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

```
url = 'https://raw.githubusercontent.com/datasciencedojo/datasets/master/titanic.csv'
titanic = pd.read_csv(url)
```

```
titanic.head()
```

Follow link (ctrl + click)

	PassengerId	Survived	Pclass	Name	Sex	Age	SibSp	Parch	Ticket	Fare	Cabin	Embarke
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	
				Futrelle,								

```
titanic.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
```

```
titanic['Age'].fillna(titanic['Age'].median(), inplace=True)
```

```
titanic['Embarked'].fillna(titanic['Embarked'].mode()[0], inplace=True)
```

```
titanic.drop(columns=['Cabin'], inplace=True)
```

```
titanic['FamilySize'] = titanic['SibSp'] + titanic['Parch'] + 1
```

```
titanic['IsAlone'] = 1  # Initialize to 1 (i.e., is alone)
titanic['IsAlone'].loc[titanic['FamilySize'] > 1] = 0  # If FamilySize > 1, then not alone
```

```
<ipython-input-9-178d7761e304>:2: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.
```

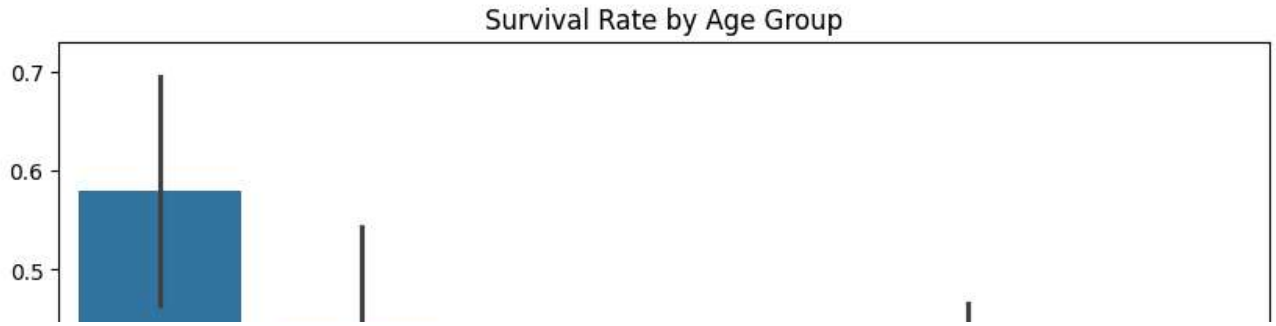
```
titanic['IsAlone'].loc[titanic['FamilySize'] > 1] = 0  # If FamilySize > 1, then not alone


titanic.to_csv('cleaned_titanic.csv', index=False)
```

```
from google.colab import files
files.download('cleaned_titanic.csv')
```

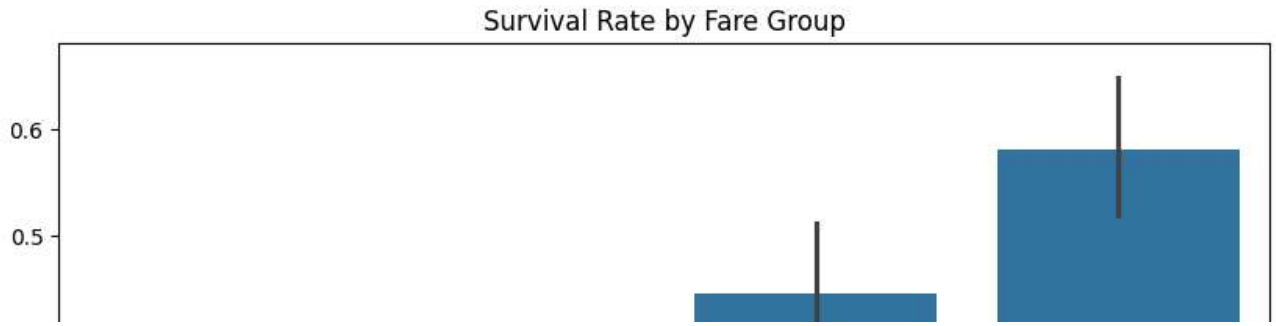
```
bins = [0, 12, 18, 25, 35, 60, 100]
labels = ['Child', 'Teenager', 'Young Adult', 'Adult', 'Senior', 'Elderly']
titanic['AgeGroup'] = pd.cut(titanic['Age'], bins, labels=labels)


plt.figure(figsize=(10, 6))
sns.barplot(x='AgeGroup', y='Survived', data=titanic)
plt.title('Survival Rate by Age Group')
plt.show()
```


```
fare_bins = [-1, 7.91, 14.454, 31, 513]
fare_labels = ['Low Fare', 'Median Fare', 'Average Fare', 'High Fare']
titanic['FareGroup'] = pd.cut(titanic['Fare'], bins=fare_bins, labels=fare_labels)
```

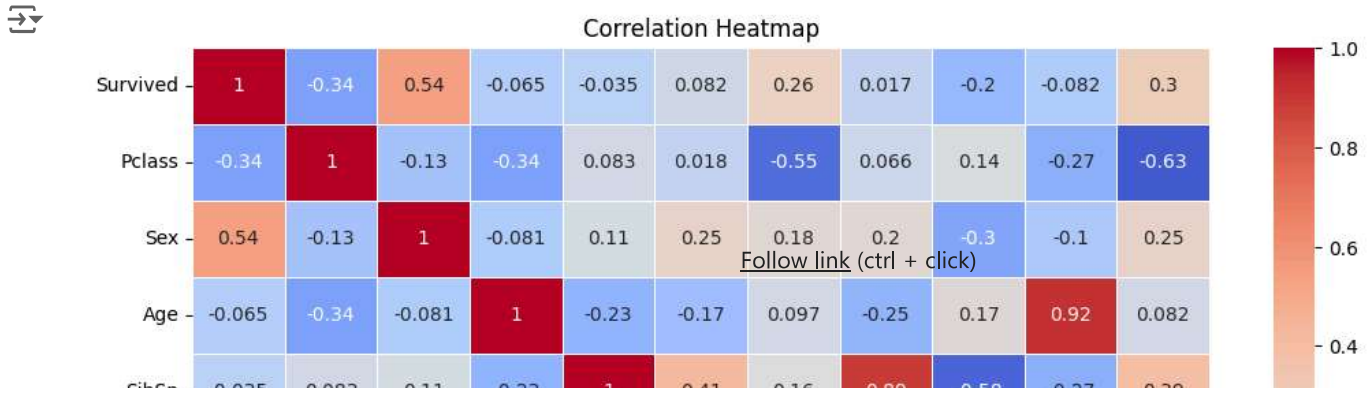
```
plt.figure(figsize=(10, 6))
sns.barplot(x='FareGroup', y='Survived', data=titanic)
plt.title('Survival Rate by Fare Group')
plt.show()
```



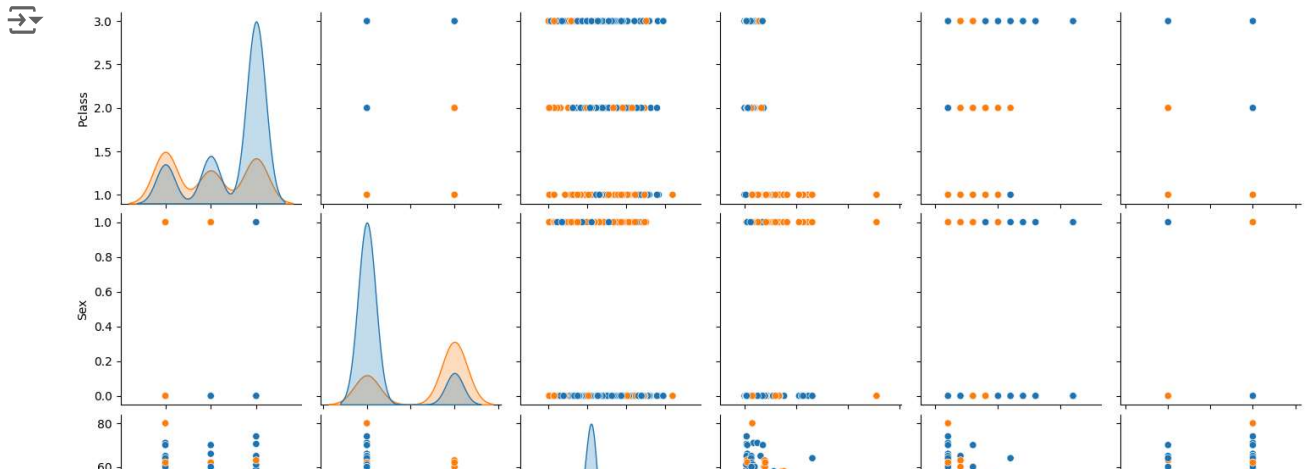

```
titanic_encoded = titanic.copy()
titanic_encoded['Sex'] = titanic_encoded['Sex'].map({'male': 0, 'female': 1})
titanic_encoded['Embarked'] = titanic_encoded['Embarked'].map({'C': 0, 'Q': 1, 'S': 2})
titanic_encoded['AgeGroup'] = titanic_encoded['AgeGroup'].cat.codes
titanic_encoded['FareGroup'] = titanic_encoded['FareGroup'].cat.codes
```

```
numeric_columns = ['Survived', 'Pclass', 'Sex', 'Age', 'SibSp', 'Parch', 'Fare', 'FamilySize', 'IsAlone', '
```

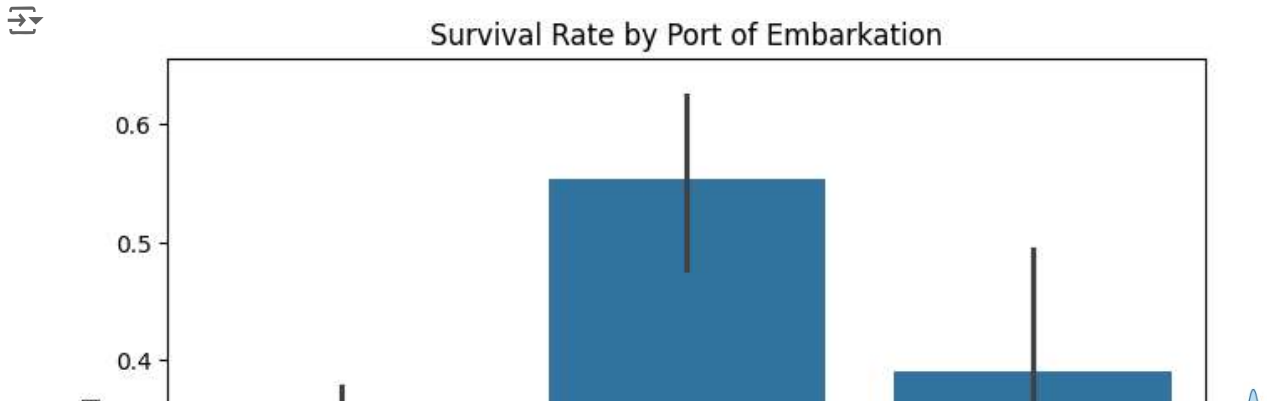
```
plt.figure(figsize=(12, 8))
sns.heatmap(titanic_encoded[numeric_columns].corr(), annot=True, cmap='coolwarm', linewidths=0.5)
plt.title('Correlation Heatmap')
plt.show()
```




```
sns.pairplot(titanic_encoded[['Survived', 'Pclass', 'Sex', 'Age', 'Fare', 'FamilySize', 'IsAlone']], hue='S
plt.show()
```

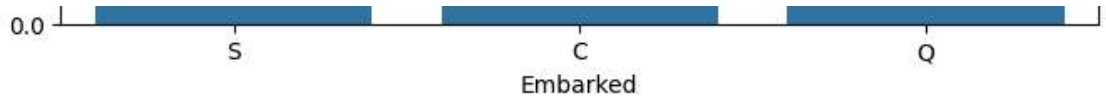



```
plt.figure(figsize=(8, 6))
sns.barplot(x='Embarked', y='Survived', data=titanic)
plt.title('Survival Rate by Port of Embarkation')
plt.show()
```




```
titanic.to_csv('updated_titanic.csv', index=False)

# Download the CSV file
from google.colab import files
files.download('updated_titanic.csv')
```



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