

```
In [1]: 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]: df=pd.read_csv(r"C:\Users\pavan\Downloads\loan1 (1).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]: 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]: df['Marital Status'].value_counts()

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

In [5]: 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]: convert={'Home Owner':{'Yes:1',"No:0"}}
df=df.replace(convert)
df
```

Out[6]:

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

Out[7]:

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

```
In [12]: x=["Marital Status","Annual Income"]
y=["Yes","No"]
all_inputs=df[x]
all_classes=df["Defaulted Borrower"]
```

```
In [13]: (x_train,x_test,y_train,y_test)=train_test_split(all_inputs,all_classes,test_size=0.5)
```

```
In [14]: clf=DecisionTreeClassifier(random_state=0)
```

```
In [15]: clf.fit(x_train,y_train)
```

Out[15]:

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

```
In [16]: score=clf.score(x_test,y_test)
         print(score)
```

```
0.8
```

```
In [ ]:
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