Confusion Matrix Evaluation Matrix

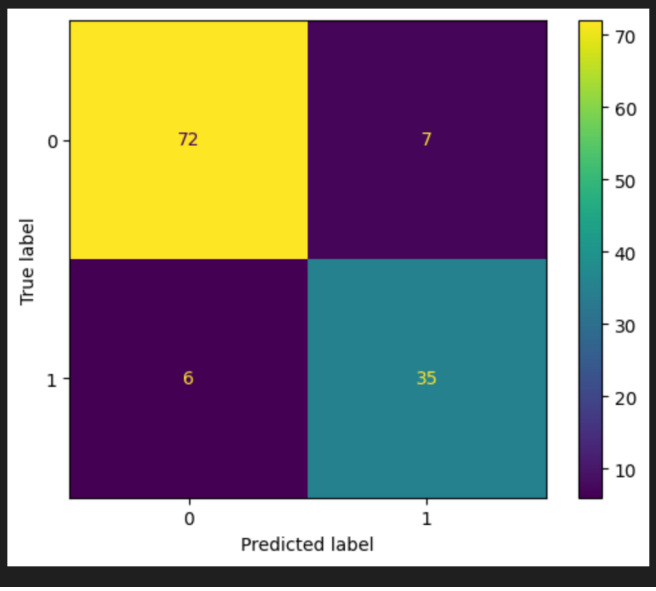
```
                precision    recall  f1-score   support

             0       0.92      0.91      0.92        79
             1       0.83      0.85      0.84        41

      accuracy                           0.89       120
     macro avg       0.88      0.88      0.88       120
  weighted avg       0.89      0.89      0.89       120

/Users/solomon/Documents/Solo_docs/INTO_United_States/Learning_Path/Hope AI
  warnings.warn(
```

```
Purchased
0    79
1    41
Name: count, dtype: int64
```



	Purchased 1	Not Purchased 0
Purchased (1)	35 True (Purchased)	7 False (Purchased)
Not Purchased (0)	6 False (Not Purchased)	72 True (Not Purchased)

1) **Accuracy:**

Not Purchase = 79; Purchased = 41

35 True (Purchased) + 72 False (Not Purchased)

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35 True (Purchased) + 72True (Not Purchased) + 7 False (Purchased) + 6 False (Not Purchased)

= (35 + 72) / (35 + 72 + 6 + 7) = 89%

2) Recall: P ☞ **Purchased;** NP ☞ **Not Purchased**

Purchased: 35 True (**P**) / 35 True (**P**) + 6 False (**NP**) => 85%

Not Purchased: 72 True (**NP**) / 72 True (**NP**) + 7 False (**P**) => 91%

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3) Precision: P ☞ **Purchased;** NP ☞ **Not Purchased**

Purchased: 35 True (**P**) / 35 True (**P**) + 7 False (**P**) => **83%**

Not Purchased: 72 True (**NP**) / 72 True (**NP**) + 6 False (**NP**) => **92%**

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4) F1-SCORE: P ☞ **Purchased;** NP ☞ **Not Purchased**

Purchased: 2 * (Recall * Precision) / (Recall +Precision)
2 * (0.85*0.83) / (0.85+0.83) => 84%

Not Purchased: 2 * (Recall * Precision) / (Recall +Precision)
2 * (0.91*0.92) / (0.91+0.92) => 92%

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5) Macro Average:

Precision:

Precision (*Purchased*) + Precision (*Not Purchased*) / 2
0.83+0.92 / 2 => **88%**

Recall:

Recall (*Purchased*) + Recall (*Not Purchased*) / 2
0.85+0.91 / 2 => **88%**

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6) Weighted Average: what is the sum of the product of each class
P ☞ **Purchased**; NP ☞ **Not Purchased**

Precision:
Precision (***P***) * (Total Count of **Purchased** in test set / Total Count of Test set)
+
Precision (***NP***) * (Total Count of **Not Purchased** in test set / Total Count of Test set)

(0.83*(**41**/120) + 0.92*(**79**/120)) => **89%**

Recall:
Recall (*Purchased*) + Recall (*Not Purchased*) / 2
(0.85*(**41**/120) + 0.91*(**79**/120)) => **89%**

F1-Meassure:
Recall (*Purchased*) + Recall (*Not Purchased*) / 2
(0.84*(**41**/120) + 0.92*(**79**/120)) => **89%**