4.0.0.xsd">
  <modelVersion>4.0.0</modelVersion>
  <groupId>com</groupId>
  <artifactId>authentication.ml</artifactId>
  <version>0.0.1-SNAPSHOT</version>
  <packaging>jar</packaging>
  <name>authentication.ml</name>
  <url></url>
  <properties>
    <java.version>1.8</java.version>
  </properties>
  <dependencies>
    <dependency>
      <groupId>org.apache.commons</groupId>
      <artifactId>commons-lang3</artifactId>
      <version>3.12.0</version>
    </dependency>
  </dependencies>
  <build>
    <plugins>
      <plugin>
        <groupId>org.apache.maven.plugins</groupId>
        <artifactId>maven-resources-plugin</artifactId>
        <version>2.6</version>
      </plugin>
      <plugin>
        <groupId>org.apache.maven.plugins</groupId>
        <artifactId>maven-compiler-plugin</artifactId>
        <version>3.1</version>
      </plugin>
      <plugin>
        <groupId>org.apache.maven.plugins</groupId>
        <artifactId>maven-surefire-plugin</artifactId>
        <version>2.12.4</version>
      </plugin>
      <plugin>
        <groupId>org.apache.maven.plugins</groupId>
        <artifactId>maven-jar-plugin</artifactId>
        <version>2.4</version>
      </plugin>
      <plugin>
        <groupId>org.apache.maven.plugins</groupId>
        <artifactId>maven-install-plugin</artifactId>
        <version>2.4</version>
      </plugin>
    </plugins>
  </build>
</project>
```

Overview Dependencies Dependency Hierarchy Effective POM pom.xml

Servers Console Terminal

<terminated> C:\Users\Welcome\p2\pool\plugins\org.eclipse.justi.openjdk.hotspot.jre.full.win32.x86_64.15.0.2.v20210201-0955\jre\bin\javaw.exe (08-May-2021, 7:54:38 pm)

SLF4J: Actual binding is of type [org.slf4j.impl.SimpleLoggerFactory]

[INFO] Scanning for projects...

[INFO]

[INFO] -----< com:authentication.ml >-----

[INFO] Building authentication.ml 0.0.1-SNAPSHOT

[INFO]

[INFO] -----[jar]-----

[INFO]

[INFO] --- maven-resources-plugin:2.6:resources (default-resources) @ authentication.ml ---

[WARNING] Using platform encoding (Cp1252 actually) to copy filtered resources, i.e. build is platform dependent!

[INFO] Copying 0 resource

[INFO]

[INFO] --- maven-compiler-plugin:3.1:compile (default-compile) @ authentication.ml ---

[INFO] Changes detected - recompiling the module!

[WARNING] File encoding has not been set, using platform encoding Cp1252, i.e. build is platform dependent!

[INFO] Compiling 1 source file to C:\Users\Welcome\OneDrive\Desktop\oracle buildthon\target\classes

[INFO]

[INFO] --- maven-resources-plugin:2.6:testResources (default-testResources) @ authentication.ml ---

[WARNING] Using platform encoding (Cp1252 actually) to copy filtered resources, i.e. build is platform dependent!

