**CAT BOOST**

**40 %**

precision recall f1-score support

0 1.00 0.70 0.82 10

1 1.00 1.00 1.00 18630

accuracy 1.00 18640

macro avg 1.00 0.85 0.91 18640

weighted avg 1.00 1.00 1.00 18640

confussion matrix for Logistic Regression Classifier:

[[ 7 3]

[ 0 18630]]

True Positive : 18630

True Negative : 7

False Positive : 0

False Negative : 3

Sensitivity, hit rate, recall, or true positive rate : 0.999839

Specificity or true negative rate : 1.000000

Precision or positive predictive value : 1.000000

Negative predictive value : 0.700000

Fall out or false positive rate: 0.000000

False negative rate : 0.000161

False discovery rate : 0.000000

Precision : 0.000161

Recall : 0.000000

Overall accuracy for Classifier : 0.999839

**60%**

precision recall f1-score support

0 1.00 0.75 0.86 12

1 1.00 1.00 1.00 27947

accuracy 1.00 27959

macro avg 1.00 0.88 0.93 27959

weighted avg 1.00 1.00 1.00 27959

confussion matrix for Logistic Regression Classifier:

[[ 9 3]

[ 0 27947]]

True Positive : 27947

True Negative : 9

False Positive : 0

False Negative : 3

Sensitivity, hit rate, recall, or true positive rate : 0.999893

Specificity or true negative rate : 1.000000

Precision or positive predictive value : 1.000000

Negative predictive value : 0.750000

Fall out or false positive rate: 0.000000

False negative rate : 0.000107

False discovery rate : 0.000000

Precision : 0.000107

Recall : 0.000000

Overall accuracy for Classifier : 0.999893

**80%**

precision recall f1-score support

0 1.00 0.73 0.85 15

1 1.00 1.00 1.00 37264

accuracy 1.00 37279

macro avg 1.00 0.87 0.92 37279

weighted avg 1.00 1.00 1.00 37279

confussion matrix for Logistic Regression Classifier:

[[ 11 4]

[ 0 37264]]

True Positive : 37264

True Negative : 11

False Positive : 0

False Negative : 4

Sensitivity, hit rate, recall, or true positive rate : 0.999893

Specificity or true negative rate : 1.000000

Precision or positive predictive value : 1.000000

Negative predictive value : 0.733333

Fall out or false positive rate: 0.000000

False negative rate : 0.000107

False discovery rate : 0.000000

Precision : 0.000107

Recall : 0.000000

Overall accuracy for Classifier : 0.999893

**DTC**

**40%**

precision recall f1-score support

0 1.00 0.80 0.89 10

1 1.00 1.00 1.00 18630

accuracy 1.00 18640

macro avg 1.00 0.90 0.94 18640

weighted avg 1.00 1.00 1.00 18640

confussion matrix for Logistic Regression Classifier:

[[ 8 2]

[ 0 18630]]

True Positive : 18630

True Negative : 8

False Positive : 0

False Negative : 2

Sensitivity, hit rate, recall, or true positive rate : 0.999893

Specificity or true negative rate : 1.000000

Precision or positive predictive value : 1.000000

Negative predictive value : 0.800000

Fall out or false positive rate: 0.000000

False negative rate : 0.000107

False discovery rate : 0.000000

Precision : 0.000107

Recall : 0.000000

Overall accuracy for Classifier : 0.999893

**60%**

precision recall f1-score support

0 0.91 0.83 0.87 12

1 1.00 1.00 1.00 27947

accuracy 1.00 27959

macro avg 0.95 0.92 0.93 27959

weighted avg 1.00 1.00 1.00 27959

confussion matrix for Logistic Regression Classifier:

[[ 10 2]

[ 1 27946]]

True Positive : 27946

True Negative : 10

False Positive : 1

False Negative : 2

Sensitivity, hit rate, recall, or true positive rate : 0.999928

Specificity or true negative rate : 0.909091

Precision or positive predictive value : 0.999964

Negative predictive value : 0.833333

Fall out or false positive rate: 0.090909

False negative rate : 0.000072

False discovery rate : 0.000036

Precision : 0.000072

Recall : 0.000036

Overall accuracy for Classifier : 0.999893

**80%**

precision recall f1-score support

0 0.92 0.73 0.81 15

1 1.00 1.00 1.00 37264

accuracy 1.00 37279

macro avg 0.96 0.87 0.91 37279

weighted avg 1.00 1.00 1.00 37279

confussion matrix for Logistic Regression Classifier:

[[ 11 4]

[ 1 37263]]

