Vaibhav Kumar

Roll no 19

DATA CLEANING

In [1]:
```
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
import seaborn as sns
%matplotlib inline
```

the data

In [2]:
```
titanic=pd.read_csv('D:\\vk\\TRIM 3\\ML\\DATASET\\titanic.csv')
```

In [3]:
```
titanic.head(10)
```

Out[3]:

	PassengerId	Pclass	Name	Gender	Age	SibSp	Parch	Ticket	Fare	Cabin	Embarked
0	892	3	Kelly, Mr. James	male	34.5	0	0	330911	7.8292	NaN	Q
1	893	3	Wilkes, Mrs. James (Ellen Needs)	female	47.0	1	0	363272	7.0000	NaN	S
2	894	2	Myles, Mr. Thomas Francis	male	62.0	0	0	240276	9.6875	NaN	Q
3	895	3	Wirz, Mr. Albert	male	27.0	0	0	315154	8.6625	NaN	S
4	896	3	Hirvonen, Mrs. Alexander (Helga E Lindqvist)	female	22.0	1	1	3101298	12.2875	NaN	S
5	897	3	Svensson, Mr. Johan Cervin	male	14.0	0	0	7538	9.2250	NaN	S
6	898	3	Connolly, Miss. Kate	female	30.0	0	0	330972	7.6292	NaN	Q
7	899	2	Caldwell, Mr. Albert Francis	male	26.0	1	1	248738	29.0000	NaN	S
8	900	3	Abrahim, Mrs. Joseph (Sophie Halaut Easu)	female	18.0	0	0	2657	7.2292	NaN	C
9	901	3	Davies, Mr. John Samuel	male	21.0	2	0	A/4 48871	24.1500	NaN	S

In [4]:

```
titanic.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 418 entries, 0 to 417
Data columns (total 11 columns):
 #   Column       Non-Null Count  Dtype  
---  ------       --------------  -----  
 0   PassengerId  418 non-null    int64  
 1   Pclass       418 non-null    int64  
 2   Name         418 non-null    object 
 3   Gender       418 non-null    object 
 4   Age          332 non-null    float64
 5   SibSp        418 non-null    int64  
 6   Parch        418 non-null    int64  
 7   Ticket       418 non-null    object 
 8   Fare         417 non-null    float64
 9   Cabin        91 non-null     object 
 10  Embarked     418 non-null    object 
dtypes: float64(2), int64(4), object(5)
memory usage: 36.0+ KB
```

Missing data

In [5]:
```
titanic.isnull()
```

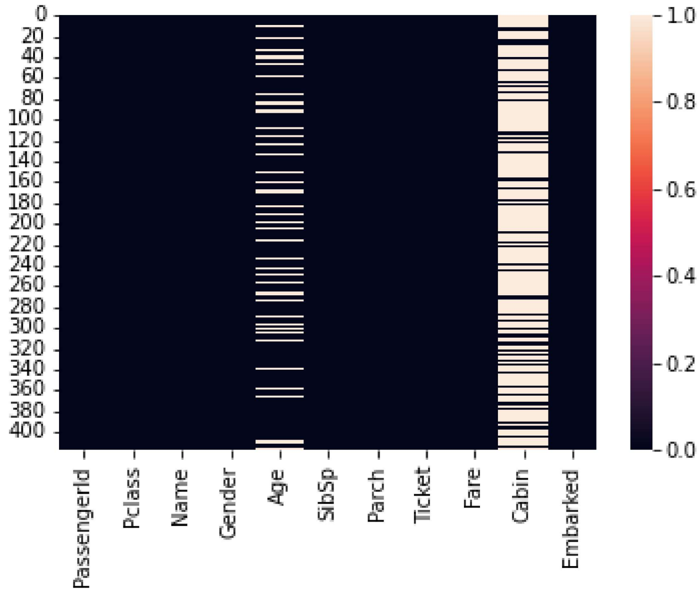
Out[5]:

	PassengerId	Pclass	Name	Gender	Age	SibSp	Parch	Ticket	Fare	Cabin	Embarked
0	False	False	False	False	False	False	False	False	False	True	False
1	False	False	False	False	False	False	False	False	False	True	False
2	False	False	False	False	False	False	False	False	False	True	False
3	False	False	False	False	False	False	False	False	False	True	False
4	False	False	False	False	False	False	False	False	False	True	False
...	...	...	...	...	...	...	...	...	...	...	...
413	False	False	False	False	True	False	False	False	False	True	False
414	False	False	False	False	False	False	False	False	False	False	False
415	False	False	False	False	False	False	False	False	False	True	False
416	False	False	False	False	True	False	False	False	False	True	False
417	False	False	False	False	True	False	False	False	False	True	False

