```
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
import seaborn as sns
from sklearn.model_selection import train_test_split
from sklearn.linear_model import LogisticRegression
from sklearn.metrics import accuracy_score, mean_squared_error
from sklearn.svm import SVC
from sklearn.ensemble import RandomForestClassifier
from sklearn.preprocessing import StandardScaler
from xgboost import XGBClassifier


import warnings
warnings.simplefilter(action="ignore")
```

```
df = pd.read_csv("/content/Employee.csv")
df.head()
```

	Education	JoiningYear	City	PaymentTier	Age	Gender	EverBench
0	Bachelors	2017	Bangalore	3	34	Male	N
1	Bachelors	2013	Pune	1	28	Female	N
2	Bachelors	2014	New Delhi	3	38	Female	N
3	Masters	2016	Bangalore	3	27	Male	N
4	Masters	2017	Pune	3	24	Male	Y

Next steps: Generate code with df | New interactive sheet

```
df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 4653 entries, 0 to 4652
Data columns (total 9 columns):
 #   Column                     Non-Null Count  Dtype
---  ------                     --------------  -----
 0   Education                  4653 non-null   object
 1   JoiningYear                4653 non-null   int64
 2   City                       4653 non-null   object
 3   PaymentTier                4653 non-null   int64
 4   Age                        4653 non-null   int64
 5   Gender                     4653 non-null   object
 6   EverBenched                4653 non-null   object
 7   ExperienceInCurrentDomain  4653 non-null   int64
 8   LeaveOrNot                 4653 non-null   int64
dtypes: int64(5), object(4)
memory usage: 327.3+ KB
```

```
df.isnull().sum()
```

	0
Education	0
JoiningYear	0
City	0
PaymentTier	0
Age	0
Gender	0
EverBenched	0
ExperienceInCurrentDomain	0
LeaveOrNot	0

dtype: int64

```
df.describe()
```

	JoiningYear	PaymentTier	Age	ExperienceInCurrentDomain
count	4653.000000	4653.000000	4653.000000	4653.000000
mean	2015.062970	2.698259	29.393295	2.905652
std	1.863377	0.561435	4.826087	1.558240
min	2012.000000	1.000000	22.000000	0.000000
25%	2013.000000	3.000000	26.000000	2.000000
50%	2015.000000	3.000000	28.000000	3.000000
75%	2017.000000	3.000000	32.000000	4.000000
max	2018.000000	3.000000	41.000000	7.000000

