Q1. Download the Titanic dataset and perform the Exploratory data analysis using pandas.

In [ ]:
```
import numpy as np
import pandas as pd
import seaborn as sns
import matplotlib.pyplot as plt
```

Read the dataset (df= pd.read_csv(r'.....\Titanic.csv')

In [ ]:
```
df = pd.read_csv(r'./Titanic.csv')
```

Display the first and last 10 instances from the dataset

In [ ]:
```
print(df.head(10))
```

```
   PassengerId  Survived  Pclass  \
0            1         0       3
1            2         1       1
2            3         1       3
3            4         1       1
4            5         0       3
5            6         0       3
6            7         0       1
7            8         0       3
8            9         1       3
9           10         1       2

                                                 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
5                                    Moran, Mr. James    male   NaN      0
6                             McCarthy, Mr. Timothy J    male  54.0      0
7                      Palsson, Master. Gosta Leonard    male   2.0      3
8   Johnson, Mrs. Oscar W (Elisabeth Vilhelmina Berg)  female  27.0      0
9                 Nasser, Mrs. Nicholas (Adele Achem)  female  14.0      1

   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
5      0            330877   8.4583   NaN        Q
6      0             17463  51.8625   E46        S
7      1            349909  21.0750   NaN        S
8      2            347742  11.1333   NaN        S
9      0            237736  30.0708   NaN        C
```

In [ ]:
```
print(df.tail(10))
```

```
     PassengerId  Survived  Pclass                                     Name  \
881          882         0       3                         Markun, Mr. Johann
882          883         0       3                Dahlberg, Miss. Gerda Ulrika
883          884         0       2               Banfield, Mr. Frederick James
884          885         0       3                      Sutehall, Mr. Henry Jr
885          886         0       3        Rice, Mrs. William (Margaret Norton)
886          887         0       2                      Montvila, Rev. Juozas
887          888         1       1               Graham, Miss. Margaret Edith
888          889         0       3    Johnston, Miss. Catherine Helen "Carrie"
889          890         1       1                       Behr, Mr. Karl Howell
890          891         0       3                         Dooley, Mr. Patrick

        Sex   Age  SibSp  Parch            Ticket     Fare Cabin Embarked
881    male  33.0      0      0            349257   7.8958   NaN        S
882  female  22.0      0      0              7552  10.5167   NaN        S
883    male  28.0      0      0  C.A./SOTON 34068  10.5000   NaN        S
884    male  25.0      0      0   SOTON/OQ 392076   7.0500   NaN        S
885  female  39.0      0      5            382652  29.1250   NaN        Q
886    male  27.0      0      0            211536  13.0000   NaN        S
887  female  19.0      0      0            112053  30.0000   B42        S
888  female   NaN      1      2        W./C. 6607  23.4500   NaN        S
889    male  26.0      0      0            111369  30.0000  C148        C
890    male  32.0      0      0            370376   7.7500   NaN        Q
```

Acquire the necessary information using the df.info() and df. Describe().

