Logistic regression optimization result

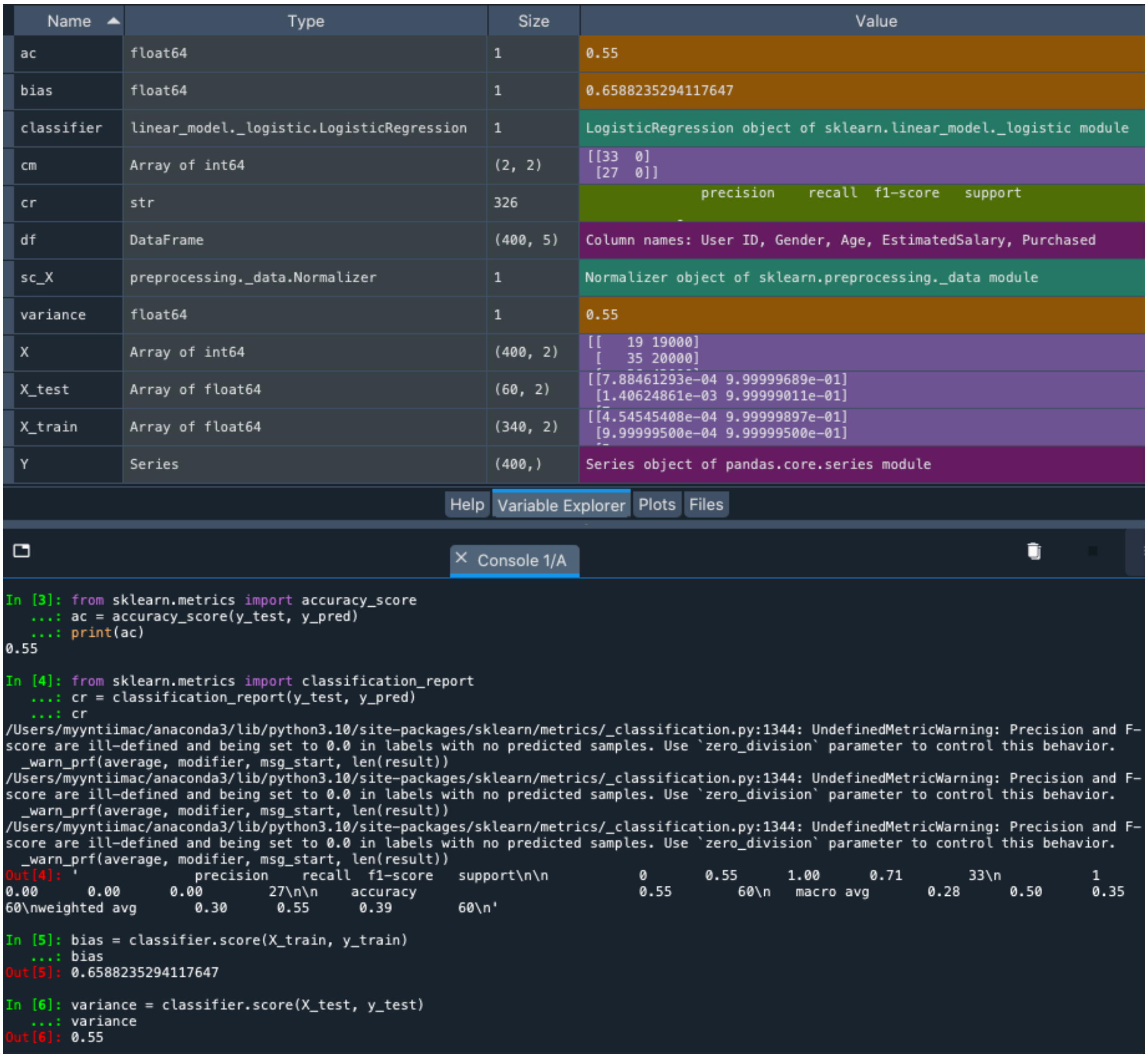
Model 1:

```
In [2]: runcell(0, '/Users/myyntiimac/Desktop/untitled2.py')
[[65  3]
 [ 8 24]]
0.89
Out[2]: 0.89

In [2]:

In [3]: from sklearn.metrics import accuracy_score
   ...: ac = accuracy_score(y_test, y_pred)
   ...: print(ac)
0.89

In [4]: from sklearn.metrics import classification_report
   ...: cr = classification_report(y_test, y_pred)
   ...: cr
Out[4]: '              precision    recall  f1-score   support\n\n           0       0.89      0.96      0.92        68\n           1
0.89      0.75      0.81        32\n\n    accuracy                           0.89       100\n   macro avg       0.89      0.85      0.87
100\nweighted avg       0.89      0.89      0.89       100\n'

In [5]: bias = classifier.score(X_train, y_train)
   ...: bias
Out[5]: 0.8233333333333334

In [6]: variance = classifier.score(X_test, y_test)
   ...: variance
Out[6]: 0.89

In [7]: |
```

