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

```
df = pd.read_csv('/content/train (2).csv')
```

```
df.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
```

```
df.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

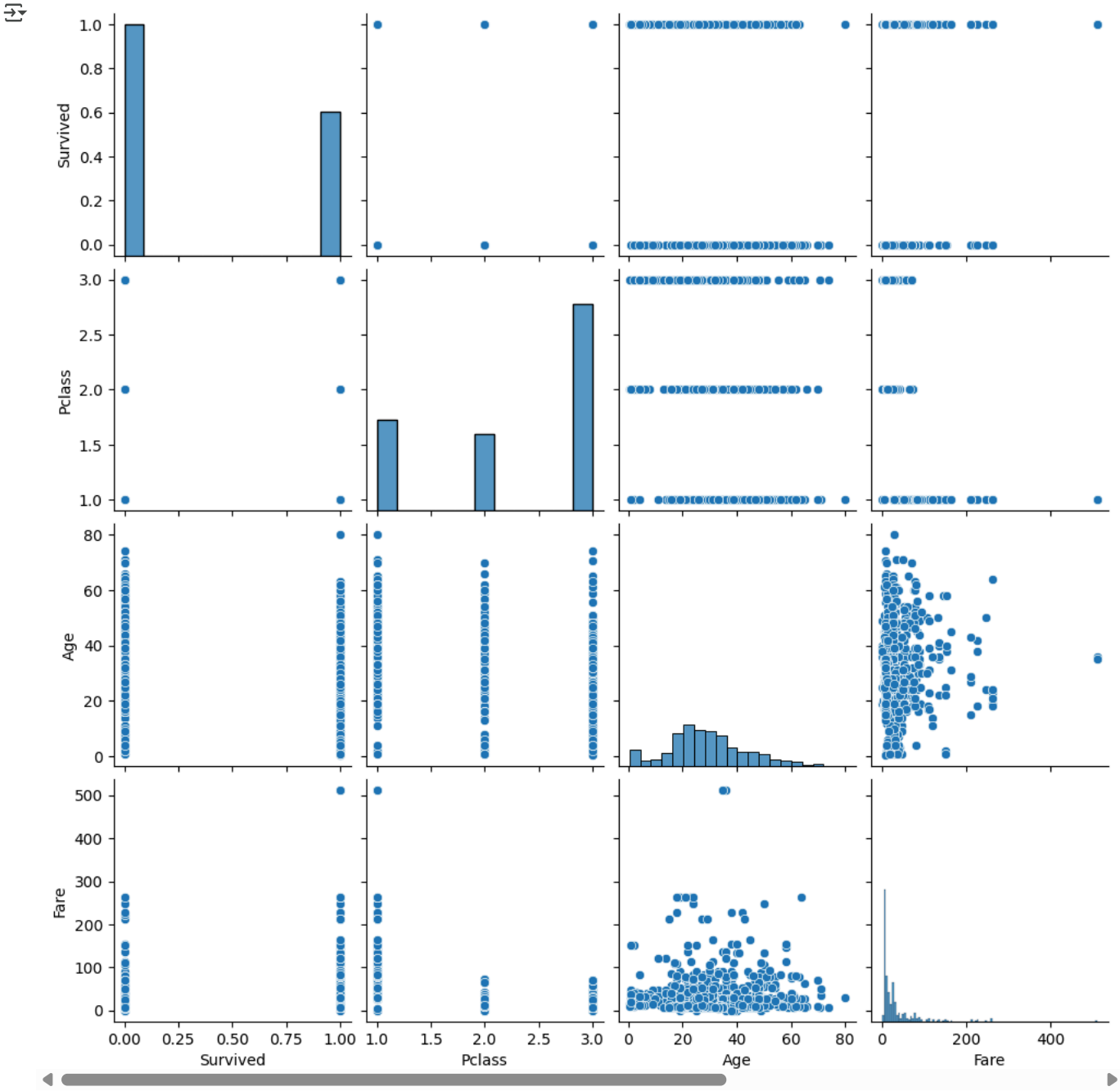
```
df['Survived'].value_counts()
df['Pclass'].value_counts()
df['Sex'].value_counts()
```

Sex	count
male	577
female	314

dtype: int64

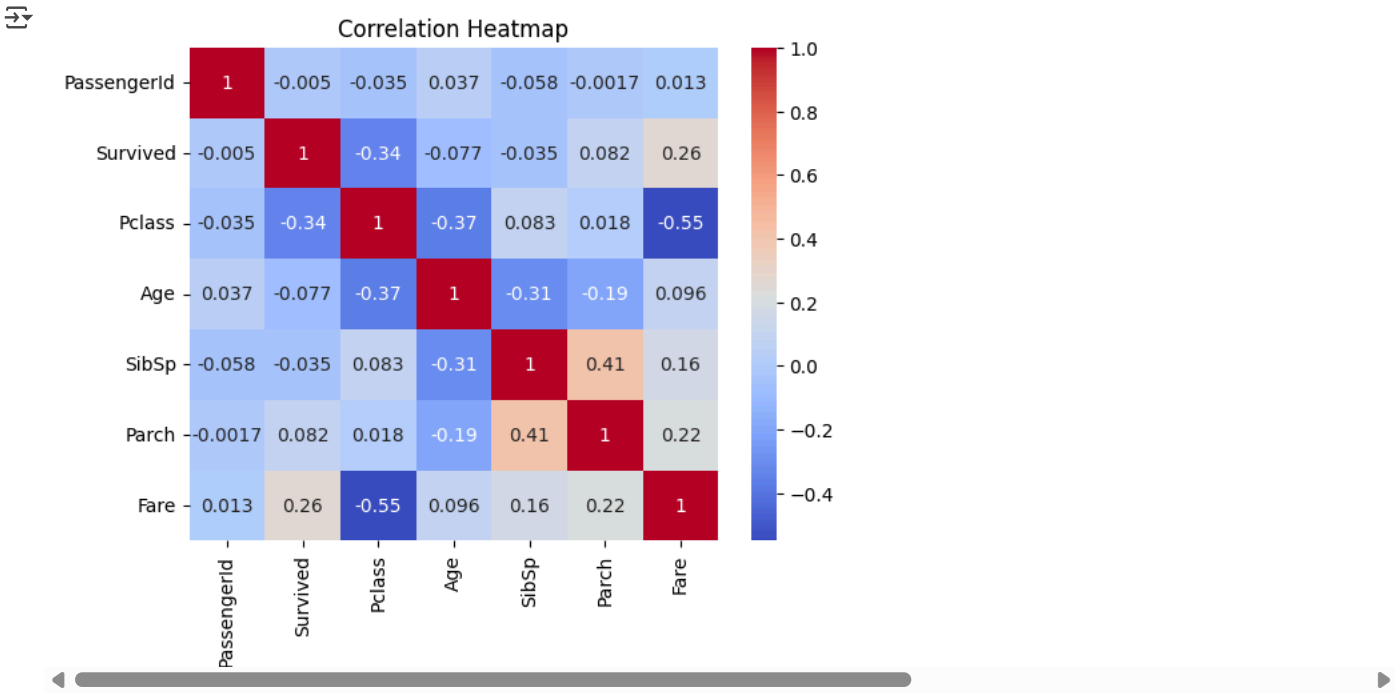
Pairplot: Survivors are more frequent in higher classes and younger ages.

```
sns.pairplot(df[['Survived', 'Pclass', 'Age', 'Fare']])
plt.show()
```



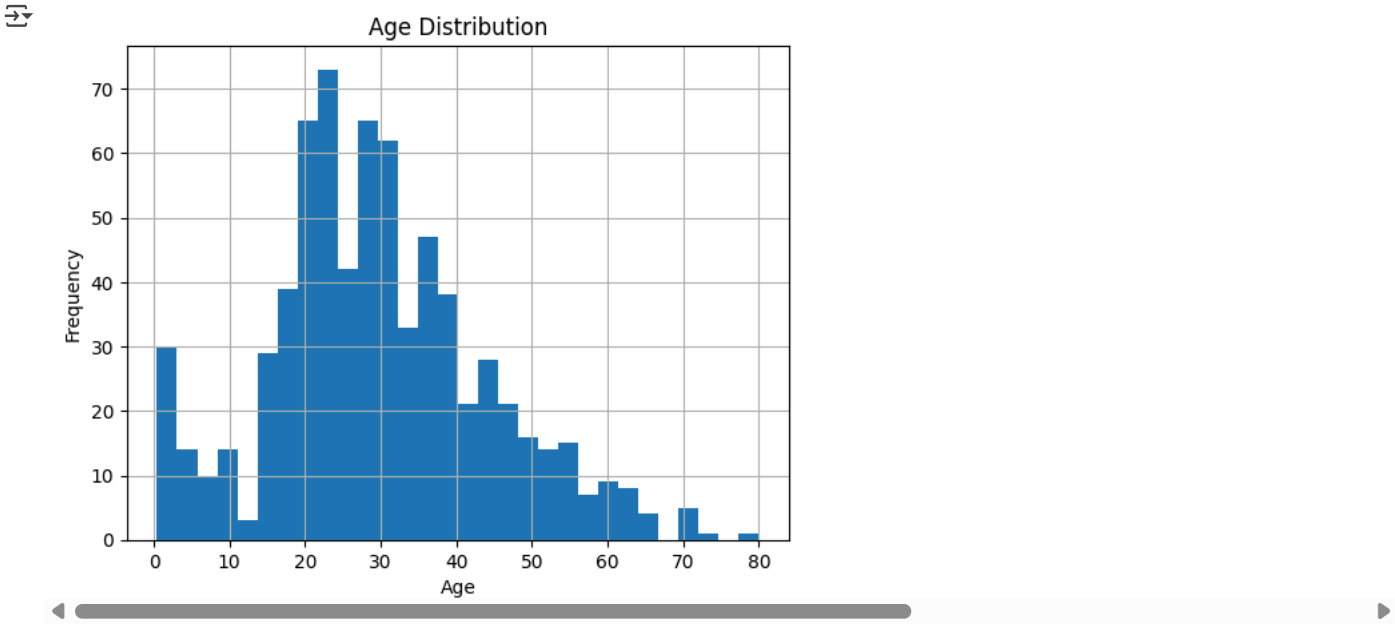
Heatmap: Strong positive correlation between Fare and Pclass (negative because lower class has higher fare).

```
corr = df.corr(numeric_only=True) # Calculate correlation only on numeric columns
sns.heatmap(corr, annot=True, cmap='coolwarm')
plt.title('Correlation Heatmap')
plt.show()
```



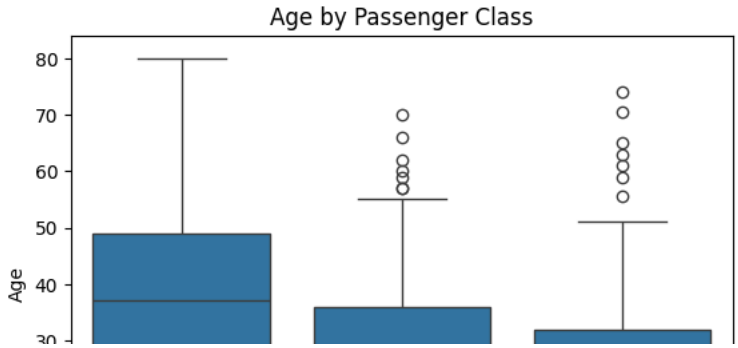
Histogram: Most passengers are in the 20–40 age range.

```
df['Age'].hist(bins=30)
plt.title('Age Distribution')
plt.xlabel('Age')
plt.ylabel('Frequency')
plt.show()
```

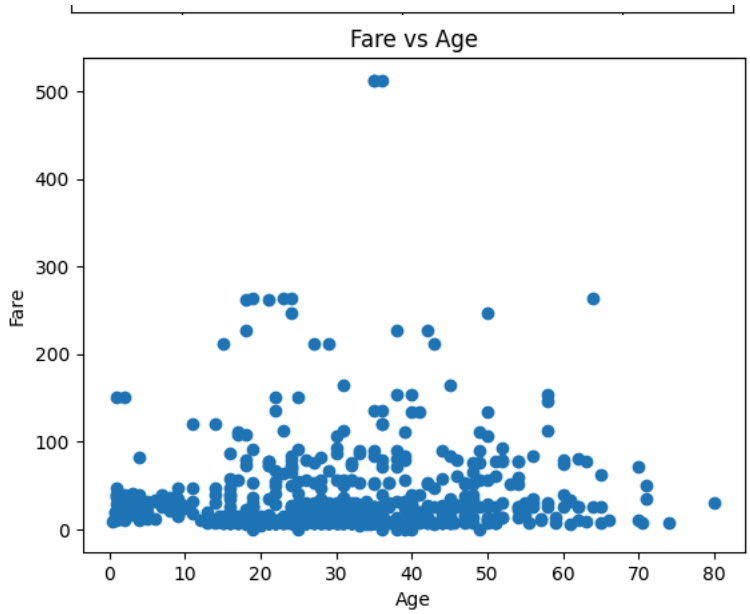


Boxplot: Outliers present in Fare; higher fares usually in first class.

```
sns.boxplot(x='Pclass', y='Age', data=df)
plt.title('Age by Passenger Class')
plt.show()
```




```
plt.scatter(df['Age'], df['Fare'])
plt.title('Fare vs Age')
plt.xlabel('Age')
plt.ylabel('Fare')
plt.show()
```



Majority of passengers are in 3rd class.

-Survival rate is higher among females and higher-class passengers.

-Age and Fare show varied distribution; outliers exist in Fare.