```
import numpy as np
import pandas as pd
import seaborn as sns
import matplotlib.pyplot as plt

dff=pd.read_csv("Titanic-Dataset.csv")

dff.head()
```

```
   PassengerId  Survived  Pclass  \
0            1         0       3
1            2         1       1
2            3         1       3
3            4         1       1
4            5         0       3

                                                Name     Sex   Age
SibSp  \
0                            Braund, Mr. Owen Harris    male  22.0
1
1  Cumings, Mrs. John Bradley (Florence Briggs Th...  female  38.0
1
2                             Heikkinen, Miss. Laina  female  26.0
0
3       Futrelle, Mrs. Jacques Heath (Lily May Peel)  female  35.0
1
4                           Allen, Mr. William Henry    male  35.0
0

   Parch            Ticket     Fare Cabin Embarked
0      0         A/5 21171   7.2500   NaN        S
1      0          PC 17599  71.2833   C85        C
2      0  STON/O2. 3101282   7.9250   NaN        S
3      0            113803  53.1000  C123        S
4      0            373450   8.0500   NaN        S
```

```
dff.describe()
```

```
       PassengerId    Survived      Pclass         Age       SibSp  \
count   891.000000  891.000000  891.000000  714.000000  891.000000
mean    446.000000    0.383838    2.308642   29.699118    0.523008
std     257.353842    0.486592    0.836071   14.526497    1.102743
min       1.000000    0.000000    1.000000    0.420000    0.000000
25%     223.500000    0.000000    2.000000   20.125000    0.000000
50%     446.000000    0.000000    3.000000   28.000000    0.000000
75%     668.500000    1.000000    3.000000   38.000000    1.000000
max     891.000000    1.000000    3.000000   80.000000    8.000000

            Parch        Fare
count  891.000000  891.000000
mean     0.381594   32.204208
```

```
std      0.806057   49.693429
min      0.000000    0.000000
25%      0.000000    7.910400
50%      0.000000   14.454200
75%      0.000000   31.000000
max      6.000000  512.329200
```

```
dff.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
```

```
dff.corr()
```

```
C:\Users\mrmel\AppData\Local\Temp\ipykernel_21864\788259740.py:1:
FutureWarning: The default value of numeric_only in DataFrame.corr is
deprecated. In a future version, it will default to False. Select only
valid columns or specify the value of numeric_only to silence this
warning.
  dff.corr()
```

```
             PassengerId  Survived    Pclass       Age     SibSp
Parch  \
PassengerId     1.000000 -0.005007 -0.035144  0.036847 -0.057527 -
0.001652
Survived       -0.005007  1.000000 -0.338481 -0.077221 -0.035322
0.081629
Pclass         -0.035144 -0.338481  1.000000 -0.369226  0.083081
0.018443
Age             0.036847 -0.077221 -0.369226  1.000000 -0.308247 -
0.189119
SibSp          -0.057527 -0.035322  0.083081 -0.308247  1.000000
0.414838
```

```
Parch          -0.001652  0.081629  0.018443 -0.189119  0.414838
1.000000
Fare            0.012658  0.257307 -0.549500  0.096067  0.159651
0.216225
```

```
                 Fare
PassengerId  0.012658
Survived     0.257307
Pclass      -0.549500
Age          0.096067
SibSp        0.159651
Parch        0.216225
Fare         1.000000
```

```
dff.corr().Parch.sort_values(ascending=False)
```

```
C:\Users\mrmel\AppData\Local\Temp\ipykernel_21864\3313888005.py:1:
FutureWarning: The default value of numeric_only in DataFrame.corr is
deprecated. In a future version, it will default to False. Select only
valid columns or specify the value of numeric_only to silence this
warning.
  dff.corr().Parch.sort_values(ascending=False)
```

```
Parch          1.000000
SibSp          0.414838
Fare           0.216225
Survived       0.081629
Pclass         0.018443
PassengerId   -0.001652
Age           -0.189119
Name: Parch, dtype: float64
```

```
dff.isnull().any()
```

```
PassengerId    False
Survived       False
Pclass         False
Name           False
Sex            False
Age             True
SibSp          False
Parch          False
Ticket         False
Fare           False
Cabin           True
Embarked        True
dtype: bool
```

