In [1]:
```
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns
```

In [7]:
```
df = pd.read_csv("C:\Downloads\Titanic-Dataset (1).csv")  # load data set
print(df.head())# print few rows
```

```
   PassengerId  Survived  Pclass  \
0            1         0       3
1            2         1       1
2            3         1       3
3            4         1       1
4            5         0       3

                                                Name     Sex   Age  SibSp  \
0                            Braund, Mr. Owen Harris    male  22.0      1
1  Cumings, Mrs. John Bradley (Florence Briggs Th...  female  38.0      1
2                             Heikkinen, Miss. Laina  female  26.0      0
3       Futrelle, Mrs. Jacques Heath (Lily May Peel)  female  35.0      1
4                           Allen, Mr. William Henry    male  35.0      0

   Parch            Ticket     Fare Cabin Embarked
0      0         A/5 21171   7.2500   NaN        S
1      0          PC 17599  71.2833   C85        C
2      0  STON/O2. 3101282   7.9250   NaN        S
3      0            113803  53.1000  C123        S
4      0            373450   8.0500   NaN        S
```

In [9]:
```
1 print(df.info()) #print 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
None
```

In [10]:
```
1 print(df.isnull().sum()) # checking for missing value
```

```
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
```

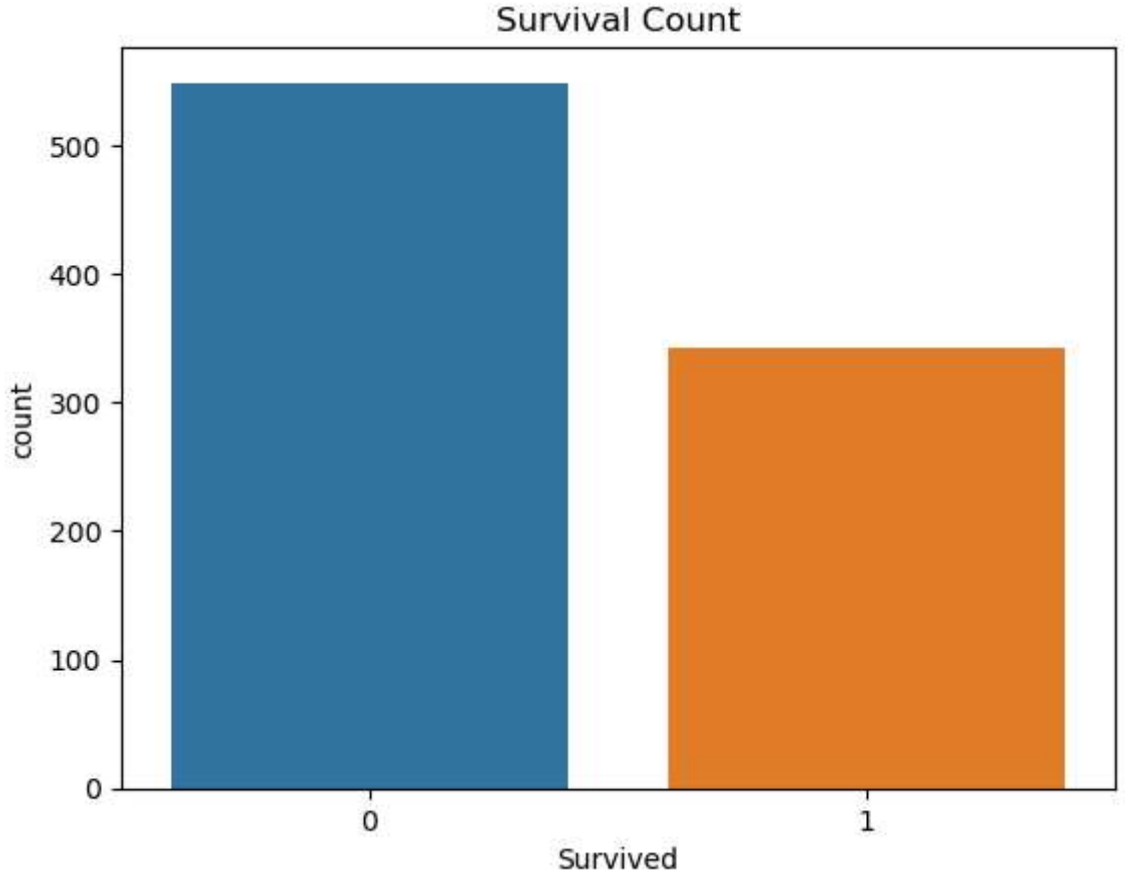
In [14]:

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

# Fill missing Embarked with mode
df['Embarked'].fillna(df['Embarked'].mode()[0], inplace=True)

# Drop Cabin column if it exists
if 'Cabin' in df.columns:
    df.drop('Cabin', axis=1, inplace=True)

# Convert 'Sex' to numeric
df['Sex'] = df['Sex'].map({'male': 0, 'female': 1})

# One-hot encode Embarked
df = pd.get_dummies(df, columns=['Embarked'], drop_first=True)

# Confirm cleaning
print(df.isnull().sum())
```

```
PassengerId    0
Survived       0
Pclass         0
Name           0
Sex            0
Age            0
SibSp          0
Parch          0
Ticket         0
Fare           0
Embarked_Q     0
Embarked_S     0
dtype: int64
```

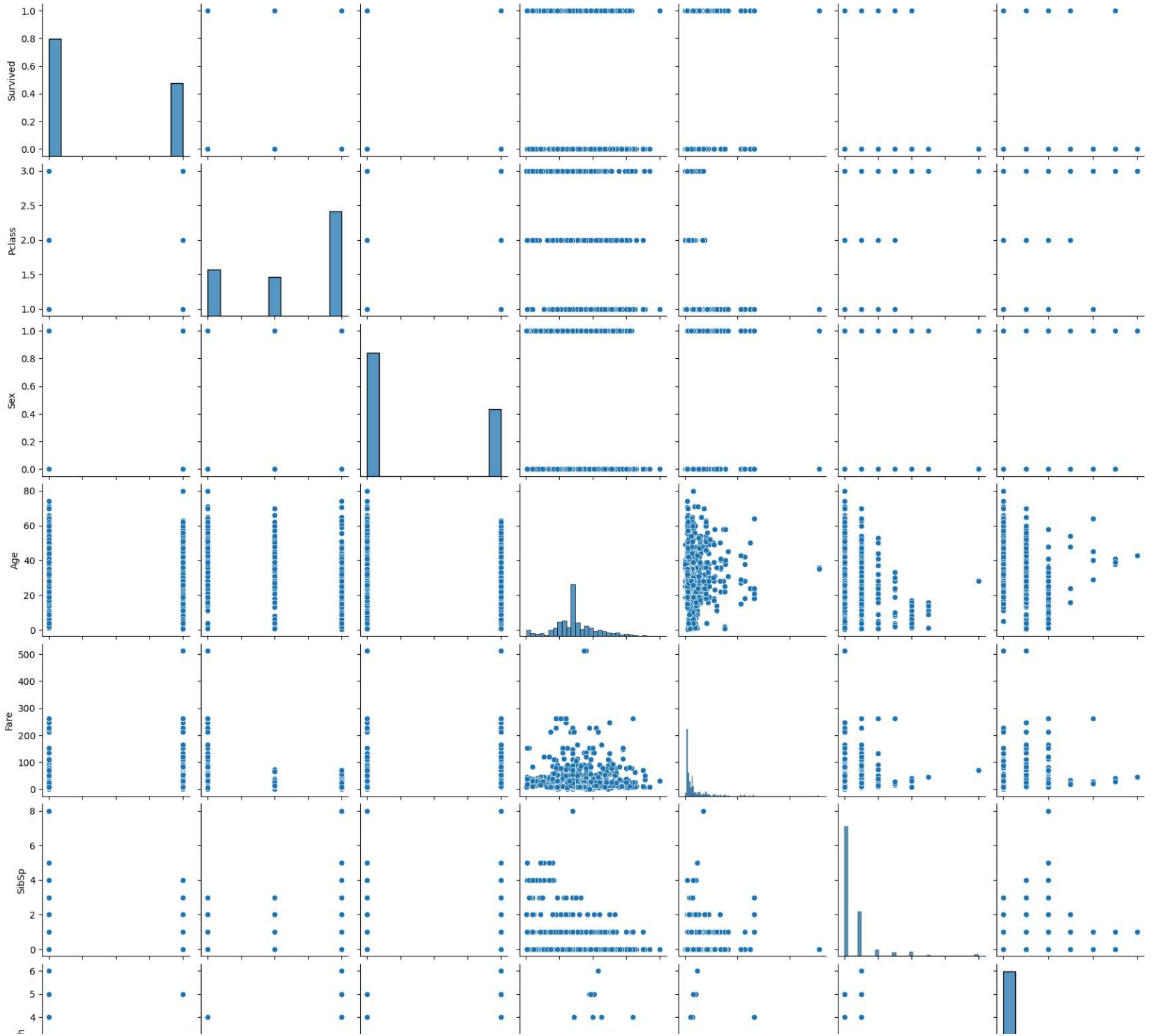
In [19]:

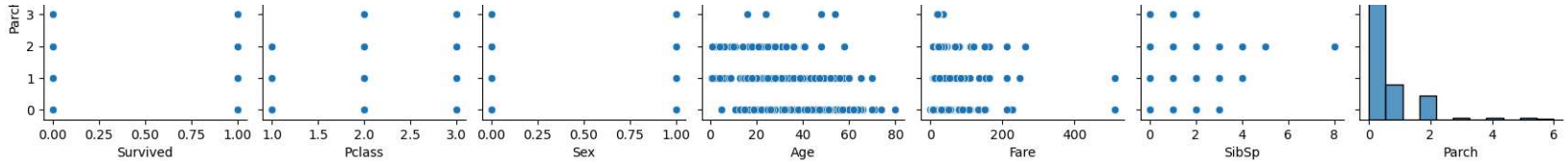
```
#Visualization

