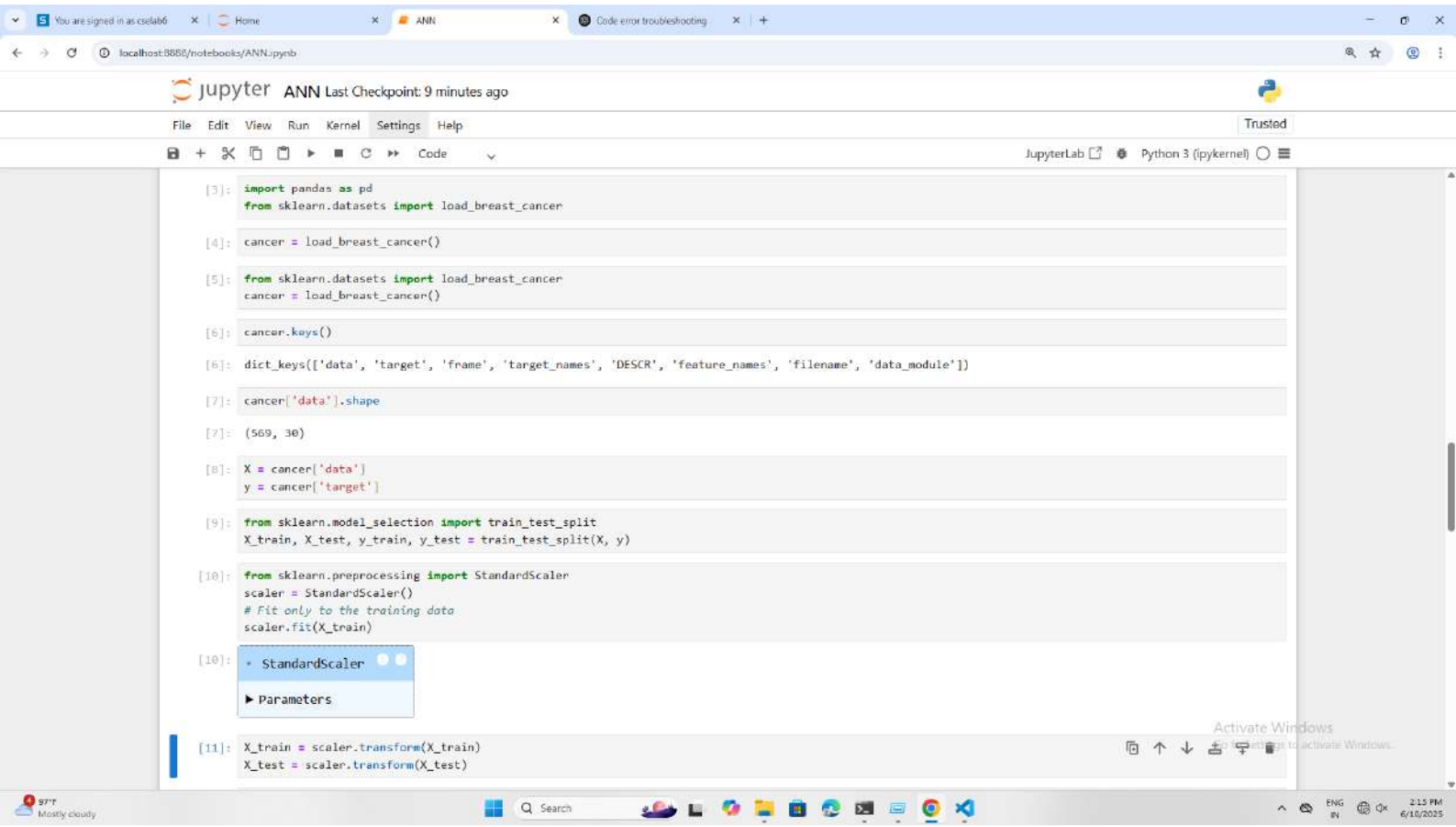
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Code
JupyterLab
Python 3 (ipykernel)
[5]: import pandas as pd
from sklearn.datasets import load_breast_cancer
[4]: cancer = load_breast_cancer()
[5]: from sklearn.datasets import load_breast_cancer
cancer = load_breast_cancer()
[6]: cancer.keys()
[6]: dict_keys(['data', 'target', 'frame', 'target_names', 'DESCR', 'feature_names', 'filename', 'data_module'])
[7]: cancer['data'].shape
[7]: (569, 30)
[8]: X = cancer['data']
y = cancer['target']
[9]: from sklearn.model_selection import train_test_split
X_train, X_test, y_train, y_test = train_test_split(X, y)
[10]: from sklearn.preprocessing import StandardScaler
scaler = StandardScaler()
# Fit only to the training data
scaler.fit(X_train)
[10]: StandardScaler
Parameters
[11]: X_train = scaler.transform(X_train)
X_test = scaler.transform(X_test)
