Importing Libraries

In [1]:
```
import pandas as pd
import numpy as np
import matplotlib.pyplot as mlt
import seaborn as sns
from sklearn.model_selection import train_test_split
from sklearn.linear_model import LogisticRegression
from sklearn.metrics import accuracy_score
import warnings
warnings.filterwarnings("ignore")
```

Data Collection & Processing

In [2]:
```
# Importing the dataset
data= pd.read_csv("C:\\Users\\Lenovo\\Downloads\\Titanic-Dataset.csv")
data.head()
```

Out[2]:

	PassengerId	Survived	Pclass	Name	Sex	Age	SibSp	Parch	Ticket	Fare	Cabin
0	1	0	3	Braund, Mr. Owen Harris	male	22.0	1	0	A/5 21171	7.2500	NaN
1	2	1	1	Cumings, Mrs. John Bradley (Florence Briggs Th...	female	38.0	1	0	PC 17599	71.2833	C85
2	3	1	3	Heikkinen, Miss. Laina	female	26.0	0	0	STON/O2. 3101282	7.9250	NaN
3	4	1	1	Futrelle, Mrs. Jacques Heath (Lily May Peel)	female	35.0	1	0	113803	53.1000	C123
4	5	0	3	Allen, Mr. William Henry	male	35.0	0	0	373450	8.0500	NaN

In [3]:
```
 # No. of Rows and Columns
data.shape
```

Out[3]:
```
(891, 12)
```

In [4]:
```
# Info about the Data
data.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 891 entries, 0 to 890
Data columns (total 12 columns):
 #   Column       Non-Null Count  Dtype  
---  ------       --------------  -----  
 0   PassengerId  891 non-null    int64  
 1   Survived     891 non-null    int64  
 2   Pclass       891 non-null    int64  
 3   Name         891 non-null    object 
 4   Sex          891 non-null    object 
 5   Age          714 non-null    float64
 6   SibSp        891 non-null    int64  
 7   Parch        891 non-null    int64  
 8   Ticket       891 non-null    object 
 9   Fare         891 non-null    float64
 10  Cabin        204 non-null    object 
 11  Embarked     889 non-null    object 
dtypes: float64(2), int64(5), object(5)
memory usage: 83.7+ KB
```

In [5]:
```
# No. of missing values
data.isnull().sum()
```

Out[5]:
```
PassengerId      0
Survived         0
Pclass           0
Name             0
Sex              0
Age            177
SibSp            0
Parch            0
Ticket           0
Fare             0
Cabin          687
Embarked         2
dtype: int64
```

Handling the Missing Data

In [6]:
```
# Drop the cabin column from the df
data =data.drop(columns='Cabin',axis=1)
```

In [7]:
```
# Replacing the missing values in Age column with mean
data["Age"].fillna(data["Age"].mean(),inplace= True)
```

In [8]:
```
# Replacing the missing values iN Embarked column with
data["Embarked"].mode()
```

Out[8]:
```
0    S
Name: Embarked, dtype: object
```

In [9]:
```
data["Embarked"].fillna(data["Embarked"].mode()[0],inplace= True)
data.isnull().sum()
```

Out[9]:
```
PassengerId    0
Survived       0
Pclass         0
Name           0
Sex            0
Age            0
SibSp          0
Parch          0
Ticket         0
Fare           0
Embarked       0
dtype: int64
```

Data Analysis

In [10]:
```
data.describe()
```

Out[10]:

	PassengerId	Survived	Pclass	Age	SibSp	Parch	Fare
count	891.000000	891.000000	891.000000	891.000000	891.000000	891.000000	891.000000
mean	446.000000	0.383838	2.308642	29.699118	0.523008	0.381594	32.204208
std	257.353842	0.486592	0.836071	13.002015	1.102743	0.806057	49.693429
min	1.000000	0.000000	1.000000	0.420000	0.000000	0.000000	0.000000
25%	223.500000	0.000000	2.000000	22.000000	0.000000	0.000000	7.910400
50%	446.000000	0.000000	3.000000	29.699118	0.000000	0.000000	14.454200
75%	668.500000	1.000000	3.000000	35.000000	1.000000	0.000000	31.000000
max	891.000000	1.000000	3.000000	80.000000	8.000000	6.000000	512.329200

