**Confusion Matrix**

| | Predicted Positive | Predicted Negative |
|---|---|---|
| Actual Positive | 71 | 8 |
| Actual Negative | 6 | 35 |

**Classification Report**

| | Precision | Recall | F1-Score | Support |
|---|---|---|---|---|
| 0 | 0.92 | 0.90 | 0.91 | 79 |
| 1 | 0.81 | 0.85 | 0.83 | 41 |
| Accuracy | - | - | 0.88 | 120 |
| Macro avg | 0.87 | 0.88 | 0.87 | 120 |
| Weighted avg | 0.89 | 0.88 | 0.88 | 120 |

CorrectlyClassified Not-Purchased = 71
CorrectlyClassified Purchased = 35
MisClassified Purchased = 6
Misclassified Not-Purchased = 8
Total count = 71+8+6+35 = 120

**Accuracy**
What is the percentage of correct classification of both from the test set?
What is the overall performance?

Accuracy = (CorrectlyClassified  Not-Purchased + CorrectlyClassified Purchased) / Total count
Accuracy = (TP+TN) / (TP+FN+FP+TN) = (71+35) / 120 = 106/120 = 0.88 88%

**Recall**

What is the percentage of correct classification from the test set?

Not-Purchased = TP / (TP + FN) = 71/ (71+8) = 71/79 = 0.90 90%

Purchased = TN / (FP + TN) = 35 / (35+6) = 35/41 = 0.85 85%

**Macro Average of Recall**

What is the average performance of correctly classified?

(Recall of Not-Purchased + Recall of Purchased) / 2 = (0.90+0.85)/2 = 1.75/2 = 0.88 88%

**Precision**

What is the percentage of correct classification to sum of correctly classified and wrongly classified of the total test set?

Not purchased = TP/ (TP+FP) = 71 / (71+6) = 71/77 = 0.92 92%

Purchased = TN / (TN+FN) = 35 / (35+8) = 35/43 = 0.81 81%

**Macro Average of Precision**

What is the average performance of correctly and wrongly classified?

8.(Precision of Not purchased + Precision of Purchased) / 2 = (0.92 + 0.81)/2 = 1.73/2 = 0.87 87%

**F1 score**

What is the overall performance of this model?

Not purchased = 2 * recall * precision / (recall + precision)

Not purchased = 2*0.90*0.92 / (0.90+0.92) = 1.656/1.82 = 0.91 91%

Purchased = 2 * recall * precision / (recall + precision)

Purchased = 2*0.85*0.81 / (0.85 + 0.81) = 1.377/1.66 = 0.83 83%

**Macro Average of F1-score**

What is the average performance of overall performance?

(f1-score of Not Purchased + f1-score of Purchased) / 2 = (0.91+0.83)/2 =1.74/2=0.87 87%

Testset Total = 120

Testset Total Not-Purchased = 79

Testset Total Purchased = 41

**Weighted Average of Precision**

What is the sum of the product of proportion rate (weight) of each class of correctly and wrongly classified?

Precision (Not Purchased) * (79/120) + Precision (Purchased) * (41/120) = 0.92 * 0.66 + 0.81*0.34 = 0.61 + 0.28 = 0.89 89%

**Weighted Average of Recall**

What is the sum of product proportion rate (weight) of each class of correctly classified?

Recall (Not Purchased) * (79/120) + Recall (Purchased) * (41/120) = 0.90*0.66 + 0.85*0.34 = 0.59 + 0.29 = 0.88 88%

**Weighted Average of F1-Score**

What is the sum of the product proportion rate of each class of overall performance?

F1-score (Not Purchased) * (79/120) + F1-score (Purchased) * (41/120) = 0.91*0.66 + 0.83*0.34 = 0.60 + 0.28 = 0.88 88%