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B-34

```
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
import seaborn as sns
%matplotlib inline

train = pd.read_csv('/content/titanic_train (2).csv')
train.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
4	5	0	3	Allen, Mr. William Henry	male	35.0	0	0	373450	8.0500	NaN	S

Next steps: Generate code with train View recommended plots New interactive sheet

```
train.info(verbose=True)
```

```
<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
```

```
d=train.describe()
d
```

	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

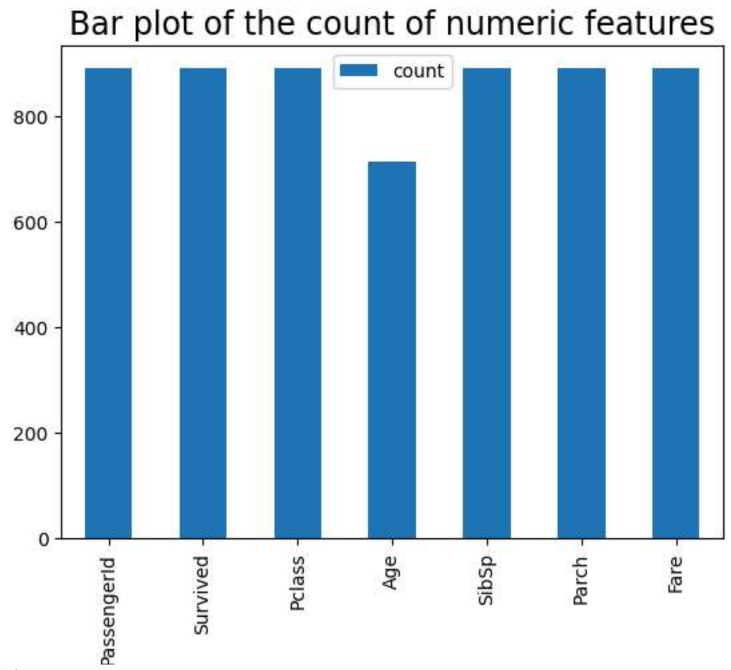
Next steps: Generate code with d View recommended plots New interactive sheet

Plot a bar diagram to check the number of numeric entries

From the bar diagram, it shows that there are some age entries missing as the number of count for 'Age' is less than the other counts. We can do some impute/transformation of the data to fill-up the missing entries.

