In [8]:
```
import pandas as pd
from sklearn.model_selection import train_test_split
from sklearn.tree import DecisionTreeClassifier
from sklearn.metrics import classification_report, accuracy_score, confusion_mat

data = pd.read_csv("bank.csv", sep=';')
```

In [9]:
```
data.head()
```

Out[9]:

	age	job	marital	education	default	balance	housing	loan	contact	da
0	30	unemployed	married	primary	no	1787	no	no	cellular	
1	33	services	married	secondary	no	4789	yes	yes	cellular	
2	35	management	single	tertiary	no	1350	yes	no	cellular	
3	30	management	married	tertiary	no	1476	yes	yes	unknown	
4	59	blue-collar	married	secondary	no	0	yes	no	unknown	

In [11]:
```
data.isnull().sum()
```

Out[11]:
```
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
y            0
dtype: int64
```

In [12]:
```
data_encoded = pd.get_dummies(data)
```

In [13]:
```
data_encoded.head()
```

Out[13]:

	age	balance	day	duration	campaign	pdays	previous	job_admin.	job_blue-collar	job
0	30	1787	19	79	1	-1	0	False	False	
1	33	4789	11	220	1	339	4	False	False	
2	35	1350	16	185	1	330	1	False	False	
3	30	1476	3	199	4	-1	0	False	False	
4	59	0	5	226	1	-1	0	False	True	

5 rows × 53 columns

In [19]:
```
X = data_encoded.drop(columns=['y_yes', 'y_no'])
y = data_encoded['y_yes']

X_train, X_test, y_train, y_test = train_test_split(X, y, test_size=0.2, random_
```

In [20]:
```
clf = DecisionTreeClassifier(random_state=42)
clf.fit(X_train, y_train)
```

Out[20]:

DecisionTreeClassifier

DecisionTreeClassifier(random_state=42)

In [21]:
```
y_pred = clf.predict(X_test)
```

In [22]:
```
accuracy = accuracy_score(y_test, y_pred)
classification_rep = classification_report(y_test, y_pred)
conf_matrix = confusion_matrix(y_test, y_pred)
```

In [23]:
```
print(f"Accuracy: {accuracy}")
print("Classification Report:")
print(classification_rep)
print("Confusion Matrix:")
print(conf_matrix)
```

```
Accuracy: 0.8917127071823204
Classification Report:
              precision    recall  f1-score   support

       False       0.94      0.93      0.94       807
        True       0.50      0.54      0.52        98

    accuracy                           0.89       905
   macro avg       0.72      0.74      0.73       905
weighted avg       0.90      0.89      0.89       905

Confusion Matrix:
[[754  53]
 [ 45  53]]
```