1- Preprocessing Part:

```
import pandas as pd
df=pd.read_excel("titanic-passengers.xlsx")
df.head()
```

	PassengerId	Survived	Pclass	Name	Sex	Age	SibSp	Parch	Ticket	Fa
0	343	No	2	Collander, Mr. Erik Gustaf	male	28.0	0	0	248740	13.00
1	76	No	3	Moen, Mr. Sigurd Hansen	male	25.0	0	0	348123	7.65
2	641	No	3	Jensen, Mr. Hans Peder	male	20.0	0	0	350050	7.85
3	568	No	3	Palsson, Mrs. Nils (Alma	female	29.0	0	4	349909	21.07

```
df.columns
```

```
Index(['PassengerId', 'Survived', 'Pclass', 'Name', 'Sex', 'Age', 'SibSp',
       'Parch', 'Ticket', 'Fare', 'Cabin', 'Embarked'],
      dtype='object')
```

```
print(df.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
```

```
print(df.isnull().sum().sum())
```

```
866
```

```
print(df['Age'].isnull().sum())
```

```
177
```

```
print(df['Cabin'].isnull().sum())
```

```
687
```

```
df["Age"].fillna(df["Age"].mean(),inplace=True)
df.head(20)
```

	PassengerId	Survived	Pclass	Name	Sex	Age	SibSp	Parch	Tick
0	343	No	2	Collander, Mr. Erik Gustaf	male	28.000000	0	0	2487
1	76	No	3	Moen, Mr. Sigurd Hansen	male	25.000000	0	0	3481
2	641	No	3	Jensen, Mr. Hans Peder	male	20.000000	0	0	3500
3	568	No	3	Palsson, Mrs. Nils (Alma Cornelia Berglund)	female	29.000000	0	4	3499
4	672	No	1	Davidson, Mr. Thornton	male	31.000000	1	0	F. 127
5	105	No	3	Gustafsson, Mr. Anders Vilhelm	male	37.000000	2	0	31012

```
df['Embarked'].value_counts()
```

```
S    644
C    168
Q     77
Name: Embarked, dtype: int64
```

Lovell, Mr.

```
df['Cabin'].value_counts()
```

```
B96 B98        4
C23 C25 C27    4
G6             4
F33            3
F2             3
              ..
C111           1
C50            1
D49            1
A34            1
E12            1
Name: Cabin, Length: 147, dtype: int64
```

```
df['Cabin'].fillna('G6',inplace=True)
df['Cabin'].value_counts()
```

```
G6             691
B96 B98          4
C23 C25 C27      4
F33              3
F2               3
               ...
C111             1
```

```
C50              1
D49              1
A34              1
E12              1
Name: Cabin, Length: 147, dtype: int64
```

Widener.

```
df['Embarked'].fillna('S',inplace=True)
df['Embarked'].value_counts()
```

```
S    646
C    168
Q     77
Name: Embarked, dtype: int64
```

Heart, Mr.

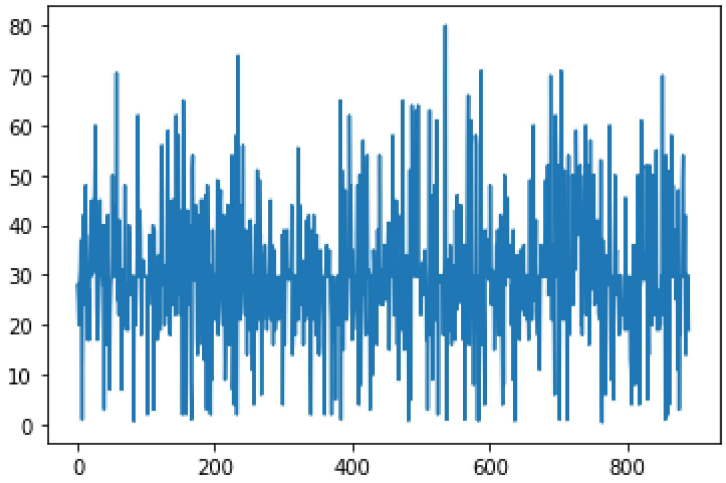
```
df.isnull().sum()
```

```
PassengerId    0
Survived       0
Pclass         0
Name           0
Sex            0
Age            0
SibSp          0
Parch          0
Ticket         0
Fare           0
Cabin          0
Embarked       0
dtype: int64
```

==> Now my data is ready to be treated

2- Visualization Part:

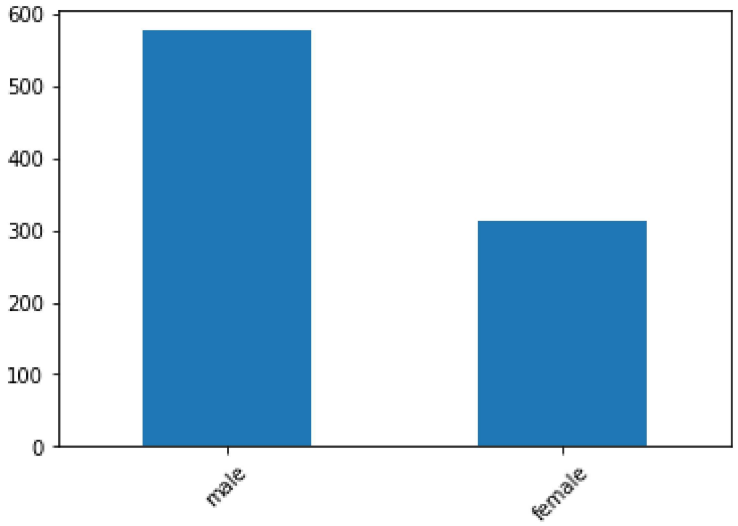
```
import matplotlib.pyplot as plt
plt.plot(df['Age'])
plt.show()
```




```
import matplotlib.pyplot as plt
```

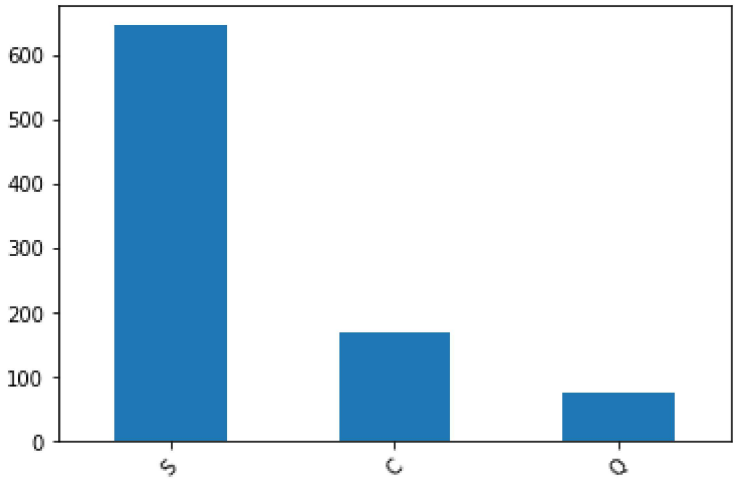
```
v=df['Sex'].value_counts()
v.plot.bar(rot=45)
```

```
<matplotlib.axes._subplots.AxesSubplot at 0x7fe857519f10>
```




```
import matplotlib.pyplot as plt
v=df['Embarked'].value_counts()
v.plot.bar(rot=45)
```

```
<matplotlib.axes._subplots.AxesSubplot at 0x7fe857556310>
```

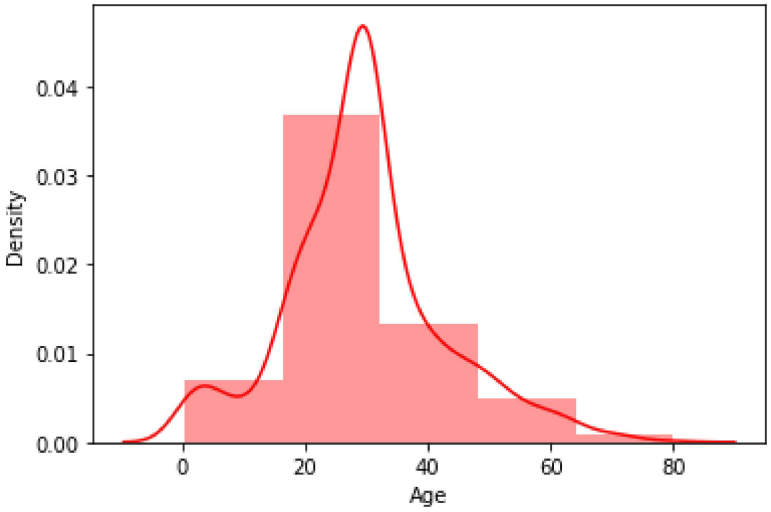



```
import matplotlib.pyplot as plt
df['Age'].plot.hist()
```

```
<matplotlib.axes._subplots.AxesSubplot at 0x7fe857477290>
```

