

```
import pandas as pd
from sklearn.model_selection import train_test_split
from sklearn.preprocessing import LabelEncoder
from sklearn.tree import DecisionTreeClassifier, plot_tree
from sklearn.metrics import accuracy_score, confusion_matrix,
classification_report
import matplotlib.pyplot as plt
import seaborn as sns
from sklearn.tree import export_text
```

```
data = pd.read_csv('bank.csv')
data.head()
```

age	job	marital	education	default	balance	housing	loan
0 59	admin.	married	secondary	no	2343	yes	no
1 56	admin.	married	secondary	no	45	no	no
2 41	technician	married	secondary	no	1270	yes	no
3 55	services	married	secondary	no	2476	yes	no
4 54	admin.	married	tertiary	no	184	no	no

	day	month	duration	campaign	pdays	previous	poutcome	deposit
0	5	may	1042	1	-1	0	unknown	yes
1	5	may	1467	1	-1	0	unknown	yes
2	5	may	1389	1	-1	0	unknown	yes
3	5	may	579	1	-1	0	unknown	yes
4	5	may	673	2	-1	0	unknown	yes

```
data.tail()
```

loan	age	job	marital	education	default	balance	housing
11157 no	33	blue-collar	single	primary	no	1	yes
11158 no	39	services	married	secondary	no	733	no
11159 no	32	technician	single	secondary	no	29	no
11160 yes	43	technician	married	secondary	no	0	no
11161 no	34	technician	married	secondary	no	0	no

```

      contact  day month  duration  campaign  pdays  previous
poutcome \

```

11157	cellular	20	apr	257	1	-1	0
unknown							
11158	unknown	16	jun	83	4	-1	0
unknown							
11159	cellular	19	aug	156	2	-1	0
unknown							
11160	cellular	8	may	9	2	172	5
failure							
11161	cellular	9	jul	628	1	-1	0
unknown							

	deposit
11157	no
11158	no
11159	no
11160	no
11161	no

```
data.columns
```

```
Index(['age', 'job', 'marital', 'education', 'default', 'balance',
      'housing',
      'loan', 'contact', 'day', 'month', 'duration', 'campaign',
      'pdays',
      'previous', 'poutcome', 'deposit'],
      dtype='object')
```

```
data.describe()
```

	age	balance	day	duration
campaign \				
count	11162.000000	11162.000000	11162.000000	11162.000000
11162.000000				
mean	41.231948	1528.538524	15.658036	371.993818
2.508421				
std	11.913369	3225.413326	8.420740	347.128386
2.722077				
min	18.000000	-6847.000000	1.000000	2.000000
1.000000				
25%	32.000000	122.000000	8.000000	138.000000
1.000000				
50%	39.000000	550.000000	15.000000	255.000000
2.000000				
75%	49.000000	1708.000000	22.000000	496.000000
3.000000				
max	95.000000	81204.000000	31.000000	3881.000000
63.000000				

	pdays	previous
count	11162.000000	11162.000000

mean	51.330407	0.832557
std	108.758282	2.292007
min	-1.000000	0.000000
25%	-1.000000	0.000000
50%	-1.000000	0.000000
75%	20.750000	1.000000
max	854.000000	58.000000

```
data.isna().sum()
```

```
age      0
job      0
marital  0
education 0
default  0
balance  0
housing  0
loan     0
contact  0
day      0
month    0
duration 0
campaign 0
pdays   0
previous 0
poutcome 0
deposit  0
dtype: int64
```

```
data.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 11162 entries, 0 to 11161
Data columns (total 17 columns):
#   Column      Non-Null Count  Dtype
---  -
0   age         11162 non-null  int64
1   job         11162 non-null  object
2   marital     11162 non-null  object
3   education   11162 non-null  object
4   default     11162 non-null  object
5   balance     11162 non-null  int64
6   housing     11162 non-null  object
7   loan        11162 non-null  object
8   contact     11162 non-null  object
9   day         11162 non-null  int64
10  month       11162 non-null  object
11  duration    11162 non-null  int64
12  campaign    11162 non-null  int64
13  pdays       11162 non-null  int64
```

```

14 previous    11162 non-null    int64
15 poutcome    11162 non-null    object
16 deposit     11162 non-null    object