True Positive : 37263

True Negative : 11

False Positive : 1

False Negative : 4

Sensitivity, hit rate, recall, or true positive rate : 0.999893

Specificity or true negative rate : 0.916667

Precision or positive predictive value : 0.999973

Negative predictive value : 0.733333

Fall out or false positive rate: 0.083333

False negative rate : 0.000107

False discovery rate : 0.000027

Precision : 0.000107

Recall : 0.000027

Overall accuracy for Classifier : 0.999866

**GBC**

**40%**

precision recall f1-score support

0 1.00 0.80 0.89 10

1 1.00 1.00 1.00 18630

accuracy 1.00 18640

macro avg 1.00 0.90 0.94 18640

weighted avg 1.00 1.00 1.00 18640

confussion matrix for Logistic Regression Classifier:

[[ 8 2]

[ 0 18630]]

True Positive : 18630

True Negative : 8

False Positive : 0

False Negative : 2

Sensitivity, hit rate, recall, or true positive rate : 0.999893

Specificity or true negative rate : 1.000000

Precision or positive predictive value : 1.000000

Negative predictive value : 0.800000

Fall out or false positive rate: 0.000000

False negative rate : 0.000107

False discovery rate : 0.000000

Precision : 0.000107

Recall : 0.000000

Overall accuracy for Classifier : 0.999893

**60%**

precision recall f1-score support

0 1.00 0.83 0.91 12

1 1.00 1.00 1.00 27947

accuracy 1.00 27959

macro avg 1.00 0.92 0.95 27959

weighted avg 1.00 1.00 1.00 27959

confussion matrix for Logistic Regression Classifier:

[[ 10 2]

[ 0 27947]]

True Positive : 27947

True Negative : 10

False Positive : 0

False Negative : 2

Sensitivity, hit rate, recall, or true positive rate : 0.999928

Specificity or true negative rate : 1.000000

Precision or positive predictive value : 1.000000

Negative predictive value : 0.833333

Fall out or false positive rate: 0.000000

False negative rate : 0.000072

False discovery rate : 0.000000

Precision : 0.000072

Recall : 0.000000

Overall accuracy for Classifier : 0.999928

**80%**

precision recall f1-score support

0 0.93 0.87 0.90 15

1 1.00 1.00 1.00 37264

accuracy 1.00 37279

macro avg 0.96 0.93 0.95 37279

weighted avg 1.00 1.00 1.00 37279

confussion matrix for Logistic Regression Classifier:

[[ 13 2]

[ 1 37263]]

True Positive : 37263

True Negative : 13

False Positive : 1

False Negative : 2

Sensitivity, hit rate, recall, or true positive rate : 0.999946

Specificity or true negative rate : 0.928571

Precision or positive predictive value : 0.999973

Negative predictive value : 0.866667

Fall out or false positive rate: 0.071429

False negative rate : 0.000054

False discovery rate : 0.000027

Precision : 0.000054

Recall : 0.000027

Overall accuracy for Classifier : 0.999920

KNN

40%

precision recall f1-score support

0 0.88 0.70 0.78 10

1 1.00 1.00 1.00 18630

accuracy 1.00 18640

macro avg 0.94 0.85 0.89 18640

weighted avg 1.00 1.00 1.00 18640

confussion matrix for Logistic Regression Classifier:

[[ 7 3]

[ 1 18629]]

True Positive : 18629

True Negative : 7

False Positive : 1

False Negative : 3

Sensitivity, hit rate, recall, or true positive rate : 0.999839

Specificity or true negative rate : 0.875000

Precision or positive predictive value : 0.999946

Negative predictive value : 0.700000

Fall out or false positive rate: 0.125000

False negative rate : 0.000161

False discovery rate : 0.000054

Precision : 0.000161

Recall : 0.000054

Overall accuracy for Classifier : 0.999785

60%

precision recall f1-score support

0 0.90 0.75 0.82 12

1 1.00 1.00 1.00 27947

accuracy 1.00 27959

macro avg 0.95 0.87 0.91 27959

weighted avg 1.00 1.00 1.00 27959

confussion matrix for Logistic Regression Classifier:

[[ 9 3]

[ 1 27946]]

True Positive : 27946

True Negative : 9

False Positive : 1

False Negative : 3

Sensitivity, hit rate, recall, or true positive rate : 0.999893

Specificity or true negative rate : 0.900000

Precision or positive predictive value : 0.999964

Negative predictive value : 0.750000

Fall out or false positive rate: 0.100000

False negative rate : 0.000107

False discovery rate : 0.000036

Precision : 0.000107

Recall : 0.000036

Overall accuracy for Classifier : 0.999857

80%

precision recall f1-score support

0 0.92 0.73 0.81 15

1 1.00 1.00 1.00 37264

accuracy 1.00 37279

macro avg 0.96 0.87 0.91 37279

weighted avg 1.00 1.00 1.00 37279

confussion matrix for Logistic Regression Classifier:

[[ 11 4]

[ 1 37263]]

