sagar-250-lab8

September 9, 2023

[1]:
```python
#Lab exercise 8
#Q1. Performing the exploratory data analysis using pandas

import pandas as pd
df = pd.read_csv('Titanic.csv')
```

[2]:
```python
#A. Display the first and last 10 instances from the dataset

# Displaying the first 10 rows
print(df.head(10))

# Displaying the last 10 rows
print(df.tail(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
     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
```

[3]:

```
#B. Acquire the necessary information using the df.info() and df.describe()

# Displaying basic information
df.info()

# Generating basic statistics for numerical columns
df.describe()
```

```
<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
```

[3]:

```
       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
```

[4]:

```python
#C. Retrieve the number of columns and rows(using shape)

# Getting the number of rows and columns using shape
num_rows, num_columns = df.shape

print("Number of rows:", num_rows)
print("Number of columns:", num_columns)
```

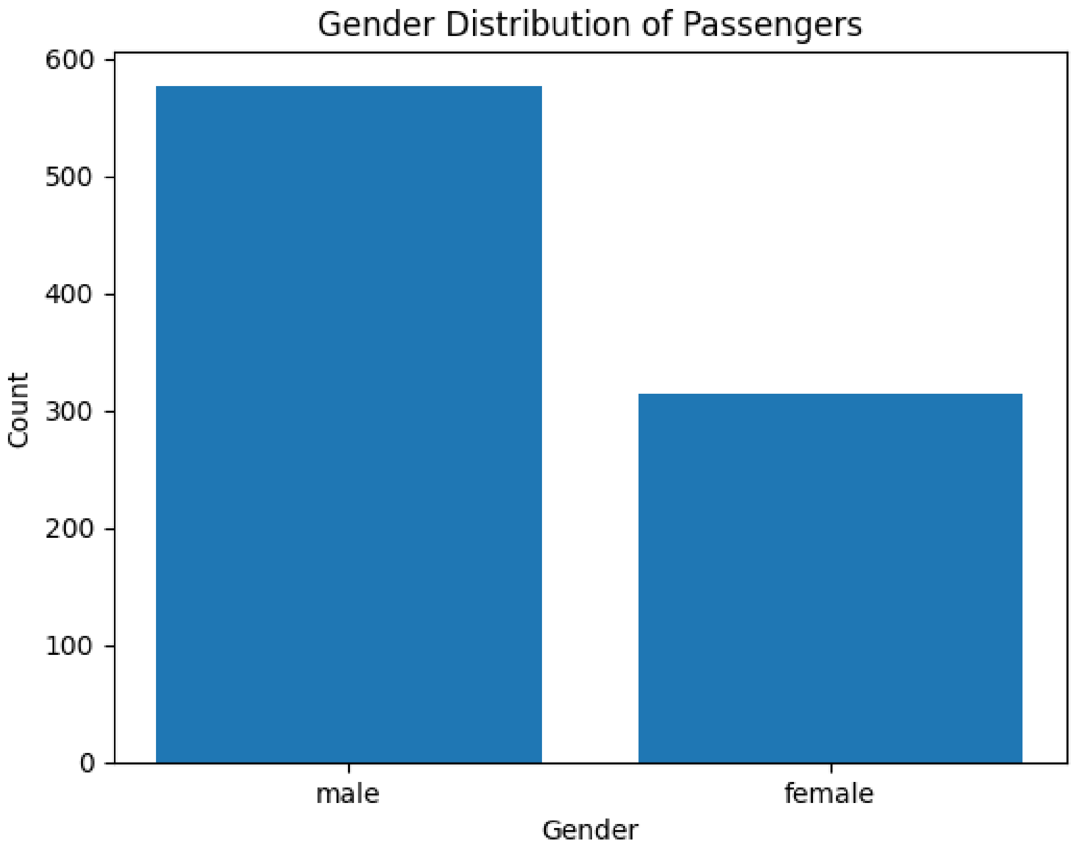
```
Number of rows: 891
Number of columns: 12
```

[4]:

```
#Q2. Create the data visualization using the matplotlib.

import matplotlib.pyplot as plt #Importing pyplot submodule
import pandas as pd
df = pd.read_csv('Titanic.csv')
```