```

```
dtypes: int64(7), object(10)
```

```
memory usage: 1.4+ MB
```

```

features = ['age', 'job', 'marital', 'education', 'default',
'balance', 'housing', 'loan', 'contact', 'day', 'month', 'duration',
'campaign', 'pdays', 'previous', 'poutcome']

```

```
target = 'deposit'
```

```

data = pd.get_dummies(data, columns=['job', 'marital', 'education',
'default', 'housing', 'loan', 'contact', 'month', 'poutcome'],

```

```
drop_first=True)
```

```
X = data.drop(target, axis=1)
```

```
y = data[target]
```

```

X_train, X_test, y_train, y_test = train_test_split(X, y,
test_size=0.3, random_state=42)

```

```
X_train
```

	age	balance	day	duration	campaign	pdays	previous
job_blue-collar \							
7968	57	950	9	1272	1	-1	0
False							
1456	34	925	13	709	1	-1	0
False							
361	41	75	1	479	9	-1	0
True							
812	46	4414	18	504	7	-1	0
False							
1092	28	4465	28	769	1	-1	0
False							
...
...							
5734	47	761	11	80	2	-1	0
False							
5191	28	159	16	449	2	33	4
False							
5390	35	1144	20	197	13	-1	0
False							
860	51	746	25	372	5	-1	0
False							
7270	30	2	23	269	1	-1	0
False							

	job_entrepreneur	job_housemaid	...	month_jul	month_jun
month_mar \					
7968	False	False	...	True	False
False					
1456	False	False	...	False	False
False					

361	False	False	...	True	False
False					
812	False	False	...	False	False
False					
1092	False	False	...	False	False
False					
...
...					
5734	False	False	...	True	False
False					
5191	False	False	...	False	False
False					
5390	False	False	...	False	False
False					
860	False	False	...	False	False
False					
7270	False	False	...	False	False
True					

	month_may	month_nov	month_oct	month_sep	poutcome_other	\
7968	False	False	False	False	False	
1456	False	False	False	False	False	
361	False	False	False	False	False	
812	False	False	False	False	False	
1092	False	False	False	False	False	
...	
5734	False	False	False	False	False	
5191	False	True	False	False	False	
5390	False	False	False	False	False	
860	False	False	False	False	False	
7270	False	False	False	False	False	

	poutcome_success	poutcome_unknown
7968	False	True
1456	False	True
361	False	True
812	False	True
1092	False	True
...
5734	False	True
5191	True	False
5390	False	True
860	False	True
7270	False	True

[7813 rows x 42 columns]

X_test

	age	balance	day	duration	campaign	pdays	previous	\
5527	65	744	5	182	1	-1	0	
4541	38	1627	16	1323	9	-1	0	
1964	35	4963	14	456	1	300	1	
5007	47	8229	8	784	2	-1	0	
8928	35	1473	12	84	3	-1	0	
...	
1052	30	495	21	641	1	-1	0	
10702	44	12	19	126	2	-1	0	
10466	44	1945	14	191	1	-1	0	
8809	55	505	17	58	1	316	1	
99	35	0	20	1205	1	-1	0	

	job_blue-collar	job_entrepreneur	job_housemaid	...
month_jul \				
5527	False	False	False	...
True				
4541	True	False	False	...
False				
1964	True	False	False	...
False				
5007	True	False	False	...
False				
8928	False	False	False	...
False				
...
.				
1052	False	False	False	...
False				
10702	False	False	False	...
False				
10466	False	False	False	...
False				
8809	False	False	False	...
False				
99	True	False	False	...
False				

	month_jun	month_mar	month_may	month_nov	month_oct
month_sep \					
5527	False	False	False	False	False
False					
4541	True	False	False	False	False
False					
1964	False	False	True	False	False
False					
5007	False	False	False	False	False
False					
8928	False	False	True	False	False
False					

```

...      ...      ...      ...      ...      ...
.
1052      False      False      False      True      False
False
10702     False      False      False      True      False
False
10466     False      False      True       False      False
False
8809      False      False      False      False      False
False
99        False      False      True       False      False
False