```
dT=d.T
dT.plot.bar(y='count')
plt.title("Bar plot of the count of numeric features",fontsize=17)
```

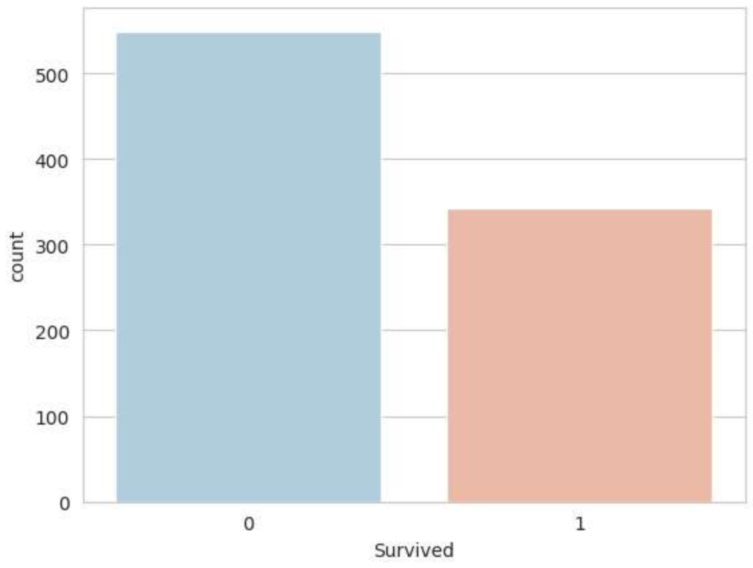
```