[INFO] Copying 0 resource

[INFO]

[INFO] --- maven-compiler-plugin:3.1:testCompile (default-testCompile) @ authentication.ml ---

[INFO] Nothing to compile - all classes are up to date

[INFO]

[INFO] --- maven-surefire-plugin:2.12.4:test (default-test) @ authentication.ml ---

[INFO]

[INFO] --- maven-jar-plugin:2.4:jar (default-jar) @ authentication.ml ---

[INFO] Building jar: C:\Users\Welcome\OneDrive\Desktop\oracle buildthon\target\authentication.ml-0.0.1-SNAPSHOT.jar

[INFO]

[INFO] --- maven-install-plugin:2.4:install (default-install) @ authentication.ml ---

[INFO] Installing C:\Users\Welcome\OneDrive\Desktop\oracle buildthon\target\authentication.ml-0.0.1-SNAPSHOT.jar to C:\Users\Welcome\.m2\repository\com\authentication\authentication.ml\0.0.1-SNAPSHOT\authentication.ml-0.0.1-SNAPSHOT.jar

[INFO] Installing C:\Users\Welcome\OneDrive\Desktop\oracle buildthon\pom.xml to C:\Users\Welcome\.m2\repository\com\authentication\authentication.ml\0.0.1-SNAPSHOT\authentication.ml-0.0.1-SNAPSHOT.pom

