```
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
import seaborn as sns
df = pd.read_csv("/content/train.csv")
```

```
df.head(3)
```

	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

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

```
df.info()           # Column types and missing data
```

```
<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()       # Summary statistics
```

	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.isnull().sum()   # Missing values
```

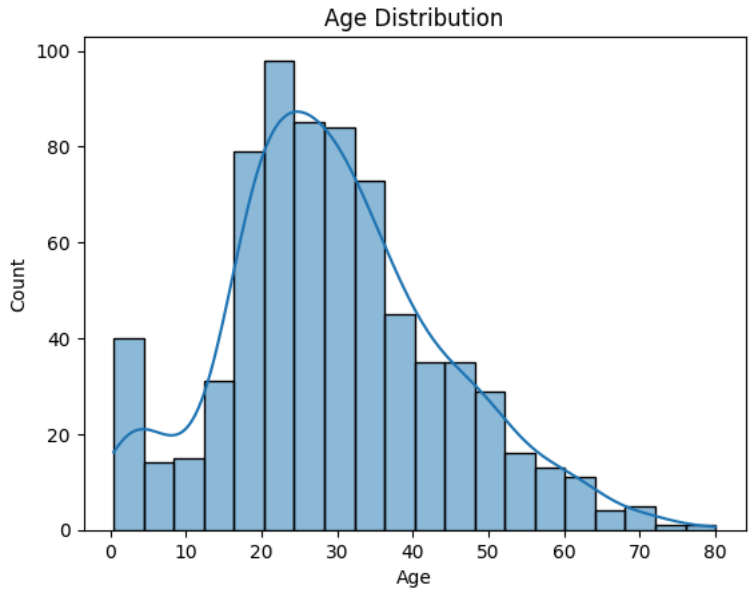
	0
PassengerId	0
Survived	0
Pclass	0
Name	0
Sex	0
Age	0
SibSp	0
Parch	0
Ticket	0
Fare	0
Cabin	687
Embarked	0

dtype: int64

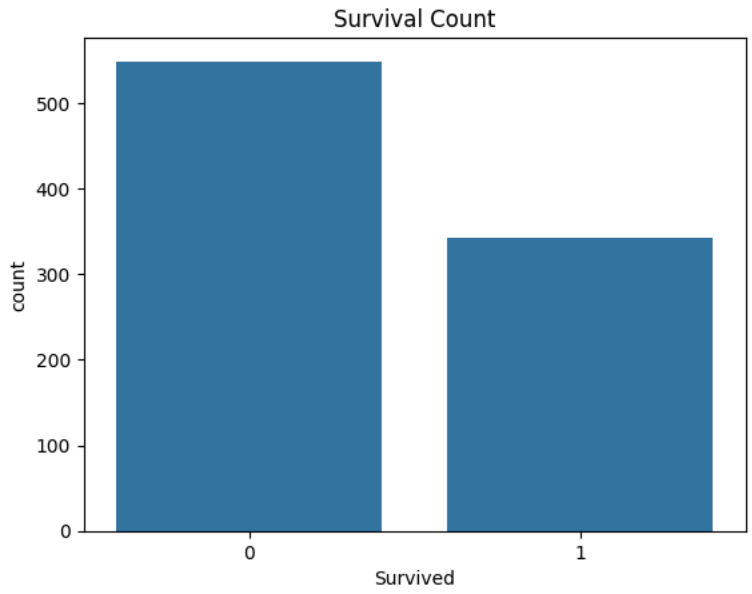
```
df.columns          # All column names
```

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

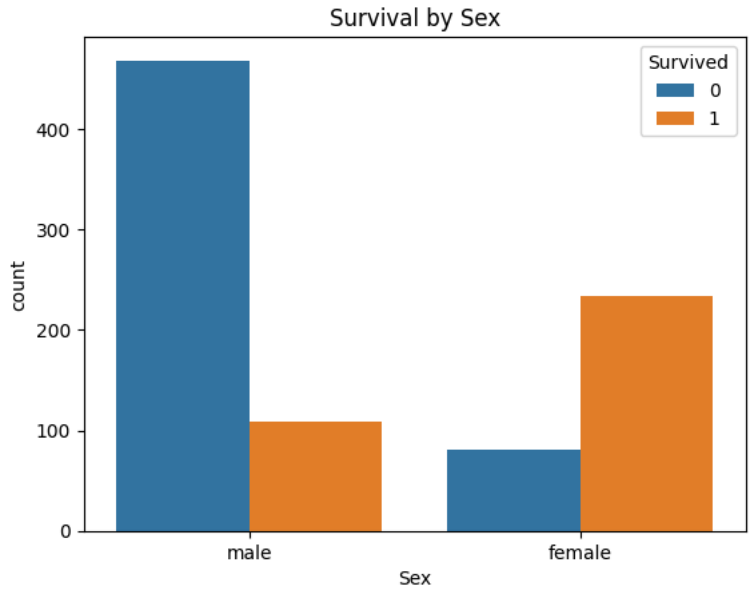
```
# Histogram for Age
sns.histplot(df['Age'].dropna(), kde=True)
plt.title('Age Distribution')
plt.show()
```




```
# Count plot for Survived
sns.countplot(data=df, x='Survived')
plt.title('Survival Count')
plt.show()
```

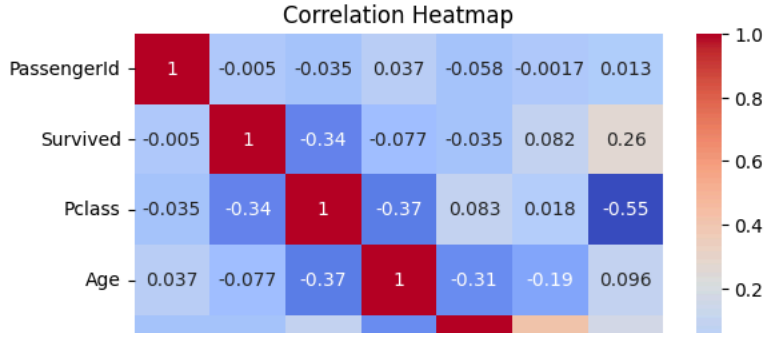



```
sns.countplot(x='Sex', hue='Survived', data=df)
plt.title('Survival by Sex')
plt.show()
```

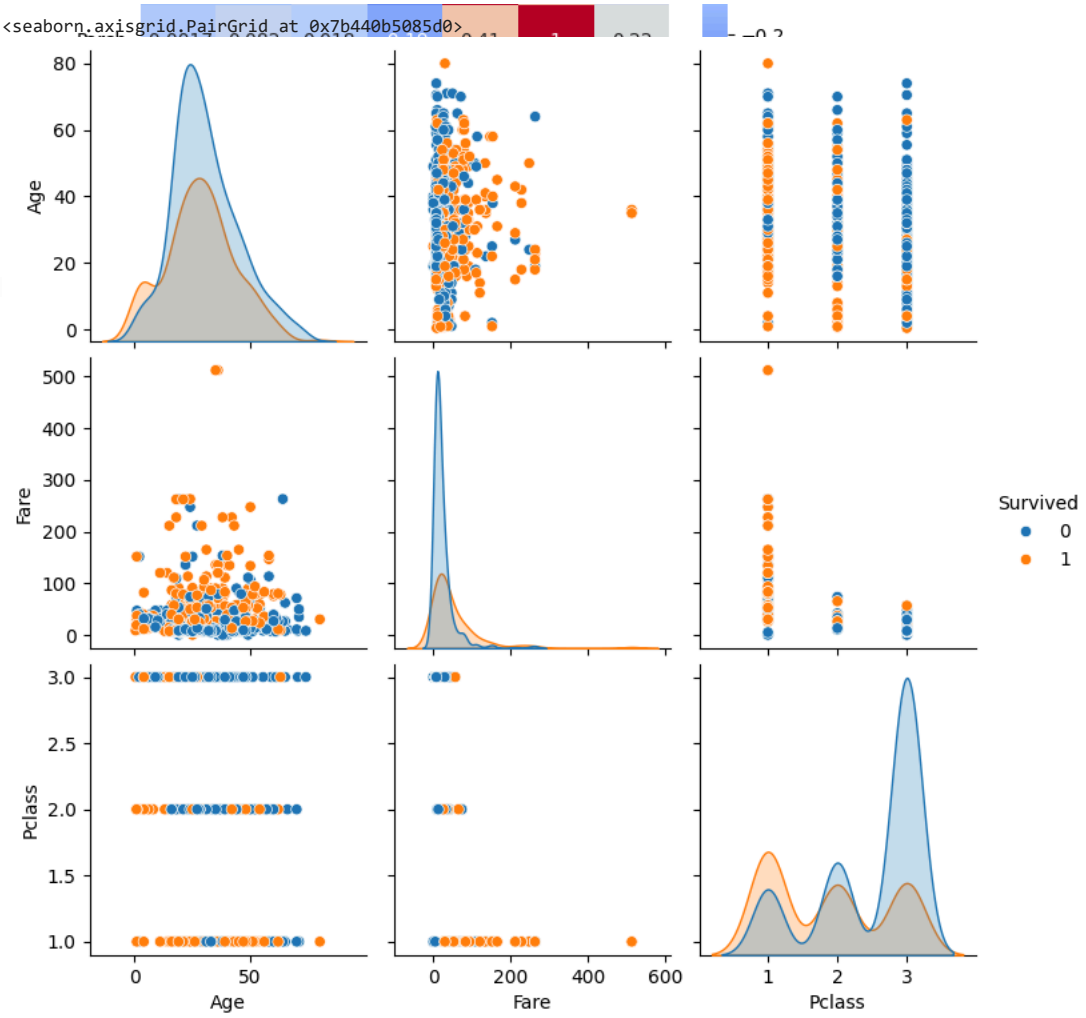



```
# Select only numeric columns for correlation calculation
numeric_df = df.select_dtypes(include=np.number)

# Calculate and plot the correlation heatmap for numeric columns
sns.heatmap(numeric_df.corr(), annot=True, cmap='coolwarm')
plt.title('Correlation Heatmap')
plt.show()
```




```
sns.pairplot(df[['Survived', 'Age', 'Fare', 'Pclass']].dropna(), hue='Survived')
```




```
# Fill missing Age with median
df['Age'] = df['Age'].fillna(df['Age'].median())

# Drop rows with too many missing values
df.dropna(subset=['Embarked'], inplace=True)


# Observation:
# Most of the survivors were female. Higher survival among 1st class passengers.


# Final Summary

''' Most passengers were in 3rd class.
 Females had a higher survival rate.
 There is a correlation between fare and survival.
 Age shows slight skewness; handled by median imputation '''
```