418 rows × 11 columns

In [6]:
```
sns.heatmap(titanic.isnull())
```

Out[6]: <AxesSubplot:>

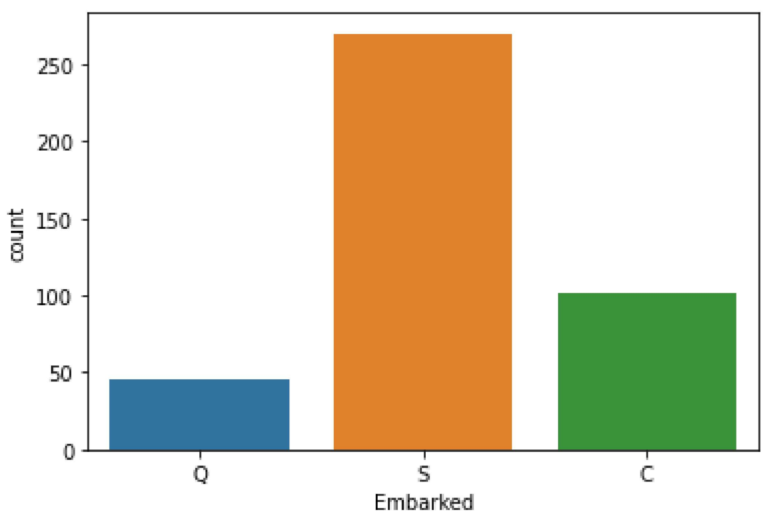


now we have to replace the age null value to some form of imputation

and drop the cabin coloumn

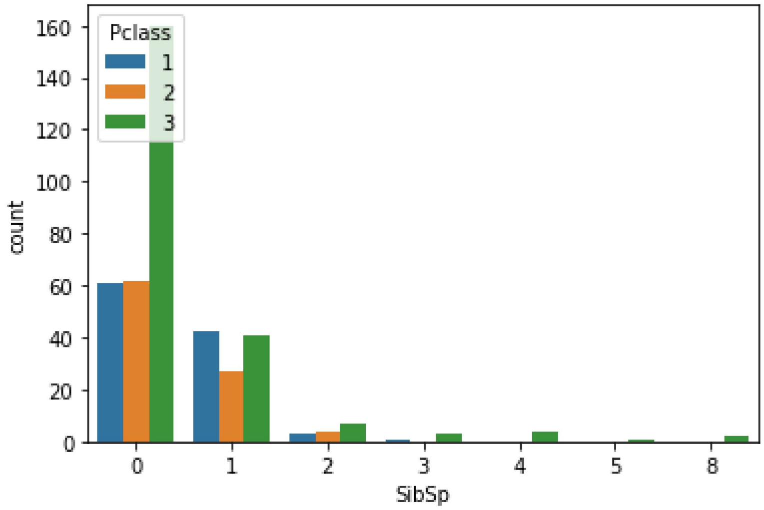
In [7]:
```
sns.countplot(x='Embarked',data=titanic)
```

Out[7]: <AxesSubplot:xlabel='Embarked', ylabel='count'>



From passenger list most of the passengers are in Embarked "S" class

In [8]:
```
sns.countplot(x='SibSp',hue='Pclass',data=titanic);
```



Color diff is the passengers class and x axis is siblings spouse

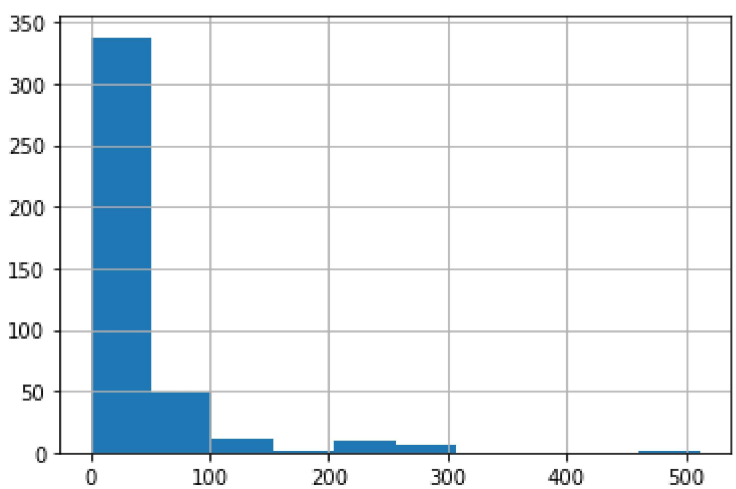
maximum passenegers are not dependent or zero dependance