True Positive : 37263

True Negative : 11

False Positive : 1

False Negative : 4

Sensitivity, hit rate, recall, or true positive rate : 0.999893

Specificity or true negative rate : 0.916667

Precision or positive predictive value : 0.999973

Negative predictive value : 0.733333

Fall out or false positive rate: 0.083333

False negative rate : 0.000107

False discovery rate : 0.000027

Precision : 0.000107

Recall : 0.000027

Overall accuracy for Classifier : 0.999866

**KSVM**

**40%**

**precision recall f1-score support**

**0 0.78 0.70 0.74 10**

**1 1.00 1.00 1.00 18630**

**accuracy 1.00 18640**

**macro avg 0.89 0.85 0.87 18640**

**weighted avg 1.00 1.00 1.00 18640**

**confussion matrix for Logistic Regression Classifier:**

**[[ 7 3]**

**[ 2 18628]]**

**True Positive : 18628**

**True Negative : 7**

**False Positive : 2**

**False Negative : 3**

**Sensitivity, hit rate, recall, or true positive rate : 0.999839**

**Specificity or true negative rate : 0.777778**

**Precision or positive predictive value : 0.999893**

**Negative predictive value : 0.700000**

**Fall out or false positive rate: 0.222222**

**False negative rate : 0.000161**

**False discovery rate : 0.000107**

**Precision : 0.000161**

**Recall : 0.000107**

**Overall accuracy for Classifier : 0.999732**

**60%**

**precision recall f1-score support**

**0 1.00 0.75 0.86 12**

**1 1.00 1.00 1.00 27947**

**accuracy 1.00 27959**

**macro avg 1.00 0.88 0.93 27959**

**weighted avg 1.00 1.00 1.00 27959**

**confussion matrix for Logistic Regression Classifier:**

**[[ 9 3]**

**[ 0 27947]]**

**True Positive : 27947**

**True Negative : 9**

**False Positive : 0**

**False Negative : 3**

**Sensitivity, hit rate, recall, or true positive rate : 0.999893**

**Specificity or true negative rate : 1.000000**

**Precision or positive predictive value : 1.000000**

**Negative predictive value : 0.750000**

**Fall out or false positive rate: 0.000000**

**False negative rate : 0.000107**

**False discovery rate : 0.000000**

**Precision : 0.000107**

**Recall : 0.000000**

**Overall accuracy for Classifier : 0.999893**

**80%**

precision recall f1-score support

0 1.00 0.73 0.85 15

1 1.00 1.00 1.00 37264

accuracy 1.00 37279

macro avg 1.00 0.87 0.92 37279

weighted avg 1.00 1.00 1.00 37279

confussion matrix for Logistic Regression Classifier:

[[ 11 4]

[ 0 37264]]

True Positive : 37264

True Negative : 11

False Positive : 0

False Negative : 4

Sensitivity, hit rate, recall, or true positive rate : 0.999893

Specificity or true negative rate : 1.000000

Precision or positive predictive value : 1.000000

Negative predictive value : 0.733333

Fall out or false positive rate: 0.000000

False negative rate : 0.000107

False discovery rate : 0.000000

Precision : 0.000107

Recall : 0.000000

Overall accuracy for Classifier : 0.999893

LDA

40%

precision recall f1-score support

0 1.00 0.10 0.18 10

1 1.00 1.00 1.00 18630

accuracy 1.00 18640

macro avg 1.00 0.55 0.59 18640

weighted avg 1.00 1.00 1.00 18640

confussion matrix for Logistic Regression Classifier:

[[ 1 9]

[ 0 18630]]

True Positive : 18630

True Negative : 1

False Positive : 0

False Negative : 9

Sensitivity, hit rate, recall, or true positive rate : 0.999517

Specificity or true negative rate : 1.000000

Precision or positive predictive value : 1.000000

Negative predictive value : 0.100000

Fall out or false positive rate: 0.000000

False negative rate : 0.000483

False discovery rate : 0.000000

Precision : 0.000483

Recall : 0.000000

Overall accuracy for Classifier : 0.999517

60%

precision recall f1-score support

0 1.00 0.08 0.15 12

1 1.00 1.00 1.00 27947

accuracy 1.00 27959

macro avg 1.00 0.54 0.58 27959

weighted avg 1.00 1.00 1.00 27959

confussion matrix for Logistic Regression Classifier:

[[ 1 11]

[ 0 27947]]

True Positive : 27947

True Negative : 1

False Positive : 0

False Negative : 11

Sensitivity, hit rate, recall, or true positive rate : 0.999607

Specificity or true negative rate : 1.000000

Precision or positive predictive value : 1.000000

Negative predictive value : 0.083333

Fall out or false positive rate: 0.000000

False negative rate : 0.000393

False discovery rate : 0.000000

Precision : 0.000393

Recall : 0.000000

Overall accuracy for Classifier : 0.999607

80%

precision recall f1-score support

0 0.14 0.87 0.24 15

1 1.00 1.00 1.00 37264

accuracy 1.00 37279

macro avg 0.57 0.93 0.62 37279

weighted avg 1.00 1.00 1.00 37279

confussion matrix for Logistic Regression Classifier:

[[ 13 2]

