IDLE Shell 3.10.2

File Edit Shell Debug Options Window Help

```
========== RESTART: C:/clg notes sec/SEM 3/task 3.py ==========
Dataset Preview:
   age           job  marital  education  ... pdays  previous
poutcome   y
0   30    unemployed  married    primary  ...    -1         0
unknown  no
1   33      services  married  secondary  ...   339         4
failure  no
2   35    management   single   tertiary  ...   330         1
failure  no
3   30    management  married   tertiary  ...    -1         0
unknown  no
4   59   blue-collar  married  secondary  ...    -1         0
unknown  no

[5 rows x 17 columns]

Dataset Information:
<class 'pandas.core.frame.DataFrame'>
```

```
Data columns (total 17 columns):
 #   Column      Non-Null Count  Dtype
---  ------      --------------  -----
 0   age         4521 non-null   int64
 1   job         4521 non-null   object
 2   marital     4521 non-null   object
 3   education   4521 non-null   object
 4   default     4521 non-null   object
 5   balance     4521 non-null   int64
 6   housing     4521 non-null   object
 7   loan        4521 non-null   object
 8   contact     4521 non-null   object
 9   day         4521 non-null   int64
 10  month       4521 non-null   object
 11  duration    4521 non-null   int64
 12  campaign    4521 non-null   int64
 13  pdays       4521 non-null   int64
 14  previous    4521 non-null   int64
 15  poutcome    4521 non-null   object
```

```
dtypes: int64(7), object(10)
memory usage: 600.6+ KB
None

Accuracy Score:
0.8968312453942521

Classification Report:
              precision    recall  f1-score   support

       False       0.92      0.97      0.94      1205
        True       0.57      0.34      0.42       152

    accuracy                           0.90      1357
   macro avg       0.74      0.65      0.68      1357
weighted avg       0.88      0.90      0.88      1357


Confusion Matrix:
```

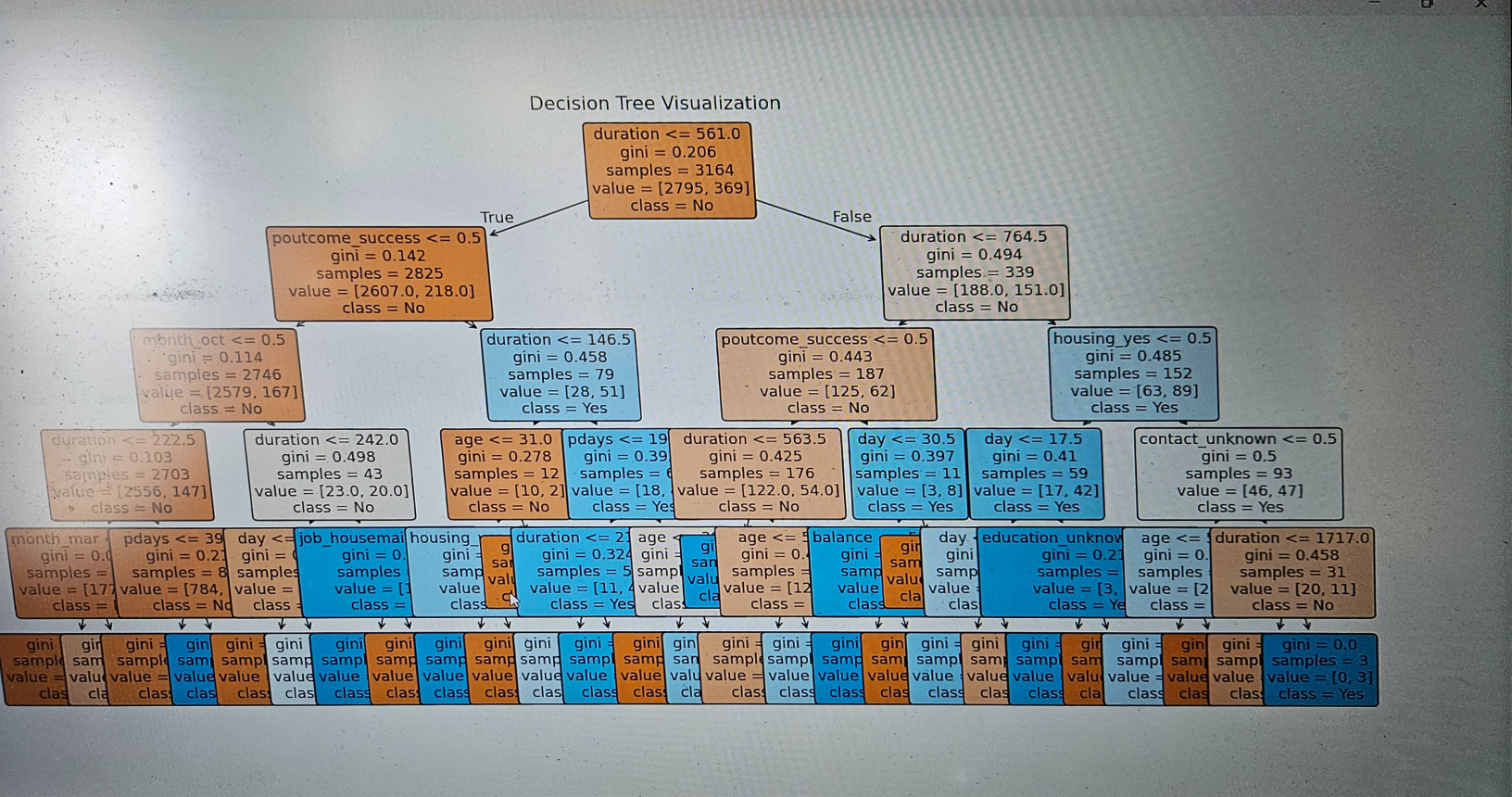
None

Accuracy Score:
0.896831245394252 1

Classification Report:

	precision	recall	f1-score	support
False	0.92	0.97	0.94	1205
True	0.57	0.34	0.42	152
accuracy			0.90	1357
macro avg	0.74	0.65	0.68	1357
weighted avg	0.88	0.90	0.88	1357

Confusion Matrix:
[[1166 39]
[101 51]]


Decision Tree Visualization
duration <= 561.0
gini = 0.206
samples = 3164
value = [2795, 369]
class = No
True
False
poutcome_success <= 0.5
gini = 0.142
samples = 2825
value = [2607.0, 218.0]
class = No
duration <= 764.5
gini = 0.494
samples = 339
value = [188.0, 151.0]
class = No
month_oct <= 0.5
gini = 0.114
samples = 2746
value = [2579, 167]
class = No
duration <= 146.5
gini = 0.458
samples = 79
value = [28, 51]
class = Yes
poutcome_success <= 0.5
gini = 0.443
samples = 187
value = [125, 62]
class = No
housing_yes <= 0.5
gini = 0.485
samples = 152
value = [63, 89]
class = Yes
duration <= 222.5
gini = 0.103
samples = 2703
value = [2556, 147]
class = No
duration <= 242.0
gini = 0.498
samples = 43
value = [23.0, 20.0]
class = No
age <= 31.0
gini = 0.278
samples = 12
value = [10, 2]
class = No
pdays <= 19
gini = 0.39
samples = 6
value = [18,
class = Yes
duration <= 563.5
gini = 0.425
samples = 176
value = [122.0, 54.0]
class = No
day <= 30.5
gini = 0.397
samples = 11
value = [3, 8]
class = Yes
day <= 17.5
gini = 0.41
samples = 59
value = [17, 42]
class = Yes
contact_unknown <= 0.5
gini = 0.5
samples = 93
value = [46, 47]
class = Yes
duration <= 1717.0
gini = 0.458
samples = 31
value = [20, 11]
class = No
gini = 0.0
samples = 3
value = [0, 3]
class = Yes