Text(0.5, 1.0, 'Bar plot of the count of numeric features')
```

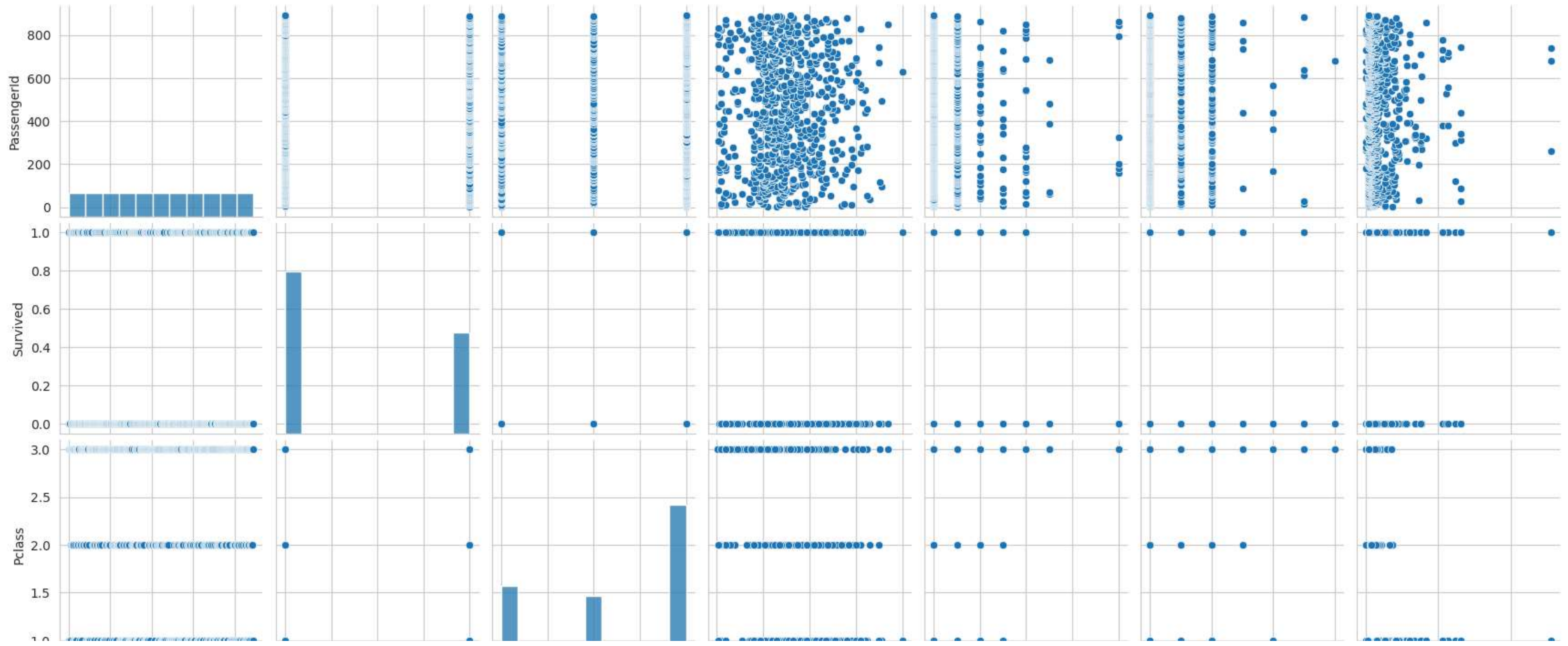


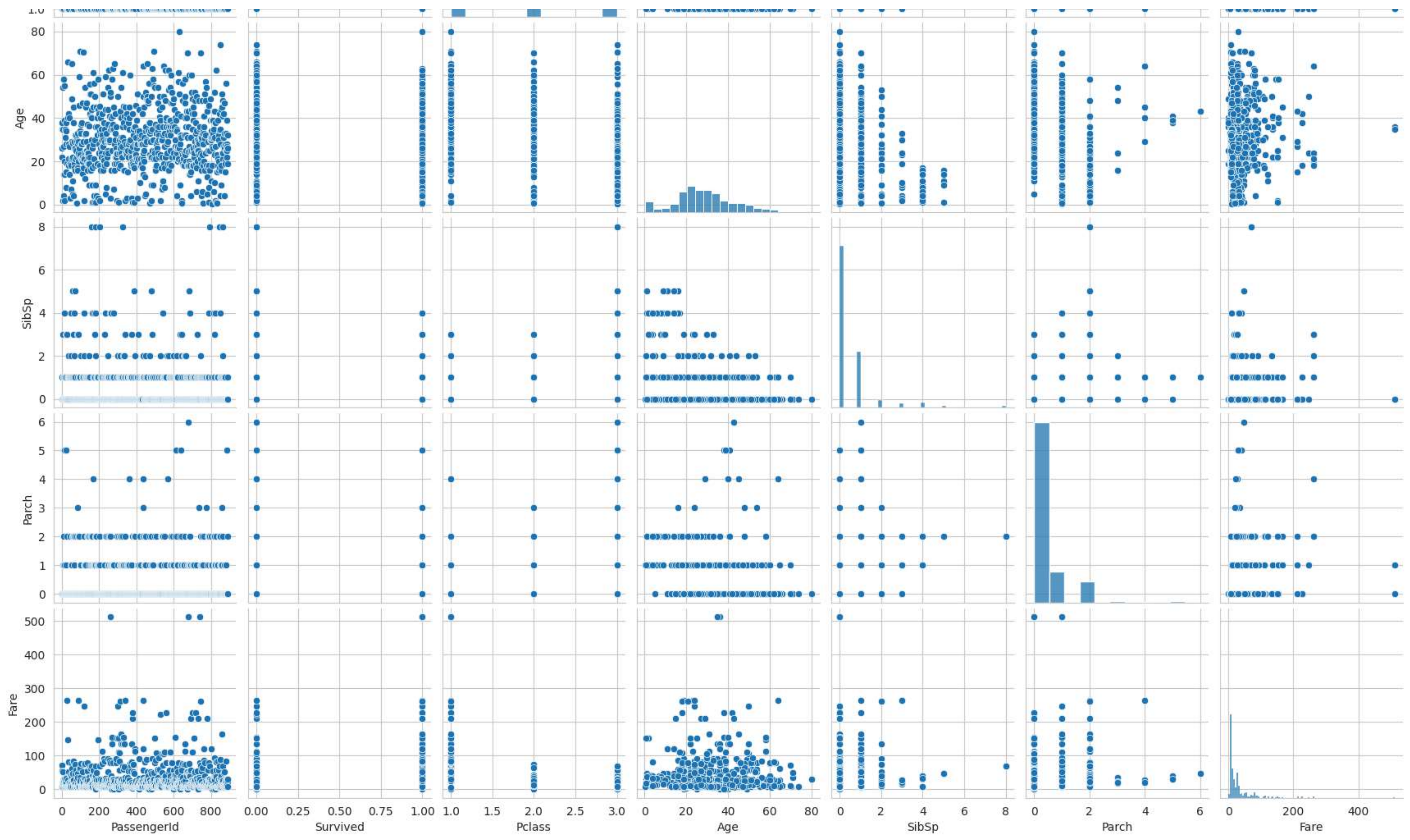
Check the relative size of survived and not-survived