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



In [16]:

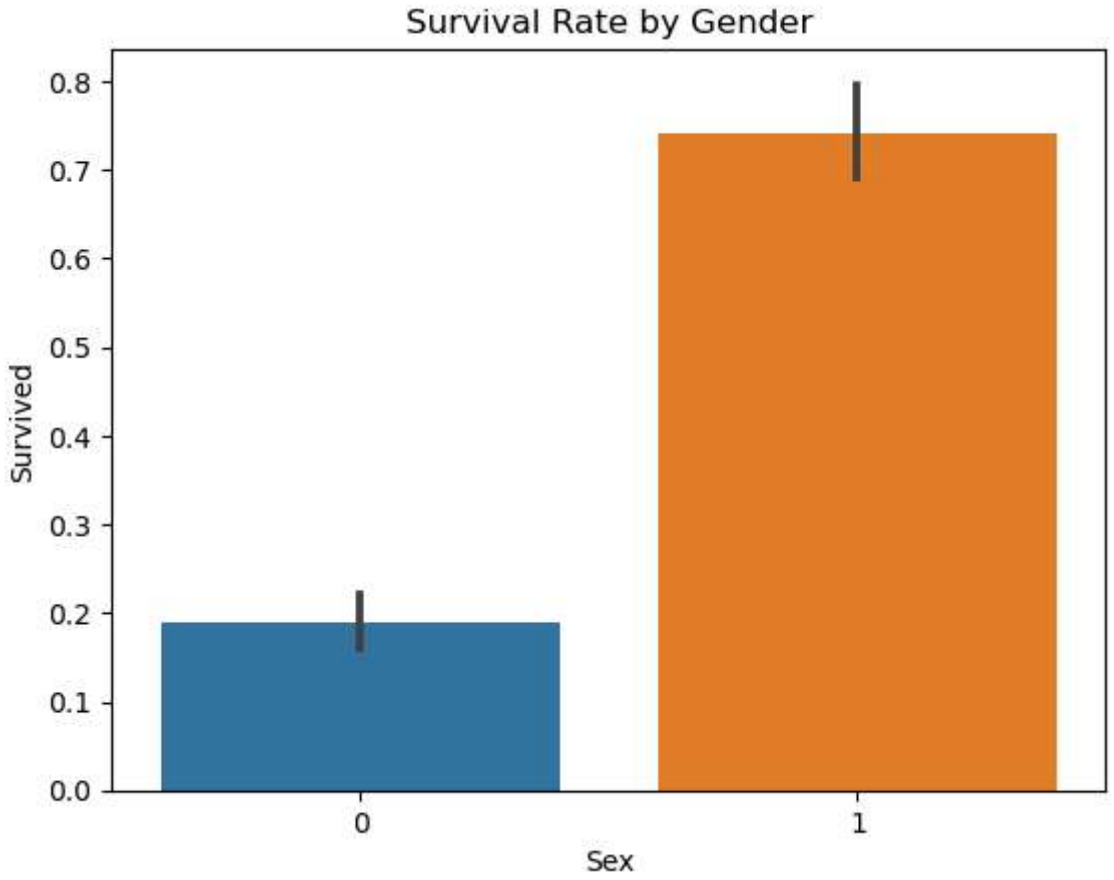
```
# Quick sample to not make it heavy
sns.pairplot(df[['Survived', 'Pclass', 'Sex', 'Age', 'Fare', 'SibSp', 'Parch']])
plt.show()
```