Model 2:

```
   ...: ac = accuracy_score(y_test, y_pred)
   ...: print(ac)
0.6583333333333333

In [4]: from sklearn.metrics import classification_report
   ...: cr = classification_report(y_test, y_pred)
   ...: cr
/Users/myyntiimac/anaconda3/lib/python3.10/site-packages/sklearn/metrics/_classification.py:1344: UndefinedMetricWarning: Precision and F-
score are ill-defined and being set to 0.0 in labels with no predicted samples. Use `zero_division` parameter to control this behavior.
  _warn_prf(average, modifier, msg_start, len(result))
/Users/myyntiimac/anaconda3/lib/python3.10/site-packages/sklearn/metrics/_classification.py:1344: UndefinedMetricWarning: Precision and F-
score are ill-defined and being set to 0.0 in labels with no predicted samples. Use `zero_division` parameter to control this behavior.
  _warn_prf(average, modifier, msg_start, len(result))
/Users/myyntiimac/anaconda3/lib/python3.10/site-packages/sklearn/metrics/_classification.py:1344: UndefinedMetricWarning: Precision and F-
score are ill-defined and being set to 0.0 in labels with no predicted samples. Use `zero_division` parameter to control this behavior.
  _warn_prf(average, modifier, msg_start, len(result))
Out[4]: '              precision    recall  f1-score   support\n\n           0       0.66      1.00      0.79        79\n           1
0.00      0.00      0.00        41\n\n    accuracy                           0.66       120\n   macro avg       0.33      0.50      0.40
120\nweighted avg       0.43      0.66      0.52       120\n'

In [5]: bias = classifier.score(X_train, y_train)
   ...: bias
Out[5]: 0.6357142857142857

In [6]: variance = classifier.score(X_test, y_test)
   ...: variance
Out[6]: 0.6583333333333333

In [7]: |
```

Model3:



Name	Type	Size	Value
ac	float64	1	0.55
bias	float64	1	0.6588235294117647
classifier	linear_model._logistic.LogisticRegression	1	LogisticRegression object of sklearn.linear_model._logistic module
cm	Array of int64	(2, 2)	[[33 0] [27 0]]
cr	str	326	precision recall f1-score support
df	DataFrame	(400, 5)	Column names: User ID, Gender, Age, EstimatedSalary, Purchased
sc_X	preprocessing._data.Normalizer	1	Normalizer object of sklearn.preprocessing._data module
variance	float64	1	0.55
X	Array of int64	(400, 2)	[[19 19000] [35 20000]
X_test	Array of float64	(60, 2)	[[7.88461293e-04 9.99999689e-01] [1.40624861e-03 9.99999011e-01]
X_train	Array of float64	(340, 2)	[[4.54545408e-04 9.99999897e-01] [9.99999500e-04 9.99999500e-01]
Y	Series	(400,)	Series object of pandas.core.series module