[INFO]

[INFO] BUILD SUCCESS

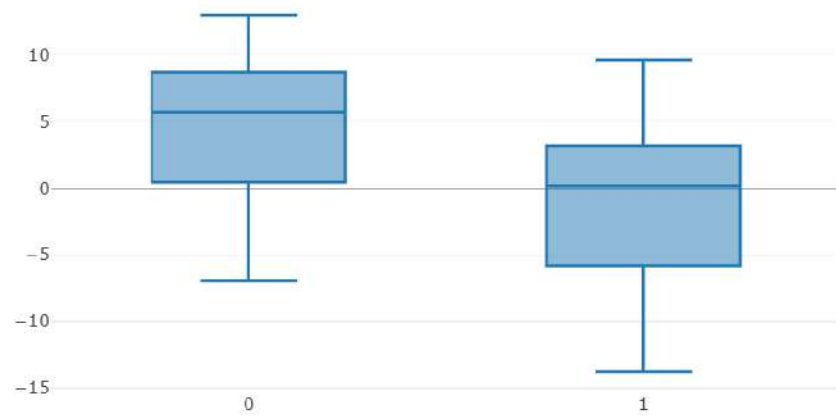
[INFO]

[INFO] Total time: 8.958 s

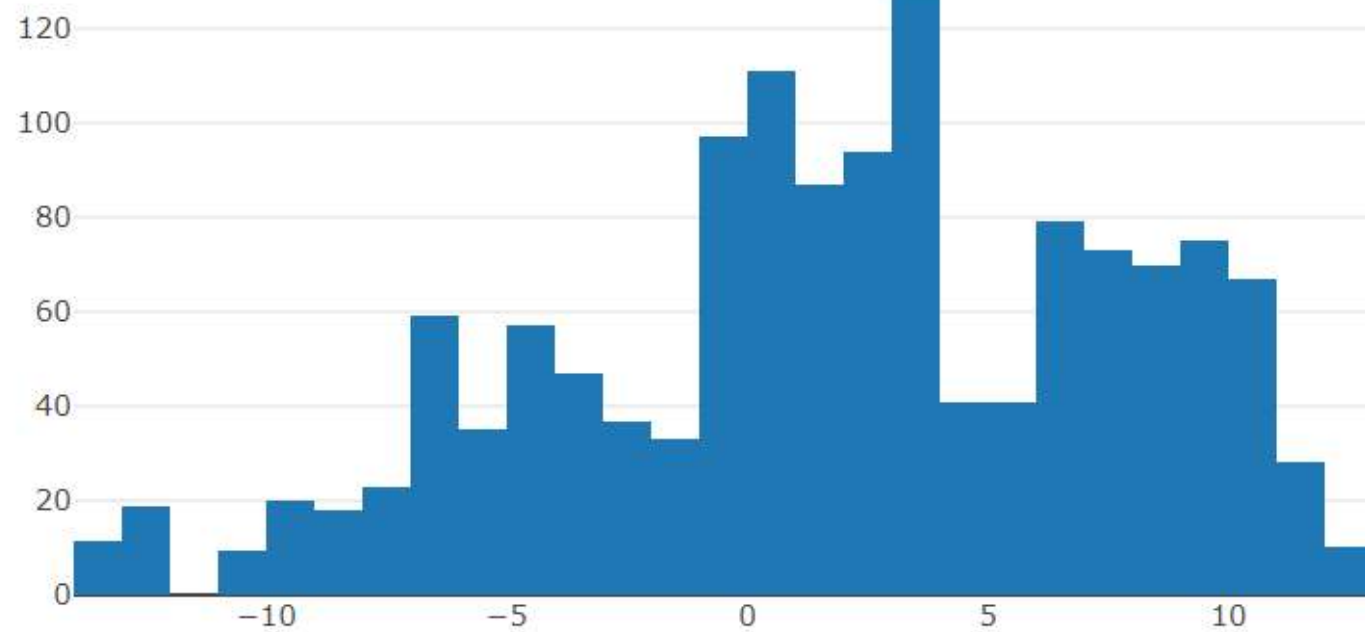
[INFO] Finished at: 2021-05-08T19:54:50+05:30

[INFO]

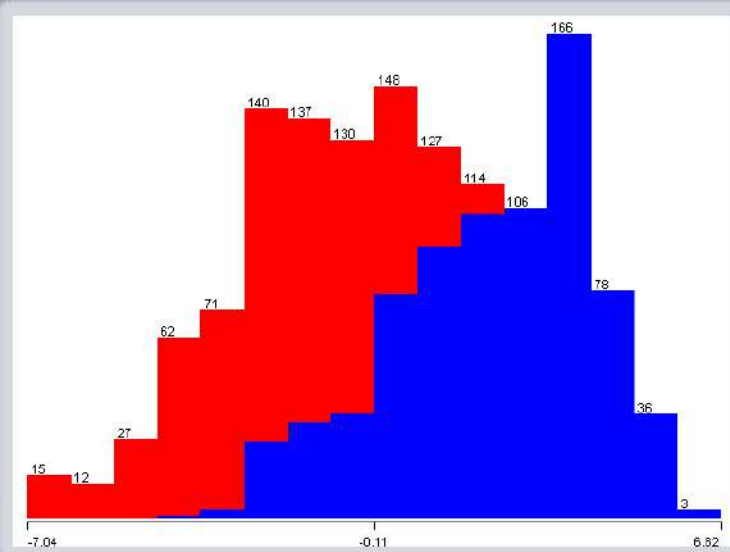
Class Distribution



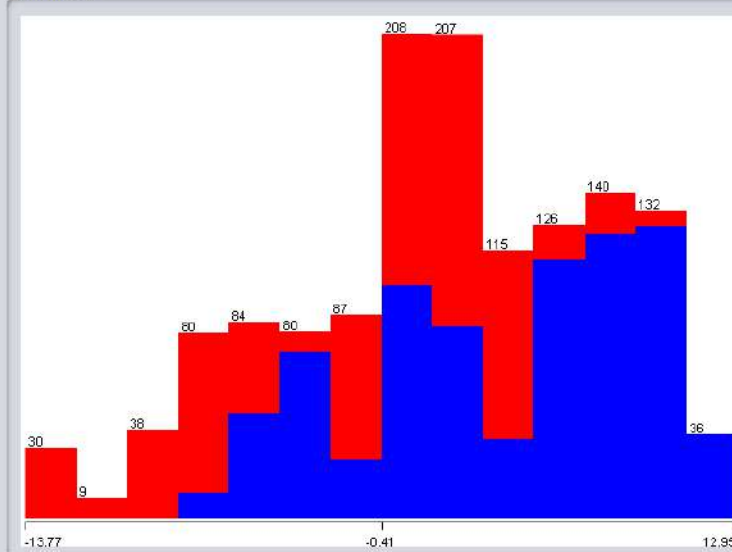
Distribution of Skewness



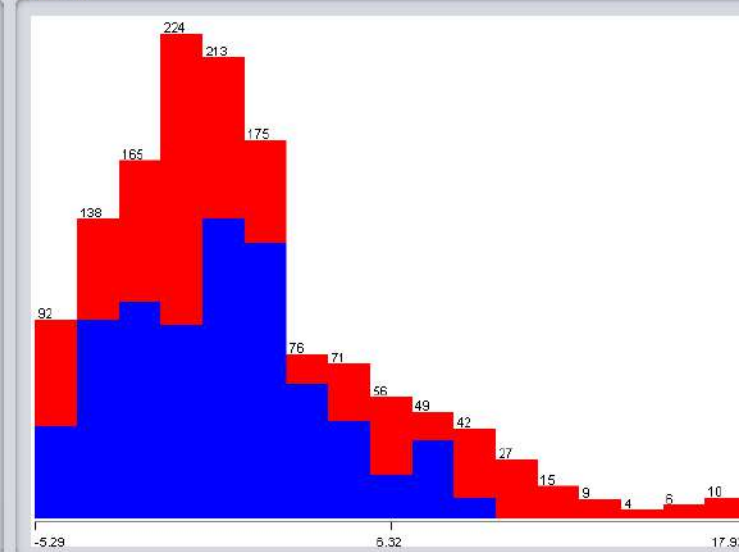
Variance



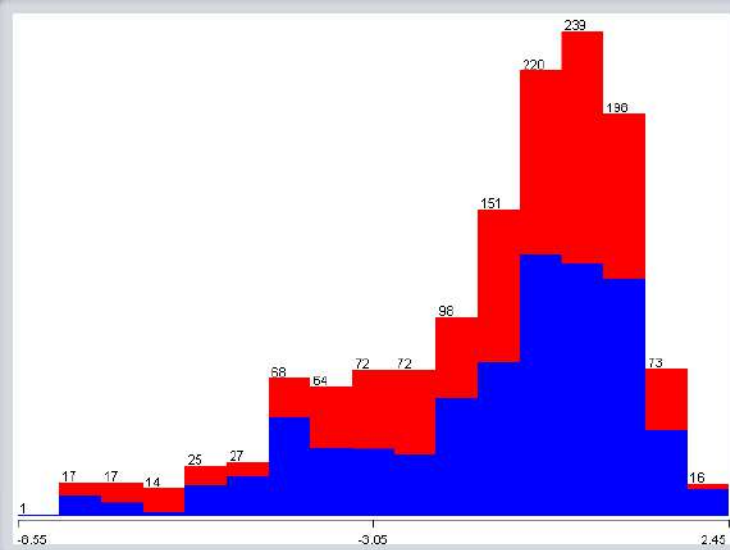
Skewness



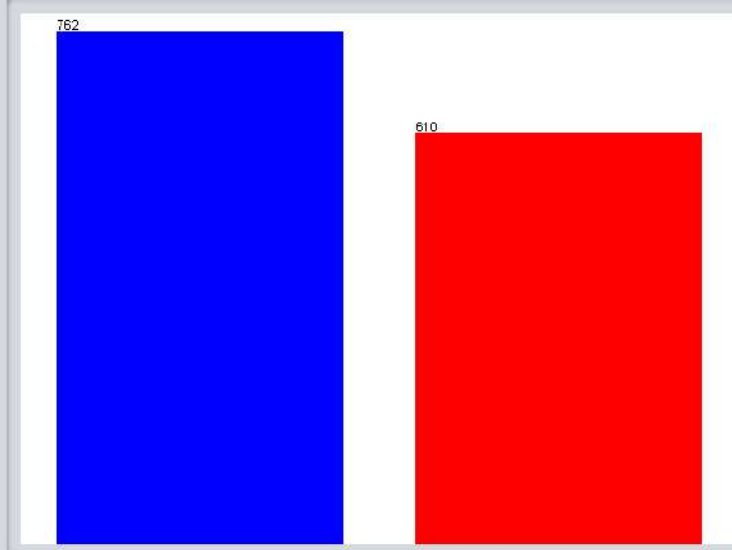