```

```

      poutcome_other  poutcome_success  poutcome_unknown
5527             False             False             True
4541             False             False             True
1964             False             False             False
5007             False             False             True
8928             False             False             True
...             ...             ...
1052             False             False             True
10702            False             False             True
10466            False             False             True
8809              True             False             False
99               False             False             True

```

```
[3349 rows x 42 columns]
```

```
y_train
```

```

7968      no
1456      yes
361       yes
812       yes
1092      yes
...
5734      no
5191      yes
5390      no
860       yes
7270      no

```

```
Name: deposit, Length: 7813, dtype: object
```

```
y_test
```

```

5527      no
4541      yes
1964      yes
5007      yes
8928      no

```

```

...
1052    yes
10702   no
10466   no
8809    no
99      yes
Name: deposit, Length: 3349, dtype: object

clf = DecisionTreeClassifier(random_state=42)
clf.fit(X_train, y_train)

DecisionTreeClassifier(random_state=42)

y_pred = clf.predict(X_test)

accuracy = accuracy_score(y_test, y_pred)
print("Accuracy:", accuracy)

Accuracy: 0.78501045088086

conf_matrix = confusion_matrix(y_test, y_pred)
print("Confusion Matrix:\n", conf_matrix)

Confusion Matrix:
[[1398  344]
 [ 376 1231]]

class_report = classification_report(y_test, y_pred)
print("Classification Report:\n", class_report)

Classification Report:

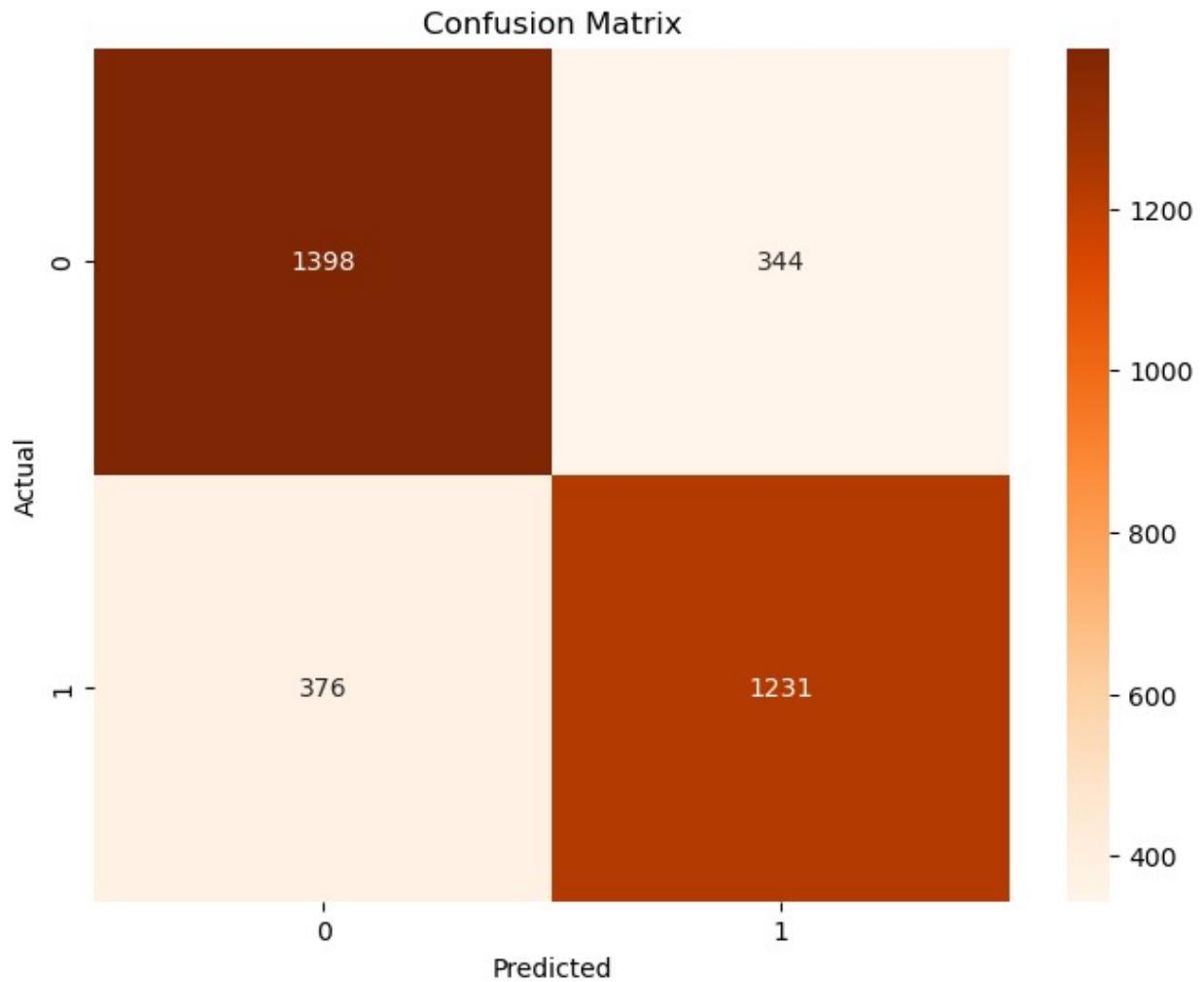
```

