In [1]:

```python
import numpy as np
import pandas as pd
import seaborn as sns
from sklearn.model_selection import train_test_split
from sklearn.tree import DecisionTreeClassifier
```

In [2]:

```python
df=pd.read_csv(r"C:\Users\MSI\Downloads\loan1.csv")
df
```

Out[2]:

	Home Owner	Marital Status	Annual Income	Defaulted Borrower
0	Yes	Single	125	No
1	No	Married	100	No
2	No	Single	70	No
3	Yes	Married	120	No
4	No	Divorced	95	Yes
5	No	Married	60	No
6	Yes	Divorced	220	No
7	No	Single	85	Yes
8	No	Married	75	No
9	No	Single	90	Yes

In [3]:

```python
df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 10 entries, 0 to 9
Data columns (total 4 columns):
 #   Column              Non-Null Count  Dtype
---  ------              --------------  -----
 0   Home Owner          10 non-null     object
 1   Marital Status      10 non-null     object
 2   Annual Income       10 non-null     int64
 3   Defaulted Borrower  10 non-null     object
dtypes: int64(1), object(3)
memory usage: 452.0+ bytes
```

In [4]:

```
1  df['Marital Status'].value_counts()
```

Out[4]:

```
Marital Status
Single      4
Married     4
Divorced    2
Name: count, dtype: int64
```

In [5]:

```
1  df['Annual Income'].value_counts()
```

Out[5]:

```
Annual Income
125    1
100    1
70     1
120    1
95     1
60     1
220    1
85     1
75     1
90     1
Name: count, dtype: int64
```

In [6]:

```
1  convert={"Home Owner":{"Yes":1,"No":0}}
2  df=df.replace(convert)
3  df
```

Out[6]:

	Home Owner	Marital Status	Annual Income	Defaulted Borrower
0	1	Single	125	No
1	0	Married	100	No
2	0	Single	70	No
3	1	Married	120	No
4	0	Divorced	95	Yes
5	0	Married	60	No
6	1	Divorced	220	No
7	0	Single	85	Yes
8	0	Married	75	No
9	0	Single	90	Yes

In [7]:

```
1  convert={"Defaulted Borrower":{"Yes":1,"No":0}}
2  df=df.replace(convert)
3  df
```

Out[7]:

	Home Owner	Marital Status	Annual Income	Defaulted Borrower
0	1	Single	125	0
1	0	Married	100	0
2	0	Single	70	0
3	1	Married	120	0
4	0	Divorced	95	1
5	0	Married	60	0
6	1	Divorced	220	0
7	0	Single	85	1
8	0	Married	75	0
9	0	Single	90	1

In [8]:

```
1  convert={"Marital Status":{"Single":1,"Married":2,"Divorced":3}}
2  df=df.replace(convert)
3  df
```

Out[8]:

	Home Owner	Marital Status	Annual Income	Defaulted Borrower
0	1	1	125	0
1	0	2	100	0
2	0	1	70	0
3	1	2	120	0
4	0	3	95	1
5	0	2	60	0
6	1	3	220	0
7	0	1	85	1
8	0	2	75	0
9	0	1	90	1

In [9]:

```python
x=["Home Owner","Marital Status","Annual Income"]
y=["Yes","No"]
all_inputs=df[x]
all_classes=df["Defaulted Borrower"]
```

In [13]:

```python
(x_train,x_test,y_train,y_test)=train_test_split(all_inputs,all_classes,test_size=0.
```

In [11]:

```python
clf=DecisionTreeClassifier(random_state=0)
```

In [14]:

```python
clf.fit(x_train,y_train)
```

Out[14]:

```
DecisionTreeClassifier(random_state=0)
```

In a Jupyter environment, please rerun this cell to show the HTML representation or trust the notebook.
On GitHub, the HTML representation is unable to render, please try loading this page with nbviewer.org.

In [16]:

```python
score=clf.score(x_test,y_test)
print(score)
```

```
0.6666666666666666
```

In [ ]:

```python

```