# DSBDAL Assignment 04 - Data Visualization 1

1. Use the inbuilt dataset 'titanic'. The dataset contains 891 rows and contains information about the passengers who boarded the unfortunate Titanic ship. Use the Seaborn library to see if we can find any patterns in the data.
2. Write a code to check how the price of the ticket (column name: 'fare') for each passenger is distributed by plotting a histogram.

The objective is to predict the value of prices of the house using the given features.

```
from google.colab import drive
drive.mount('/content/drive')
```

```
Mounted at /content/drive
```

```
import numpy as np
import pandas as pd
import seaborn as sns
```

## Pre Processsing

### Structure of Dataset

survival Survival 0 = No, 1 = Yes pclass Ticket class 1 = 1st, 2 = 2nd, 3 = 3rd sex Sex Age Age in years sibsp # of siblings / spouses aboard the Titanic parch # of parents / children aboard the Titanic ticket Ticket number fare Passenger fare cabin Cabin number embarked Port of Embarkation C = Cherbourg, Q = Queenstown, S = Southampton

```
ds = pd.read_csv('/content/drive/My Drive/DSBDL/Assignment4/titanic.csv')
ds.head()
```

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

Next steps: Generate code with ds View recommended plots

```
ds.describe()
```

| | PassengerId | Survived | Pclass | Age | SibSp | Parch | Fare |
|---|---|---|---|---|---|---|---|
| **count** | 891.000000 | 891.000000 | 891.000000 | 714.000000 | 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 | 14.526497 | 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 | 20.125000 | 0.000000 | 0.000000 | 7.910400 |
| **50%** | 446.000000 | 0.000000 | 3.000000 | 28.000000 | 0.000000 | 0.000000 | 14.454200 |
| **75%** | 668.500000 | 1.000000 | 3.000000 | 38.000000 | 1.000000 | 0.000000 | 31.000000 |
| **max** | 891.000000 | 1.000000 | 3.000000 | 80.000000 | 8.000000 | 6.000000 | 512.329200 |

```
ds.dtypes
```

```
PassengerId      int64
Survived         int64
Pclass           int64
Name            object
Sex             object
Age            float64
SibSp            int64
Parch            int64
Ticket          object
Fare           float64
Cabin           object
```

```
Embarked        object
dtype: object
```

## Correcting data-types

```
ds = ds.astype( {
    "Name": "string" ,
    "Sex": "string" ,
    "Ticket": "string"  ,
    "Cabin": "string"  ,
    "Embarked": "string"  ,
} )
ds.dtypes
```

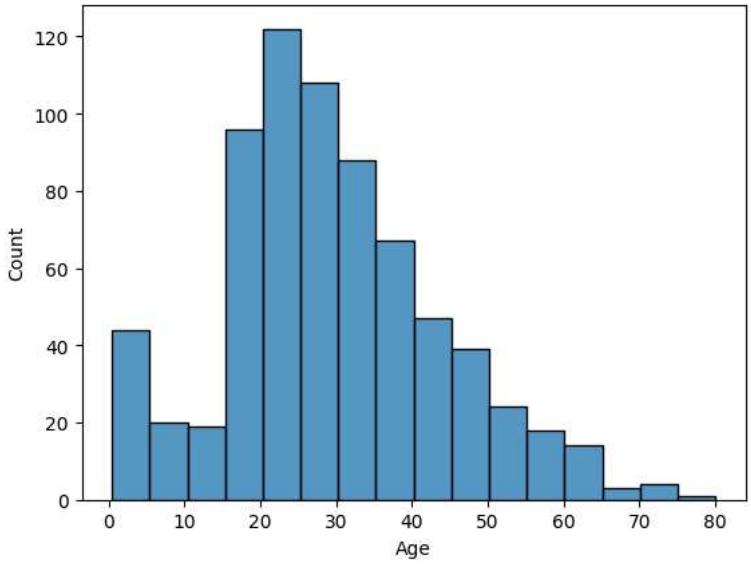
```
PassengerId      int64
Survived         int64
Pclass           int64
Name            string
Sex             string
Age            float64
SibSp            int64
Parch            int64
Ticket          string
Fare           float64
Cabin           string
Embarked        string
dtype: object
```

```
# Check number of missing values
ds.isna().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
```

```
# Check statistics of columns with missing values
print( ds[ "Age" ].describe() )
sns.histplot( data=ds , x="Age" , bins=16 )
```

```
count    714.000000
mean      29.699118
std       14.526497
min        0.420000
25%       20.125000
50%       28.000000
75%       38.000000
max       80.000000
Name: Age, dtype: float64
<Axes: xlabel='Age', ylabel='Count'>
```