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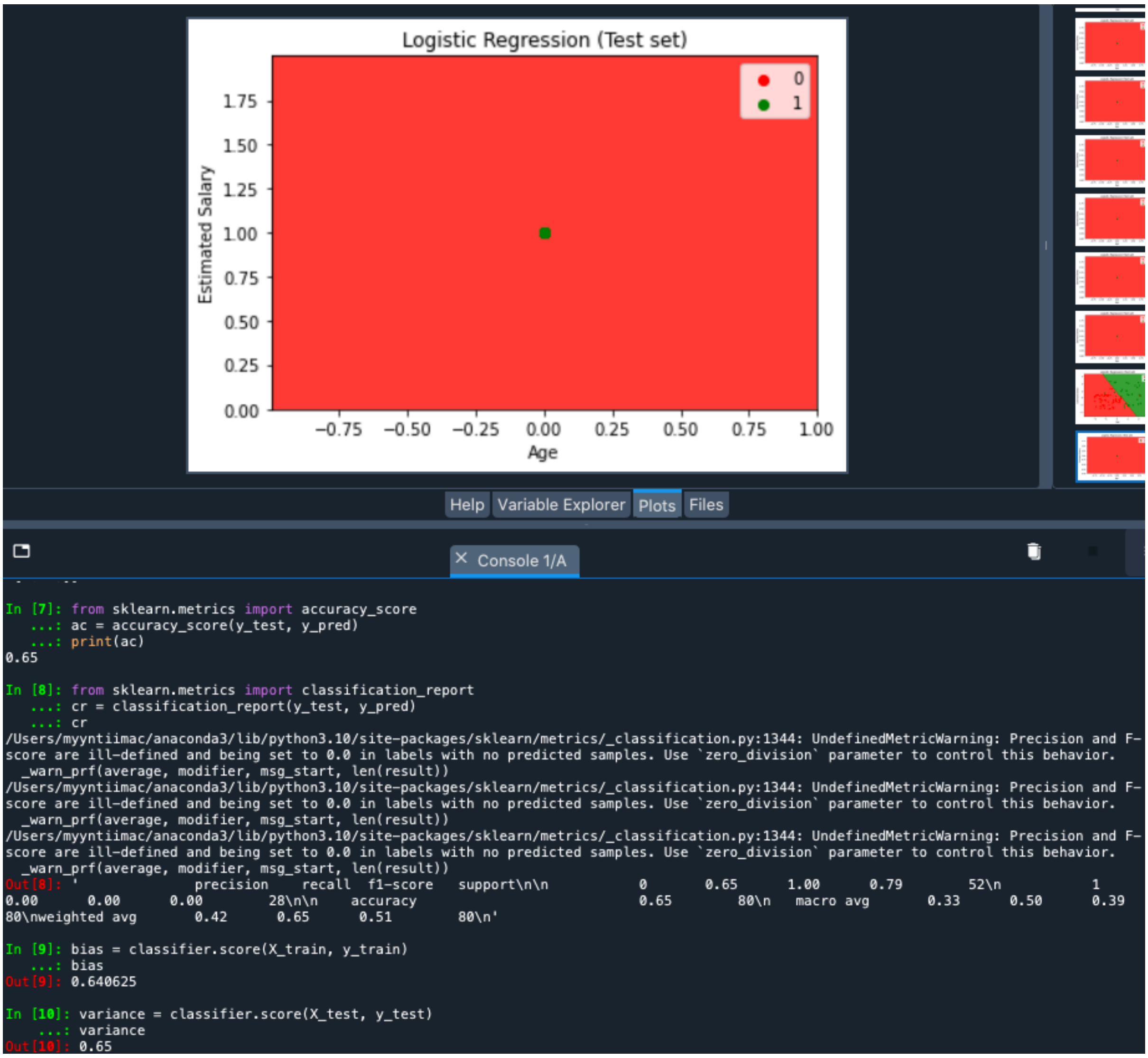
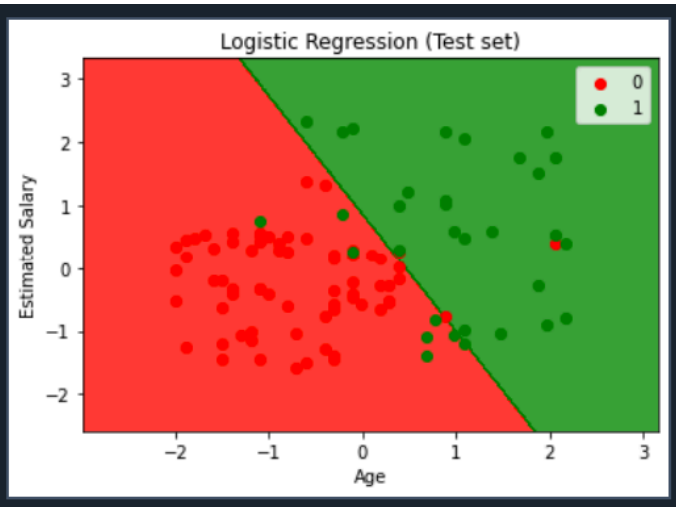
Console 1/A

```
In [3]: from sklearn.metrics import accuracy_score
   ...: ac = accuracy_score(y_test, y_pred)
   ...: print(ac)
0.55

In [4]: from sklearn.metrics import classification_report
   ...: cr = classification_report(y_test, y_pred)
   ...: cr
/Users/myyntiimac/anaconda3/lib/python3.10/site-packages/sklearn/metrics/_classification.py:1344: UndefinedMetricWarning: Precision and F-score are ill-defined and being set to 0.0 in labels with no predicted samples. Use `zero_division` parameter to control this behavior.
  _warn_prf(average, modifier, msg_start, len(result))
/Users/myyntiimac/anaconda3/lib/python3.10/site-packages/sklearn/metrics/_classification.py:1344: UndefinedMetricWarning: Precision and F-score are ill-defined and being set to 0.0 in labels with no predicted samples. Use `zero_division` parameter to control this behavior.
  _warn_prf(average, modifier, msg_start, len(result))
/Users/myyntiimac/anaconda3/lib/python3.10/site-packages/sklearn/metrics/_classification.py:1344: UndefinedMetricWarning: Precision and F-score are ill-defined and being set to 0.0 in labels with no predicted samples. Use `zero_division` parameter to control this behavior.
  _warn_prf(average, modifier, msg_start, len(result))
Out[4]: '              precision    recall  f1-score   support\n\n           0       0.55      1.00      0.71        33\n           1
