Assignment 8 - Data Visualization 1

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ERP Number :- 38

TE Comp 1

- Use the inbuild 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.
- Write a code to check how the price of the ticket for each passenger is distributed by plotting a histogram.

In [2]:
```
import numpy as np
import matplotlib.pyplot as plt
import seaborn as sns
import pandas as pd
```

In [3]:
```
data=pd.read_csv('titanic.csv')
```

In [4]:
```
data.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 [5]:
```
data.shape
```

Out[5]:
```
(891, 12)
```

In [6]:
```
data.describe()
```

Out[6]:

	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

In [7]:
```
data
```

Out[7]:

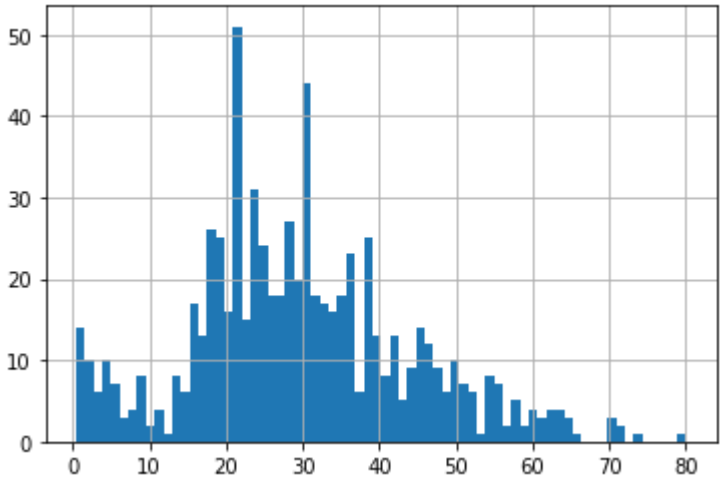
	PassengerId	Survived	Pclass	Name	Sex	Age	SibSp	Parch	Ticket	Fare	Cabin	I
0	1	0	3	Braund, Mr. Owen Harris	male	22.0	1	0	A/5 21171	7.2500	NaN	
1	2	1	1	Cumings, Mrs. John Bradley (Florence Briggs Th...	female	38.0	1	0	PC 17599	71.2833	C85	
2	3	1	3	Heikkinen, Miss. Laina	female	26.0	0	0	STON/O2. 3101282	7.9250	NaN	
3	4	1	1	Futrelle, Mrs. Jacques Heath (Lily May Peel)	female	35.0	1	0	113803	53.1000	C123	
4	5	0	3	Allen, Mr. William Henry	male	35.0	0	0	373450	8.0500	NaN	
...	...	...	...	...	...	...	...	...	...	...	...	...
886	887	0	2	Montvila, Rev. Juozas	male	27.0	0	0	211536	13.0000	NaN	
887	888	1	1	Graham, Miss. Margaret Edith	female	19.0	0	0	112053	30.0000	B42	

	PassengerId	Survived	Pclass	Name	Sex	Age	SibSp	Parch	Ticket	Fare	Cabin	I
888	889	0	3	Johnston, Miss. Catherine Helen "Carrie"	female	NaN	1	2	W./C. 6607	23.4500	NaN	
889	890	1	1	Behr, Mr. Karl Howell	male	26.0	0	0	111369	30.0000	C148	
890	891	0	3	Dooley, Mr. Patrick	male	32.0	0	0	370376	7.7500	NaN	

891 rows × 12 columns

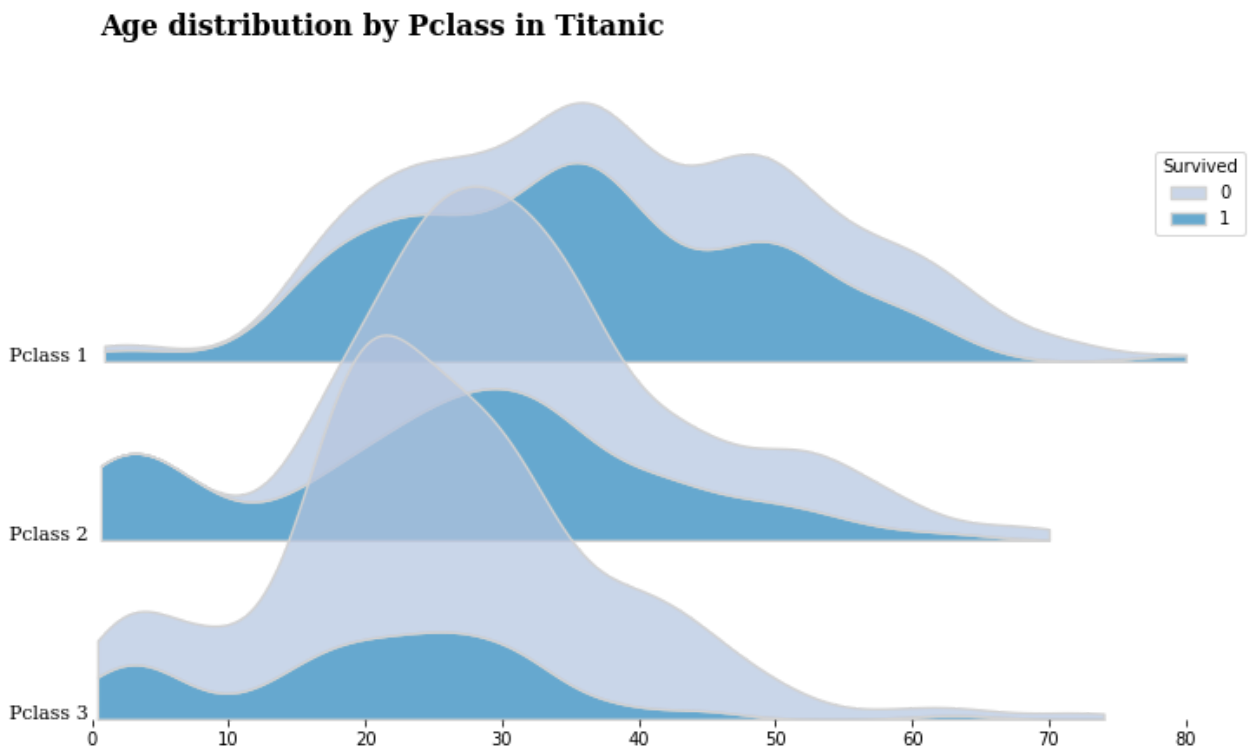
In [8]:
```
###Now let us look at the ages of the passengers

data['Age'].hist(bins=70)
```

Out[8]:
```
<AxesSubplot:>
```



In [13]:
```
fig = plt.figure(figsize=(12, 8))
gs = fig.add_gridspec(3,1)
gs.update(hspace= -0.55)

axes = list()
colors = ["#022133", "#5c693b", "#51371c"]

for idx, cls, c in zip(range(3), sorted(data['Pclass'].unique()), colors):
    axes.append(fig.add_subplot(gs[idx, 0]))

    # you can also draw density plot with matplotlib + scipy.
    sns.kdeplot(x='Age', data=data[data['Pclass']==cls],
                fill=True, ax=axes[idx], cut=0, bw_method=0.25,
                lw=1.4, edgecolor='lightgray', hue='Survived',
                multiple="stack", palette='PuBu', alpha=0.7
               )
```

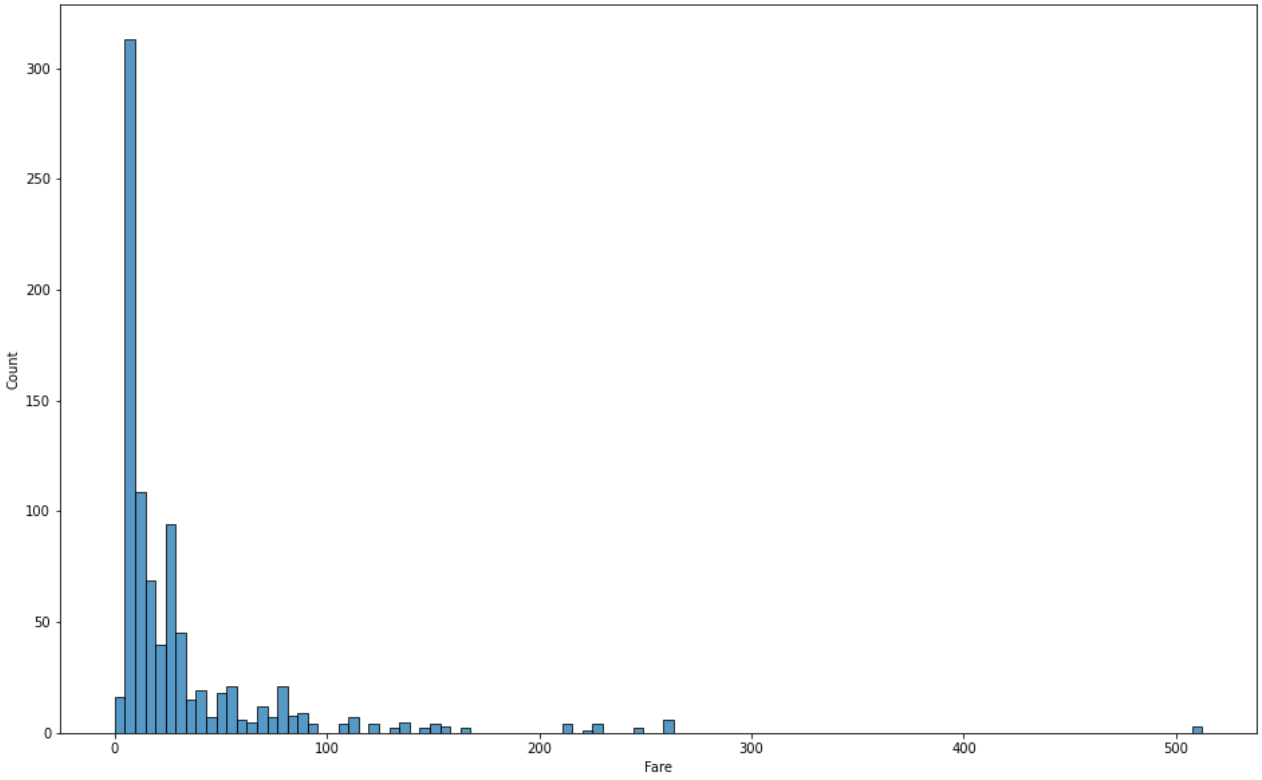
```
    axes[idx].set_ylim(0, 0.04)
    axes[idx].set_xlim(0, 85)

    axes[idx].set_yticks([])
    if idx != 2 : axes[idx].set_xticks([])
    axes[idx].set_ylabel('')
    axes[idx].set_xlabel('')

    spines = ["top","right","left","bottom"]
    for s in spines:
        axes[idx].spines[s].set_visible(False)

    axes[idx].patch.set_alpha(0)
    axes[idx].text(-0.2,0,f'Pclass {cls}',fontweight="light", fontfamily='serif', fonts
    if idx != 1 : axes[idx].get_legend().remove()

fig.text(0.13,0.81,"Age distribution by Pclass in Titanic", fontweight="bold", fontfami

plt.show()
```



From above graph, we can infer that there are less numbers of survivers form class 2 & 3 and their age group is between 10-30 years

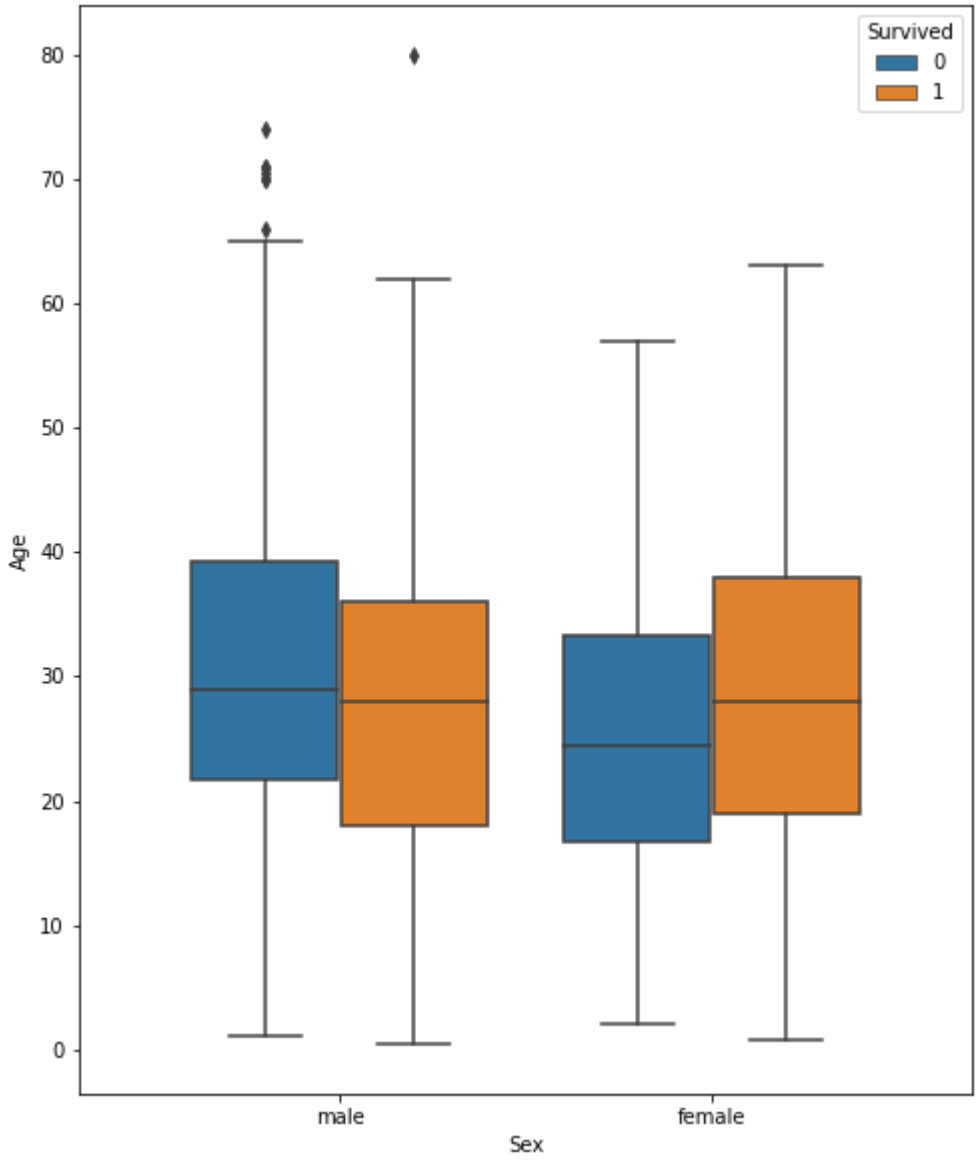
In [10]:

```
plt.figure(figsize=(16,10))
sns.histplot(data=data['Fare'])
plt.show()
```



In [11]:
```
plt.figure(figsize=(8,10))
sns.boxplot(y=data['Age'], x=data['Sex'], hue=data['Survived'])
plt.plot()
```

Out[11]:
```
[]
```



1) Number of females survived is more than female casualties.

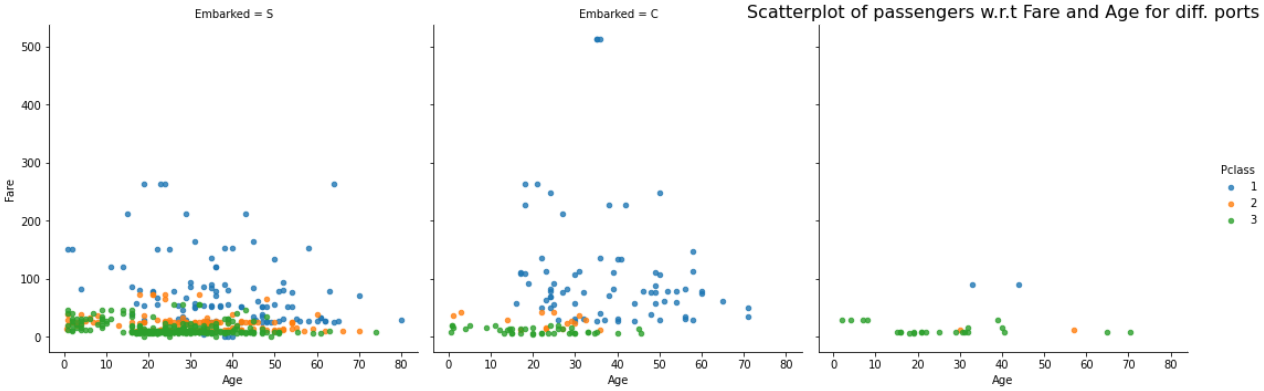
2) Number of males survived is less than the male casualties.

3) Hence, first priority was to save females then males.

In [12]:
```
sns.lmplot('Age', 'Fare', data=data, fit_reg=False, hue="Pclass", col="Embarked", scatt
plt.subplots_adjust(top=0.9)
plt.title('Scatterplot of passengers w.r.t Fare and Age for diff. ports', fontsize=16)
```

```
c:\users\orionoriginal\appdata\local\programs\python\python39\lib\site-packages\seaborn
\_decorators.py:36: FutureWarning: Pass the following variables as keyword args: x, y. F
rom version 0.12, the only valid positional argument will be `data`, and passing other a
rguments without an explicit keyword will result in an error or misinterpretation.
  warnings.warn(
```

Out[12]:
```
Text(0.5, 1.0, 'Scatterplot of passengers w.r.t Fare and Age for diff. ports')
```



From above plot we get that more number of passengers Embarked at port S & C