	precision	recall	f1-score	support
no	0.79	0.80	0.80	1742
yes	0.78	0.77	0.77	1607
accuracy			0.79	3349
macro avg	0.78	0.78	0.78	3349
weighted avg	0.78	0.79	0.78	3349

```

confusion = confusion_matrix(y_test, y_pred)
plt.figure(figsize=(8, 6))
sns.heatmap(confusion, annot=True, fmt="d", cmap="Oranges")
plt.xlabel('Predicted')
plt.ylabel('Actual')
plt.title('Confusion Matrix')
plt.show()

```

```
tree_structure = export_text(clf, feature_names=list(X.columns))
print("Decision Tree Structure:")
print(tree_structure)
```

Decision Tree Structure:

```
|--- duration <= 251.50
|   |--- poutcome_success <= 0.50
|   |   |--- duration <= 123.50
|   |   |   |--- month_mar <= 0.50
|   |   |   |   |--- month_oct <= 0.50
|   |   |   |   |   |--- month_feb <= 0.50
|   |   |   |   |   |   |--- job_student <= 0.50
|   |   |   |   |   |   |   |--- day <= 1.50
|   |   |   |   |   |   |   |   |--- age <= 36.50
|   |   |   |   |   |   |   |   |   |--- class: no
|   |   |   |   |   |   |   |   |   |--- age > 36.50
|   |   |   |   |   |   |   |   |   |   |--- class: yes
|   |   |   |   |   |   |   |--- day > 1.50
|   |   |   |   |--- duration <= 88.50
```

```

depth 9
depth 4
depth 14
depth 2

```

```

--- balance <= -165.00
|--- class: no
|--- balance > -165.00
|   |--- class: yes
|       --- balance > -15.00
|           --- class: no
|--- duration > 122.50
|   --- class: yes
--- day > 10.00
    --- balance <= 185.00
        |--- job_technician <= 0.50
            |--- class: no
        |--- job_technician > 0.50
            |--- class: yes
    --- balance > 185.00
        --- education_unknown <= 0.50
            |--- age <= 62.00
                |--- class: yes
            |--- age > 62.00
                |--- housing_yes <= 0.50
                    |--- class: no
                |--- housing_yes > 0.50
                    |--- class: yes
            --- education_unknown > 0.50
                --- class: no
--- month_oct > 0.50
    --- age <= 43.00
        --- day <= 26.50
            |--- class: no
        --- day > 26.50
            |--- class: yes
    --- age > 43.00
        --- balance <= 196.00
            |--- class: no
        --- balance > 196.00
            --- job_technician <= 0.50
                |--- marital_single <= 0.50
                    |--- class: yes
                |--- marital_single > 0.50
                    |--- class: no
            --- job_technician > 0.50
                --- class: no
--- month_mar > 0.50
    --- poutcome_other <= 0.50
        --- age <= 62.00
            --- job_services <= 0.50
                --- age <= 29.50
                    --- day <= 4.00
                        --- class: no