In [9]:
```
titanic['Fare']
```

Out[9]:
```
0        7.8292
1        7.0000
2        9.6875
3        8.6625
4       12.2875
         ...   
413      8.0500
414    108.9000
415      7.2500
416      8.0500
417     22.3583
Name: Fare, Length: 418, dtype: float64
```

In [10]:
```
titanic['Fare'].hist()
```

Out[10]:
```
<AxesSubplot:>
```



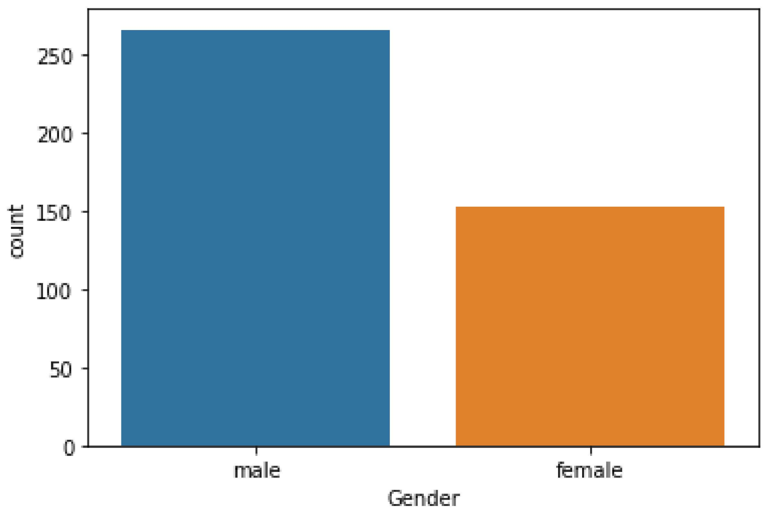
Max count comes in range 0-50

In [11]:
```
titanic['Gender']
```

Out[11]:
```
0        male
1      female
2        male
3        male
4      female
        ...  
413      male
414    female
415      male
416      male
417      male
Name: Gender, Length: 418, dtype: object
```

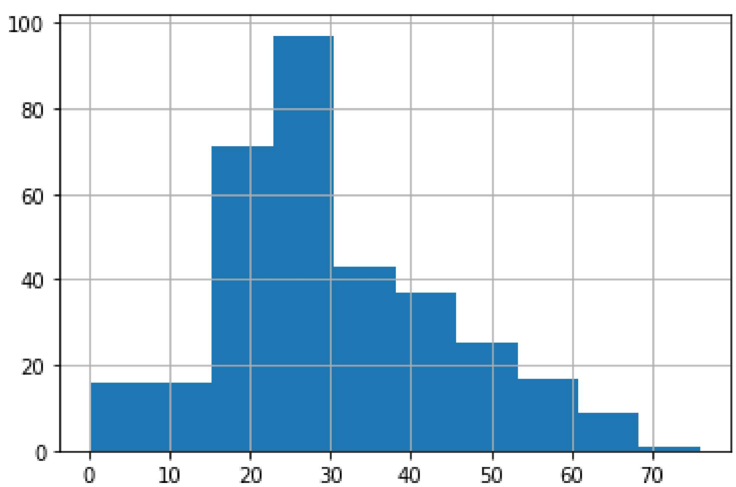
In [12]:
```
sns.countplot(x='Gender',data=titanic)
```

Out[12]: <AxesSubplot:xlabel='Gender', ylabel='count'>



Males are more than Females

In [13]:
```
titanic['Age'].hist();
```



most of the Passengers are of age between 20-30

Data Cleaning

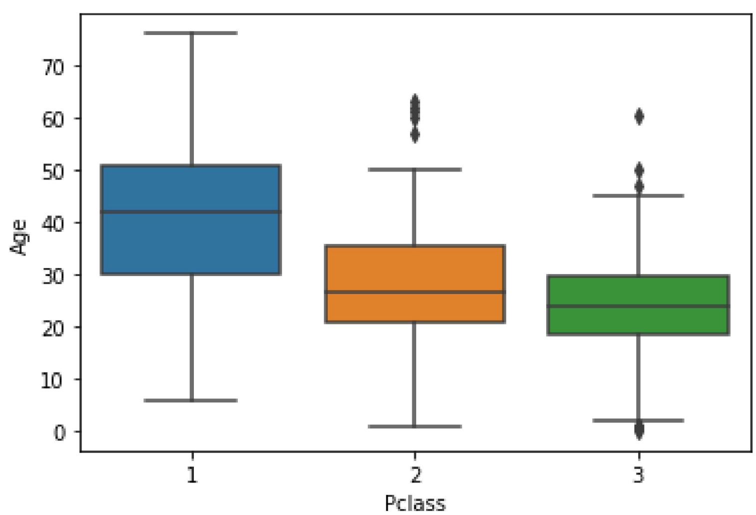
In [14]:
```
titanic.describe()
```

Out[14]:

	PassengerId	Pclass	Age	SibSp	Parch	Fare
count	418.000000	418.000000	332.000000	418.000000	418.000000	417.000000
mean	1100.500000	2.265550	30.272590	0.447368	0.392344	35.627188
std	120.810458	0.841838	14.181209	0.896760	0.981429	55.907576
min	892.000000	1.000000	0.170000	0.000000	0.000000	0.000000
25%	996.250000	1.000000	21.000000	0.000000	0.000000	7.895800
50%	1100.500000	3.000000	27.000000	0.000000	0.000000	14.454200
75%	1204.750000	3.000000	39.000000	1.000000	0.000000	31.500000
max	1309.000000	3.000000	76.000000	8.000000	9.000000	512.329200

In [15]:
```
plt.figure(figsize=(6,4))
sns.boxplot(x='Pclass',y='Age',data=titanic)
```

Out[15]: <AxesSubplot:xlabel='Pclass', ylabel='Age'>



In [16]:
```
titanic.groupby('Pclass').mean()['Age']
```

Out[16]:
```
Pclass
1    40.918367
2    28.777500
3    24.027945
Name: Age, dtype: float64
```

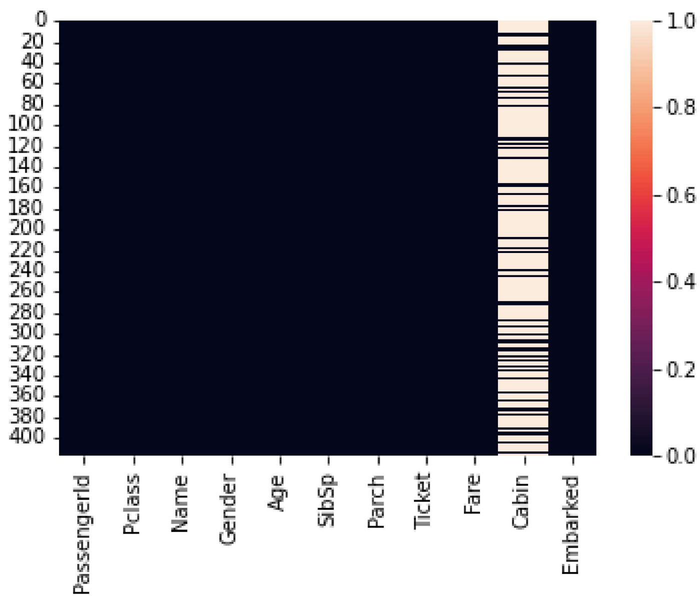
In [17]:
```
def impute_age(cols):
    Age=cols[0]
    Pclass=cols[1]
    if pd.isnull(Age):
        if Pclass == 1:
            return 41
        elif Pclass ==2:
            return 29
        else:
            return 24
```

```
    else:
        return Age
```

In [18]:
```
titanic['Age']=titanic[['Age','Pclass']].apply(impute_age,axis=1)
```

In [19]:
```
sns.heatmap(titanic.isnull())
```

Out[19]:
```
<AxesSubplot:>
```



Age has no missing value

In [20]:
```
titanic['Age']
```

Out[20]:
```
0      34.5
1      47.0
2      62.0
3      27.0
4      22.0
       ...
413    24.0
414    39.0
415    38.5
416    24.0
417    24.0
Name: Age, Length: 418, dtype: float64
```

In [21]:
```
titanic.drop('Cabin',axis=1,inplace=True)
```

In [22]:
```
titanic.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 418 entries, 0 to 417
Data columns (total 10 columns):
 #   Column       Non-Null Count  Dtype  
---  ------       --------------  -----  
 0   PassengerId  418 non-null    int64  
 1   Pclass       418 non-null    int64  
 2   Name         418 non-null    object 
 3   Gender       418 non-null    object 
 4   Age          418 non-null    float64
 5   SibSp        418 non-null    int64  
 6   Parch        418 non-null    int64  
 7   Ticket       418 non-null    object 
 8   Fare         417 non-null    float64
 9   Embarked     418 non-null    object 
dtypes: float64(2), int64(4), object(4)
memory usage: 32.8+ KB
```

Day 4

In [29]:
```
titanic.dropna(inplace=True) # remove Nan Value
# it will delete the entire row
```