Survived
Pclass
Sex
Age
Fare
SibSp



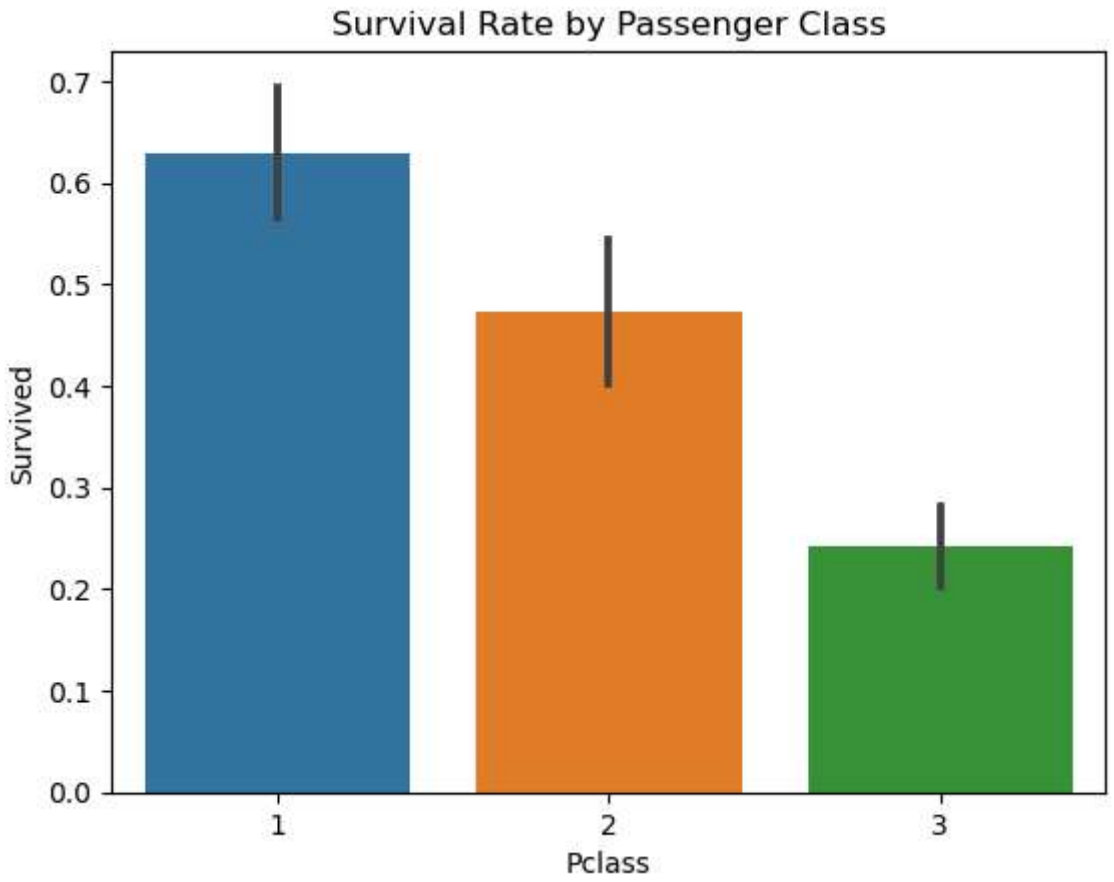
In [17]:

```
1 # Survival rate by Sex
2 sns.barplot(x='Sex', y='Survived', data=df)
3 plt.title('Survival Rate by Gender')
4 plt.show()
```



In [18]:

```
# Survival rate by Pclass
sns.barplot(x='Pclass', y='Survived', data=df)
plt.title('Survival Rate by Passenger Class')
plt.show()
```



In [ ]:

```
1
```