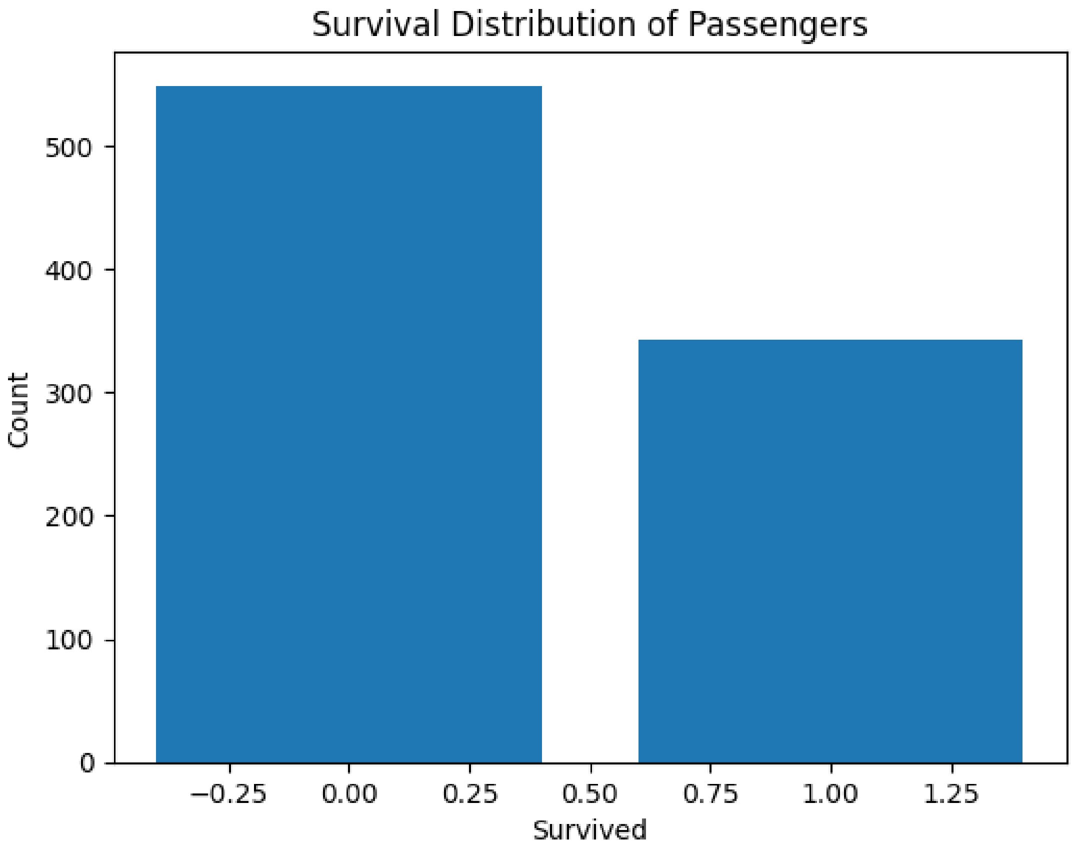
[5]:

```
#A. Visualize the Gender of Passengers using the Bar graph.

gender_counts = df['Gender'].value_counts()

#Creating the bar plot to visualize Gender distribution
plt.bar(gender_counts.index, gender_counts.values)

# Adding labels and title
plt.xlabel('Gender')
plt.ylabel('Count')
plt.title('Gender Distribution of Passengers')

# Showing the plot
plt.show()
```



[6]:

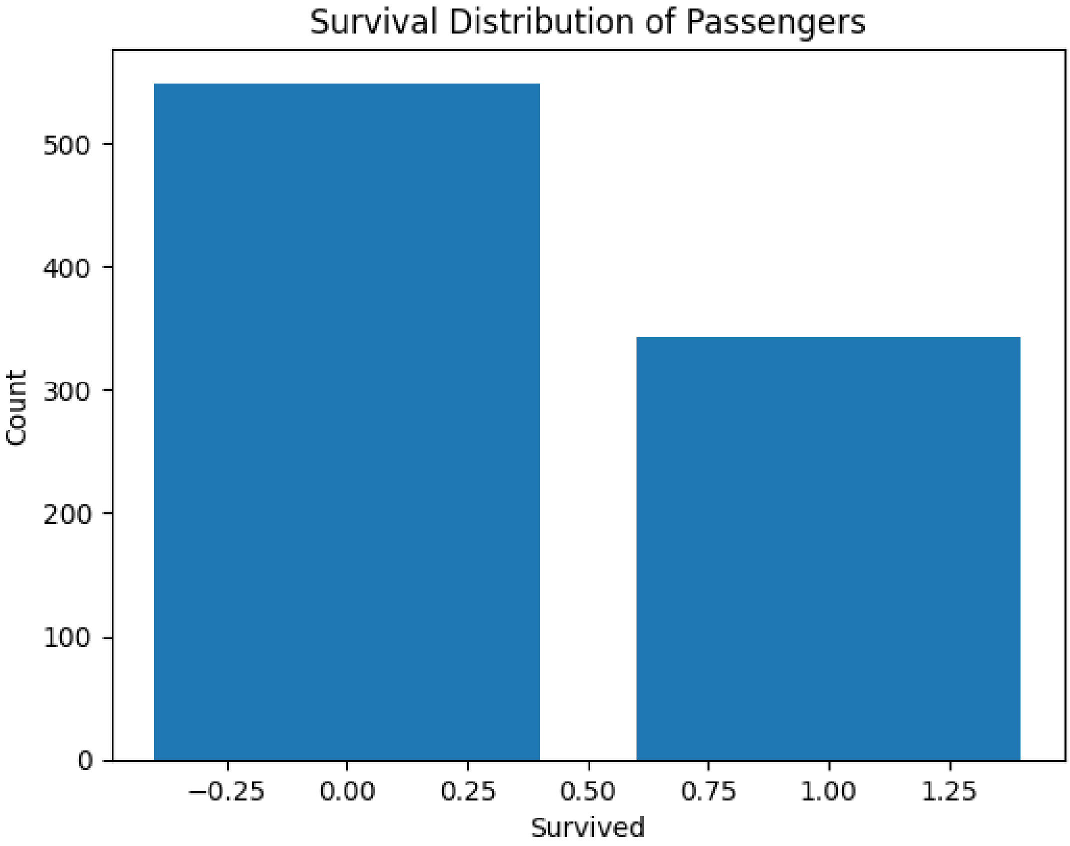
```
#B. Visualize the Survival Count of Passengers using the Bar graph.

survival_counts = df['Survived'].value_counts()

#Creating the bar plot to visualize the survival count
plt.bar(survival_counts.index, survival_counts.values)

# Adding labels and title
plt.xlabel('Survived')
plt.ylabel('Count')
plt.title('Survival Distribution of Passengers')

# Showing the plot
plt.show()
```