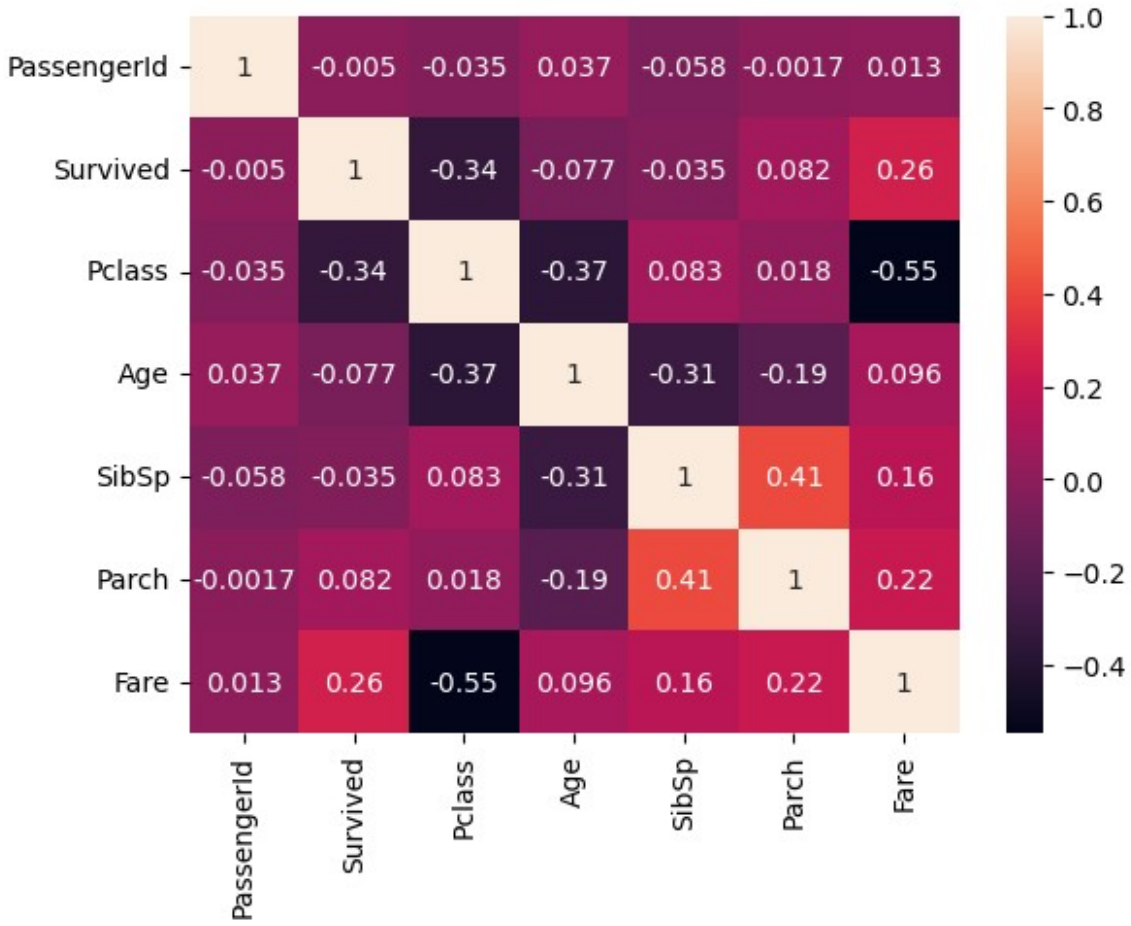
```
dff.isnull().sum()
```

```
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
```

```
sns.heatmap(dff.corr(),annot=True)
```

```
C:\Users\mrmel\AppData\Local\Temp\ipykernel_21864\2164039887.py:1:
FutureWarning: The default value of numeric_only in DataFrame.corr is
deprecated. In a future version, it will default to False. Select only
valid columns or specify the value of numeric_only to silence this
warning.
  sns.heatmap(dff.corr(),annot=True)

<Axes: >
```




```
dff=dff.drop(columns="Cabin",axis=1) #handling null values

dff["Age"].fillna(dff["Age"].mean(),inplace=True)

print(dff["Embarked"].mode())
```

```
0    S
Name: Embarked, dtype: object
```

```
print(dff["Embarked"].mode()[0])
```

```
S
```

```
dff["Embarked"].fillna(dff["Embarked"].mode()[0],inplace=True)

dff.isnull().sum()
```

```
PassengerId    0
Survived       0
Pclass         0
Name           0
Sex            0
Age            0
```

```
SibSp          0
Parch          0
Ticket         0
Fare           0
Embarked       0
dtype: int64
```

```
dff["Survived"].value_counts()
```

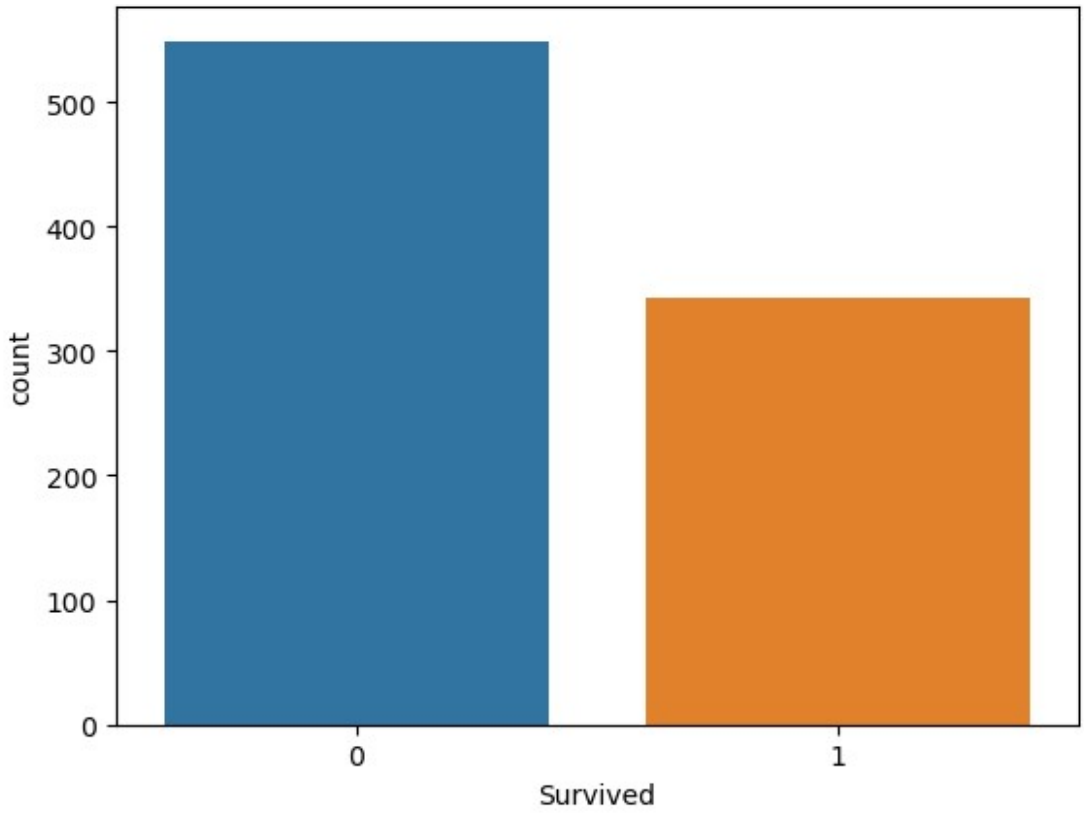
```
0    549
1    342
Name: Survived, dtype: int64
```

```
dff["Sex"].value_counts()
```

```
male      577
female    314
Name: Sex, dtype: int64
```