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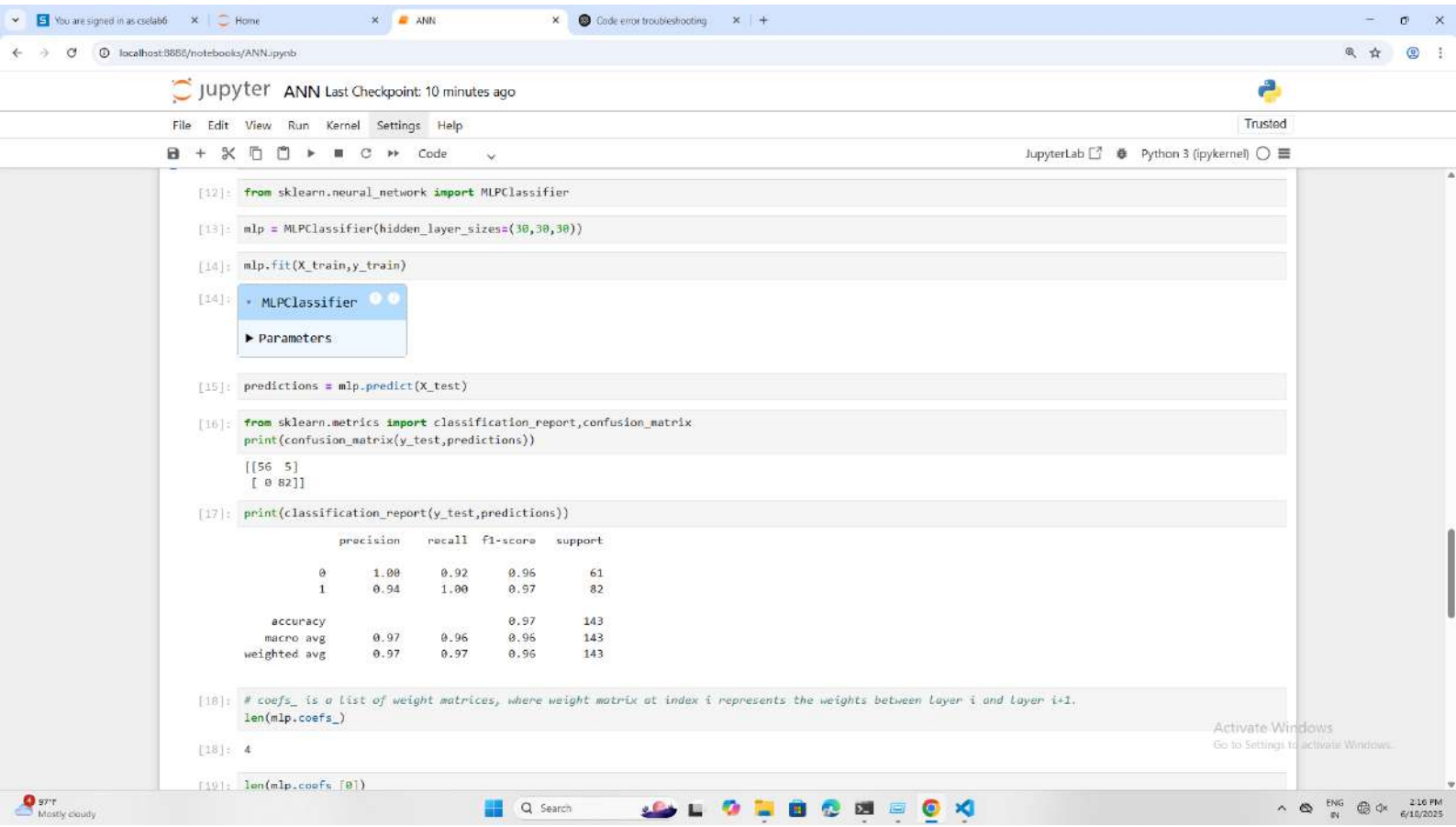
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Code
JupyterLab
Python 3 (ipykernel)
[12]: from sklearn.neural_network import MLPClassifier
[13]: mlp = MLPClassifier(hidden_layer_sizes=(30,30,30))
[14]: mlp.fit(X_train,y_train)
[14]: MLPClassifier
Parameters
[15]: predictions = mlp.predict(X_test)
[16]: from sklearn.metrics import classification_report,confusion_matrix
print(confusion_matrix(y_test,predictions))
[[56 5]
[0 82]]
[17]: print(classification_report(y_test,predictions))
precision recall f1-score support
0 1.00 0.92 0.96 61
1 0.94 1.00 0.97 82
accuracy 0.97 143
macro avg 0.97 0.96 0.96 143
weighted avg 0.97 0.97 0.96 143
[18]: # coefs_ is a list of weight matrices, where weight matrix at index i represents the weights between layer i and layer i+1.
len(mlp.coefs_)
[18]: 4
[19]: len(mlp.coefs_[0])
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Code

JupyterLab | Python 3 (ipykernel)

[19]:
```
len(mlp.coefs_[0])
```

[19]:
```
30
```

[20]:
```
# intercepts_ is a list of bias vectors, where the vector at index i represents the bias values added to layer i+1.
len(mlp.intercepts_[0])
```

[20]:
```
30
```

[21]:
```
X_train = scaler.transform(X_train)
X_test = scaler.transform(X_test)
```

[22]:
```
from sklearn.neural_network import MLPClassifier
```

[23]:
```
mlp = MLPClassifier(hidden_layer_sizes=(30,40,50))
```

[24]:
```
mlp.fit(X_train,y_train)
```

[24]:
```
MLPClassifier
▶ Parameters
```

[25]:
```
predictions = mlp.predict(X_test)
```

[26]:
```
from sklearn.metrics import classification_report,confusion_matrix
print(confusion_matrix(y_test,predictions))
```

```
[[56  5]
 [ 5 77]]
```

[27]:
```
print(classification_report(y_test,predictions))
```

```
              precision    recall  f1-score   support

           0       0.92      0.92      0.92        61
           1       0.94      0.94      0.94        82
```

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Code

JupyterLab | Python 3 (ipykernel)

```
[ 5 77]]
```

[27]:
```
print(classification_report(y_test,predictions))
```

```
              precision    recall  f1-score   support

           0       0.92      0.92      0.92        61
           1       0.94      0.94      0.94        82

    accuracy                           0.93       143
   macro avg       0.93      0.93      0.93       143
weighted avg       0.93      0.93      0.93       143
```

[28]:
```
# coefs_ is a list of weight matrices, where weight matrix at index i represents the weights between layer i and layer i+1.
len(mlp.coefs_)
```

[28]: 4

[29]:
```
len(mlp.coefs_[0])
```

[29]: 30

[30]:
```
# intercepts_ is a list of bias vectors, where the vector at index i represents the bias values added to layer i+1.
len(mlp.intercepts_[0])
```

[30]: 30

[ ]:

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