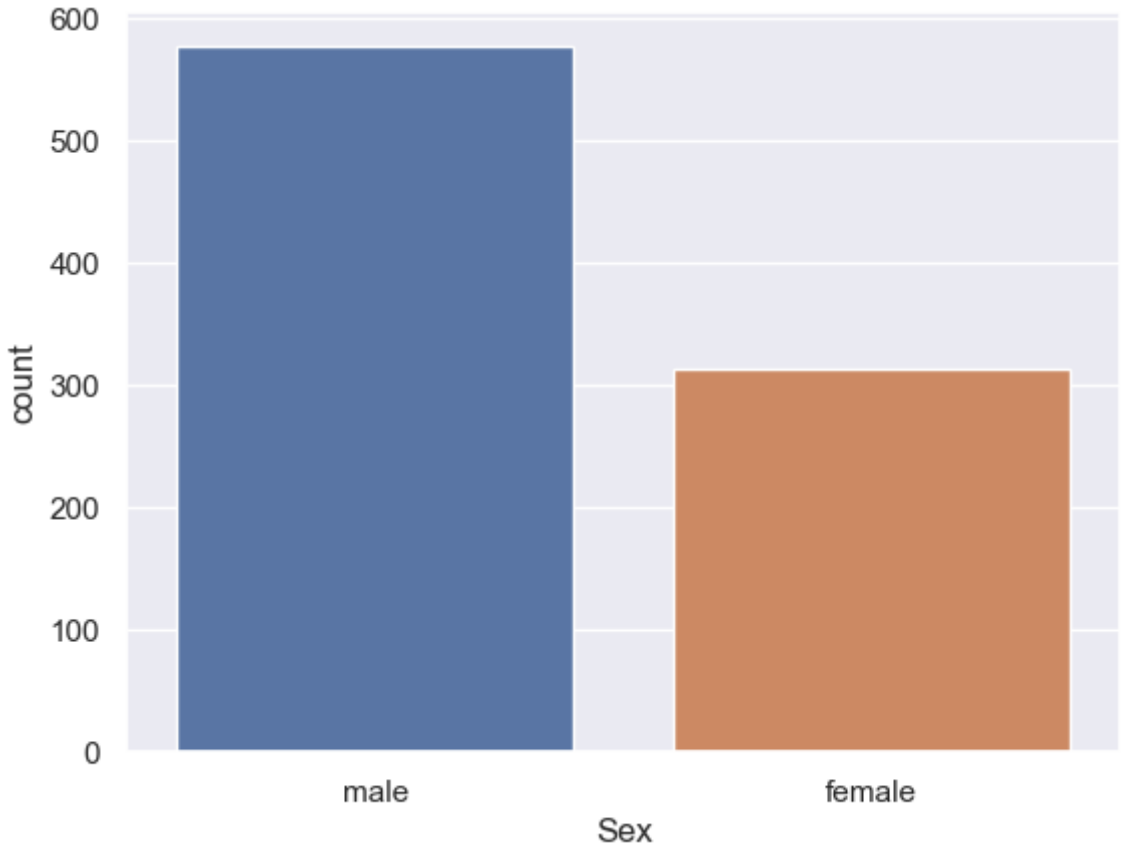
In [11]:
```
# TO know the count of people survived
data["Survived"].value_counts()
```

Out[11]:
```
Survived
0    549
1    342
Name: count, dtype: int64
```

Data Visualization

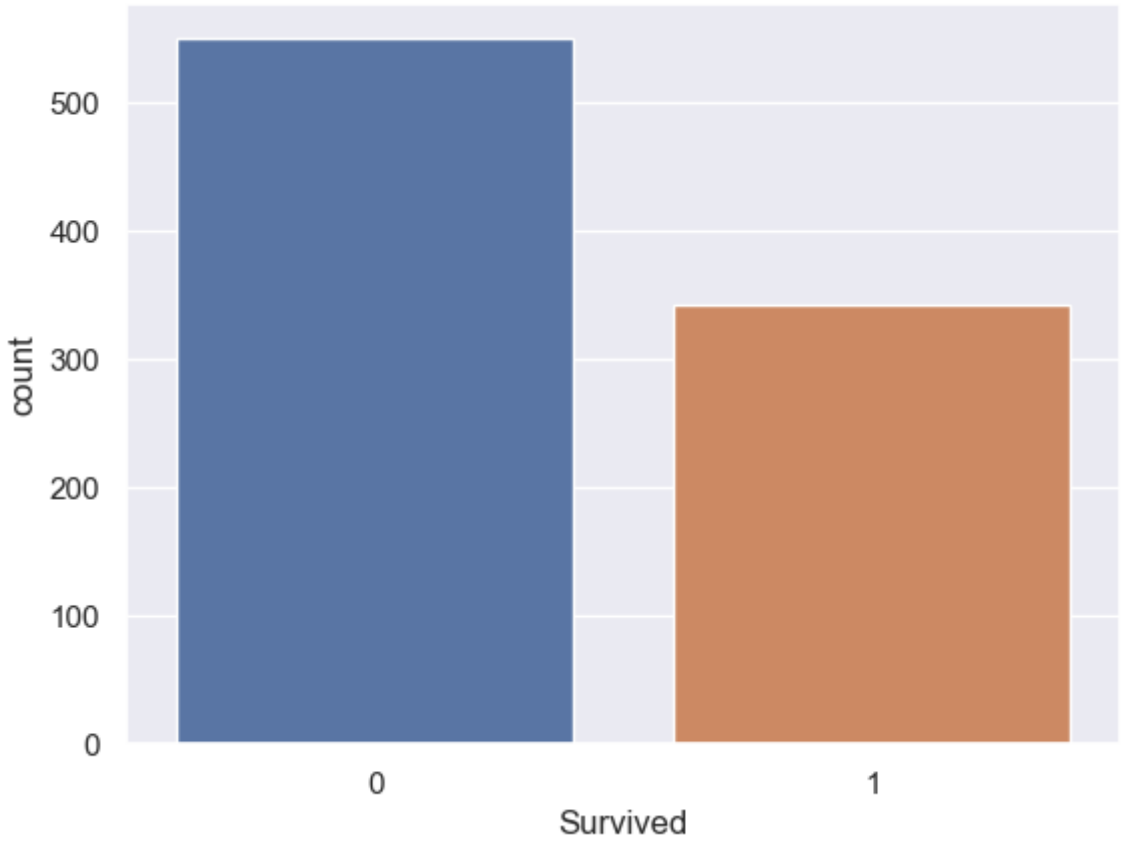
In [12]:
```
sns.set()
#Count plot on the basis of "Gender"
sns.countplot(data= data,x="Sex")
```