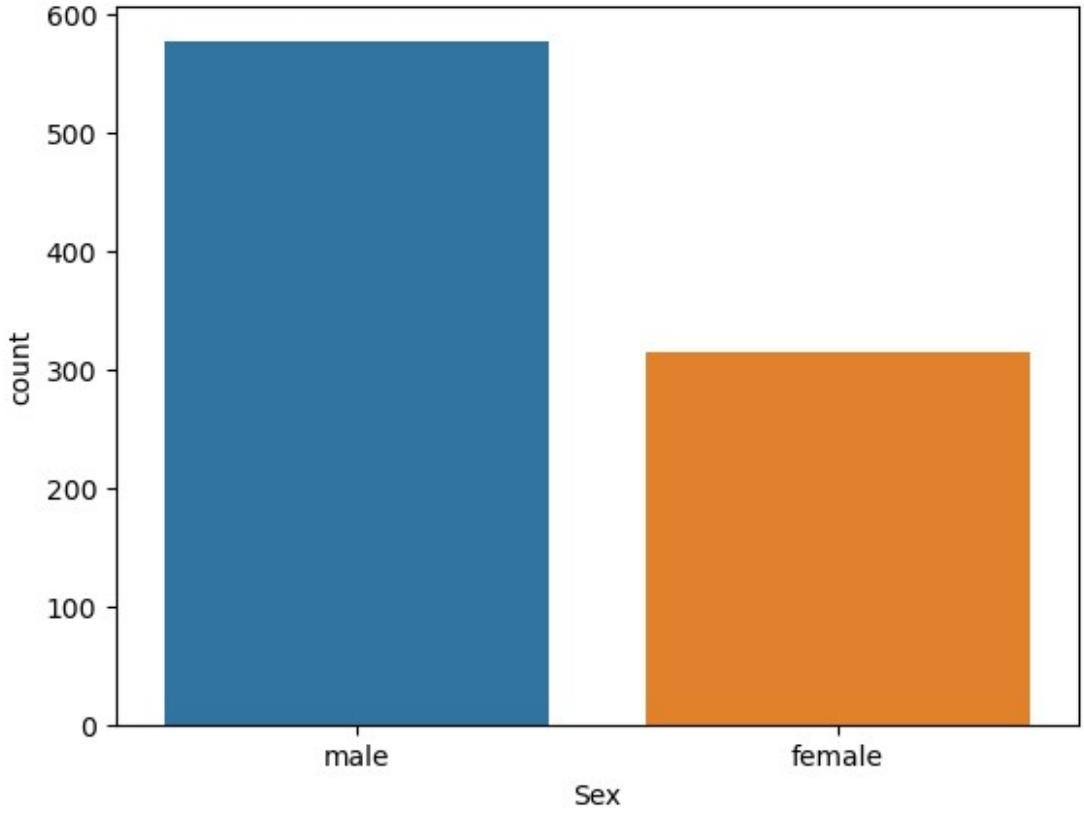
```
sns.countplot(x="Survived",data=dff)
```

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



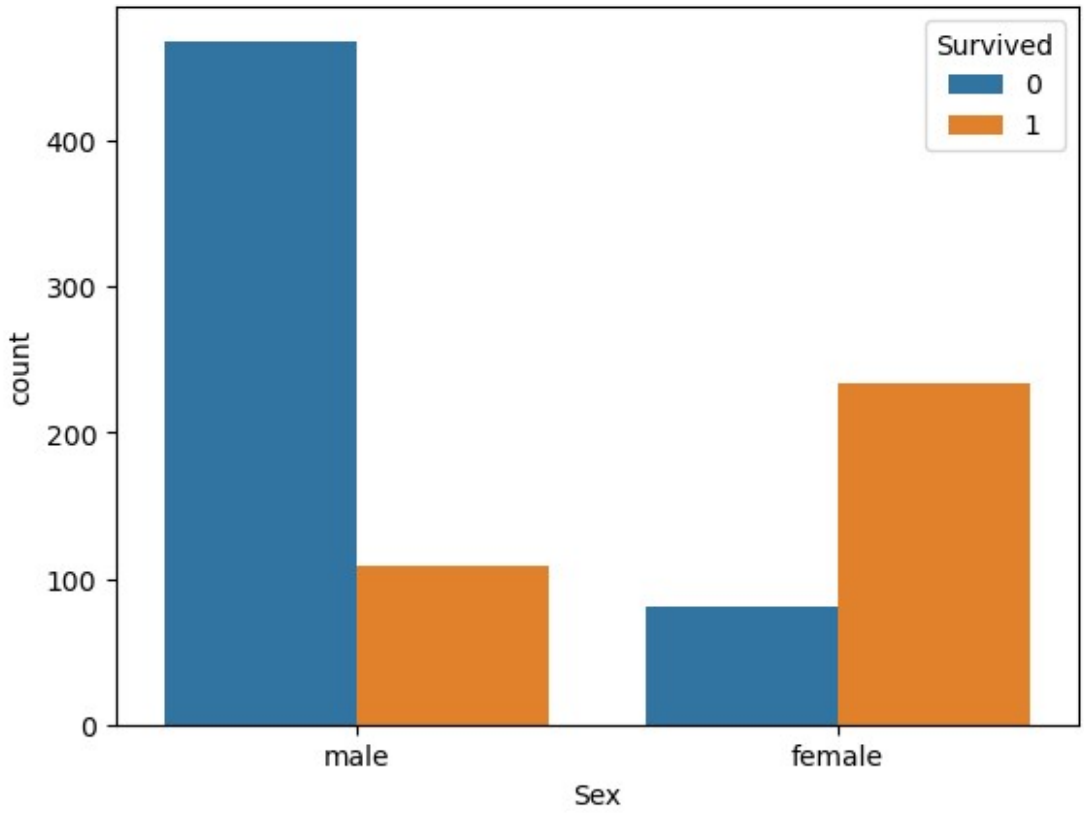

```
sns.countplot(x="Sex",data=dff)
```