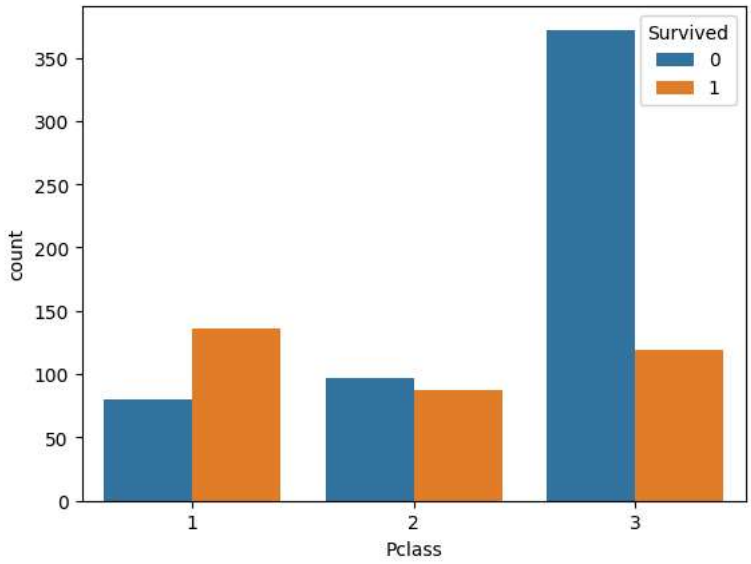

## Exploratory Data Analysis

### Visualization of each feature with target class Survived

Observation: Pclass = 3 (third class) passengers survived the least and Pclass = 1 (first class) passengers survived the most

```
# PClass vs Survived
sns.countplot( data=ds , x="Pclass" , hue="Survived" )
```

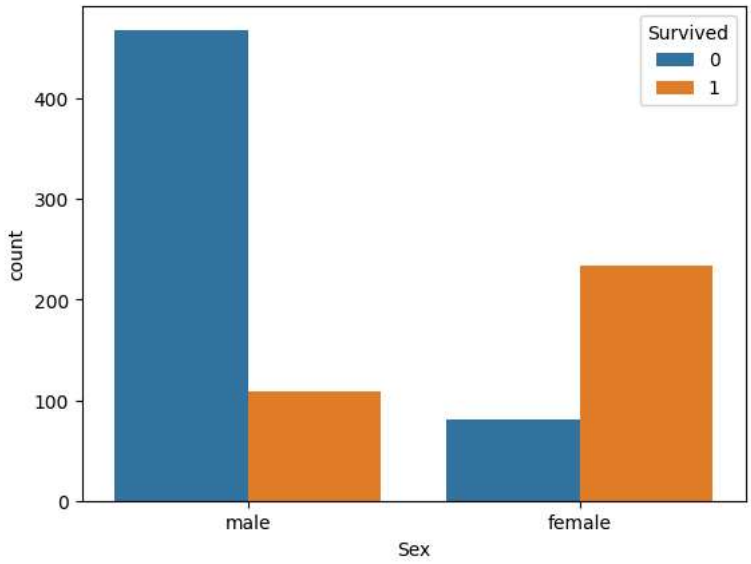
```
<Axes: xlabel='Pclass', ylabel='count'>
```




Observation: Males survived least, females the most

```
# Sex vs. Survived
sns.countplot( data=ds , x="Sex" , hue="Survived" )
```

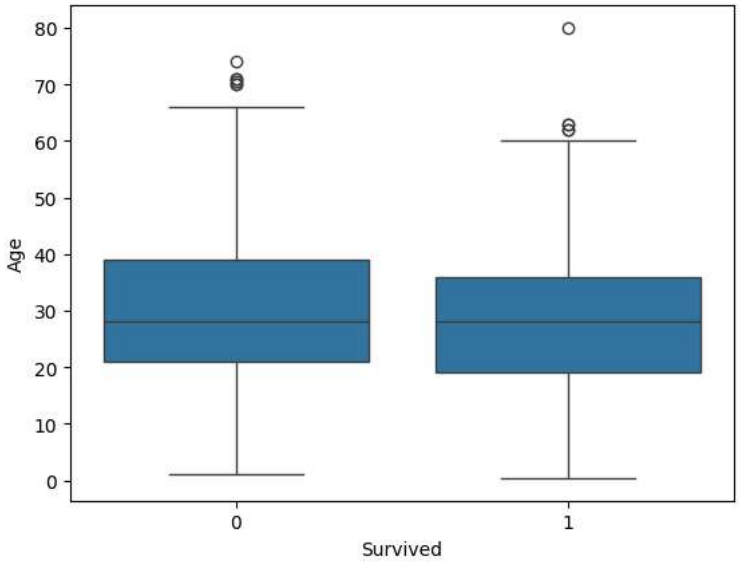
```
<Axes: xlabel='Sex', ylabel='count'>
```




Observation: The distribution of the age of passengers who survived appears to have a smaller median than that of the passengers who didn't survived, indicating younger passengers survived most

```
# Age vs. Survived
sns.boxplot( data=ds , x="Survived" , y="Age" )
```