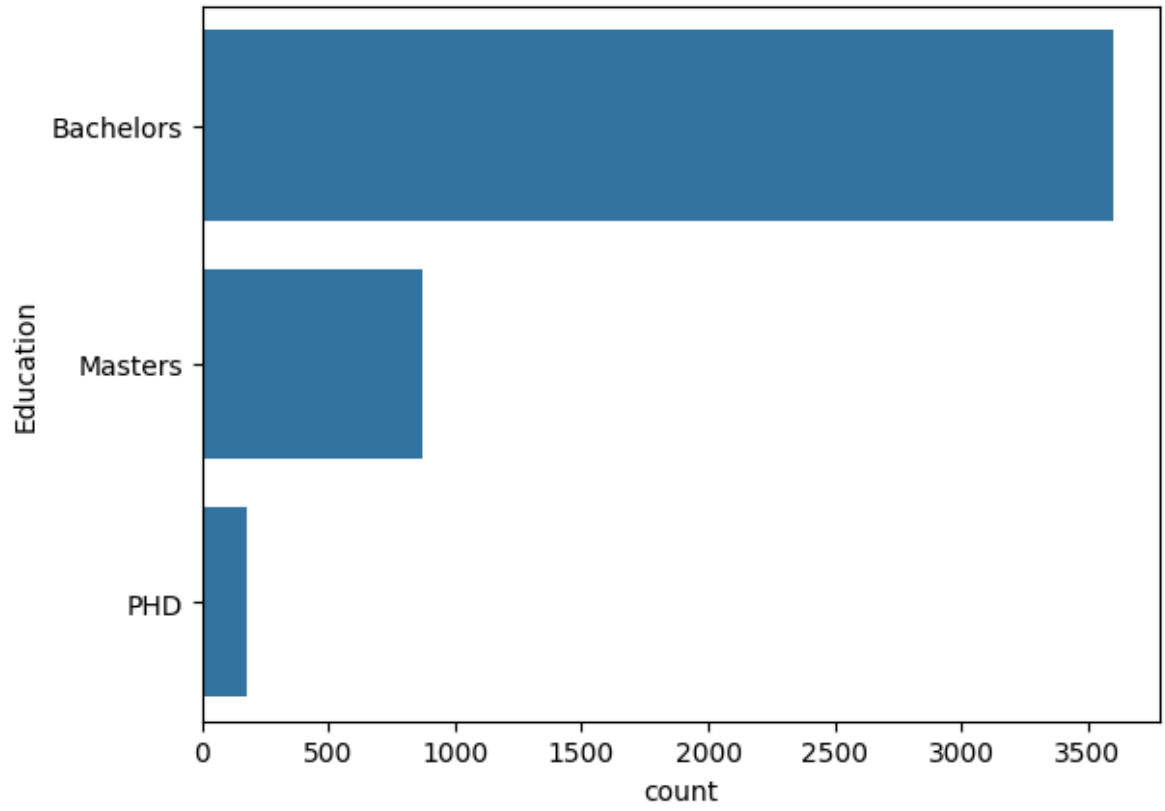
```
df["Education"].value_counts()
```

Education	count
Bachelors	3601
Masters	873
PHD	179

dtype: int64

```
sns.countplot(df["Education"])
```

```
<Axes: xlabel='count', ylabel='Education'>
```



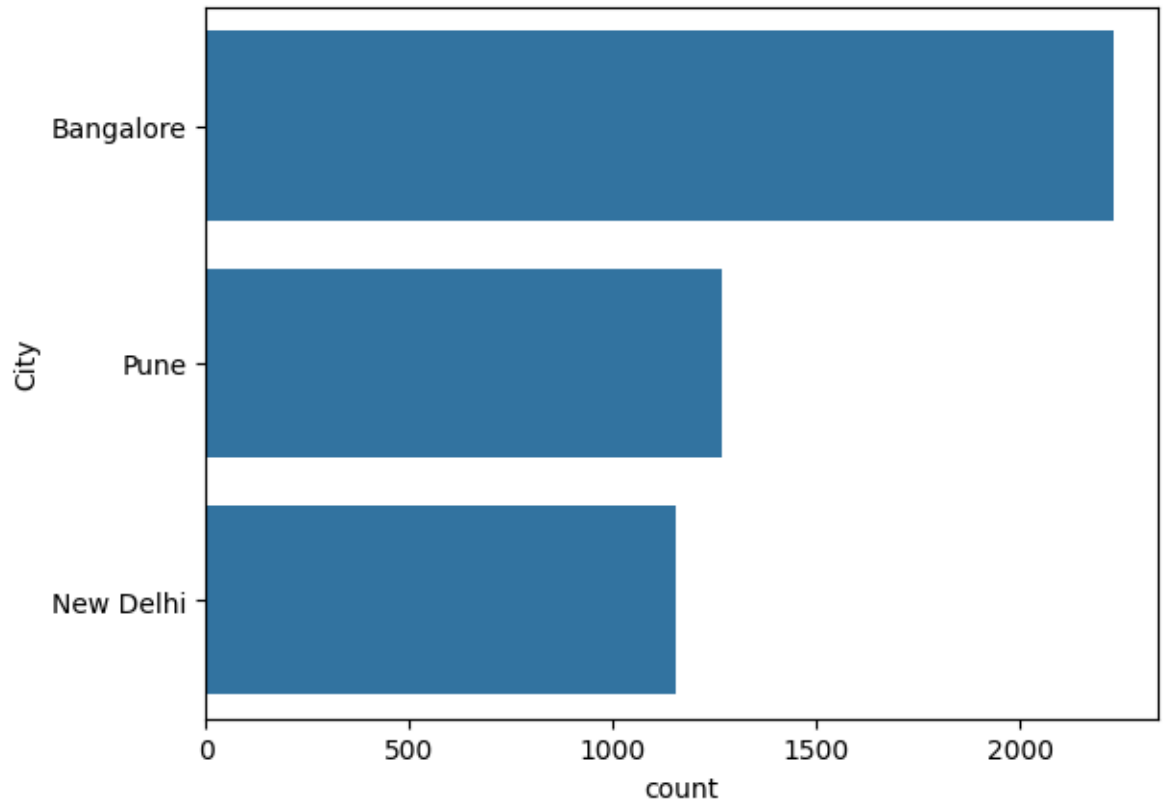

```
df["City"].value_counts()
```

City	count
Bangalore	2228
Pune	1268
New Delhi	1157

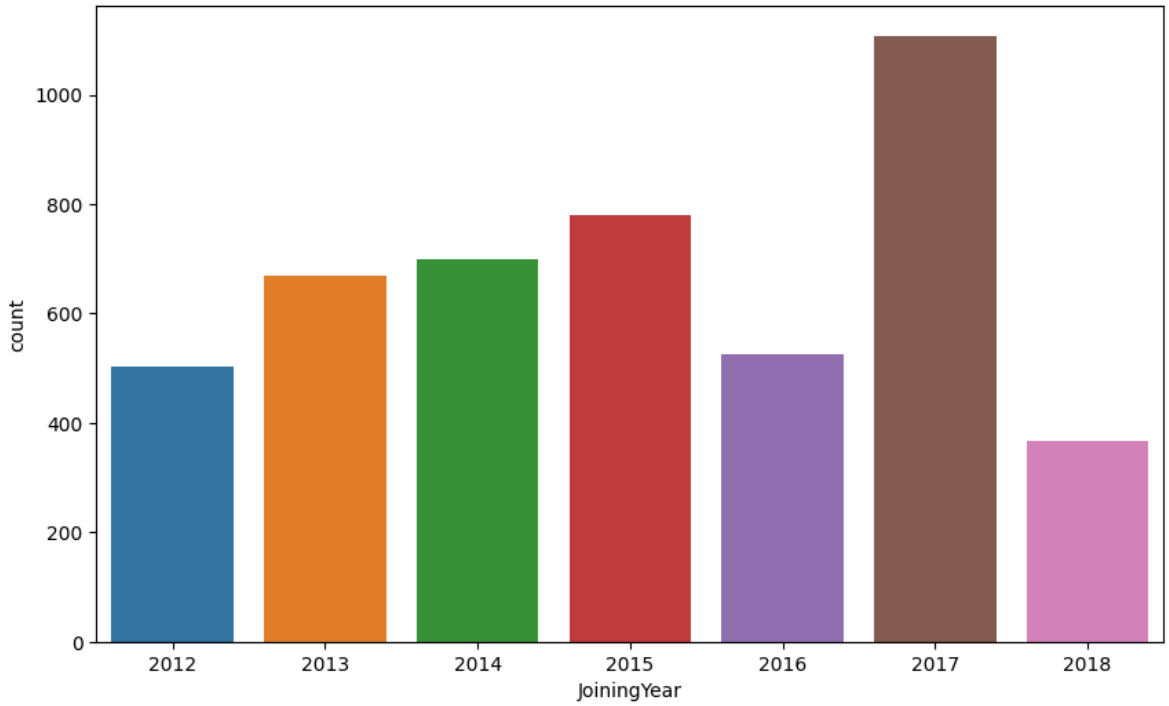
dtype: int64

```
sns.countplot(df["City"])
```

```
<Axes: xlabel='count', ylabel='City'>
```




```
plt.figure(figsize=(10,6))
sns.countplot(
    x="JoiningYear",
    data=df,
    hue="JoiningYear",
    palette="tab10",
    legend=False
)
plt.show()
```



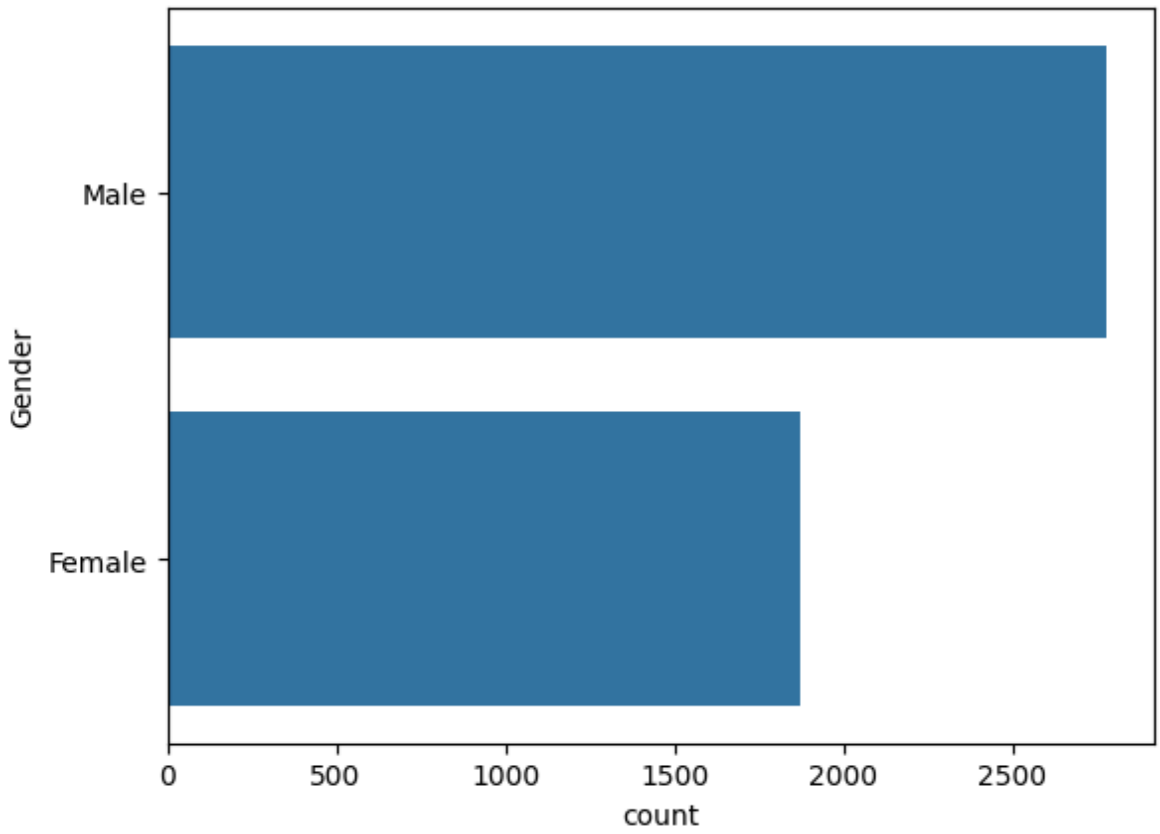

```
df["Gender"].value_counts()
```

Gender	count
Male	2778
Female	1875

dtype: int64

```
sns.countplot(df["Gender"])
```

```
<Axes: xlabel='count', ylabel='Gender'>
```