[ 81 37183]]

True Positive : 37183

True Negative : 13

False Positive : 81

False Negative : 2

Sensitivity, hit rate, recall, or true positive rate : 0.999946

Specificity or true negative rate : 0.138298

Precision or positive predictive value : 0.997826

Negative predictive value : 0.866667

Fall out or false positive rate: 0.861702

False negative rate : 0.000054

False discovery rate : 0.002174

Precision : 0.000054

Recall : 0.002174

Overall accuracy for Classifier : 0.997774

LG

40%

precision recall f1-score support

0 1.00 0.80 0.89 10

1 1.00 1.00 1.00 18630

accuracy 1.00 18640

macro avg 1.00 0.90 0.94 18640

weighted avg 1.00 1.00 1.00 18640

confussion matrix for Logistic Regression Classifier:

[[ 8 2]

[ 0 18630]]

True Positive : 18630

True Negative : 8

False Positive : 0

False Negative : 2

Sensitivity, hit rate, recall, or true positive rate : 0.999893

Specificity or true negative rate : 1.000000

Precision or positive predictive value : 1.000000

Negative predictive value : 0.800000

Fall out or false positive rate: 0.000000

False negative rate : 0.000107

False discovery rate : 0.000000

Precision : 0.000107

Recall : 0.000000

Overall accuracy for Classifier : 0.999893

60%

precision recall f1-score support

0 1.00 0.83 0.91 12

1 1.00 1.00 1.00 27947

accuracy 1.00 27959

macro avg 1.00 0.92 0.95 27959

weighted avg 1.00 1.00 1.00 27959

confussion matrix for Logistic Regression Classifier:

[[ 10 2]

[ 0 27947]]

True Positive : 27947

True Negative : 10

False Positive : 0

False Negative : 2

Sensitivity, hit rate, recall, or true positive rate : 0.999928

Specificity or true negative rate : 1.000000

Precision or positive predictive value : 1.000000

Negative predictive value : 0.833333

Fall out or false positive rate: 0.000000

False negative rate : 0.000072

False discovery rate : 0.000000

Precision : 0.000072

Recall : 0.000000

Overall accuracy for Classifier : 0.999928

80%

precision recall f1-score support

0 0.92 0.80 0.86 15

1 1.00 1.00 1.00 37264

accuracy 1.00 37279

macro avg 0.96 0.90 0.93 37279

weighted avg 1.00 1.00 1.00 37279

confussion matrix for Logistic Regression Classifier:

[[ 12 3]

[ 1 37263]]

True Positive : 37263

True Negative : 12

False Positive : 1

False Negative : 3

Sensitivity, hit rate, recall, or true positive rate : 0.999919

Specificity or true negative rate : 0.923077

Precision or positive predictive value : 0.999973

Negative predictive value : 0.800000

Fall out or false positive rate: 0.076923

False negative rate : 0.000081

False discovery rate : 0.000027

Precision : 0.000081

Recall : 0.000027

Overall accuracy for Classifier : 0.999893

**LGBM**

**40%**

**precision recall f1-score support**

**0 0.00 0.00 0.00 10**

**1 1.00 1.00 1.00 18630**

**accuracy 1.00 18640**

**macro avg 0.50 0.50 0.50 18640**

**weighted avg 1.00 1.00 1.00 18640**

**confussion matrix for Logistic Regression Classifier:**

**[[ 0 10]**

**[ 4 18626]]**

**True Positive : 18626**

**True Negative : 0**

**False Positive : 4**

**False Negative : 10**

**Sensitivity, hit rate, recall, or true positive rate : 0.999463**

**Specificity or true negative rate : 0.000000**

**Precision or positive predictive value : 0.999785**

**Negative predictive value : 0.000000**

**Fall out or false positive rate: 1.000000**

**False negative rate : 0.000537**

**False discovery rate : 0.000215**

**Precision : 0.000537**

**Recall : 0.000215**

**Overall accuracy for Classifier : 0.999249**

**60%**

**precision recall f1-score support**

**0 0.00 0.00 0.00 10**

**1 1.00 1.00 1.00 18630**

**accuracy 1.00 18640**

**macro avg 0.50 0.50 0.50 18640**

**weighted avg 1.00 1.00 1.00 18640**

**confussion matrix for Logistic Regression Classifier:**

**[[ 0 10]**

**[ 4 18626]]**

**True Positive : 18626**

**True Negative : 0**

**False Positive : 4**

**False Negative : 10**

**Sensitivity, hit rate, recall, or true positive rate : 0.999463**

**Specificity or true negative rate : 0.000000**

**Precision or positive predictive value : 0.999785**

**Negative predictive value : 0.000000**

**Fall out or false positive rate: 1.000000**

**False negative rate : 0.000537**

**False discovery rate : 0.000215**

**Precision : 0.000537**

**Recall : 0.000215**

**Overall accuracy for Classifier : 0.999249**

**80%**

precision recall f1-score support

0 0.00 0.00 0.00 15

1 1.00 1.00 1.00 37264

accuracy 1.00 37279

macro avg 0.50 0.50 0.50 37279

weighted avg 1.00 1.00 1.00 37279

confussion matrix for Logistic Regression Classifier:

[[ 0 15]

[ 45 37219]]

True Positive : 37219

True Negative : 0

False Positive : 45

False Negative : 15

Sensitivity, hit rate, recall, or true positive rate : 0.999597

Specificity or true negative rate : 0.000000

Precision or positive predictive value : 0.998792

Negative predictive value : 0.000000

Fall out or false positive rate: 1.000000

False negative rate : 0.000403

False discovery rate : 0.001208

Precision : 0.000403

Recall : 0.001208

Overall accuracy for Classifier : 0.998391

LSVM

40%

precision recall f1-score support

0 0.89 0.80 0.84 10

1 1.00 1.00 1.00 18630

accuracy 1.00 18640

macro avg 0.94 0.90 0.92 18640

weighted avg 1.00 1.00 1.00 18640

confussion matrix for Logistic Regression Classifier:

[[ 8 2]

[ 1 18629]]

True Positive : 18629

True Negative : 8

False Positive : 1

False Negative : 2

Sensitivity, hit rate, recall, or true positive rate : 0.999893

Specificity or true negative rate : 0.888889

Precision or positive predictive value : 0.999946

Negative predictive value : 0.800000

Fall out or false positive rate: 0.111111

False negative rate : 0.000107

False discovery rate : 0.000054

Precision : 0.000107

Recall : 0.000054

Overall accuracy for Classifier : 0.999839

60%

precision recall f1-score support

0 0.83 0.83 0.83 12

1 1.00 1.00 1.00 27947

accuracy 1.00 27959

macro avg 0.92 0.92 0.92 27959

weighted avg 1.00 1.00 1.00 27959

confussion matrix for Logistic Regression Classifier:

[[ 10 2]

[ 2 27945]]

True Positive : 27945

True Negative : 10

False Positive : 2

False Negative : 2

Sensitivity, hit rate, recall, or true positive rate : 0.999928

Specificity or true negative rate : 0.833333

Precision or positive predictive value : 0.999928

Negative predictive value : 0.833333

Fall out or false positive rate: 0.166667

False negative rate : 0.000072

False discovery rate : 0.000072

Precision : 0.000072

Recall : 0.000072

Overall accuracy for Classifier : 0.999857

80%

precision recall f1-score support

0 0.86 0.80 0.83 15

1 1.00 1.00 1.00 37264

accuracy 1.00 37279

macro avg 0.93 0.90 0.91 37279

weighted avg 1.00 1.00 1.00 37279

confussion matrix for Logistic Regression Classifier:

[[ 12 3]

[ 2 37262]]