Out[12]:
```
<Axes: xlabel='Sex', ylabel='count'>
```



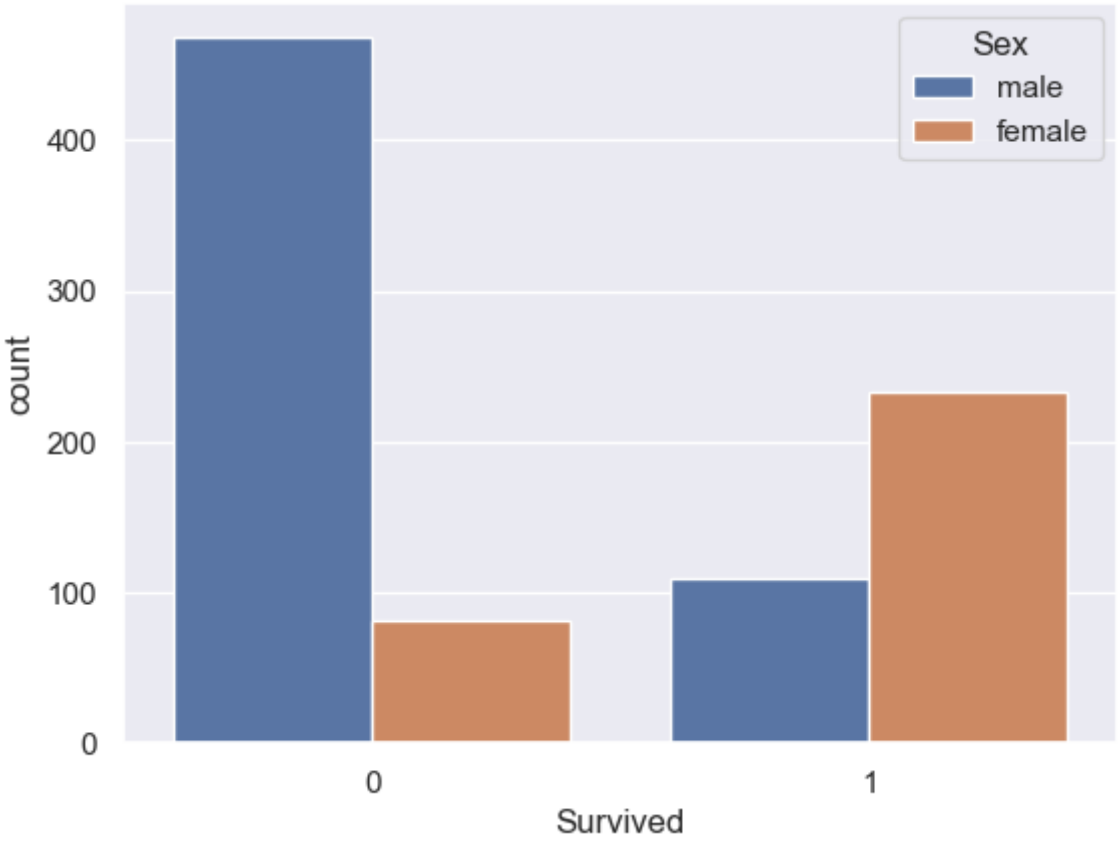
In [13]:
```
#Count plot on the basis of "Survived"
sns.countplot(data= data,x="Survived")
```