In [30]:
```
titanic.info()
```

```
<class 'pandas.core.frame.DataFrame'>
Int64Index: 417 entries, 0 to 417
Data columns (total 10 columns):
 #   Column       Non-Null Count  Dtype  
---  ------       --------------  -----  
 0   PassengerId  417 non-null    int64  
 1   Pclass       417 non-null    int64  
 2   Name         417 non-null    object 
 3   Gender       417 non-null    object 
 4   Age          417 non-null    float64
 5   SibSp        417 non-null    int64  
 6   Parch        417 non-null    int64  
 7   Ticket       417 non-null    object 
 8   Fare         417 non-null    float64
 9   Embarked     417 non-null    object 
dtypes: float64(2), int64(4), object(4)
memory usage: 35.8+ KB
```

categorical value

In [25]:
```
pd.get_dummies(titanic['Gender'])
```

Out[25]:

	female	male
0	0	1
1	1	0
2	0	1
3	0	1
4	1	0
...	...	...
413	0	1
414	1	0
415	0	1
416	0	1
417	0	1

417 rows × 2 columns

In [26]:
```
pd.get_dummies(titanic['Gender'],drop_first=True)
```

Out[26]:

	male
0	1
1	0
2	1
3	1
4	0
...	...
413	1
414	0
415	1
416	1
417	1

417 rows × 1 columns

In [27]:
```
gender = pd.get_dummies(titanic['Gender'],drop_first=False)
gender
```

Out[27]:

	female	male
0	0	1
1	1	0
2	0	1
3	0	1
4	1	0
...	...	...
413	0	1
414	1	0
415	0	1
416	0	1
417	0	1

417 rows × 2 columns

In [28]:

```
embark=pd.get_dummies(titanic['Embarked'],drop_first=False)
embark
```

Out[28]:

	C	Q	S
0	0	1	0
1	0	0	1
2	0	1	0
3	0	0	1
4	0	0	1
...	...	...	...
413	0	0	1
414	1	0	0
415	0	0	1
416	0	0	1
417	1	0	0

417 rows × 3 columns

In [31]:

```
titanic.drop(['Gender','Embarked','Name','Ticket'],axis=1,inplace=True)
```

In [32]:

```
titanic.head()
```

Out[32]:

	PassengerId	Pclass	Age	SibSp	Parch	Fare
0	892	3	34.5	0	0	7.8292
1	893	3	47.0	1	0	7.0000
2	894	2	62.0	0	0	9.6875
3	895	3	27.0	0	0	8.6625
4	896	3	22.0	1	1	12.2875

In [33]:

```
titanic.info()
```

```
<class 'pandas.core.frame.DataFrame'>
Int64Index: 417 entries, 0 to 417
Data columns (total 6 columns):
 #   Column       Non-Null Count  Dtype  
---  ------       --------------  -----  
 0   PassengerId  417 non-null    int64  
 1   Pclass       417 non-null    int64  
 2   Age          417 non-null    float64
 3   SibSp        417 non-null    int64  
 4   Parch        417 non-null    int64  
 5   Fare         417 non-null    float64
dtypes: float64(2), int64(4)
memory usage: 22.8 KB
```

In [34]:

```
titanic = pd.concat([titanic,gender,embark],axis=1)
```

In [35]:

```
titanic.head()
```

Out[35]:

	PassengerId	Pclass	Age	SibSp	Parch	Fare	female	male	C	Q	S
0	892	3	34.5	0	0	7.8292	0	1	0	1	0
1	893	3	47.0	1	0	7.0000	1	0	0	0	1
2	894	2	62.0	0	0	9.6875	0	1	0	1	0
3	895	3	27.0	0	0	8.6625	0	1	0	0	1
4	896	3	22.0	1	1	12.2875	1	0	0	0	1

In [37]:

```
titanic.info()
```

```
<class 'pandas.core.frame.DataFrame'>
Int64Index: 417 entries, 0 to 417
Data columns (total 11 columns):
 #   Column       Non-Null Count  Dtype  
---  ------       --------------  -----  
 0   PassengerId  417 non-null    int64  
 1   Pclass       417 non-null    int64  
 2   Age          417 non-null    float64
 3   SibSp        417 non-null    int64  
 4   Parch        417 non-null    int64  
 5   Fare         417 non-null    float64
 6   female       417 non-null    uint8  
 7   male         417 non-null    uint8  
 8   C            417 non-null    uint8  
 9   Q            417 non-null    uint8  
 10  S            417 non-null    uint8  
dtypes: float64(2), int64(4), uint8(5)
memory usage: 24.8 KB
```

In [ ]: