

## Confusion Matrix - Simple Summary

### ➤ Decision Tree

[16]: print(clf_report)				
	precision	recall	f1-score	support
0	0.90	0.89	0.90	85
1	0.82	0.84	0.83	49
accuracy			0.87	134
macro avg	0.86	0.87	0.86	134
weighted avg	0.87	0.87	0.87	134

1. What is the overall performance of the model? / What is the percentage of “correct classification of both purchased and not purchased” to the “total input” of test set?  
**Accuracy - 87%**
2. What is the percentage of “correct classification of purchased” to the “total input of the purchased” in the test set?  
**Recall - purchased: 84%**
3. What is the percentage of “correct classification of not-purchased” to the “total input of the not-purchased” in the test set?  
**Recall – not purchased: 89%**
4. What is the percentage of “correct classification of purchased” to the “sum of correctly classified as purchased and wrongly classified as purchased” in the test set?  
**Precision - purchased: 82%**
5. What is the percentage of “correct classification of not-purchased” to the “sum of correctly classified as not-purchased and wrongly classified as not-purchased” in the test set?  
**Precision - not purchased: 90%**
6. What is the balanced performance of the purchased class?  
**F1 score - purchased: 83%**
7. What is the balanced performance of the not purchased class?  
**F1 score – not purchased: 90%**
8. What is the simple average performance across both classes?  
**Macro average: Precision = 86%, recall = 87%, f1 score = 86%**
9. What is the average performance after considering how many customers are in each group? / What is the model’s overall score considering the proportion of each class?  
**Weighted average: precision, recall, f1 score = 87%**

## ➤ Random Forest

```
[18]: print(clf_report)
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	precision	recall	f1-score	support
0	0.93	0.92	0.92	85
1	0.86	0.88	0.87	49
accuracy			0.90	134
macro avg	0.89	0.90	0.90	134
weighted avg	0.90	0.90	0.90	134

1. What is the overall performance of the model? / What is the percentage of “correct classification of both purchased and not purchased” to the “total input” of test set?

Accuracy - 90%

2. What is the percentage of “correct classification of purchased” to the “total input of the purchased” in the test set?

Recall - purchased: 88%

3. What is the percentage of “correct classification of not-purchased” to the “total input of the not-purchased” in the test set?

Recall – not purchased: 92%

4. What is the percentage of “correct classification of purchased” to the “sum of correctly classified as purchased and wrongly classified as purchased” in the test set?

Precision - purchased: 86%

5. What is the percentage of “correct classification of not-purchased” to the “sum of correctly classified as not-purchased and wrongly classified as not-purchased” in the test set?

Precision - not purchased: 93%

6. What is the balanced performance of the purchased class?

F1 score - purchased: 87%

7. What is the balanced performance of the not purchased class?

F1 score – not purchased: 92%

8. What is the simple average performance across both classes?

Macro average: Precision = 89%, recall = 90%, f1 score = 90%

9. What is the average performance after considering how many customers are in each group? / What is the model’s overall score considering the proportion of each class?

Weighted average: precision, recall, f1 score = 90%