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



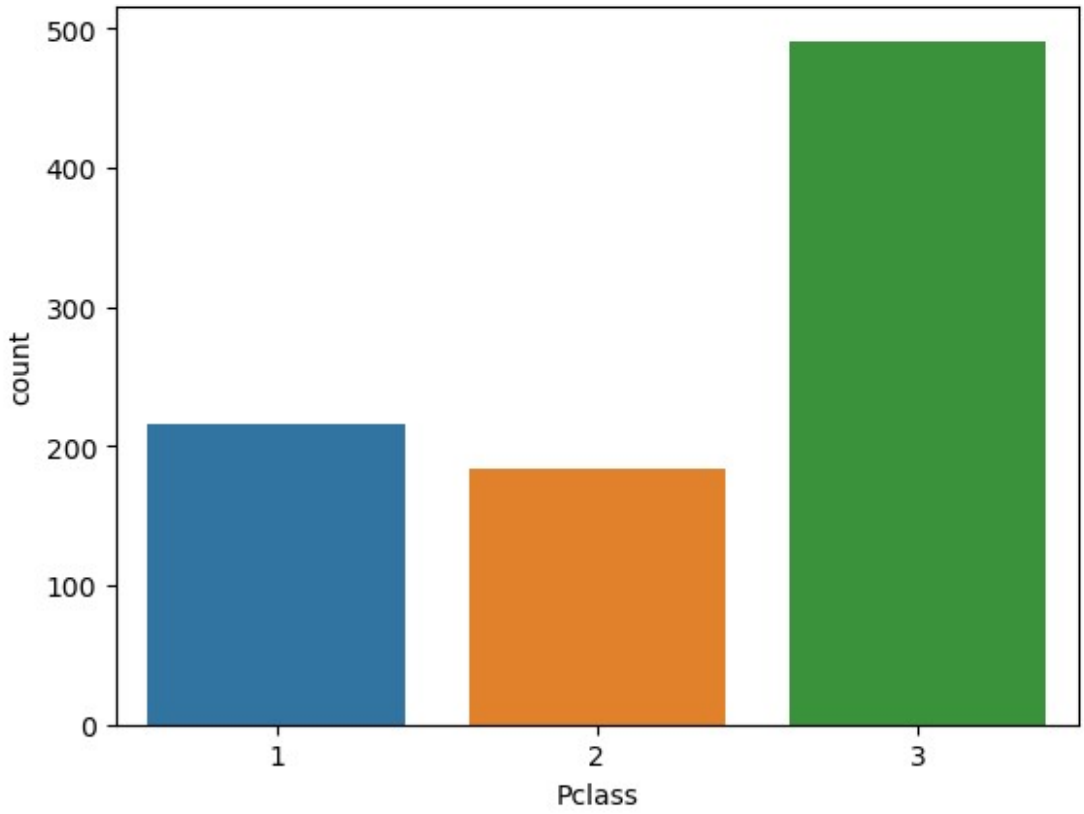

```
sns.countplot(x="Sex",hue="Survived",data=dff)
```

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



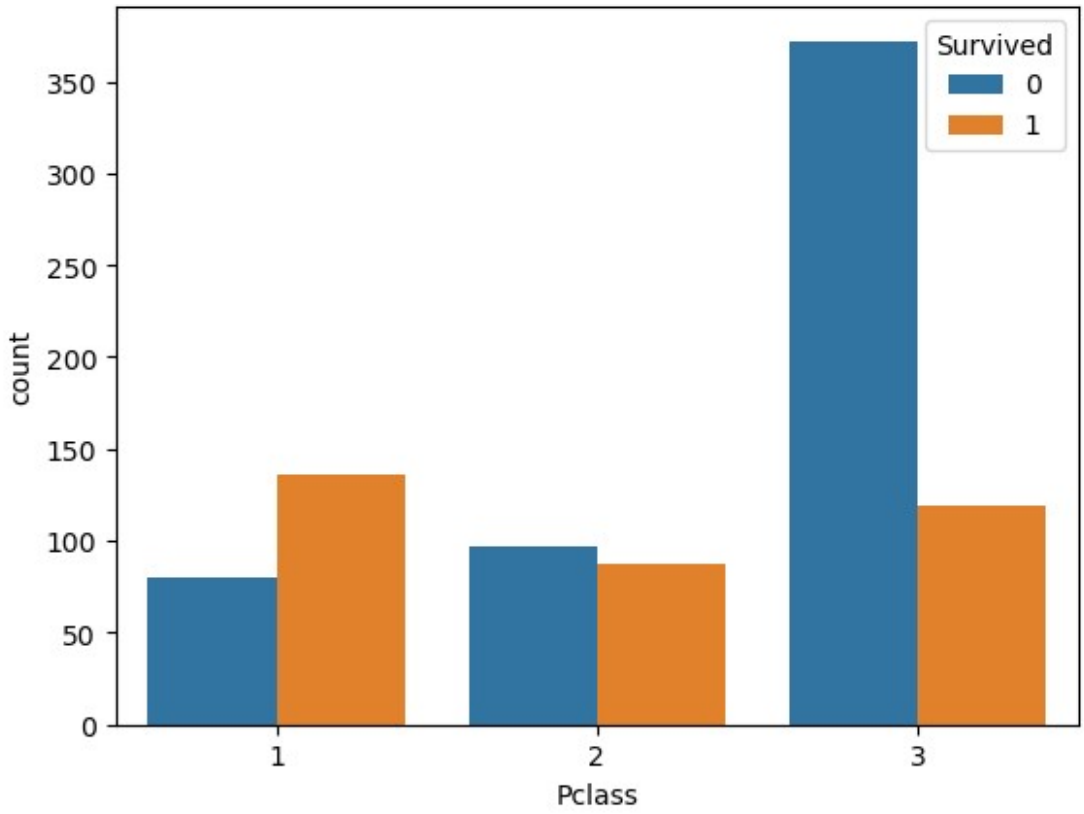

```
sns.countplot(x="Pclass",data=dff)
```