```

```
| | | | | | | | | |--- day > 4.00  
| | | | | | | | | |--- class: yes  
| | | | | | | | | |--- age > 29.50  
| | | | | | | | | |--- class: yes  
| | | | | | | | |--- job_services > 0.50  
| | | | | | | | |--- class: no  
| | | | | | | |--- age > 62.00  
| | | | | | | |--- age <= 69.00  
| | | | | | | |--- class: no  
| | | | | | | |--- age > 69.00  
| | | | | | | |--- class: yes  
| | | | | |--- poutcome_other > 0.50  
| | | | | |--- class: no  
|--- duration > 123.50  
|   --- contact_unknown <= 0.50  
|     --- housing_yes <= 0.50  
|       --- month_aug <= 0.50  
|         --- month_jul <= 0.50  
|           --- month_nov <= 0.50  
|             --- month_jan <= 0.50  
|               --- month_feb <= 0.50  
|                 --- month_may <= 0.50  
|                   --- truncated branch of  
depth 20 |  
|                                     --- month_may > 0.50  
|                                     --- truncated branch of  
depth 8 |  
|                                               --- month_feb > 0.50  
|                                                 --- day <= 7.50  
|                                                   --- truncated branch of  
depth 11 |  
|                                               --- day > 7.50  
|                                               --- truncated branch of  
depth 3 |  
|                               --- month_jan > 0.50  
|                                 --- day <= 27.50  
|                                   --- class: yes  
|                                 --- day > 27.50  
|                                   --- balance <= 1643.50  
|                                       --- truncated branch of  
depth 5 |  
|                                           --- balance > 1643.50  
|                                           --- truncated branch of  
depth 3 |  
|                               --- month_nov > 0.50  
|                                --- day <= 16.50  
|                                  --- balance <= 154.00  
|                                    --- duration <= 217.50  
|                                        --- class: no
```



```
depth 2 | | | | | | | | |--- job_unemployed > 0.50  
| | | | | | | | |   |-- class: yes  
| | | | | | | | |--- duration > 183.00  
| | | | | | | | |   |-- day <= 27.00  
| | | | | | | | |     |-- job_technician <= 0.50  
| | | | | | | | |       |-- truncated branch of  
depth 3 | | | | | | | | |--- job_technician > 0.50  
| | | | | | | | |   |-- class: no  
| | | | | | | | |   |-- day > 27.00  
| | | | | | | | |     |-- class: no  
| | | | | | | | |--- campaign > 1.50  
| | | | | | | | |   |-- age <= 26.50  
| | | | | | | | |     |-- duration <= 164.00  
| | | | | | | | |       |-- class: no  
| | | | | | | | |     |-- duration > 164.00  
| | | | | | | | |       |-- class: yes  
| | | | | | | | |--- age > 26.50  
| | | | | | | | |   |-- age <= 62.00  
| | | | | | | | |     |-- job_retired <= 0.50  
| | | | | | | | |       |-- truncated branch of  
depth 6 | | | | | | | | |--- job_retired > 0.50  
| | | | | | | | |       |-- truncated branch of  
depth 3 | | | | | | | | |--- age > 62.00  
| | | | | | | | |   |-- class: yes  
| | | | | | | | |--- pdays > 32.00  
| | | | | | | | |   |-- job_unemployed <= 0.50  
| | | | | | | | |     |-- pdays <= 586.00  
| | | | | | | | |       |-- balance <= 31.00  
| | | | | | | | |         |-- poutcome_other <= 0.50  
| | | | | | | | |           |-- class: yes  
| | | | | | | | |           |-- poutcome_other > 0.50  
| | | | | | | | |             |-- class: no  
| | | | | | | | |       |-- balance > 31.00  
| | | | | | | | |         |-- class: yes  
| | | | | | | | |     |-- pdays > 586.00  
| | | | | | | | |       |-- class: no  
| | | | | | | | |   |-- job_unemployed > 0.50  
| | | | | | | | |     |-- class: no  
| | | | | | | | |--- housing_yes > 0.50  
| | | | | | | | |   |-- month_jun <= 0.50  
| | | | | | | | |     |-- month_mar <= 0.50  
| | | | | | | | |       |-- month_oct <= 0.50  
| | | | | | | | |         |-- pdays <= 1.50  
| | | | | | | | |           |-- age <= 59.50  
| | | | | | | | |             |-- month_sep <= 0.50
```

```

|--- truncated branch of
depth 16
|--- month_sep > 0.50
|--- class: yes
|--- age > 59.50
|--- job_blue-collar <= 0.50
|--- class: yes
|--- job_blue-collar > 0.50
|--- class: no
|--- pdays > 1.50
|--- pdays <= 97.50
|--- job_management <= 0.50
|--- class: yes
|--- job_management > 0.50
|--- truncated branch of
depth 3
|--- pdays > 97.50
|--- month_aug <= 0.50
|--- truncated branch of
depth 9
|--- month_aug > 0.50
|--- truncated branch of
depth 2
|--- month_oct > 0.50
|--- age <= 43.00
|--- campaign <= 3.50
|--- class: yes
|--- campaign > 3.50
|--- class: no
|--- age > 43.00
|--- age <= 67.50
|--- class: no
|--- age > 67.50
|--- class: yes
|--- month_mar > 0.50
|--- poutcome_other <= 0.50
|--- campaign <= 3.50
|--- class: yes
|--- campaign > 3.50
|--- age <= 32.50
|--- class: yes
|--- age > 32.50
|--- class: no
|--- poutcome_other > 0.50
|--- class: no
|--- month_jun > 0.50
|--- duration <= 141.00
|--- class: no
|--- duration > 141.00