True Positive : 37262

True Negative : 12

False Positive : 2

False Negative : 3

Sensitivity, hit rate, recall, or true positive rate : 0.999919

Specificity or true negative rate : 0.857143

Precision or positive predictive value : 0.999946

Negative predictive value : 0.800000

Fall out or false positive rate: 0.142857

False negative rate : 0.000081

False discovery rate : 0.000054

Precision : 0.000081

Recall : 0.000054

Overall accuracy for Classifier : 0.999866

**MLPC**

**40%**

**precision recall f1-score support**

**0 0.00 0.00 0.00 10**

**1 1.00 1.00 1.00 18630**

**accuracy 1.00 18640**

**macro avg 0.50 0.50 0.50 18640**

**weighted avg 1.00 1.00 1.00 18640**

**confussion matrix for Logistic Regression Classifier:**

**[[ 0 10]**

**[ 0 18630]]**

**True Positive : 18630**

**True Negative : 0**

**False Positive : 0**

**False Negative : 10**

**Sensitivity, hit rate, recall, or true positive rate : 0.999464**

**Specificity or true negative rate : nan**

**Precision or positive predictive value : 1.000000**

**Negative predictive value : 0.000000**

**Fall out or false positive rate: nan**

**False negative rate : 0.000536**

**False discovery rate : 0.000000**

**Precision : 0.000536**

**Recall : 0.000000**

**Overall accuracy for Classifier : 0.999464**

**60%**

**precision recall f1-score support**

**0 0.00 0.00 0.00 12**

**1 1.00 1.00 1.00 27947**

**accuracy 1.00 27959**

**macro avg 0.50 0.50 0.50 27959**

**weighted avg 1.00 1.00 1.00 27959**

**confussion matrix for Logistic Regression Classifier:**

**[[ 0 12]**

**[ 0 27947]]**

**True Positive : 27947**

**True Negative : 0**

**False Positive : 0**

**False Negative : 12**

**Sensitivity, hit rate, recall, or true positive rate : 0.999571**

**Specificity or true negative rate : nan**

**Precision or positive predictive value : 1.000000**

**Negative predictive value : 0.000000**

**Fall out or false positive rate: nan**

**False negative rate : 0.000429**

**False discovery rate : 0.000000**

**Precision : 0.000429**

**Recall : 0.000000**

**Overall accuracy for Classifier : 0.999571**

**80%**

**precision recall f1-score support**

**0 0.00 0.00 0.00 15**

**1 1.00 1.00 1.00 37264**

**accuracy 1.00 37279**

**macro avg 0.50 0.50 0.50 37279**

**weighted avg 1.00 1.00 1.00 37279**

**confussion matrix for Logistic Regression Classifier:**

**[[ 0 15]**

**[ 0 37264]]**

**True Positive : 37264**

**True Negative : 0**

**False Positive : 0**

**False Negative : 15**

**Sensitivity, hit rate, recall, or true positive rate : 0.999598**

**Specificity or true negative rate : nan**

**Precision or positive predictive value : 1.000000**

**Negative predictive value : 0.000000**

**Fall out or false positive rate: nan**

**False negative rate : 0.000402**

**False discovery rate : 0.000000**

**Precision : 0.000402**

**Recall : 0.000000**

**Overall accuracy for Classifier : 0.999598**

**NB**

**40%**

**precision recall f1-score support**

**0 0.28 1.00 0.43 10**

**1 1.00 1.00 1.00 18630**

**accuracy 1.00 18640**

**macro avg 0.64 1.00 0.72 18640**

**weighted avg 1.00 1.00 1.00 18640**

**confussion matrix for Logistic Regression Classifier:**

**[[ 10 0]**

**[ 26 18604]]**

**True Positive : 18604**

**True Negative : 10**

**False Positive : 26**

**False Negative : 0**

**Sensitivity, hit rate, recall, or true positive rate : 1.000000**

**Specificity or true negative rate : 0.277778**

**Precision or positive predictive value : 0.998604**

**Negative predictive value : 1.000000**

**Fall out or false positive rate: 0.722222**

**False negative rate : 0.000000**

**False discovery rate : 0.001396**

**Precision : 0.000000**

**Recall : 0.001396**

**Overall accuracy for Classifier : 0.998605**

**60%**

**precision recall f1-score support**

**0 0.24 1.00 0.38 12**

**1 1.00 1.00 1.00 27947**

**accuracy 1.00 27959**

**macro avg 0.62 1.00 0.69 27959**

**weighted avg 1.00 1.00 1.00 27959**

**confussion matrix for Logistic Regression Classifier:**

**[[ 12 0]**

**[ 39 27908]]**

**True Positive : 27908**

**True Negative : 12**

**False Positive : 39**

**False Negative : 0**

**Sensitivity, hit rate, recall, or true positive rate : 1.000000**

**Specificity or true negative rate : 0.235294**

**Precision or positive predictive value : 0.998605**

**Negative predictive value : 1.000000**

**Fall out or false positive rate: 0.764706**

**False negative rate : 0.000000**

**False discovery rate : 0.001395**

**Precision : 0.000000**

**Recall : 0.001395**

**Overall accuracy for Classifier : 0.998605**

**80%**

**precision recall f1-score support**

**0 1.00 0.80 0.89 15**

**1 1.00 1.00 1.00 37264**

**accuracy 1.00 37279**

**macro avg 1.00 0.90 0.94 37279**

**weighted avg 1.00 1.00 1.00 37279**

**confussion matrix for Logistic Regression Classifier:**

**[[ 12 3]**

**[ 0 37264]]**

**True Positive : 37264**

**True Negative : 12**

**False Positive : 0**

**False Negative : 3**

**Sensitivity, hit rate, recall, or true positive rate : 0.999919**

**Specificity or true negative rate : 1.000000**

**Precision or positive predictive value : 1.000000**

**Negative predictive value : 0.800000**

**Fall out or false positive rate: 0.000000**

**False negative rate : 0.000081**

**False