[7]:

```
#C. Visualize the Age of Passengers using the Bar/Histogram graph.

survival_counts = df['Survived'].value_counts()

#Creating the bar plot to visualize the survival count
```

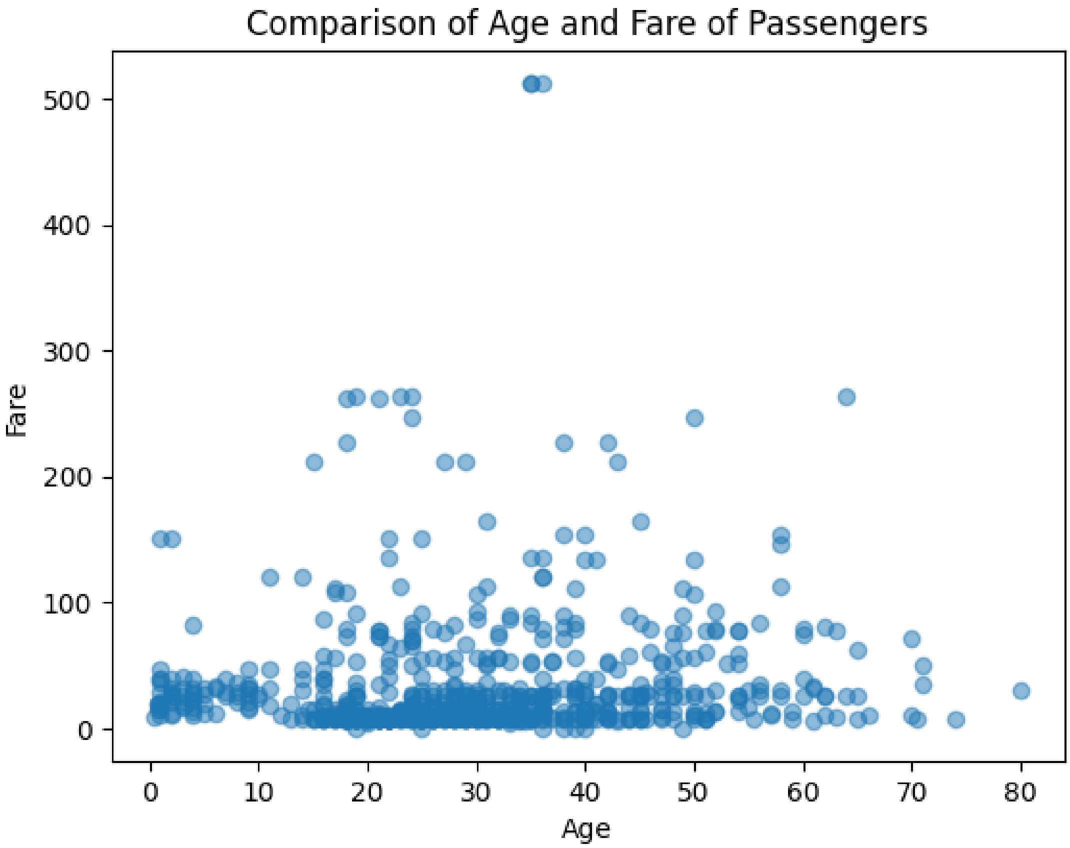
```
plt.bar(survival_counts.index, survival_counts.values)

# Adding labels and title
plt.xlabel('Survived')
plt.ylabel('Count')
plt.title('Survival Distribution of Passengers')

# Showing the plot
plt.show()
```



[8]:

```
#D. Visualize the comparison of Age and Fare of Passengers using the␣
↪Scatterplot.

# Creating a scatterplot of Age vs. Fare
plt.scatter(df['Age'], df['Fare'], alpha=0.5)

# Adding labels and title
plt.xlabel('Age')
plt.ylabel('Fare')
plt.title('Comparison of Age and Fare of Passengers')
```

```
# Showing the plot
plt.show()
```


Comparison of Age and Fare of Passengers
Fare
Age