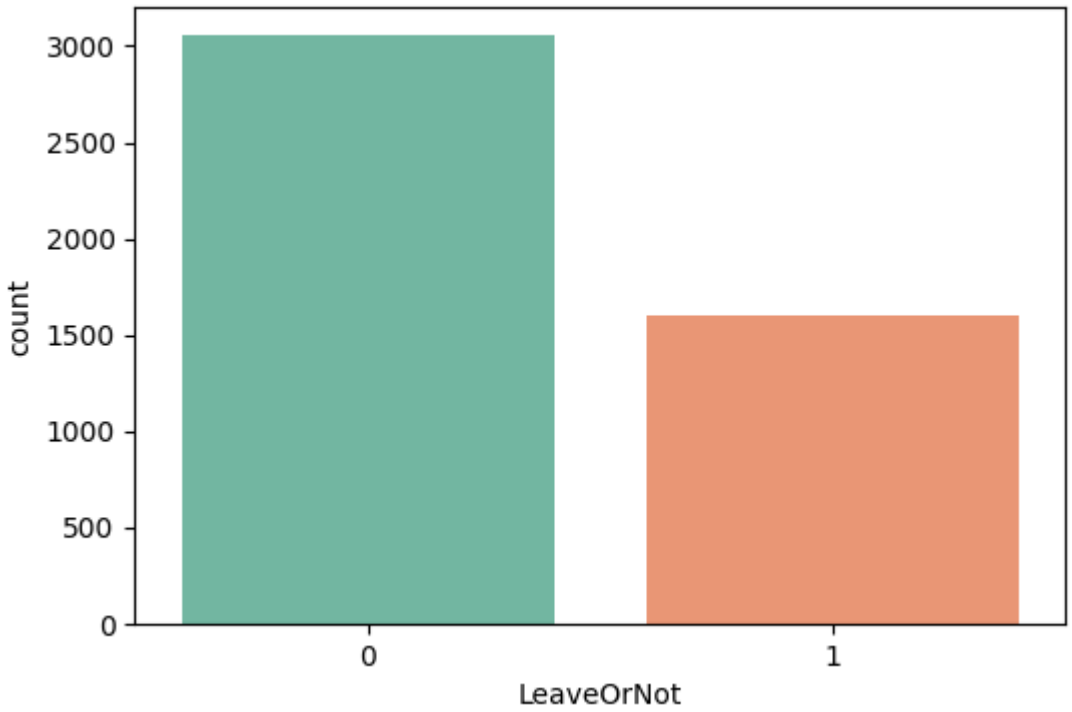



```
df["LeaveOrNot"].value_counts()
```

LeaveOrNot	count
0	3053
1	1600

dtype: int64

```
plt.figure(figsize=(6,4))
sns.countplot(x="LeaveOrNot", data=df, hue="LeaveOrNot", palette="Set
plt.show()
```




```
df.head()
```

	Education	JoiningYear	City	PaymentTier	Age	Gender	EverBench
0	Bachelors	2017	Bangalore	3	34	Male	N
1	Bachelors	2013	Pune	1	28	Female	N
2	Bachelors	2014	New Delhi	3	38	Female	N
3	Masters	2016	Bangalore	3	27	Male	N
4	Masters	2017	Pune	3	24	Male	Y

Next steps: Generate code with df | New interactive sheet

```
df = pd.get_dummies(df,["Education", "City", "Gender", "EverBenched"]
```

```
df.head()
```

	JoiningYear	PaymentTier	Age	ExperienceInCurrentDomain	LeaveOrNot
0	2017	3	34	0	0
1	2013	1	28	3	1
2	2014	3	38	2	0
3	2016	3	27	5	1
4	2017	3	24	2	1

Next steps: Generate code with df | New interactive sheet

```
df.head()
```

	JoiningYear	PaymentTier	Age	ExperienceInCurrentDomain	LeaveOrNot
0	2017	3	34	0	0
1	2013	1	28	3	1
2	2014	3	38	2	0
3	2016	3	27	5	1
4	2017	3	24	2	1

Next steps: Generate code with df | New interactive sheet

```
x = df.drop(["LeaveOrNot"], axis = 1)
y = df["LeaveOrNot"]
```

```
x.head()
```

	JoiningYear	PaymentTier	Age	ExperienceInCurrentDomain	Education_
0	2017	3	34	0	
1	2013	1	28	3	
2	2014	3	38	2	
3	2016	3	27	5	
4	2017	3	24	2	

Next steps: Generate code with x | New interactive sheet

```
y.head()
```

	LeaveOrNot
0	0
1	1
2	0
3	1
4	1

dtype: int64

```
x_train, x_test, y_train, y_test = train_test_split(x,y,test_size=0.2
```

```
x_train.shape
```

```
(3722, 14)
```

```
x_test.shape
```

```
(931, 14)
```

Logistic Regression

```
lr = LogisticRegression()
lr.fit(x_train, y_train)
```

▾ LogisticRegression

```
LogisticRegression()
```

```
y_pred = lr.predict(x_test)
accuracy_score(y_pred, y_test)
```

```
0.7346938775510204
```

SVM (Support Vector Machine)

```
svm = SVC()
svm.fit(x_train, y_train)
```