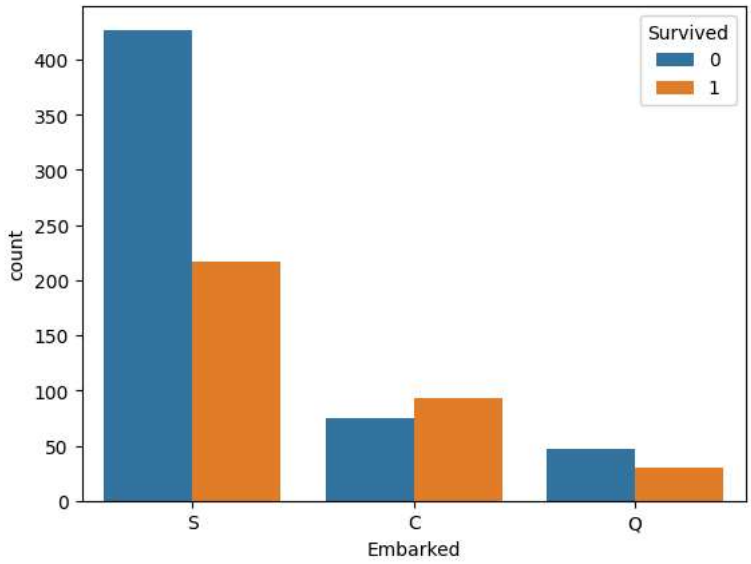
```
<Axes: xlabel='Survived', ylabel='Age'>
```




Observation: Most passengers which survived or didn't survive embarked the Titanic from Southampton

```
# Embarked vs. Survived
sns.countplot( data=ds , x="Embarked" , hue="Survived" )
```

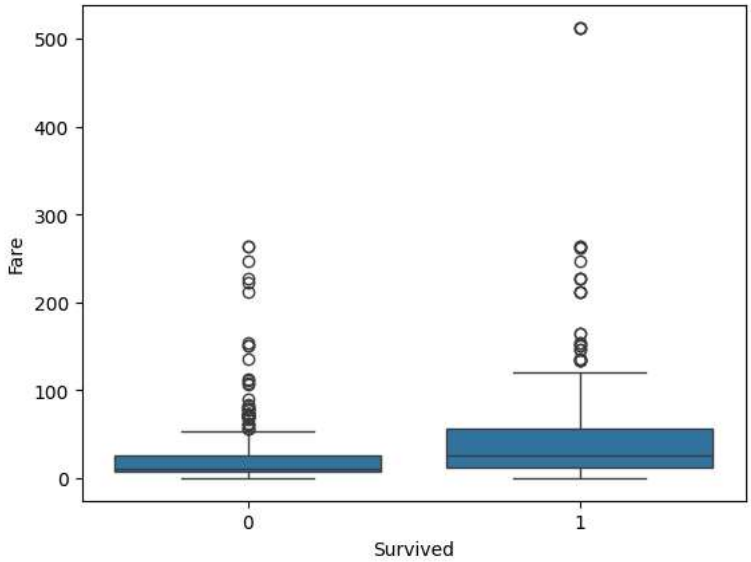
```
<Axes: xlabel='Embarked', ylabel='count'>
```




Observation: As first class passengers survived the most, passengers with higher fare survived, assuming the fact that first-class had a higher fare than other classes

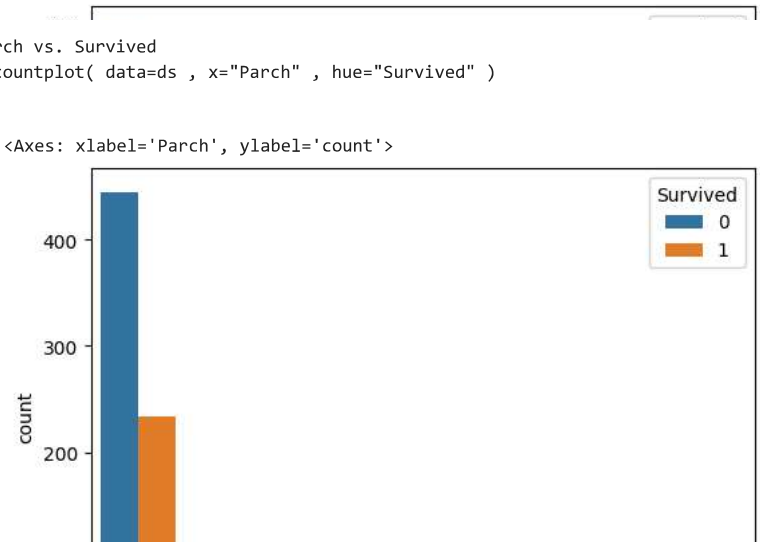
```
# Fare vs. Survived
sns.boxplot( data=ds , x="Survived" , y="Fare" )
```

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




```
sns.countplot( data=ds , x="SibSp" , hue="Survived" )
```

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



```
# Parch vs. Survived
sns.countplot( data=ds , x="Parch" , hue="Survived" )
```

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