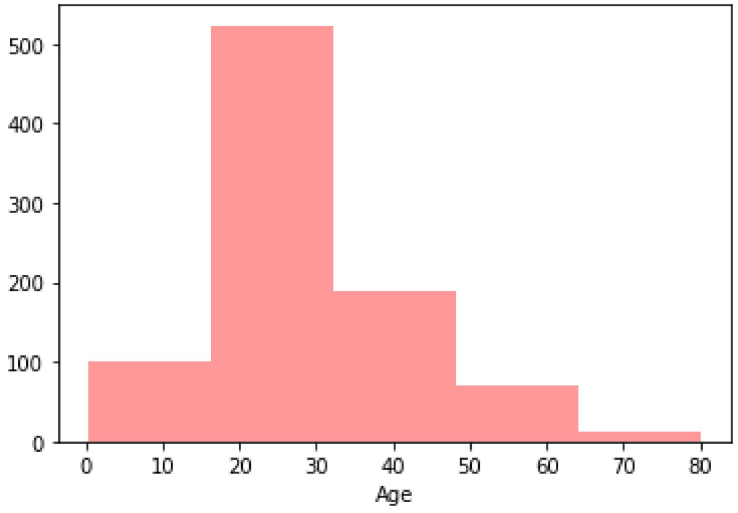

```
import seaborn as sns
sns.distplot(df['Age'],bins=5,hist=True,kde=True,color='red')
```

```
/usr/local/lib/python3.7/dist-packages/seaborn/distributions.py:2557: FutureWarning:
  warnings.warn(msg, FutureWarning)
<matplotlib.axes._subplots.AxesSubplot at 0x7fe8499ba050>
```



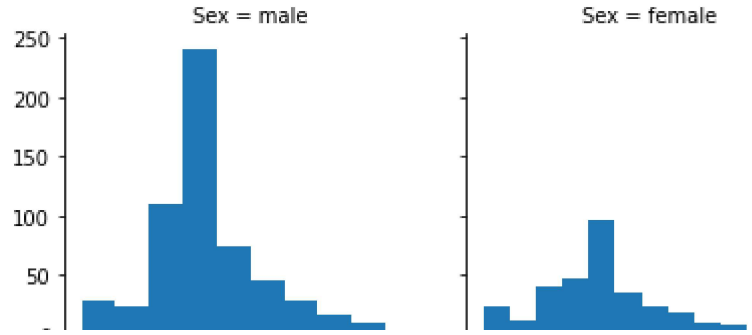

```
import seaborn as sns
sns.distplot(df['Age'],bins=5,hist=True,kde=False,color='red')
```

```
/usr/local/lib/python3.7/dist-packages/seaborn/distributions.py:2557: FutureWarning:
  warnings.warn(msg, FutureWarning)
<matplotlib.axes._subplots.AxesSubplot at 0x7fe848f7bd90>
```



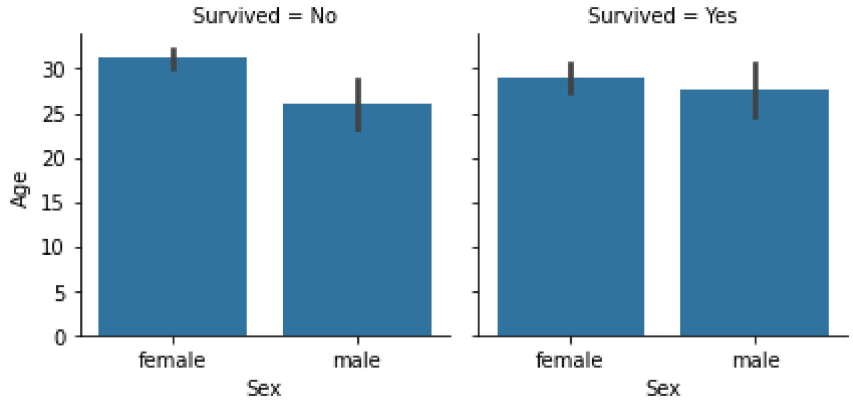

```
import matplotlib.pyplot as plt
import seaborn as sns
grid=sns.FacetGrid(df,col='Sex')
grid.map(plt.hist,'Age')
```

```
<seaborn.axisgrid.FacetGrid at 0x7fe8466c20d0>
```



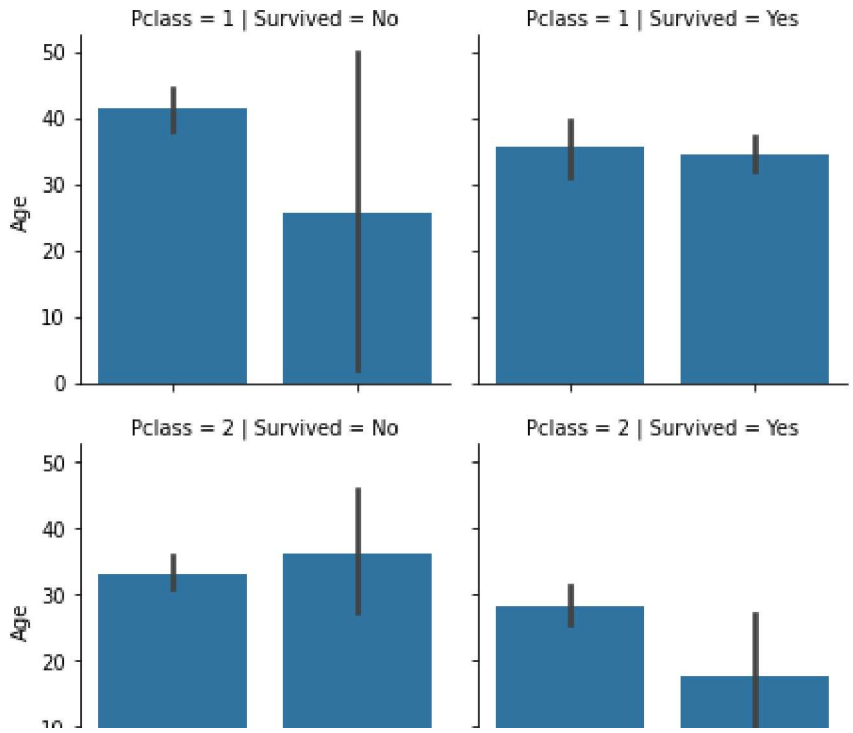

```
import matplotlib.pyplot as plt
import seaborn as sns
grid=sns.FacetGrid(df,col='Survived')
grid.map(sns.barplot,'Sex','Age')
grid.add_legend()
```

```
/usr/local/lib/python3.7/dist-packages/seaborn/axisgrid.py:643: UserWarning: Using t
  warnings.warn(warning)
<seaborn.axisgrid.FacetGrid at 0x7fe8466d0f90>
```




```
import matplotlib.pyplot as plt
import seaborn as sns
grid=sns.FacetGrid(df,row='Pclass',col='Survived')
grid.map(sns.barplot,'Sex','Age')
grid.add_legend()
```

```
/usr/local/lib/python3.7/dist-packages/seaborn/axisgrid.py:643: UserWarning: Using t
  warnings.warn(warning)
<seaborn.axisgrid.FacetGrid at 0x7fe83dc78b10>
```




```
def plot_correlation_map(df):
  corr=df.corr()
  s,ax=plt.subplots(figsize=(12,10))
  cmap=sns.diverging_palette(220,10,as_cmap=True)
  s=sns.heatmap(
      corr,
      cmap=cmap,
      square=True,
      cbar_kws={'shrink':.9},
      ax=ax,
      annot=True,
      annot_kws={'fontsize':12}
  )
plot_correlation_map(df)
```


```
df[["Survived","Pclass"]].groupby(["Survived"], as_index=False).mean()
```

	Survived	Pclass
0	No	2.531876
1	Yes	1.950292

```
df["Surname"] = df["Name"].str.split(".").str.get(0)
df["Surname"]
df["title"] = df["Surname"].str.split(",").str.get(-1)
df["title"]
```

```
0         Mr
1         Mr
2         Mr
3        Mrs
4         Mr
       ...
886       Mrs
887        Mr
888     Miss
889        Mr
890     Miss
Name: title, Length: 891, dtype: object
```

```
df.head()
```

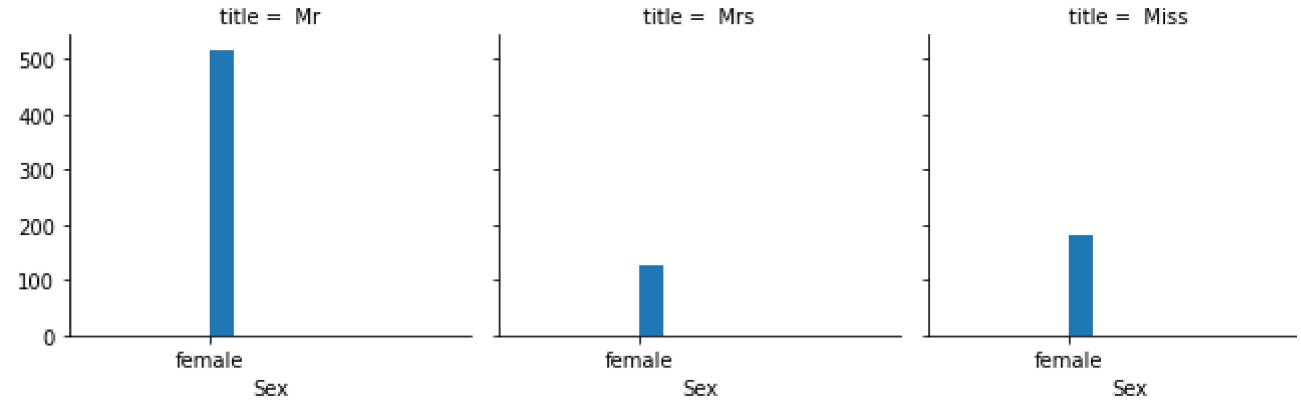
ıgerId	Survived	Pclass	Name	Sex	Age	SibSp	Parch	Ticket	Fare	Cabin
343	No	2	Collander, Mr. Erik Gustaf	male	28.0	0	0	248740	13.0000	NaN
76	No	3	Moen, Mr. Sigurd Hansen	male	25.0	0	0	348123	7.6500	F G73

```
df=df.drop('Name',axis=1)
df=df.drop('Surname',axis=1)
df.head()
```

	PassengerId	Survived	Pclass	Sex	Age	SibSp	Parch	Ticket	Fare	Cabin
0	343	No	2	male	28.0	0	0	248740	13.0000	NaN
1	76	No	3	male	25.0	0	0	348123	7.6500	F G73
2	641	No	3	male	20.0	0	0	350050	7.8542	NaN
3	568	No	3	female	29.0	0	4	349909	21.0750	NaN
4	672	No	1	male	31.0	1	0	F.C. 12750	52.0000	B71

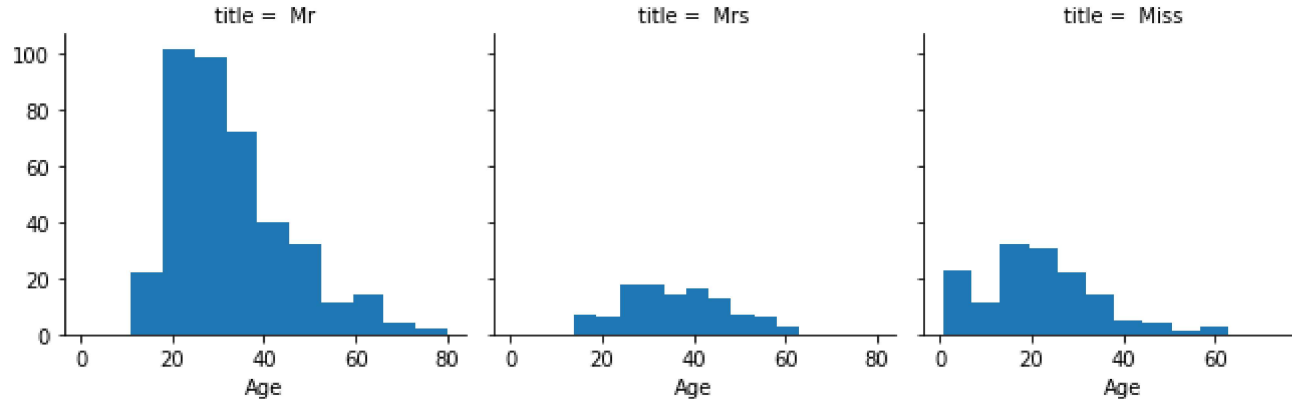
```
import seaborn as sns
import matplotlib.pyplot as plt
g=sns.FacetGrid(df,col='title')
g.map(plt.hist,"Sex")
```

```
<seaborn.axisgrid.FacetGrid at 0x7f0951e654d0>
```




```
import seaborn as sns
import matplotlib.pyplot as plt
g=sns.FacetGrid(df,col='title')
g.map(plt.hist,"Age")
```

```
<seaborn.axisgrid.FacetGrid at 0x7f09515d17d0>
```



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