In [ ]:
```
df.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 [ ]:
```
df.describe()
```

Out[ ]:

	PassengerId	Survived	Pclass	Age	SibSp	Parch	Fare
count	891.000000	891.000000	891.000000	714.000000	891.000000	891.000000	891.00000[
mean	446.000000	0.383838	2.308642	29.699118	0.523008	0.381594	32.20420[
std	257.353842	0.486592	0.836071	14.526497	1.102743	0.806057	49.69342[
min	1.000000	0.000000	1.000000	0.420000	0.000000	0.000000	0.00000[
25%	223.500000	0.000000	2.000000	20.125000	0.000000	0.000000	7.91040[
50%	446.000000	0.000000	3.000000	28.000000	0.000000	0.000000	14.45420[
75%	668.500000	1.000000	3.000000	38.000000	1.000000	0.000000	31.00000[
max	891.000000	1.000000	3.000000	80.000000	8.000000	6.000000	512.32920[

Retrieve the number of columns and rows. (using shape)

In [ ]:
```
print("Number of rows:", df.shape[0])
print("Number of columns:", df.shape[1])
```

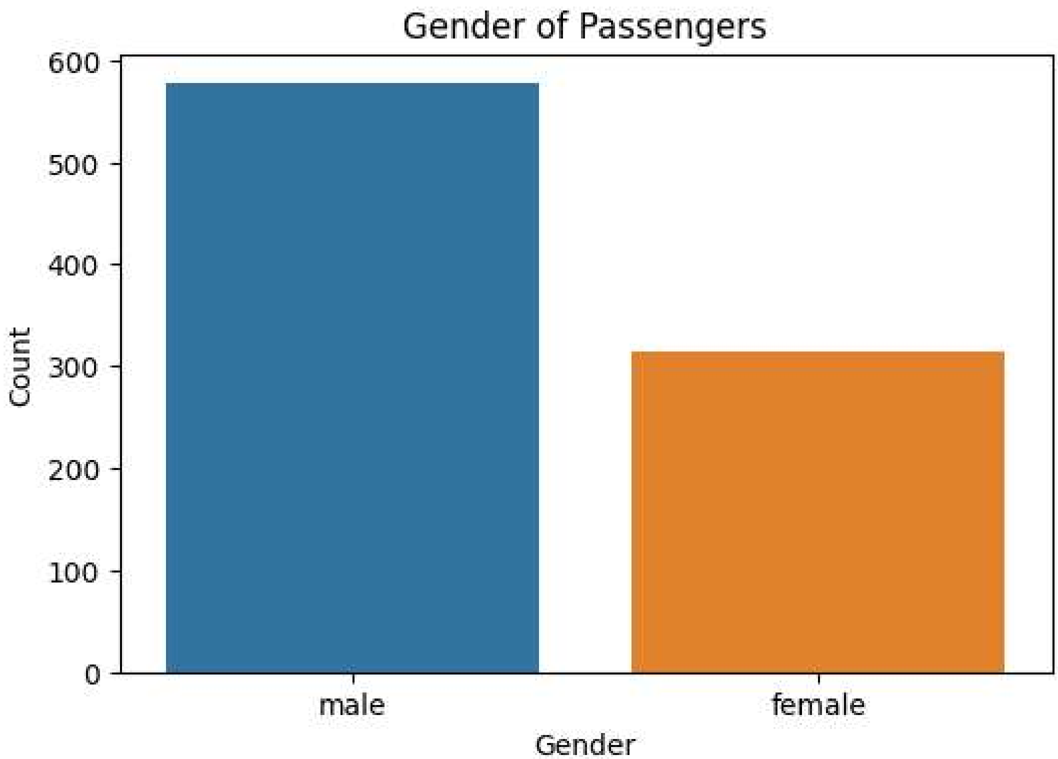
```
Number of rows: 891
Number of columns: 12
```

Q2. Create the data visualization using the matplotlib.

Visualize the Gender of Passengers using the Bar graph.

In [ ]:
```
gender_counts = df['Sex'].value_counts()
plt.figure(figsize=(6, 4))
sns.barplot(x=gender_counts.index, y=gender_counts.values)
plt.title('Gender of Passengers')
plt.xlabel('Gender')
plt.ylabel('Count')
plt.show()
```

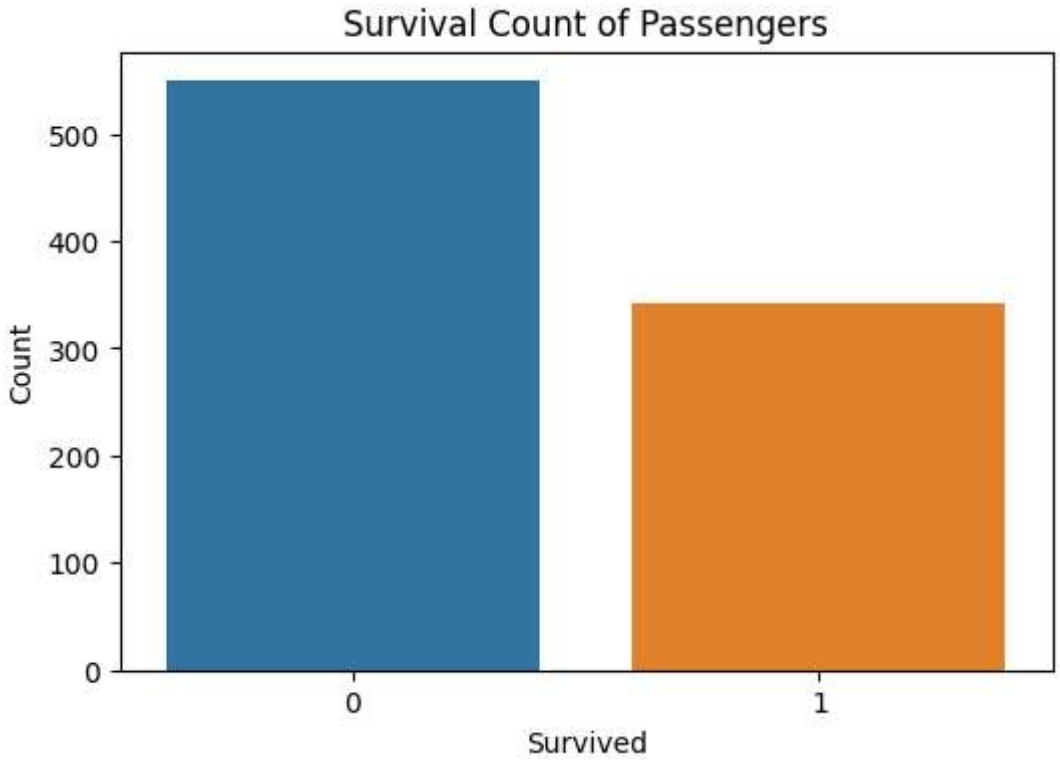
```
C:\Users\Lenovo\AppData\Roaming\Python\Python311\site-packages\seaborn\_oldcore.py:1
498: FutureWarning: is_categorical_dtype is deprecated and will be removed in a futu
re version. Use isinstance(dtype, CategoricalDtype) instead
  if pd.api.types.is_categorical_dtype(vector):
C:\Users\Lenovo\AppData\Roaming\Python\Python311\site-packages\seaborn\_oldcore.py:1