Curtosis



Entropy



Class



Preprocess

Classify

Cluster

Associate

Select attributes

Visualize

Plot Matrix

Variance

Skewness

Curtosis

Entropy

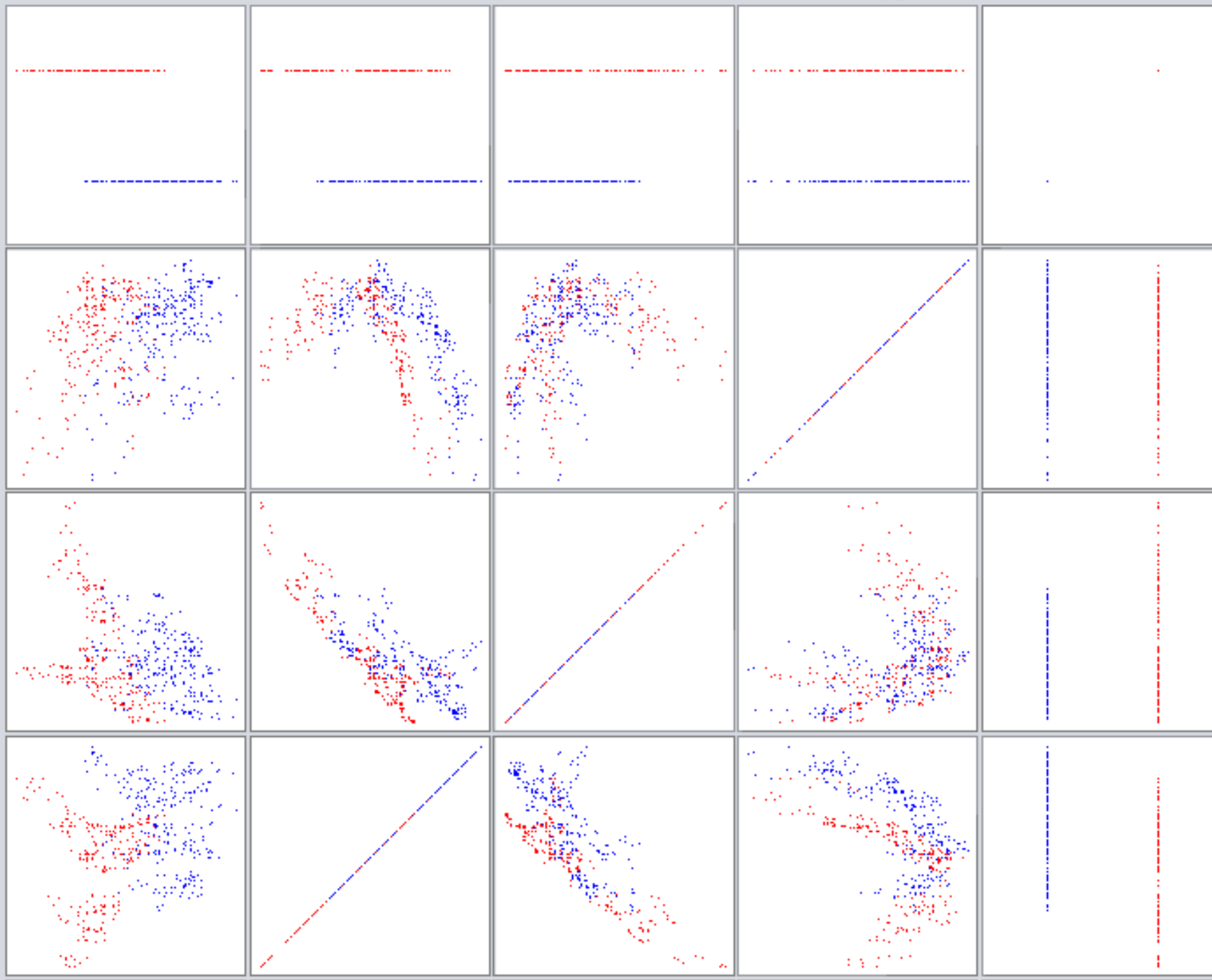
Class

Class

Entropy

Curtosis

Skewness



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

Logistic Regression with ridge parameter of 1.0E-8

Coefficients...

	Class
Variable	0
=====	
Variance	7.8594
Skewness	4.191
Curtosis	5.2875
Entropy	0.6053
Intercept	-7.3219

Odds Ratios...

	Class
Variable	0
=====	
Variance	2590.0439
Skewness	66.0892
Curtosis	197.8461
Entropy	1.8318

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

Correctly Classified Instances	1360	99.1254 %
Incorrectly Classified Instances	12	0.8746 %
Kappa statistic	0.9823	
Mean absolute error	0.012	
Root mean squared error	0.0814	
Relative absolute error	2.4278 %	
Root relative squared error	16.3751 %	
Total Number of Instances	1372	

```
=== Detailed Accuracy By Class ===
```

	TP Rate	FP Rate	Precision	Recall	F-Measure	MCC	ROC Area	PRC Area	Class
	0.992	0.010	0.992	0.992	0.992	0.982	1.000	1.000	0
	0.990	0.008	0.990	0.990	0.990	0.982	1.000	1.000	1
Weighted Avg.	0.991	0.009	0.991	0.991	0.991	0.982	1.000	1.000	

```
=== Confusion Matrix ===
```

```
  a   b  <-- classified as
756   6 |   a = 0
  6 604 |   b = 1
```



Project Explorer

authentication.ml (in oracle buildthon)

CRUD

Grievance

Grievance Handling System Code

HelloWorld

Ritin

Servers

Test

Authentication.java authentication.ml/pom.xml

```

30 // TODO Auto-generated catch block
31 e.printStackTrace();

```

Servers Data Source Explorer Console

<terminated> Authentication [Java Application] C:\Users\Welcome\p2\pool\plugins\org.eclipse.justj.openjdk.hotspot.jre.full.win32.x86_64_15.0.2.v20210201-0955\jre\bin\javaw.exe (08-May-2021, 8:06:54 pm - 8:06:58 pm)

1372 rows X 5 cols

data_banknote_authentication.csv				
Variance	Skewness	Curtosis	Entropy	Class
3.6216	8.6661	-2.8073	-0.44699	0
4.5459	8.1674	-2.4586	-1.4621	0
3.866	-2.6383	1.9242	0.10645	0
3.4566	9.5228	-4.0112	-3.5944	0
0.32924	-4.4552	4.5718	-0.9888	0

data_banknote_authentication.csv				
Variance	Skewness	Curtosis	Entropy	Class
0.40614	1.3492	-1.4501	-0.55949	1
-1.3887	-4.8773	6.4774	0.34179	1
-3.7503	-13.4586	17.5932	-2.7771	1
-3.5637	-8.3827	12.393	-1.2823	1
-2.5419	-0.65804	2.6842	1.1952	1

Structure of data_banknote_authentication.csv

Index	Column Name	Column Type
0	Variance	DOUBLE
1	Skewness	DOUBLE
2	Curtosis	DOUBLE
3	Entropy	DOUBLE
4	Class	INTEGER

data_banknote_authentication.csv						
Summary	Variance	Skewness	Curtosis	Entropy	Class	
Count	1372	1372	1372	1372	1372	
sum	595.0847726999998	2637.468481520002	1917.5444048900017	-1634.9527454999989	610	
Mean	0.4337352570699696	1.9223531206414035	1.3976271172667638	-1.1916565200437328	0.44460641399416895	
Min	-7.0421	-13.7731	-5.2861	-8.5482	0	
Max	6.8248	12.9516	17.9274	2.4495	1	
Range	13.8669	26.7247	23.2135	10.9977	1	
Variance	8.081299121945154	34.44570967967512	18.576359377624264	4.414256203357667	0.2471116611696257	
Std. Dev	2.8427625862785577	5.86904674369485	4.310030090106595	2.101013137359609	0.4971032701256608	

Train dataset size823

** Logistic Regression Evaluation with Datasets **

Correctly Classified Instances	270	98.1818 %
Incorrectly Classified Instances	5	1.8182 %
Kappa statistic	0.9636	
Mean absolute error	0.0164	
Root mean squared error	0.1057	
Relative absolute error	3.2918 %	
Root relative squared error	21.0539 %	
Total Number of Instances	275	

Confusion matrix:

[139.0, 4.0]

[1.0, 131.0]

Area under the curve

0.9995232040686586

[Correct, Incorrect, Kappa, Total cost, Average cost, KB relative, KB information, Correlation, Complexity 0, Complexity scheme, Complexity improvement, MAE, RMSE]

Recall :0.99

Precision:0.97

F1 score:0.98

Accuracy:0.98

Predicted label:

1.0