```
sns.set_style('whitegrid')
sns.countplot(x='Survived',data=train,palette='RdBu_r')
sns.pairplot(train)
```

```
<ipython-input-7-3d95a3593ccf>:2: FutureWarning:

Passing `palette` without assigning `hue` is deprecated and will be removed in v0.14.0. Assign the `x` variable to `hue` and set `legend=False` for the same effect.

  sns.countplot(x='Survived',data=train,palette='RdBu_r')
<seaborn.axisgrid.PairGrid at 0x7995ab271c00>
```







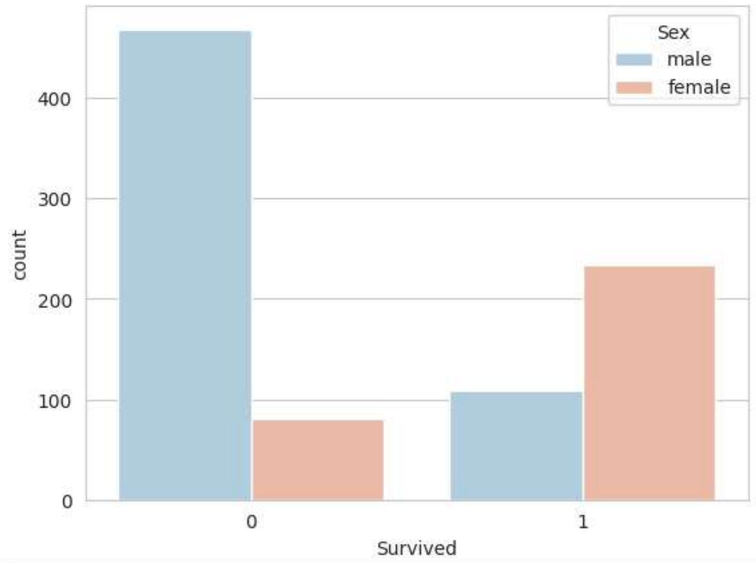
Age
SibSp
Parch
Fare
PassengerId
Survived
Pclass
Age
SibSp
Parch
Fare

Is there a pattern for the survivability based on sex?

It looks like more female survived than males!

```
sns.set_style('whitegrid')
sns.countplot(x='Survived',hue='Sex',data=train,palette='RdBu_r')
```

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

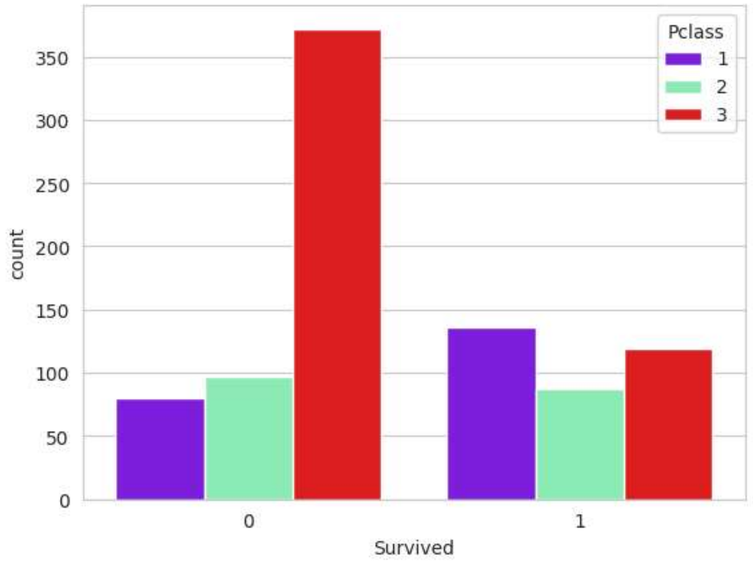


What about any pattern related to passenger class?

It looks like disproportionately large number of 3rd class passengers died!

```
sns.set_style('whitegrid')
sns.countplot(x='Survived',hue='Pclass',data=train,palette='rainbow')
```

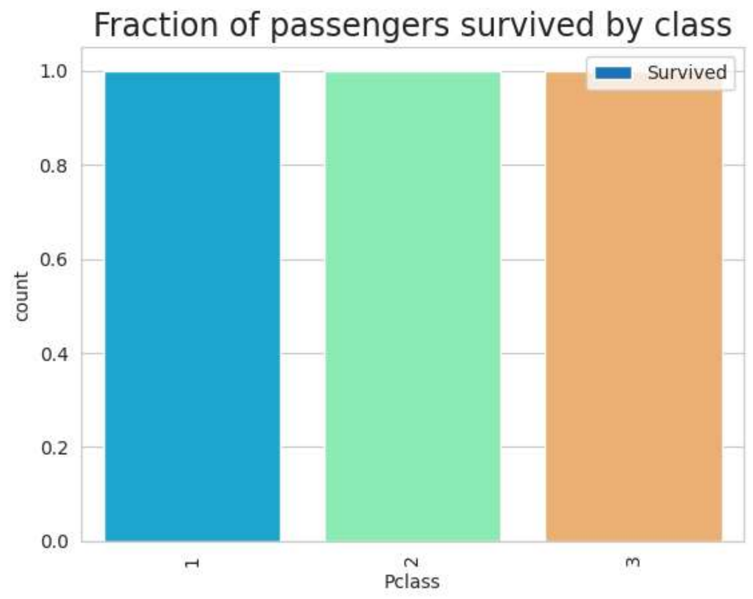
```
<Axes: xlabel='Survived', ylabel='count'>
```



Following code extracts and plots the fraction of passenger count that survived, by each class

```
f_class_survived=train.groupby('Pclass')['Survived'].mean()
f_class_survived = pd.DataFrame(f_class_survived)
f_class_survived
f_class_survived.plot.bar(y='Survived')
sns.countplot(x='Survived',data=f_class_survived,palette='rainbow')
plt.title("Fraction of passengers survived by class",fontsize=17)
```

```
<ipython-input-10-0920c7b673ab>:5: FutureWarning:

Passing `palette` without assigning `hue` is deprecated and will be removed in v0.14.0. Assign the `x` variable to `hue` and set `legend=False` for the same effect.

  sns.countplot(x='Survived',data=f_class_survived,palette='rainbow')
Text(0.5, 1.0, 'Fraction of passengers survived by class')
```

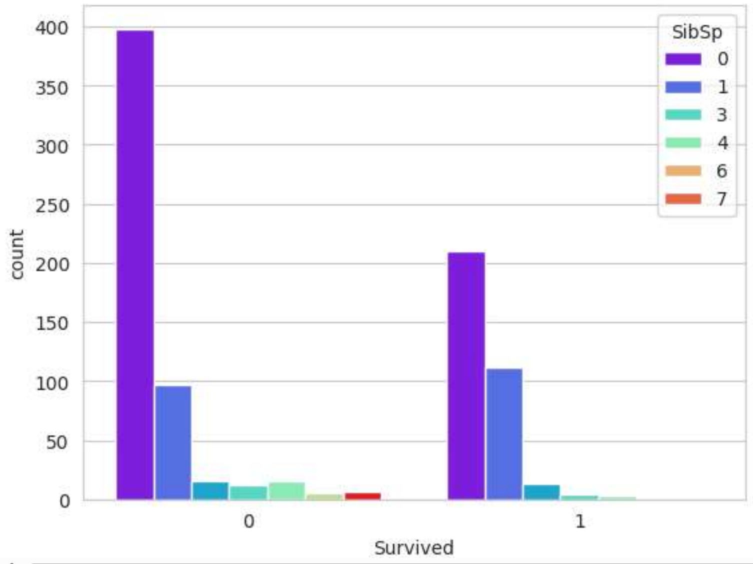


What about any pattern related to having sibling and spouse?

It looks like there is a weak trend that chance of survibility increased if there were more number of sibling or spouse

```
sns.set_style('whitegrid')
sns.countplot(x='Survived',hue='SibSp',data=train,palette='rainbow')
```

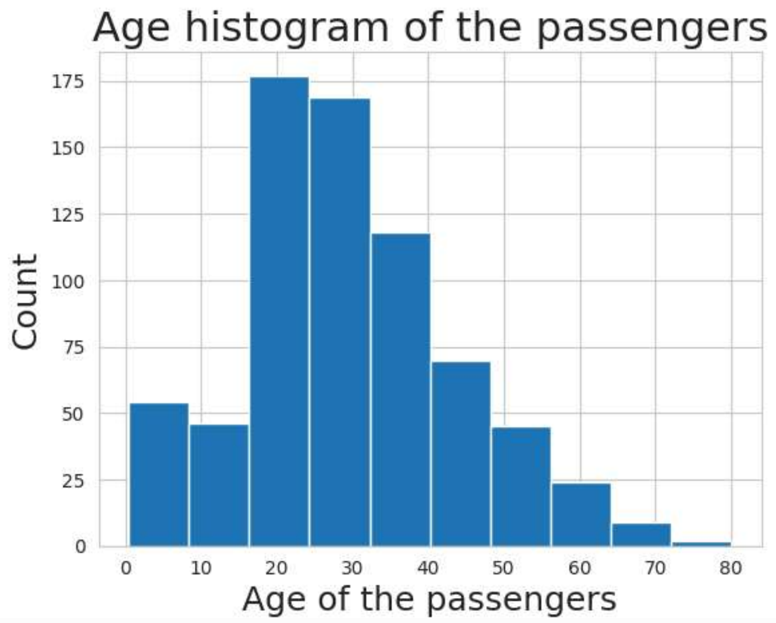
```
<Axes: xlabel='Survived', ylabel='count'>
```



How does the overall age distribution look like?

```
plt.xlabel("Age of the passengers",fontsize=18)
plt.ylabel("Count",fontsize=18)
plt.title("Age histogram of the passengers",fontsize=22)
#train['Age'].hist(bins=30,color='darkred',alpha=0.7,figsize=(10,6))
train['Age'].hist()
```

```
<Axes: title={'center': 'Age histogram of the passengers'}, xlabel='Age of the passengers', ylabel='Count'>
```

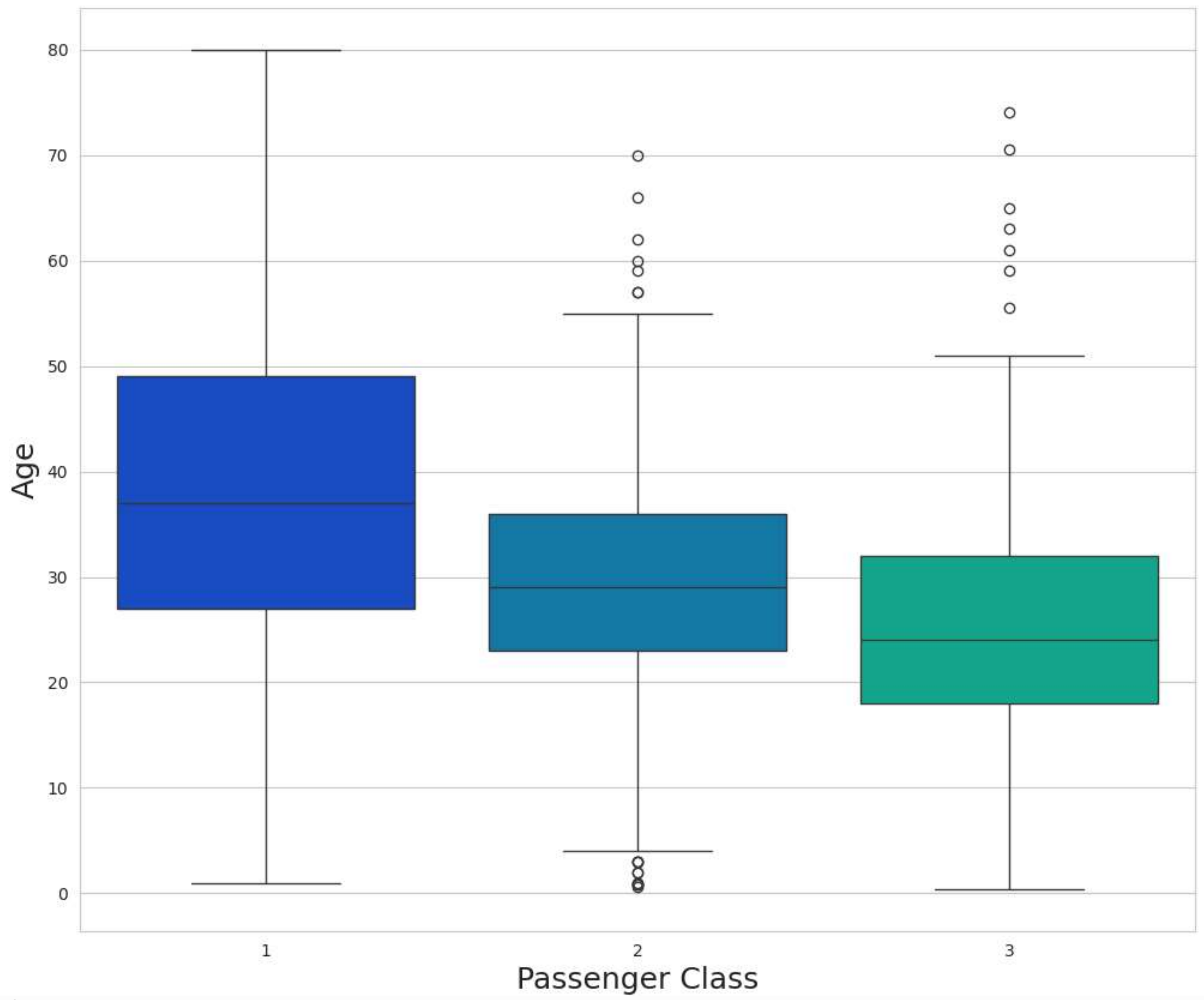


How does the age distribution look like across passenger class?

It looks like that the average age is different for three classes and it generally decreases from 1st class to 3rd class.

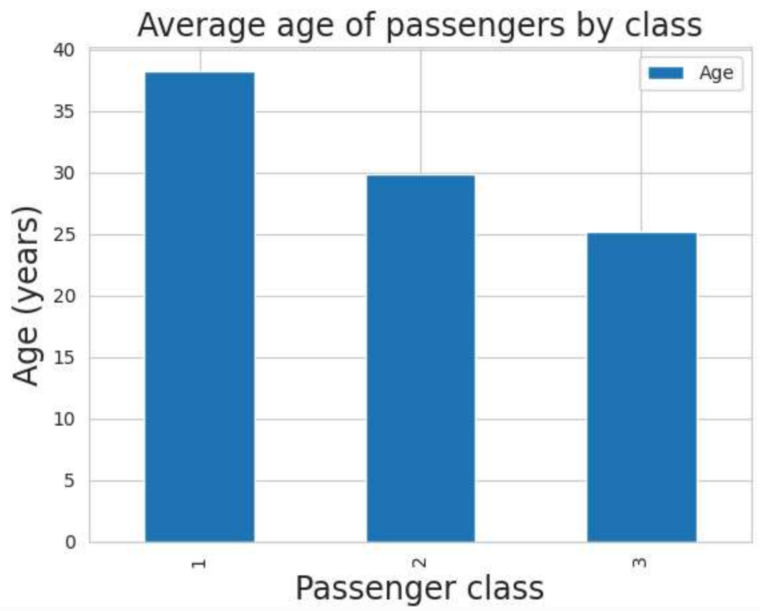
```
plt.figure(figsize=(12, 10))
plt.xlabel("Passenger Class",fontsize=18)
plt.ylabel("Age",fontsize=18)
sns.boxplot(x='Pclass',y='Age',data=train,palette='winter')
```

```
<ipython-input-13-2a1e3ee6c4a4>:4: FutureWarning:

Passing `palette` without assigning `hue` is deprecated and will be removed in v0.14.0. Assign the `x` variable to `hue` and set `legend=False` for the same effect.

  sns.boxplot(x='Pclass',y='Age',data=train,palette='winter')
<Axes: xlabel='Passenger Class', ylabel='Age'>
```



```
f_class_Age=train.groupby('Pclass')['Age'].mean()
f_class_Age = pd.DataFrame(f_class_Age)

f_class_Age.plot.bar(y='Age')
plt.title("Average age of passengers by class",fontsize=17)
plt.ylabel("Age (years)", fontsize=17)
plt.xlabel("Passenger class", fontsize=17)
```

```
Text(0.5, 0, 'Passenger class')
```



```
a=list(f_class_Age['Age'])

def impute_age(cols):
    Age = cols[0]
    Pclass = cols[1]

    if pd.isnull(Age):

        if Pclass == 1:
            return a[0]

        elif Pclass == 2:
            return a[1]

        else:
            return a[2]

    else:
        return Age
```

Apply the above-defined function and plot the count of numeric features

```
train['Age'] = train[['Age','Pclass']].apply(impute_age,axis=1)
d=train.describe()

dT=d.T
```