discovery rate : 0.000000**

**Precision : 0.000081**

**Recall : 0.000000**

**Overall accuracy for Classifier : 0.999920**

**QDA**

**40%**

**precision recall f1-score support**

**0 0.00 0.00 0.00 10**

**1 1.00 1.00 1.00 18630**

**accuracy 1.00 18640**

**macro avg 0.50 0.50 0.50 18640**

**weighted avg 1.00 1.00 1.00 18640**

**confussion matrix for Logistic Regression Classifier:**

**[[ 0 10]**

**[ 0 18630]]**

**True Positive : 18630**

**True Negative : 0**

**False Positive : 0**

**False Negative : 10**

**Sensitivity, hit rate, recall, or true positive rate : 0.999464**

**Specificity or true negative rate : nan**

**Precision or positive predictive value : 1.000000**

**Negative predictive value : 0.000000**

**Fall out or false positive rate: nan**

**False negative rate : 0.000536**

**False discovery rate : 0.000000**

**Precision : 0.000536**

**Recall : 0.000000**

**Overall accuracy for Classifier : 0.999464**

**60%**

**precision recall f1-score support**

**0 0.00 0.00 0.00 12**

**1 1.00 1.00 1.00 27947**

**accuracy 1.00 27959**

**macro avg 0.50 0.50 0.50 27959**

**weighted avg 1.00 1.00 1.00 27959**

**confussion matrix for Logistic Regression Classifier:**

**[[ 0 12]**

**[ 0 27947]]**

**True Positive : 27947**

**True Negative : 0**

**False Positive : 0**

**False Negative : 12**

**Sensitivity, hit rate, recall, or true positive rate : 0.999571**

**Specificity or true negative rate : nan**

**Precision or positive predictive value : 1.000000**

**Negative predictive value : 0.000000**

**Fall out or false positive rate: nan**

**False negative rate : 0.000429**

**False discovery rate : 0.000000**

**Precision : 0.000429**

**Recall : 0.000000**

**Overall accuracy for Classifier : 0.999571**

**80%**

**precision recall f1-score support**

**0 0.00 0.00 0.00 15**

**1 1.00 1.00 1.00 37264**

**accuracy 1.00 37279**

**macro avg 0.50 0.50 0.50 37279**

**weighted avg 1.00 1.00 1.00 37279**

**confussion matrix for Logistic Regression Classifier:**

**[[ 0 15]**

**[ 0 37264]]**

**True Positive : 37264**

**True Negative : 0**

**False Positive : 0**

**False Negative : 15**

**Sensitivity, hit rate, recall, or true positive rate : 0.999598**

**Specificity or true negative rate : nan**

**Precision or positive predictive value : 1.000000**

**Negative predictive value : 0.000000**

**Fall out or false positive rate: nan**

**False negative rate : 0.000402**

**False discovery rate : 0.000000**

**Precision : 0.000402**

**Recall : 0.000000**

**Overall accuracy for Classifier : 0.999598**

**RFC**

**40%**

**precision recall f1-score support**

**0 0.88 0.70 0.78 10**

**1 1.00 1.00 1.00 18630**

**accuracy 1.00 18640**

**macro avg 0.94 0.85 0.89 18640**

**weighted avg 1.00 1.00 1.00 18640**

**confussion matrix for Logistic Regression Classifier:**

**[[ 7 3]**

**[ 1 18629]]**

**True Positive : 18629**

**True Negative : 7**

**False Positive : 1**

**False Negative : 3**

**Sensitivity, hit rate, recall, or true positive rate : 0.999839**

**Specificity or true negative rate : 0.875000**

**Precision or positive predictive value : 0.999946**

**Negative predictive value : 0.700000**

**Fall out or false positive rate: 0.125000**

**False negative rate : 0.000161**

**False discovery rate : 0.000054**

**Precision : 0.000161**

**Recall : 0.000054**

**Overall accuracy for Classifier : 0.999785**

**60%**

**precision recall f1-score support**

**0 1.00 0.75 0.86 12**

**1 1.00 1.00 1.00 27947**

**accuracy 1.00 27959**

**macro avg 1.00 0.88 0.93 27959**

**weighted avg 1.00 1.00 1.00 27959**

**confussion matrix for Logistic Regression Classifier:**

**[[ 9 3]**

**[ 0 27947]]**

**True Positive : 27947**

**True Negative : 9**

**False Positive : 0**

**False Negative : 3**

**Sensitivity, hit rate, recall, or true positive rate : 0.999893**

**Specificity or true negative rate : 1.000000**

**Precision or positive predictive value : 1.000000**

**Negative predictive value : 0.750000**

**Fall out or false positive rate: 0.000000**

**False negative rate : 0.000107**

**False discovery rate : 0.000000**

**Precision : 0.000107**

**Recall : 0.000000**

**Overall accuracy for Classifier : 0.999893**

**80%**

**precision recall f1-score support**

**0 1.00 0.73 0.85 15**

**1 1.00 1.00 1.00 37264**

**accuracy 1.00 37279**

**macro avg 1.00 0.87 0.92 37279**

**weighted avg 1.00 1.00 1.00 37279**

**confussion matrix for Logistic Regression Classifier:**

**[[ 11 4]**

**[ 0 37264]]**

**True Positive : 37264**

**True Negative : 11**

**False Positive : 0**

**False Negative : 4**

**Sensitivity, hit rate, recall, or true positive rate : 0.999893**

**Specificity or true negative rate : 1.000000**

**Precision or positive predictive value : 1.000000**

**Negative predictive value : 0.733333**

**Fall out or false positive rate: 0.000000**

**False negative rate : 0.000107**

**False discovery rate : 0.000000**

**Precision : 0.000107**

**Recall : 0.000000**

**Overall accuracy for Classifier : 0.999893**

**XGB**

**40%**

precision recall f1-score support

0 0.88 0.70 0.78 10

1 1.00 1.00 1.00 18630

accuracy 1.00 18640

macro avg 0.94 0.85 0.89 18640

weighted avg 1.00 1.00 1.00 18640

confussion matrix for Logistic Regression Classifier:

[[ 7 3]

[ 1 18629]]

True Positive : 18629

True Negative : 7

False Positive : 1

False Negative : 3

Sensitivity, hit rate, recall, or true positive rate : 0.999839

Specificity or true negative rate : 0.875000

Precision or positive predictive value : 0.999946

Negative predictive value : 0.700000

Fall out or false positive rate: 0.125000

False negative rate : 0.000161

False discovery rate : 0.000054

Precision : 0.000161

Recall : 0.000054

Overall accuracy for Classifier : 0.999785

**60%**

precision recall f1-score support

0 1.00 0.73 0.85 15

1 1.00 1.00 1.00 37264

accuracy 1.00 37279

macro avg 1.00 0.87 0.92 37279

weighted avg 1.00 1.00 1.00 37279

confussion matrix for Logistic Regression Classifier:

[[ 11 4]

[ 0 37264]]

True Positive : 37264

True Negative : 11

False Positive : 0

False Negative : 4

Sensitivity, hit rate, recall, or true positive rate : 0.999893

Specificity or true negative rate : 1.000000

Precision or positive predictive value : 1.000000

Negative predictive value : 0.733333

Fall out or false positive rate: 0.000000

False negative rate : 0.000107

False discovery rate : 0.000000

Precision : 0.000107

Recall : 0.000000

Overall accuracy for Classifier : 0.999893

**80%**

precision recall f1-score support

0 1.00 0.73 0.85 15

1 1.00 1.00 1.00 37264

accuracy 1.00 37279

macro avg 1.00 0.87 0.92 37279

weighted avg 1.00 1.00 1.00 37279

confussion matrix for Logistic Regression Classifier:

[[ 11 4]

[ 0 37264]]

True Positive : 37264

True Negative : 11

False Positive : 0

False Negative : 4

Sensitivity, hit rate, recall, or true positive rate : 0.999893

Specificity or true negative rate : 1.000000

Precision or positive predictive value : 1.000000

Negative predictive value : 0.733333

Fall out or false positive rate: 0.000000

False negative rate : 0.000107

False discovery rate : 0.000000

Precision : 0.000107

Recall : 0.000000

Overall accuracy for Classifier : 0.999893

AdaBoost

40 %

precision recall f1-score support

0 1.00 0.80 0.89 10

1 1.00 1.00 1.00 18630

accuracy 1.00 18640

macro avg 1.00 0.90 0.94 18640

weighted avg 1.00 1.00 1.00 18640

confussion matrix for Logistic Regression Classifier:

[[ 8 2]

[ 0 18630]]

True Positive : 18630

True Negative : 8

False Positive : 0

False Negative : 2

Sensitivity, hit rate, recall, or true positive rate : 0.999893

Specificity or true negative rate : 1.000000

Precision or positive predictive value : 1.000000

Negative predictive value : 0.800000

Fall out or false positive rate: 0.000000

False negative rate : 0.000107

False discovery rate : 0.000000

Precision : 0.000107

Recall : 0.000000

Overall accuracy for Classifier : 0.999893

60%

precision recall f1-score support

0 0.90 0.75 0.82 12

1 1.00 1.00 1.00 27947

accuracy 1.00 27959

macro avg 0.95 0.87 0.91 27959

weighted avg 1.00 1.00 1.00 27959

confussion matrix for Logistic Regression Classifier:

[[ 9 3]

[ 1 27946]]

True Positive : 27946

True Negative : 9

False Positive : 1

False Negative : 3

Sensitivity, hit rate, recall, or true positive rate : 0.999893

Specificity or true negative rate : 0.900000

Precision or positive predictive value : 0.999964

Negative predictive value : 0.750000

Fall out or false positive rate: 0.100000

False negative rate : 0.000107

False discovery rate : 0.000036

Precision : 0.000107

Recall : 0.000036

Overall accuracy for Classifier : 0.999857

80%

precision recall f1-score support

0 0.44 0.47 0.45 15

1 1.00 1.00 1.00 37264

accuracy 1.00 37279

macro avg 0.72 0.73 0.73 37279

weighted avg 1.00 1.00 1.00 37279

confussion matrix for Logistic Regression Classifier:

[[ 7 8]

[ 9 37255]]

True Positive : 37255

True Negative : 7

False Positive : 9

False Negative : 8

Sensitivity, hit rate, recall, or true positive rate : 0.999785

Specificity or true negative rate : 0.437500

Precision or positive predictive value : 0.999758

Negative predictive value : 0.466667

Fall out or false positive rate: 0.562500

False negative rate : 0.000215

False discovery rate : 0.000242

Precision : 0.000215

Recall : 0.000242

Overall accuracy for Classifier : 0.999544