0.00      0.00      0.00        27\n\n    accuracy                           0.55        60\n   macro avg       0.28      0.50      0.35
60\nweighted avg       0.30      0.55      0.39        60\n'

In [5]: bias = classifier.score(X_train, y_train)
   ...: bias
Out[5]: 0.6588235294117647

In [6]: variance = classifier.score(X_test, y_test)
   ...: variance
Out[6]: 0.55
```

Model 4



Model 5:



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Console 1/A

```
In [16]: runcell(0, '/Users/myyntiimac/untitled1.py')
[[65  3]
 [ 8 24]]
0.89

In [17]: runcell(0, '/Users/myyntiimac/untitled1.py')
[[65  3]
 [ 8 24]]
0.89
Out[17]: '              precision    recall  f1-score   support\n\n           0       0.89      0.96      0.92        68\n           1
0.89      0.75      0.81        32\n\n    accuracy                           0.89       100\n   macro avg       0.89      0.85      0.87
100\nweighted avg       0.89      0.89      0.89       100\n'

In [18]: runcell(0, '/Users/myyntiimac/untitled1.py')
[[65  3]
 [ 8 24]]
0.89
Out[18]: 0.8233333333333334

In [19]: runcell(0, '/Users/myyntiimac/untitled1.py')
[[65  3]
 [ 8 24]]
0.89
Out[19]: 0.89

In [20]: runcell(0, '/Users/myyntiimac/untitled1.py')
[[65  3]
 [ 8 24]]
0.89
/Users/myyntiimac/untitled1.py:84: UserWarning: *c* argument looks like a single numeric RGB or RGBA sequence, which should be avoided as
```