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



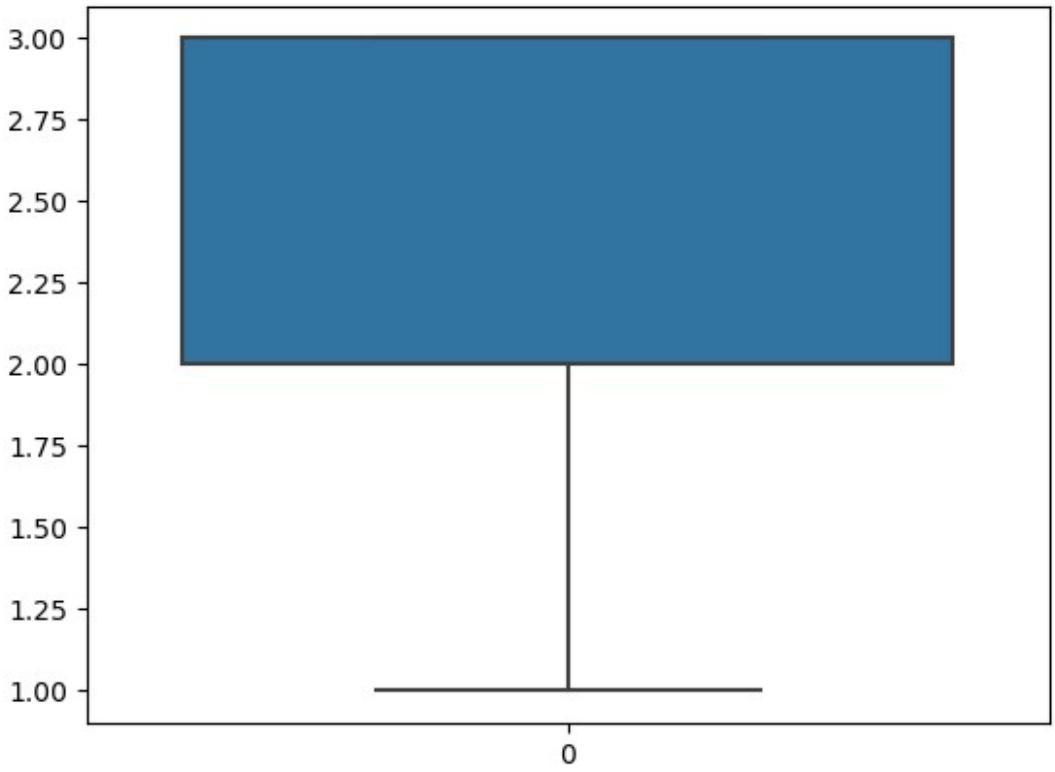

```
sns.countplot(x="Pclass",hue="Survived",data=dff)
```

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



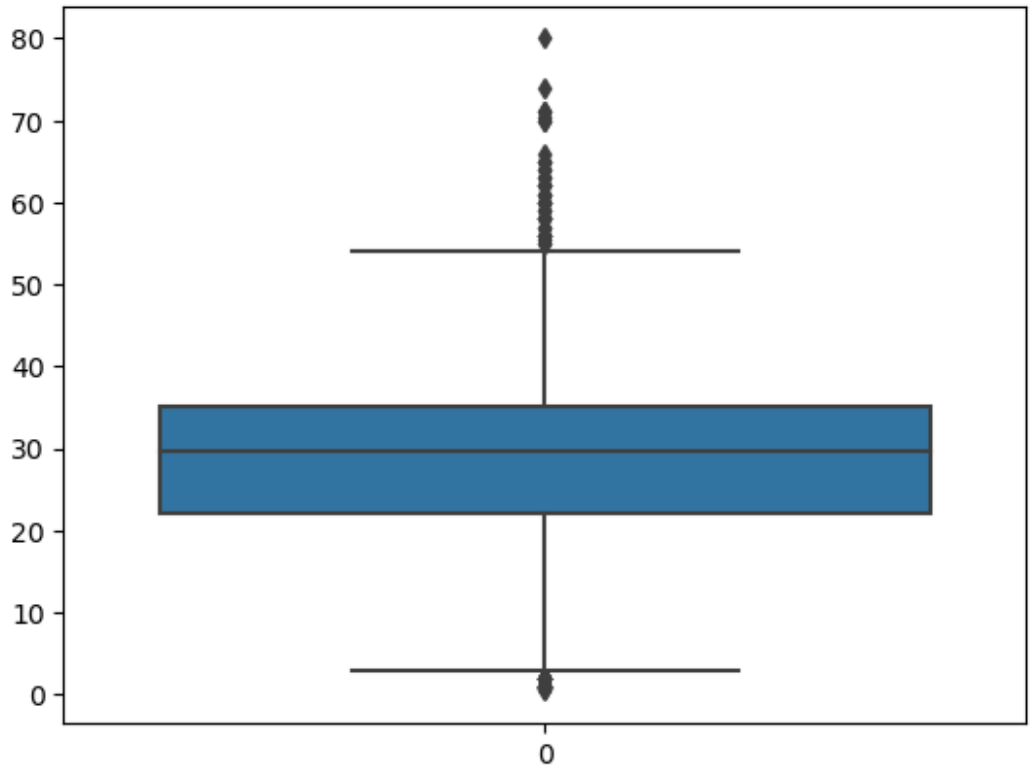

```
sns.boxplot(dff.Pclass)
```

```
<Axes: >
```



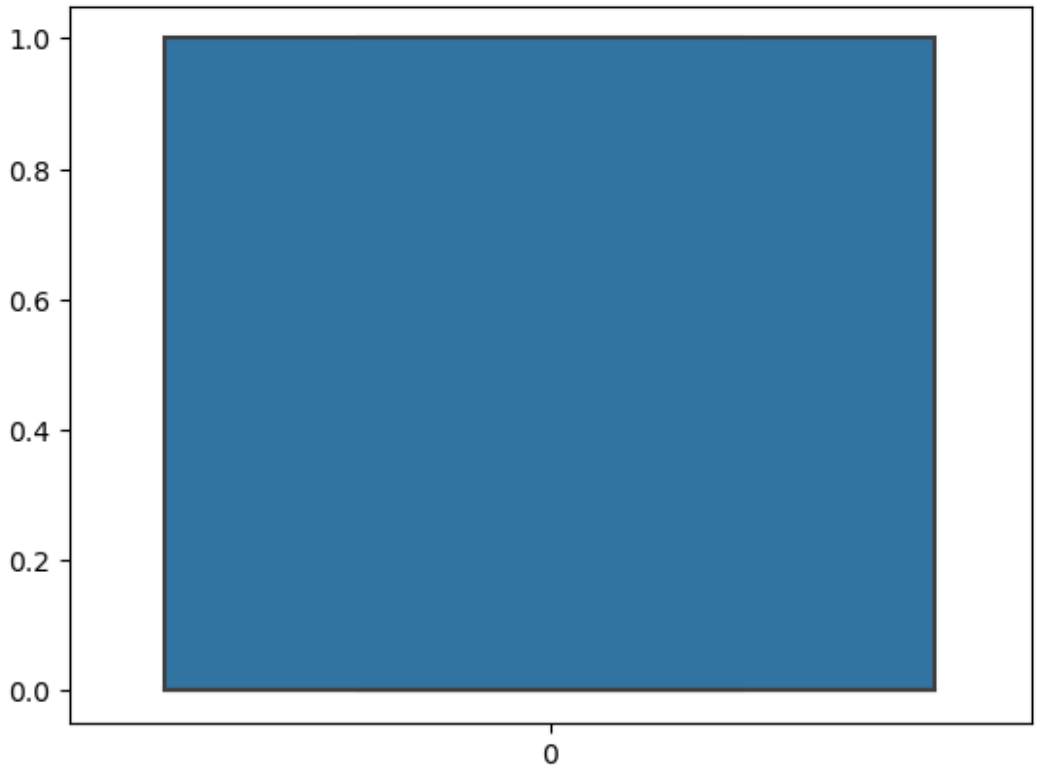

```
sns.boxplot(dff.Age)
```

```
<Axes: >
```



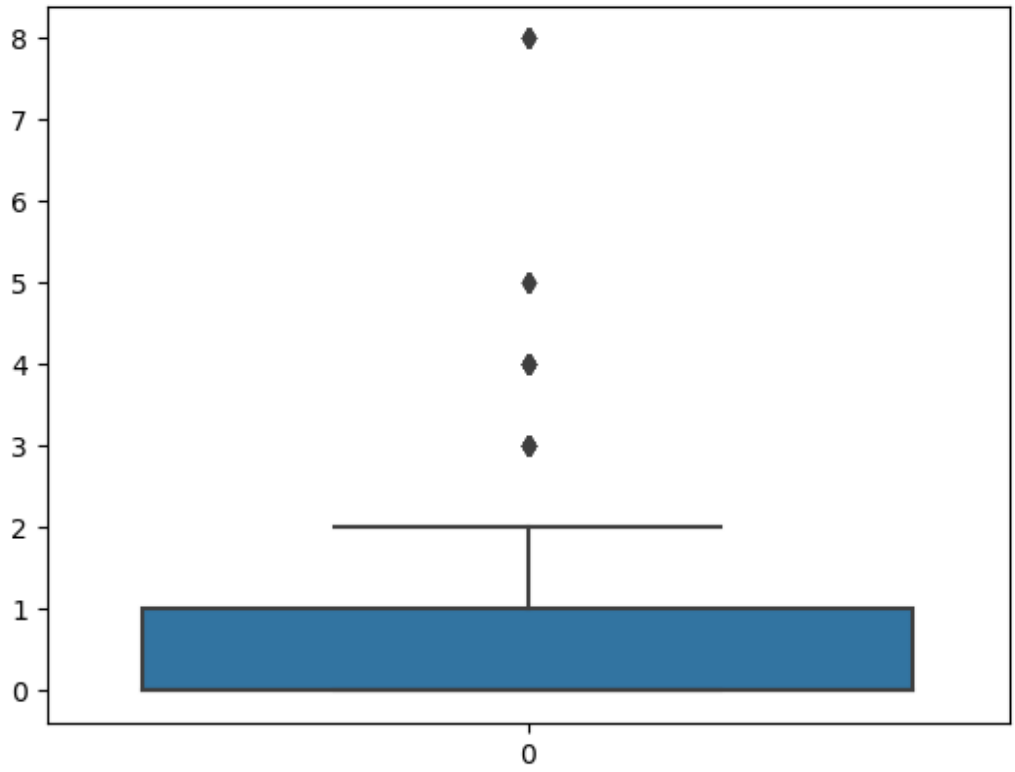

```
sns.boxplot(dff.Survived)
```

```
<Axes: >
```




```
sns.boxplot(dff.SibSp)
```

```
<Axes: >
```




```
q1=dff.SibSp.quantile(0.25)#q1 is 25 percent
q3=dff.SibSp.quantile(0.75)

iqr=q3-q1
iqr
```

```
1.0
```

```
upper_limit=q3+1.5*iqr
upper_limit
```

```
2.5
```

```
dff.median()
```

```
C:\Users\mrmel\AppData\Local\Temp\ipykernel_21864\651726956.py:1:
FutureWarning: The default value of numeric_only in DataFrame.median
is deprecated. In a future version, it will default to False. In
addition, specifying 'numeric_only=None' is deprecated. Select only
valid columns or specify the value of numeric_only to silence this
warning.
  dff.median()
```

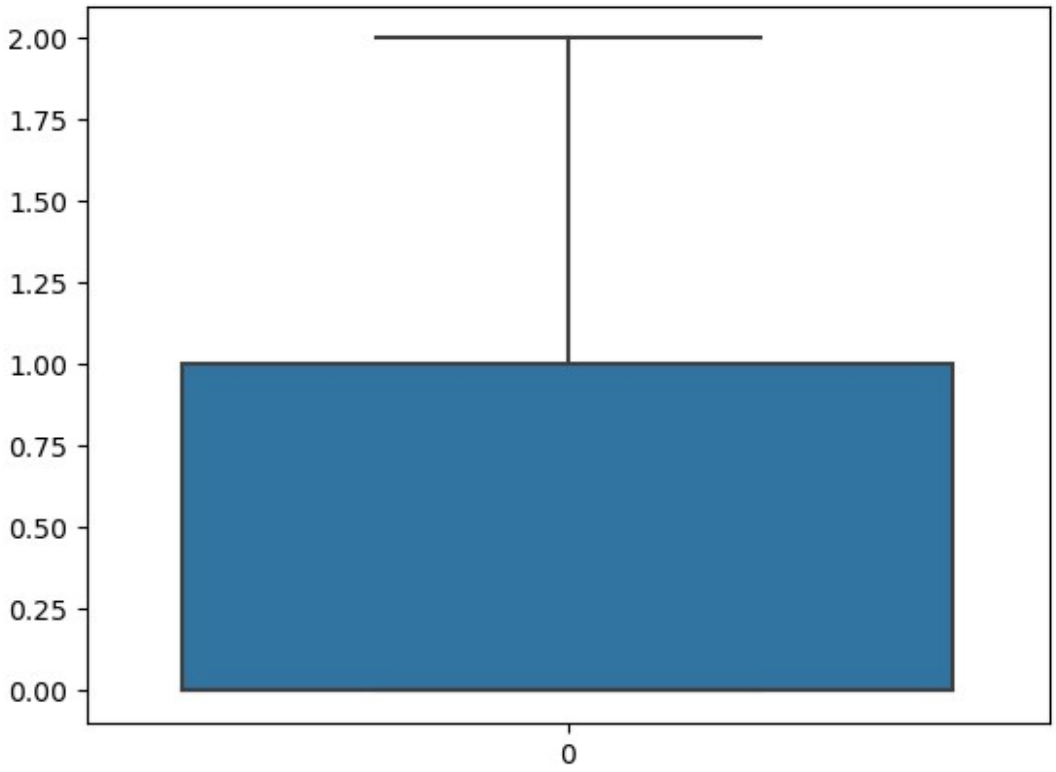
```
PassengerId    446.000000
Survived         0.000000
Pclass           3.000000
Age             29.699118
```

```
SibSp             0.000000
Parch             0.000000
Fare             14.454200
dtype: float64
```

```
dff['SibSp']=np.where(dff['SibSp']>upper_limit,0,dff['SibSp'])

sns.boxplot(dff.SibSp)
```

```
<Axes: >
```




```
q1=dff.Age.quantile(0.25)#q1 is 25 percent
q3=dff.Age.quantile(0.75)

iqr=q3-q1
iqr
```

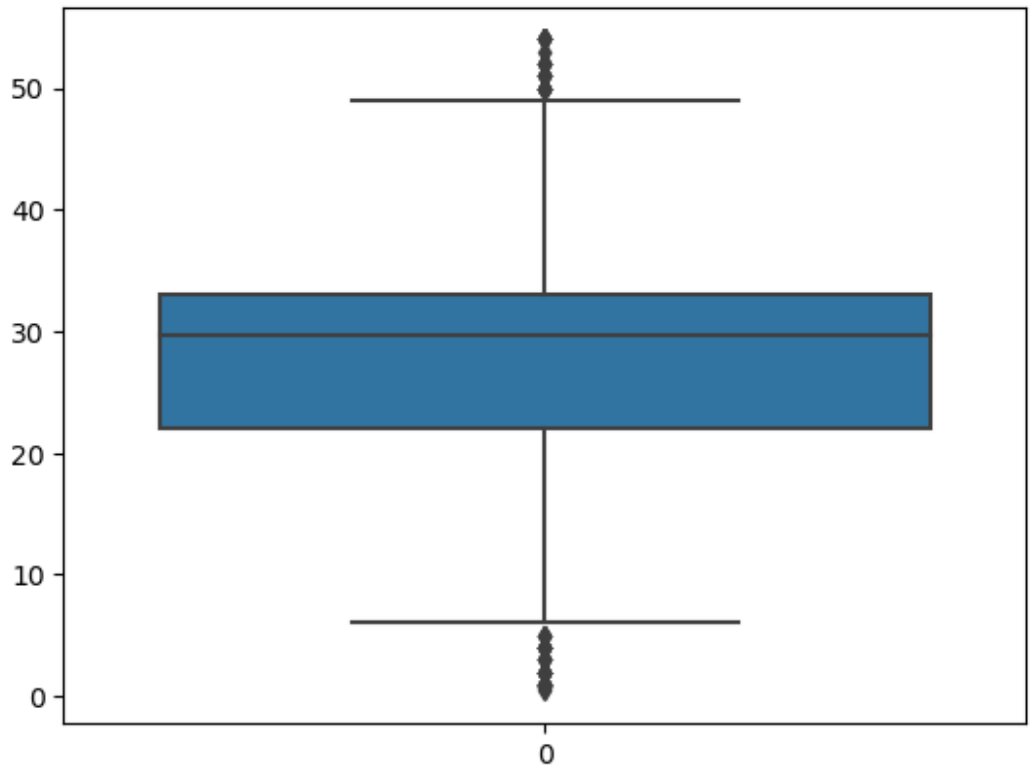
```
13.0
```

```
upper_limit=q3+1.5*iqr
upper_limit
```

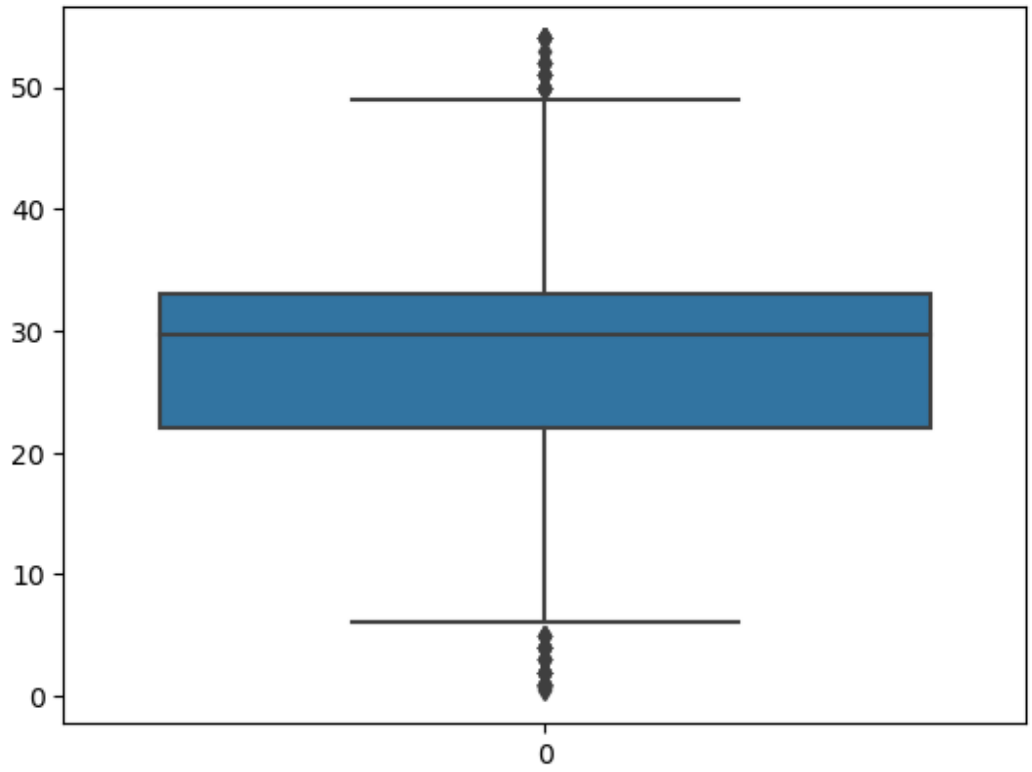
```
54.5
```

```
lower_limit=q1-1.5*iqr
lower_limit
```

```
2.5
dff['Age']=np.where(dff['Age']>upper_limit,29,dff['Age'])
sns.boxplot(dff.Age)
<Axes: >
```




```
dff['Age']=np.where(dff['Age']>upper_limit,29,dff['Age'])
sns.boxplot(dff.Age)
<Axes: >
```




```
from sklearn.preprocessing import LabelEncoder
le=LabelEncoder()

dff["Sex"]=le.fit_transform(dff["Sex"])

print(le.classes_)
```

```
['female' 'male']
```

```
dff.head()
```

```
   PassengerId  Survived  Pclass  \
0            1         0       3
1            2         1       1
2            3         1       3
3            4         1       1
4            5         0       3

                                                Name  Sex   Age  SibSp
Parch  \
0                            Braund, Mr. Owen Harris    1  22.0      1
0
1  Cumings, Mrs. John Bradley (Florence Briggs Th...    0  38.0      1
0
2                             Heikkinen, Miss. Laina    0  26.0      0
0
```

```
3       Futrelle, Mrs. Jacques Heath (Lily May Peel)    0  35.0      1
0
4                            Allen, Mr. William Henry    1  35.0      0
0

             Ticket     Fare Embarked
0         A/5 21171   7.2500        S
1          PC 17599  71.2833        C
2  STON/O2. 3101282   7.9250        S
3            113803  53.1000        S
4            373450   8.0500        S
```

```
mapping=dict(zip(le.classes_,range(len(le.classes_))))
mapping
```

```
{'female': 0, 'male': 1}
```

```
lr=LabelEncoder()
```

```
dff["Embarked"]=lr.fit_transform(dff["Embarked"])
```

```
print(lr.classes_)
```

```
['C' 'Q' 'S']
```

```
mapping=dict(zip(lr.classes_,range(len(lr.classes_))))
mapping
```

```
{'C': 0, 'Q': 1, 'S': 2}
```

```
dff.head()
```

```
   PassengerId  Survived  Pclass  \
0            1         0       3
1            2         1       1
2            3         1       3
3            4         1       1
4            5         0       3

                                                Name  Sex   Age  SibSp
Parch  \
0                            Braund, Mr. Owen Harris    1  22.0      1
0
1  Cumings, Mrs. John Bradley (Florence Briggs Th...    0  38.0      1
0
2                             Heikkinen, Miss. Laina    0  26.0      0
0
3       Futrelle, Mrs. Jacques Heath (Lily May Peel)    0  35.0      1
0
4                            Allen, Mr. William Henry    1  35.0      0
0
```

```
             Ticket     Fare  Embarked
0         A/5 21171   7.2500         2
1          PC 17599  71.2833         0
2  STON/O2. 3101282   7.9250         2
3            113803  53.1000         2
4            373450   8.0500         2
```

```
x=dff.drop(columns=["PassengerId","Name","Ticket","Survived"],axis=1)
y=dff["Survived"]
```

```
x.head()
```

```
   Pclass  Sex   Age  SibSp  Parch     Fare  Embarked
0       3    1  22.0      1      0   7.2500         2
1       1    0  38.0      1      0  71.2833         0
2       3    0  26.0      0      0   7.9250         2
3       1    0  35.0      1      0  53.1000         2
4       3    1  35.0      0      0   8.0500         2
```

```
y.head()
```

```
0    0
1    1
2    1
3    1
4    0
Name: Survived, dtype: int64
```

```
from sklearn.preprocessing import MinMaxScaler
ms=MinMaxScaler()
```

```
x_Scaled=pd.DataFrame(ms.fit_transform(x),columns=x.columns)
x_Scaled.head()
```

```
   Pclass  Sex       Age  SibSp  Parch      Fare  Embarked
0     1.0  1.0  0.402762    0.5    0.0  0.014151       1.0
1     0.0  0.0  0.701381    0.5    0.0  0.139136       0.0
2     1.0  0.0  0.477417    0.0    0.0  0.015469       1.0
3     0.0  0.0  0.645390    0.5    0.0  0.103644       1.0
4     1.0  1.0  0.645390    0.0    0.0  0.015713       1.0
```

```
from sklearn.model_selection import train_test_split
x_train,x_test,y_train,y_test=train_test_split(x_Scaled,y,test_size=0.
2,random_state=0)
```

```
print(x_train.shape,x_test.shape,y_train.shape,y_test.shape)
```

```
(712, 7) (179, 7) (712,) (179,)
```

```
from sklearn.linear_model import LogisticRegression
lo=LogisticRegression()
```

```
lo.fit(x_train,y_train)
```

```
LogisticRegression()
```

```
y_pred=lo.predict(x_test)
```

```
y_pred
```

```
array([0, 0, 0, 1, 1, 0, 1, 1, 1, 1, 0, 1, 0, 1, 1, 1, 0, 0, 0, 0, 0,
1,
       0, 0, 1, 1, 0, 1, 1, 1, 0, 1, 0, 0, 0, 0, 0, 0, 0, 0, 1, 0, 0,
0,
       1, 0, 0, 1, 0, 0, 0, 1, 1, 0, 0, 0, 0, 1, 0, 0, 0, 0, 1, 0, 1,
0,
       1, 0, 1, 1, 1, 0, 1, 0, 0, 1, 0, 0, 0, 0, 0, 0, 1, 0, 0, 1, 1,
1,
       1, 1, 0, 0, 0, 1, 1, 0, 1, 0, 0, 1, 0, 0, 0, 0, 1, 1, 1, 0, 0,
1,
       0, 1, 0, 1, 0, 1, 1, 1, 0, 1, 0, 0, 0, 0, 0, 0, 0, 0, 0, 1,
0,
       0, 1, 0, 0, 0, 1, 0, 0, 0, 1, 0, 1, 1, 1, 0, 1, 1, 0, 0, 1, 1,
0,
       1, 0, 1, 0, 1, 1, 0, 0, 1, 1, 0, 0, 0, 0, 0, 0, 0, 1, 0, 0, 1,
0,
       1, 0, 0], dtype=int64)
```

```
survive=pd.DataFrame({"Actual_data":y_test,"Predicted_data":y_pred})
survive
```

	Actual_data	Predicted_data
495	0	0
648	0	0
278	0	0
31	1	1
255	1	1
..	...	...
780	1	1
837	0	0
215	1	1
833	0	0
372	0	0

```
[179 rows x 2 columns]
```

```
from sklearn.metrics import accuracy_score
```

```
print(accuracy_score(y_test,y_pred))
```

```
0.8100558659217877
```