498: FutureWarning: is_categorical_dtype is deprecated and will be removed in a futu
re version. Use isinstance(dtype, CategoricalDtype) instead
  if pd.api.types.is_categorical_dtype(vector):
C:\Users\Lenovo\AppData\Roaming\Python\Python311\site-packages\seaborn\_oldcore.py:1
498: FutureWarning: is_categorical_dtype is deprecated and will be removed in a futu
re version. Use isinstance(dtype, CategoricalDtype) instead
  if pd.api.types.is_categorical_dtype(vector):
```



Visualize the Survival Count of Passengers using the Bar graph

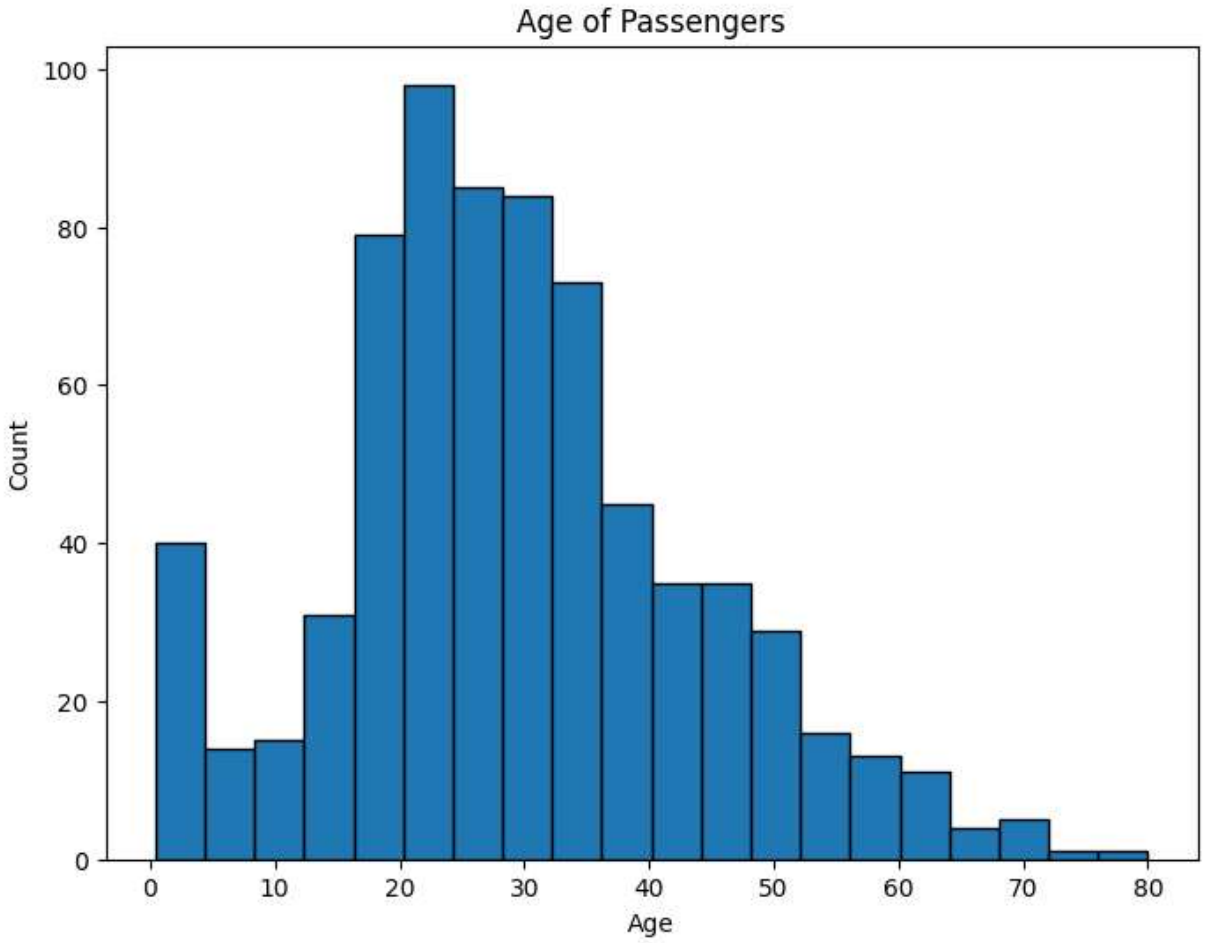
In [ ]:
```
survival_counts = df['Survived'].value_counts()
plt.figure(figsize=(6, 4))
sns.barplot(x=survival_counts.index, y=survival_counts.values)
plt.title('Survival Count of Passengers')
plt.xlabel('Survived')
plt.ylabel('Count')
plt.show()
```

```
C:\Users\Lenovo\AppData\Roaming\Python\Python311\site-packages\seaborn\_oldcore.py:1
498: FutureWarning: is_categorical_dtype is deprecated and will be removed in a futu
re version. Use isinstance(dtype, CategoricalDtype) instead
  if pd.api.types.is_categorical_dtype(vector):
C:\Users\Lenovo\AppData\Roaming\Python\Python311\site-packages\seaborn\_oldcore.py:1
498: FutureWarning: is_categorical_dtype is deprecated and will be removed in a futu
re version. Use isinstance(dtype, CategoricalDtype) instead
  if pd.api.types.is_categorical_dtype(vector):
C:\Users\Lenovo\AppData\Roaming\Python\Python311\site-packages\seaborn\_oldcore.py:1
498: FutureWarning: is_categorical_dtype is deprecated and will be removed in a futu
re version. Use isinstance(dtype, CategoricalDtype) instead
  if pd.api.types.is_categorical_dtype(vector):
```



Visualize the Age of Passengers using the Bar/Histogram graph.

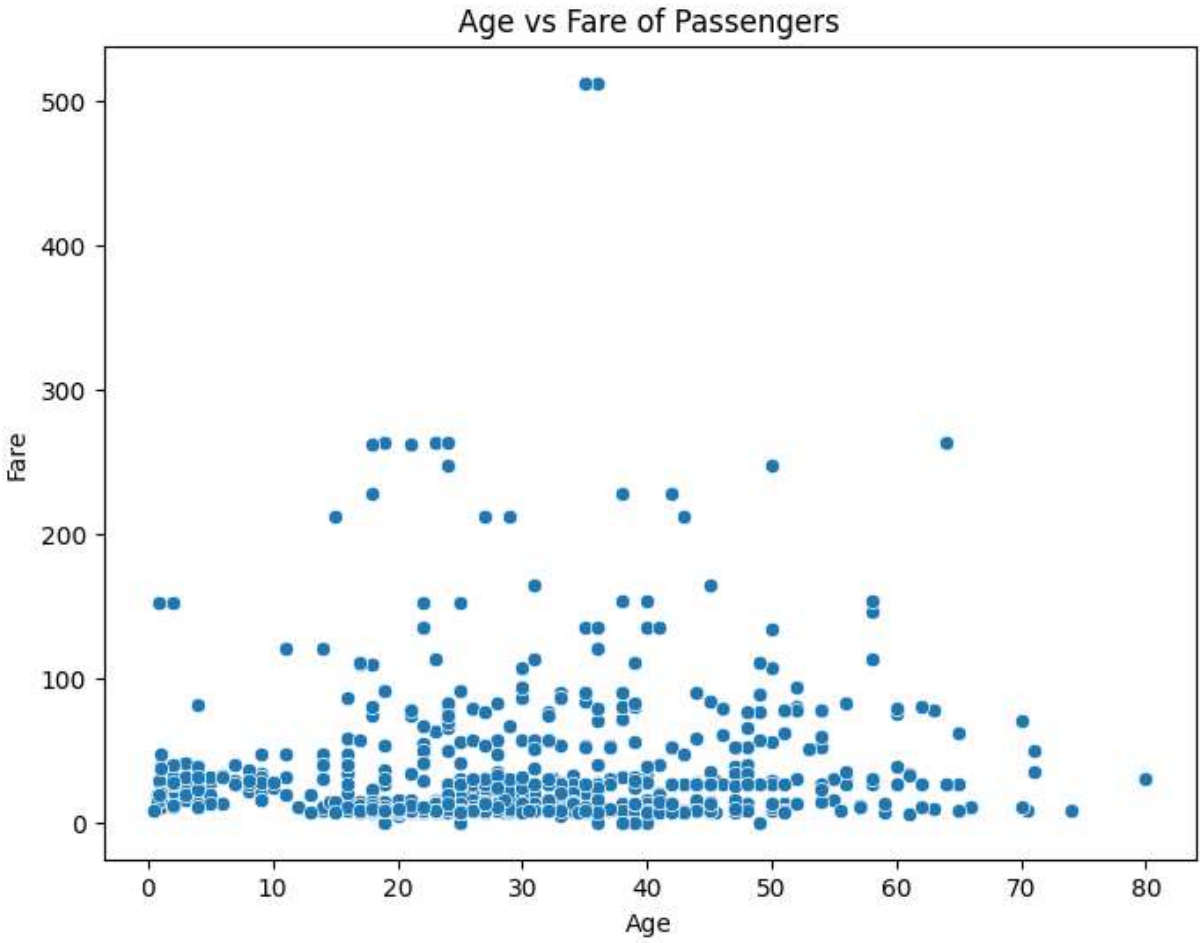
In [ ]:
```
plt.figure(figsize=(8, 6))
plt.hist(df['Age'], bins=20, edgecolor='black')
plt.title('Age of Passengers')
plt.xlabel('Age')
plt.ylabel('Count')
plt.show()
```



Visualize the comparison of Age and Fare of Passengers using the Scatterplot.

In [ ]:
```
plt.figure(figsize=(8, 6))
sns.scatterplot(x='Age', y='Fare', data=df)
plt.title('Age vs Fare of Passengers')
plt.xlabel('Age')
plt.ylabel('Fare')
plt.show()
```

```
C:\Users\Lenovo\AppData\Roaming\Python\Python311\site-packages\seaborn\_oldcore.py:1
498: FutureWarning: is_categorical_dtype is deprecated and will be removed in a futu
re version. Use isinstance(dtype, CategoricalDtype) instead
  if pd.api.types.is_categorical_dtype(vector):
C:\Users\Lenovo\AppData\Roaming\Python\Python311\site-packages\seaborn\_oldcore.py:1
498: FutureWarning: is_categorical_dtype is deprecated and will be removed in a futu
re version. Use isinstance(dtype, CategoricalDtype) instead
  if pd.api.types.is_categorical_dtype(vector):
```


Age vs Fare of Passengers
Fare
Age
0
100
200
300
400
500
0
10
20
30
40
50
60
70
80