Out[13]:
```
<Axes: xlabel='Survived', ylabel='count'>
```



In [14]:
```
#Count plot on the basis of "Survived" and  "Gender"
sns.countplot(data= data,x="Survived",hue="Sex")
```

Out[14]:
```
<Axes: xlabel='Survived', ylabel='count'>
```



Encoding

In [15]:
```
# to know the value counts as per Gender
data["Sex"].value_counts()
```

Out[15]:
```
Sex
male      577
female    314
Name: count, dtype: int64
```

In [16]:
```
# to know the value counts as per Enbarked
data["Embarked"].value_counts()
```

Out[16]:
```
Embarked
S    646
C    168
Q     77
Name: count, dtype: int64
```

In [17]:
```
# Encoding the categotical columns
data.replace({"Sex":{"male":0,"female":1},"Embarked":{"S":0,"C":1,"Q":2}},inplace=
data.head()
```

Out[17]:

	PassengerId	Survived	Pclass	Name	Sex	Age	SibSp	Parch	Ticket	Fare	Embarke
0	1	0	3	Braund, Mr. Owen Harris	0	22.0	1	0	A/5 21171	7.2500	
1	2	1	1	Cumings, Mrs. John Bradley (Florence Briggs Th...	1	38.0	1	0	PC 17599	71.2833	
2	3	1	3	Heikkinen, Miss. Laina	1	26.0	0	0	STON/O2. 3101282	7.9250	
3	4	1	1	Futrelle, Mrs. Jacques Heath (Lily May Peel)	1	35.0	1	0	113803	53.1000	
4	5	0	3	Allen, Mr. William Henry	0	35.0	0	0	373450	8.0500	

Seperating Features and Targrts

In [18]:
```
x= data.drop(["PassengerId","Name","Survived","Ticket"],axis= 1)
y= data["Survived"]
```

In [19]:
```
x
```

Out[19]:

	Pclass	Sex	Age	SibSp	Parch	Fare	Embarked
0	3	0	22.000000	1	0	7.2500	0
1	1	1	38.000000	1	0	71.2833	1
2	3	1	26.000000	0	0	7.9250	0
3	1	1	35.000000	1	0	53.1000	0
4	3	0	35.000000	0	0	8.0500	0
...	...	...	...	...	...	...	...
886	2	0	27.000000	0	0	13.0000	0
887	1	1	19.000000	0	0	30.0000	0
888	3	1	29.699118	1	2	23.4500	0
889	1	0	26.000000	0	0	30.0000	1
890	3	0	32.000000	0	0	7.7500	2

891 rows × 7 columns

In [20]:
```
y
```

Out[20]:
```
0      0
1      1
2      1
3      1
4      0
      ..
886    0
887    1
888    0
889    1
890    0
Name: Survived, Length: 891, dtype: int64
```

Splitting the data into test data and train data

In [21]:
```
x_train,x_test,y_train,y_test=train_test_split(x,y,test_size=0.2)
```

Model Training

Logistic Regression

In [22]:
```
model = LogisticRegression()
model.fit(x_train,y_train)
```

Out[22]:
```
LogisticRegression()
```

Accuracy score

In [23]:
```
#Accuracy on the training data
x_train_prediction = model.predict(x_train)
training_data_accuracy = accuracy_score(y_train,x_train_prediction)
print("Accuracy on the training data is:",training_data_accuracy)
```

```
Accuracy on the training data is: 0.8103932584269663
```

In [24]:
```
#Accuracy on the test data
x_test_prediction = model.predict(x_test)
test_data_accuracy = accuracy_score(y_test,x_test_prediction)
print("Accuracy on the training data is:",test_data_accuracy)
```

```
Accuracy on the training data is: 0.7653631284916201
```

BUILDING A PREDICTIVE SYSTEM ON GIVING INPUT

In [25]:
```
input_data= (1,0,46,0,1,7.28,1)
#change the input array into numpy array
input_as_numpy =np.asarray(input_data)
```

In [26]:
```
#reshape the numpy array as we are predicting for only one instance
input_reshaped =input_as_numpy.reshape(1,-1)
prediction =model.predict(input_reshaped)
```

In [27]:
```
print(prediction)
if (prediction[0]==0):
    print("THE PERSON WON'T BE SAVED FROM SINKING.")
else:
    print("THE PERSON WILL BE SAVED FROM SINKING.")
```

```
[0]
THE PERSON WON'T BE SAVED FROM SINKING.
```

In [ ]: