In [3]:

```
import numpy as np
import pandas as pd
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
```

In [7]:

```
data=pd.read_csv(r"C:\Users\Divyam Chaturvedi\Desktop\Titanic data set\tested.csv")
```

In [8]:

```
data.head()
```

Out[8]:

	PassengerId	Survived	Pclass	Name	Sex	Age	SibSp	Parch	Ticket	Fare	Cabin	Embarked
0	892	0	3	Kelly, Mr. James	male	34.5	0	0	330911	7.8292	NaN	Q
1	893	1	3	Wilkes, Mrs. James (Ellen Needs)	female	47.0	1	0	363272	7.0000	NaN	S
2	894	0	2	Myles, Mr. Thomas Francis	male	62.0	0	0	240276	9.6875	NaN	Q
3	895	0	3	Wirz, Mr. Albert	male	27.0	0	0	315154	8.6625	NaN	S
4	896	1	3	Hirvonen, Mrs. Alexander (Helga E Lindqvist)	female	22.0	1	1	3101298	12.2875	NaN	S

In [9]:

```
data.shape
```

Out[9]:

```
(418, 12)
```

In [10]:

```
data.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 418 entries, 0 to 417
Data columns (total 12 columns):
 #   Column       Non-Null Count  Dtype  
---  ------       --------------  -----  
 0   PassengerId  418 non-null    int64  
 1   Survived     418 non-null    int64  
 2   Pclass       418 non-null    int64  
 3   Name         418 non-null    object 
 4   Sex          418 non-null    object 
 5   Age          332 non-null    float64
 6   SibSp        418 non-null    int64  
 7   Parch        418 non-null    int64  
 8   Ticket       418 non-null    object 
 9   Fare         417 non-null    float64
 10  Cabin        91 non-null     object 
 11  Embarked     418 non-null    object 
dtypes: float64(2), int64(5), object(5)
memory usage: 39.3+ KB
```

In [11]:

```
data.isnull().sum()
```

Out[11]:

```
PassengerId      0
Survived         0
Pclass           0
Name             0
Sex              0
Age             86
SibSp            0
Parch            0
Ticket           0
Fare             1
Cabin          327
Embarked         0
dtype: int64
```

In [12]:
```
data=data.drop(columns='Cabin',axis=1)
```

In [13]:
```
data['Age'].fillna(data['Age'].mean(),inplace=True)
```

In [14]:
```
data['Fare'].fillna(data['Fare'].mode()[0],inplace=True)
```

In [15]:
```
data.isnull().sum().sum()
```

Out[15]:
```
0
```

In [16]:
```
data['Survived'].value_counts()
```

Out[16]:
```
0    266
1    152
Name: Survived, dtype: int64
```

In [19]:
```
data.describe()
```

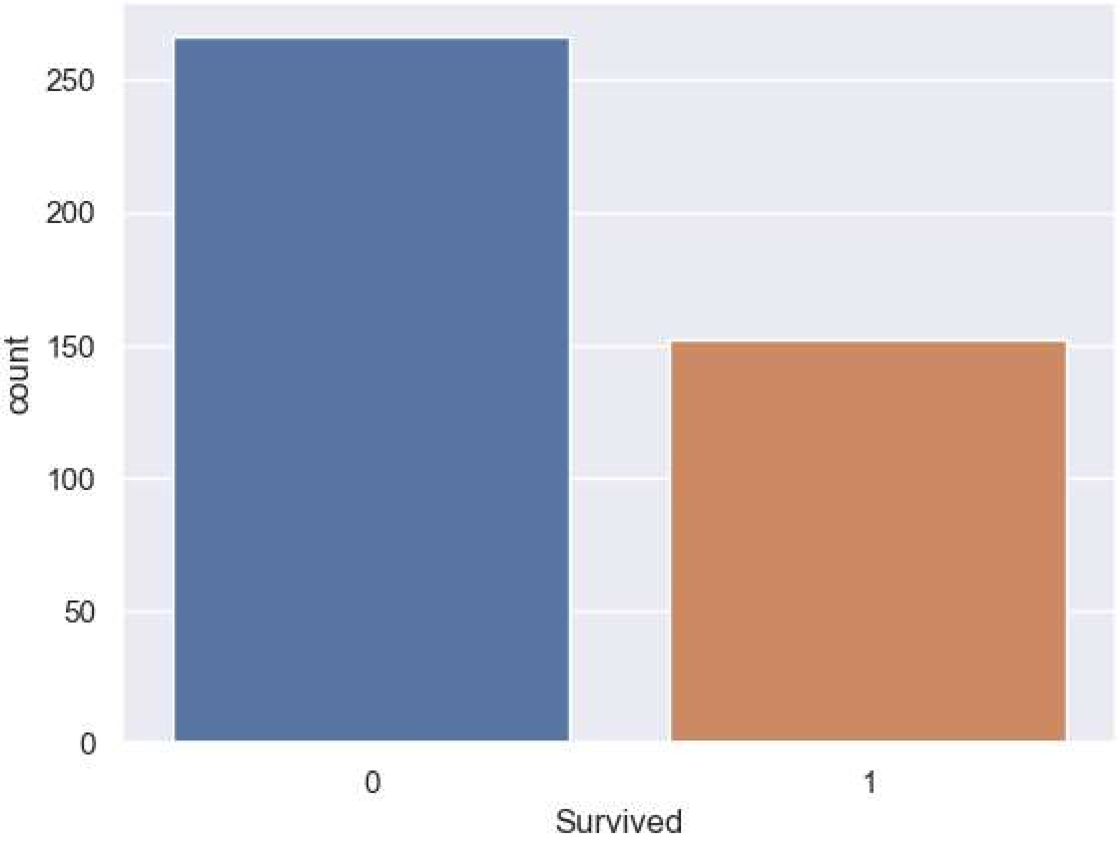
Out[19]:

	PassengerId	Survived	Pclass	Age	SibSp	Parch	Fare
count	418.000000	418.000000	418.000000	418.000000	418.000000	418.000000	418.000000
mean	1100.500000	0.363636	2.265550	30.272590	0.447368	0.392344	35.560497
std	120.810458	0.481622	0.841838	12.634534	0.896760	0.981429	55.857145
min	892.000000	0.000000	1.000000	0.170000	0.000000	0.000000	0.000000
25%	996.250000	0.000000	1.000000	23.000000	0.000000	0.000000	7.895800
50%	1100.500000	0.000000	3.000000	30.272590	0.000000	0.000000	14.454200
75%	1204.750000	1.000000	3.000000	35.750000	1.000000	0.000000	31.471875
max	1309.000000	1.000000	3.000000	76.000000	8.000000	9.000000	512.329200

In [20]:
```
sns.set()
```

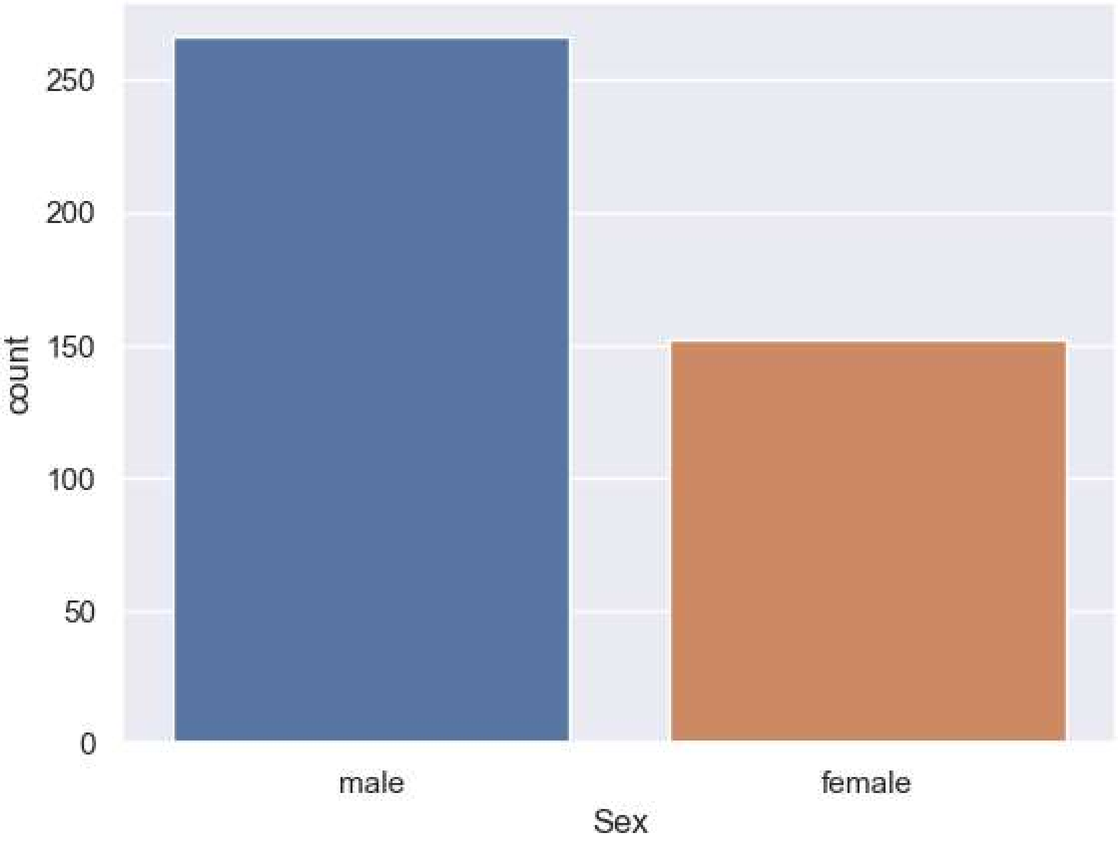
In [21]:
```
sns.countplot(x='Survived',data=data)
```

Out[21]:
```
<Axes: xlabel='Survived', ylabel='count'>
```



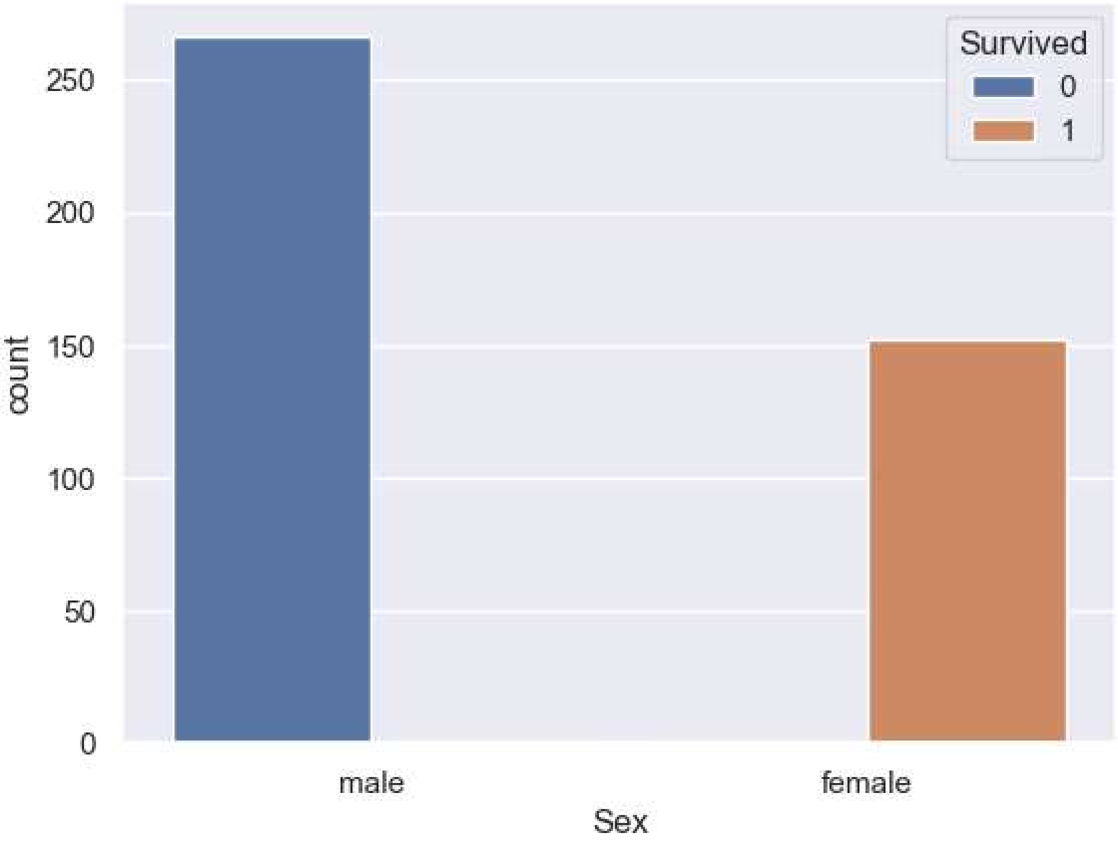
```
In [24]:  sns.countplot(x='Sex',data=data)
```

```
Out[24]: <Axes: xlabel='Sex', ylabel='count'>
```



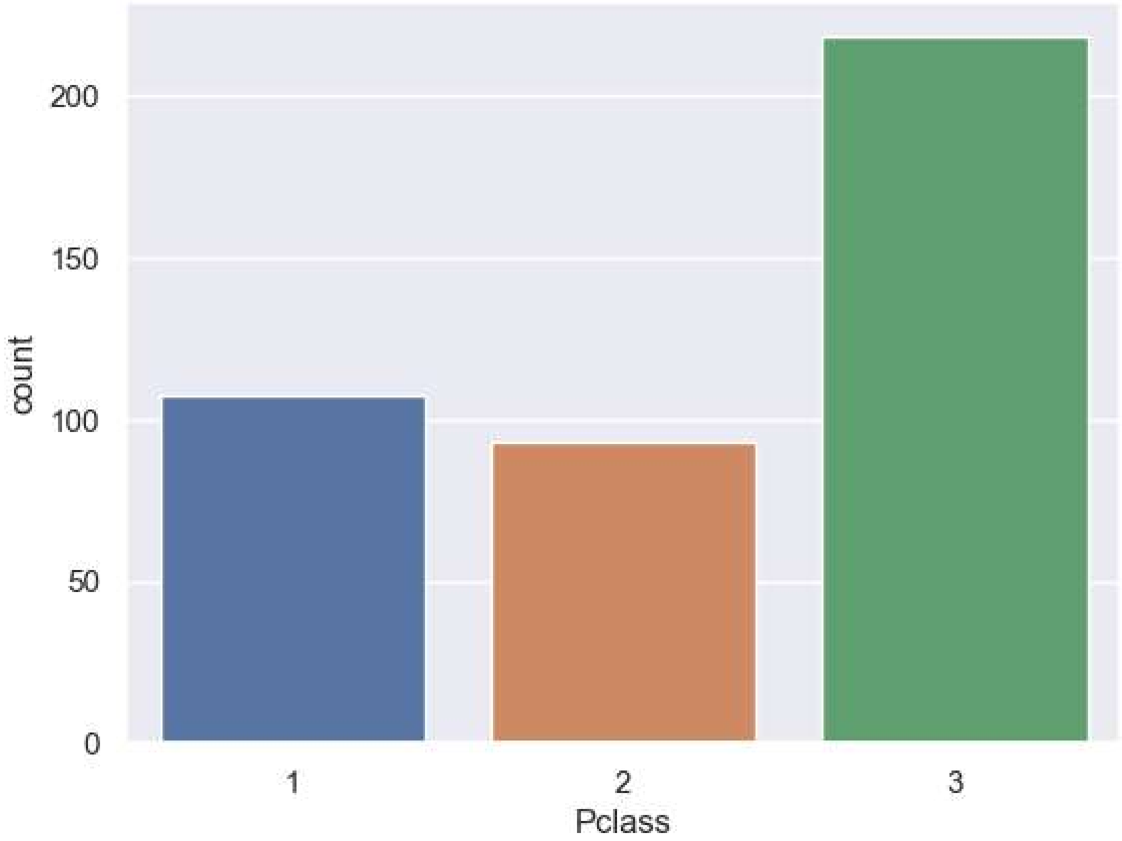
```
In [25]:  sns.countplot(x='Sex',hue='Survived',data=data)
```

```
Out[25]: <Axes: xlabel='Sex', ylabel='count'>
```



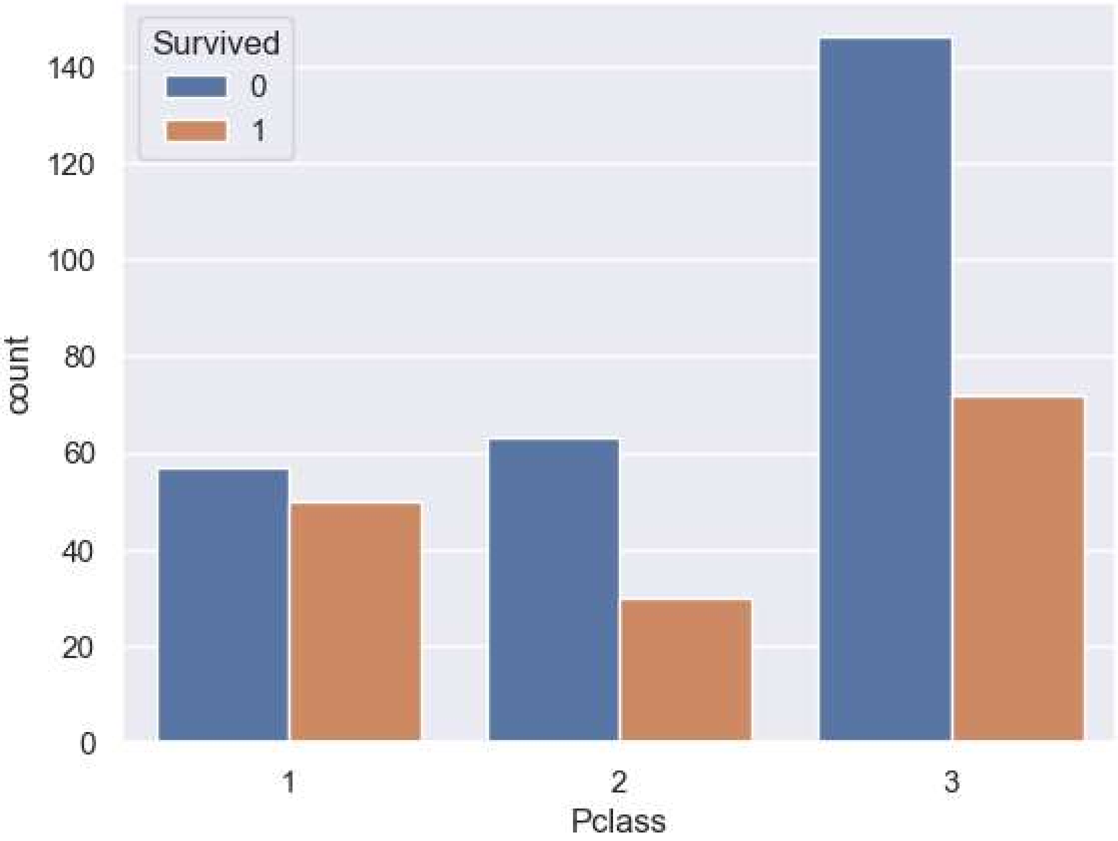
```
In [26]:  sns.countplot(x='Pclass',data=data)
```

```
Out[26]: <Axes: xlabel='Pclass', ylabel='count'>
```



```
In [27]:  sns.countplot(x='Pclass',hue='Survived',data=data)
```

```
Out[27]: <Axes: xlabel='Pclass', ylabel='count'>
```



```
In [28]:  data['Sex'].value_counts()
```

```
Out[28]: male      266
         female    152
         Name: Sex, dtype: int64
```

In [29]:

```
data['Embarked'].value_counts()
```

Out[29]:

```
S    270
C    102
Q     46
Name: Embarked, dtype: int64
```

In [30]:

```
data.replace({'Sex':{'male':0,'female':1},'Embarked':{'S':0,'C':1,'Q':2}},inplace=True)
```

In [31]:

```
data
```

Out[31]:

	PassengerId	Survived	Pclass	Name	Sex	Age	SibSp	Parch	Ticket	Fare	Embarked
0	892	0	3	Kelly, Mr. James	0	34.50000	0	0	330911	7.8292	2
1	893	1	3	Wilkes, Mrs. James (Ellen Needs)	1	47.00000	1	0	363272	7.0000	0
2	894	0	2	Myles, Mr. Thomas Francis	0	62.00000	0	0	240276	9.6875	2
3	895	0	3	Wirz, Mr. Albert	0	27.00000	0	0	315154	8.6625	0
4	896	1	3	Hirvonen, Mrs. Alexander (Helga E Lindqvist)	1	22.00000	1	1	3101298	12.2875	0
...	...	...	...	...	...	...	...	...	...	...	...
413	1305	0	3	Spector, Mr. Woolf	0	30.27259	0	0	A.5. 3236	8.0500	0
414	1306	1	1	Oliva y Ocana, Dona. Fermina	1	39.00000	0	0	PC 17758	108.9000	1
415	1307	0	3	Saether, Mr. Simon Sivertsen	0	38.50000	0	0	SOTON/O.Q. 3101262	7.2500	0
416	1308	0	3	Ware, Mr. Frederick	0	30.27259	0	0	359309	8.0500	0
417	1309	0	3	Peter, Master. Michael J	0	30.27259	1	1	2668	22.3583	1

418 rows × 11 columns

In [32]:
```
X=data.drop(columns=['PassengerId','Name','Ticket'],axis=1)
```

In [33]:
```
Y=data['Survived']
```

In [34]:
```
print(X)
```

```
     Survived  Pclass  Sex       Age  SibSp  Parch      Fare  Embarked
0           0       3    0  34.50000      0      0    7.8292         2
1           1       3    1  47.00000      1      0    7.0000         0
2           0       2    0  62.00000      0      0    9.6875         2
3           0       3    0  27.00000      0      0    8.6625         0
4           1       3    1  22.00000      1      1   12.2875         0
..        ...     ...  ...       ...    ...    ...       ...       ...
413         0       3    0  30.27259      0      0    8.0500         0
414         1       1    1  39.00000      0      0  108.9000         1
415         0       3    0  38.50000      0      0    7.2500         0
416         0       3    0  30.27259      0      0    8.0500         0
417         0       3    0  30.27259      1      1   22.3583         1

[418 rows x 8 columns]
```

In [35]:
```
print(Y)
```

```
0      0
1      1
2      0
3      0
4      1
      ..
413    0
414    1
415    0
416    0
417    0
Name: Survived, Length: 418, dtype: int64
```

In [36]:

```
X_train,X_test,Y_train,Y_test=train_test_split(X,Y,test_size=0.2,random_state=2)
```

In [37]:

```
print(X.shape,X_train.shape,X_test.shape)
```

```
(418, 8) (334, 8) (84, 8)
```

In [38]:

```
model=LogisticRegression()
```

In [39]:

```
model.fit(X_train,Y_train)
```

```
C:\ProgramData\anaconda3\Lib\site-packages\sklearn\linear_model\_logistic.py:458: ConvergenceWarning: lb
fgs failed to converge (status=1):
STOP: TOTAL NO. of ITERATIONS REACHED LIMIT.

Increase the number of iterations (max_iter) or scale the data as shown in:
    https://scikit-learn.org/stable/modules/preprocessing.html (https://scikit-learn.org/stable/modules/
preprocessing.html)
Please also refer to the documentation for alternative solver options:
    https://scikit-learn.org/stable/modules/linear_model.html#logistic-regression (https://scikit-learn.
org/stable/modules/linear_model.html#logistic-regression)
  n_iter_i = _check_optimize_result(
```

Out[39]:

```
▾ LogisticRegression

LogisticRegression()
```

In [40]:

```
X_train_prediction=model.predict(X_train)
```

In [41]:

```
print(X_train_prediction)
```

```
[1 1 0 0 1 1 0 0 0 1 0 0 1 0 0 0 1 0 1 0 1 0 1 1 0 0 0 0 0 1 0 0 0 0 0 0 0
 1 1 1 0 0 0 1 0 0 0 1 0 1 0 0 0 0 0 0 0 0 1 0 0 0 1 0 0 1 0 1 0 1 1 1 0 1
 0 1 0 0 0 0 0 0 0 0 0 0 0 1 1 0 1 1 0 1 0 0 0 0 0 0 0 1 0 1 1 1 0 1 0 1 0
 1 1 0 0 0 0 1 1 0 1 0 0 1 1 0 1 0 0 0 0 0 0 1 0 0 1 0 0 1 0 0 1 0 1 1 0 0
 0 0 1 1 1 0 0 1 1 0 1 1 0 0 0 0 0 0 0 1 1 0 0 1 1 1 1 0 1 0 0 0 0 1 0 1 1
 1 0 1 0 0 0 1 0 0 0 1 0 1 0 0 0 0 0 0 0 1 1 1 1 0 0 0 0 1 0 0 1 0 0 1 0 0
 1 0 1 0 0 0 0 0 1 0 0 0 1 1 0 0 0 1 1 0 1 0 0 0 0 0 1 0 0 0 0 0 1 0 0 0 1
 0 1 1 1 1 0 0 0 1 1 0 0 1 0 1 1 0 0 0 0 1 0 0 0 0 0 1 0 0 1 1 0 1 1 0 0 0
 0 0 0 0 1 0 0 0 0 0 1 0 1 0 0 0 0 0 0 0 0 0 1 0 0 0 1 1 0 1 1 0 0 0 1 1 1
 1]
```

In [42]:

```
train_data_accuracy=accuracy_score(Y_train,X_train_prediction)
```

In [43]:

```
print("Accuracy Score of training data: ",train_data_accuracy)
```

```
Accuracy Score of training data:  1.0
```

In [44]:

```
X_test_prediction=model.predict(X_test)
```

In [45]:

```
print(X_test_prediction)
```

```
[0 0 0 1 1 0 1 0 0 1 0 1 1 0 1 0 0 0 0 0 0 0 0 0 1 1 0 1 0 0 1 1 0 1 0 0 1
 1 0 0 0 0 1 1 0 0 1 0 1 0 0 0 1 1 1 0 0 1 0 0 0 0 0 0 1 0 1 1 1 1 1 1 0 0
 0 1 1 0 1 0 0 0 0 0]
```

In [46]:

```
test_data_accuracy=accuracy_score(Y_test,X_test_prediction)
```

In [47]:

```
print("Accuracy score of testing data:",test_data_accuracy)
```

```
Accuracy score of testing data: 1.0
```

In [ ]:

```
```