```



```
depth 6 | | | | | | | | | | --- education_unknown > 0.50  
| | | | | | | | | | |--- truncated branch of  
depth 2 | | | | | | | | | |  
| | | | | | | | | | --- age > 60.50  
| | | | | | | | | | |--- class: yes  
| | | | | | | | | | --- duration > 308.50  
| | | | | | | | | | --- day <= 8.50  
| | | | | | | | | | |--- campaign <= 6.00  
| | | | | | | | | | |--- truncated branch of  
depth 2 | | | | | | | | | |  
| | | | | | | | | | --- campaign > 6.00  
| | | | | | | | | | |--- class: no  
| | | | | | | | | | --- day > 8.50  
| | | | | | | | | | --- duration <= 422.00  
| | | | | | | | | | |--- truncated branch of  
depth 6 | | | | | | | | | |  
| | | | | | | | | | --- duration > 422.00  
| | | | | | | | | | |--- class: yes  
| | | | | | | | | | --- month_aug > 0.50  
| | | | | | | | | | --- campaign <= 1.50  
| | | | | | | | | | --- day <= 21.50  
| | | | | | | | | | --- duration <= 341.00  
| | | | | | | | | | --- duration <= 310.00  
| | | | | | | | | | |--- truncated branch of  
depth 5 | | | | | | | | | |  
| | | | | | | | | | --- duration > 310.00  
| | | | | | | | | | |--- truncated branch of  
depth 3 | | | | | | | | | |  
| | | | | | | | | | --- duration > 341.00  
| | | | | | | | | | |--- class: yes  
| | | | | | | | | | --- day > 21.50  
| | | | | | | | | | --- balance <= 1036.50  
| | | | | | | | | | |--- class: no  
| | | | | | | | | | --- balance > 1036.50  
| | | | | | | | | | |--- class: yes  
| | | | | | | | | | --- campaign > 1.50  
| | | | | | | | | | --- age <= 59.50  
| | | | | | | | | | --- duration <= 361.50  
| | | | | | | | | | --- pdays <= 152.00  
| | | | | | | | | | |--- truncated branch of  
depth 10 | | | | | | | | | |  
| | | | | | | | | | --- pdays > 152.00  
| | | | | | | | | | |--- class: yes  
| | | | | | | | | | --- duration > 361.50  
| | | | | | | | | | --- balance <= 2.50  
| | | | | | | | | | |--- class: no  
| | | | | | | | | | --- balance > 2.50  
| | | | | | | | | | |--- truncated branch of
```

```
| | | | | | | | | |  
| | | | | | | | | |--- age > 59.50  
| | | | | | | | | |--- class: yes  
| | | | | | | | | |  
| | | | | | | | | |--- loan_yes > 0.50  
| | | | | | | | | |--- duration <= 414.00  
| | | | | | | | | |    --- balance <= 116.00  
| | | | | | | | | |        --- day <= 1.50  
| | | | | | | | | |            --- class: yes  
| | | | | | | | | |            --- day > 1.50  
| | | | | | | | | |                --- class: no  
| | | | | | | | | |--- balance > 116.00  
| | | | | | | | | |    --- month_sep <= 0.50  
| | | | | | | | | |        --- duration <= 370.50  
| | | | | | | | | |            --- age <= 61.50  
| | | | | | | | | |                --- truncated branch of
```

```
| | | | | | | | | | --- age > 61.50  
| | | | | | | | | | |--- class: yes  
| | | | | | | | | | |--- duration > 370.50  
| | | | | | | | | | |--- class: yes  
| | | | | | | | | | |--- month_sep > 0.50  
| | | | | | | | | | |--- class: yes  
| | | | | | | | | |--- duration > 414.00  
| | | | | | | | | | |--- campaign <= 3.50  
| | | | | | | | | | |--- class: yes  
| | | | | | | | | | |--- campaign > 3.50  
| | | | | | | | | | |--- class: no  
--- housing_yes > 0.50  
|--- pdays <= 374.50  
|--- month_jun <= 0.50  
|--- duration <= 392.50  
|--- month_mar <= 0.50  
|--- month_sep <= 0.50  
|--- day <= 29.50  
|--- truncated branch of
```

```
| | | | | | | | | | --- day > 29.50  
| | | | | | | | | | --- truncated branch of
```

[illegible]

```

|--- duration > 453.50
|--- class: yes
|--- job_blue-collar > 0.50
|--- balance <= 622.00
|--- truncated branch of
depth 3
|--- balance > 622.00
|--- truncated branch of
depth 4
|--- duration > 460.00
|--- balance <= 1227.00
|--- job_management <= 0.50
|--- class: no
|--- job_management > 0.50
|--- truncated branch of
depth 2
|--- balance > 1227.00
|--- previous <= 6.00
|--- truncated branch of
depth 2
|--- previous > 6.00
|--- class: no
|--- month_jun > 0.50
|--- job_services <= 0.50
|--- class: yes
|--- job_services > 0.50
|--- age <= 40.50
|--- class: no
|--- age > 40.50
|--- class: yes
|--- pdays > 374.50
|--- class: yes
|--- poutcome_success > 0.50
|--- previous <= 10.50
|--- campaign <= 4.50
|--- month_jun <= 0.50
|--- pdays <= 186.50
|--- month_nov <= 0.50
|--- class: yes
|--- month_nov > 0.50
|--- job_technician <= 0.50
|--- class: yes
|--- job_technician > 0.50
|--- pdays <= 92.50
|--- class: yes
|--- pdays > 92.50
|--- class: no
|--- pdays > 186.50
|--- age <= 74.50

```

```

depth 2
    --- month_jan <= 0.50
        |--- day <= 2.50
            |--- truncated branch of
                |--- day > 2.50
                    |--- class: yes
                --- month_jan > 0.50
                    |--- job_retired <= 0.50
                        |--- class: no
                    |--- job_retired > 0.50
                        |--- class: yes
                --- age > 74.50
                    |--- previous <= 5.00
                        |--- class: no
                    |--- previous > 5.00
                        |--- class: yes
            --- month_jun > 0.50
                |--- previous <= 6.50
                    |--- balance <= 4454.00
                        |--- balance <= 219.50
                            |--- job_blue-collar <= 0.50
                                |--- class: yes
                            |--- job_blue-collar > 0.50
                                |--- class: no
                        |--- balance > 219.50
                            |--- class: yes
                    |--- balance > 4454.00
                        |--- class: no
                |--- previous > 6.50
                    |--- class: no
            --- campaign > 4.50
                |--- balance <= 3110.50
                    |--- class: yes
                |--- balance > 3110.50
                    |--- class: no
            --- previous > 10.50
                |--- marital_married <= 0.50
                    |--- class: yes
                |--- marital_married > 0.50
                    |--- class: no
        --- contact_unknown > 0.50
            |--- poutcome_unknown <= 0.50
                |--- class: yes
            |--- poutcome_unknown > 0.50
                |--- month_oct <= 0.50
                    |--- duration <= 380.50
                        |--- month_nov <= 0.50
                            |--- age <= 50.50
                                |--- class: no

```



```

depth 3 | | | | | | | | | | --- duration > 604.50
| | | | | | | | | | |--- truncated branch of
depth 8 | | | | | | | | | | --- housing_yes > 0.50
| | | | | | | | | | |--- age <= 35.50
| | | | | | | | | | |--- truncated branch of
depth 10 | | | | | | | | | | --- age > 35.50
| | | | | | | | | | |--- truncated branch of
depth 5 | | | | | | | | | | --- duration > 609.50
| | | | | | | | | | |--- age <= 62.00
| | | | | | | | | | |--- day <= 2.00
| | | | | | | | | | |--- class: no
| | | | | | | | | | |--- day > 2.00
| | | | | | | | | | |--- truncated branch of
depth 5 | | | | | | | | | | --- age > 62.00
| | | | | | | | | | |--- pdays <= 185.50
| | | | | | | | | | |--- class: no
| | | | | | | | | | |--- pdays > 185.50
| | | | | | | | | | |--- class: yes
| | | | | | | | | | |--- month_jun > 0.50
| | | | | | | | | | |--- class: yes
| | | | | | | | | | |--- month_jul > 0.50
| | | | | | | | | | |--- job_blue-collar <= 0.50
| | | | | | | | | | |--- balance <= 1933.00
| | | | | | | | | | |--- age <= 32.50
| | | | | | | | | | |--- duration <= 488.50
| | | | | | | | | | |--- class: no
| | | | | | | | | | |--- duration > 488.50
| | | | | | | | | | |--- truncated branch of
depth 5 | | | | | | | | | | --- age > 32.50
| | | | | | | | | | |--- job_management <= 0.50
| | | | | | | | | | |--- truncated branch of
depth 9 | | | | | | | | | | --- job_management > 0.50
| | | | | | | | | | |--- truncated branch of
depth 3 | | | | | | | | | | --- balance > 1933.00
| | | | | | | | | | |--- duration <= 502.00
| | | | | | | | | | |--- class: no
| | | | | | | | | | |--- duration > 502.00
| | | | | | | | | | |--- class: yes
| | | | | | | | | | |--- job_blue-collar > 0.50
| | | | | | | | | | |--- education_tertiary <= 0.50
| | | | | | | | | | |--- campaign <= 6.50
| | | | | | | | | | |--- class: yes

```



```

|--- month_jul <= 0.50
|   |--- class: no
|--- month_jul > 0.50
|   |--- class: yes
|--- day > 3.50
|   |--- pdays <= 67.50
|       |--- pdays <= 57.00
|           |--- class: yes
|       |--- pdays > 57.00
|           |--- class: no
|       |--- pdays > 67.50
|           |--- class: yes
|--- balance > 13362.50
|   |--- class: no
|--- job_student > 0.50
|   |--- duration <= 526.50
|       |--- class: no
|   |--- duration > 526.50
|       |--- class: yes
|--- contact_unknown > 0.50
|   |--- month_may <= 0.50
|       |--- balance <= 2910.50
|           |--- balance <= 273.50
|               |--- job_entrepreneur <= 0.50
|                   |--- day <= 3.50
|                       |--- campaign <= 2.50
|                           |--- balance <= 136.00
|                               |--- class: no
|                                   |--- balance > 136.00
|                                       |--- class: yes
|                                           |--- campaign > 2.50
|                                               |--- class: yes
|--- day > 3.50
|   |--- age <= 50.50
|       |--- class: yes
|   |--- age > 50.50
|       |--- duration <= 540.00
|           |--- class: yes
|       |--- duration > 540.00
|           |--- class: no
|--- job_entrepreneur > 0.50
|   |--- class: no
|--- balance > 273.50
|   |--- campaign <= 2.50
|       |--- class: yes
|   |--- campaign > 2.50
|       |--- balance <= 2076.50
|           |--- duration <= 597.00
|               |--- class: yes

```



```

depth 3
    --- age > 30.00
    --- truncated branch of
    --- age > 64.50
    --- previous <= 1.50
    --- duration <= 1129.00
    |--- class: yes
    --- duration > 1129.00
    |--- class: no
    --- previous > 1.50
    |--- class: yes
    --- balance > 19640.00
    --- class: no

```