In [6]:
```
# Import necessary libraries
import pandas as pd
import seaborn as sns
import matplotlib.pyplot as plt
from sklearn.model_selection import train_test_split
from sklearn.linear_model import LogisticRegression
from sklearn.metrics import accuracy_score, classification_report
```

In [7]:
```
titanic_data=pd.read_csv("C:\\Users\\Dell\\Downloads\\Titanic-Dataset.csv")
```

In [8]:
```
titanic_data
```

Out[8]:

	PassengerId	Survived	Pclass	Name	Sex	Age	SibSp	Parch	Ticket	Fare	Cabin	Emba
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	
3	4	1	1	Futrelle, Mrs. Jacques Heath (Lily May Peel)	female	35.0	1	0	113803	53.1000	C123	
4	5	0	3	Allen, Mr. William Henry	male	35.0	0	0	373450	8.0500	NaN	
...	...	...	...	...	...	...	...	...	...	...	...	
886	887	0	2	Montvila, Rev. Juozas	male	27.0	0	0	211536	13.0000	NaN	
887	888	1	1	Graham, Miss. Margaret Edith	female	19.0	0	0	112053	30.0000	B42	
888	889	0	3	Johnston, Miss. Catherine Helen "Carrie"	female	NaN	1	2	W./C. 6607	23.4500	NaN	
889	890	1	1	Behr, Mr. Karl Howell	male	26.0	0	0	111369	30.0000	C148	
890	891	0	3	Dooley, Mr. Patrick	male	32.0	0	0	370376	7.7500	NaN	

891 rows × 12 columns

In [9]:

```python
# Data Cleaning
# Fill missing Age values with the median age
titanic_data['Age'].fillna(titanic_data['Age'].median(), inplace=True)
```

In [10]:

```python
# Fill missing Embarked values with the most common port ('S')
titanic_data['Embarked'].fillna(titanic_data['Embarked'].mode()[0], inplace=True)
```

In [11]:

```python
# Drop the Cabin column since it has many missing values
titanic_data.drop('Cabin', axis=1, inplace=True)
```

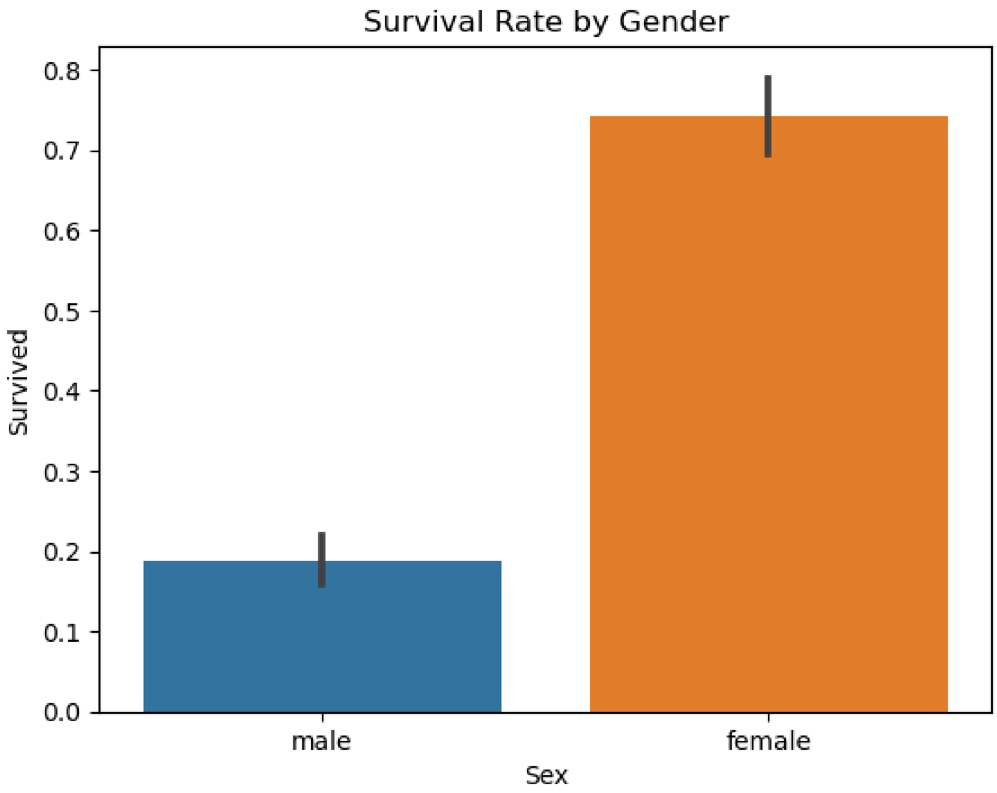
In [12]:

```python
# Check for missing values after cleaning
print("Missing values in each column after cleaning:")
print(titanic_data.isnull().sum())
```

```
Missing values in each column after cleaning:
PassengerId    0
Survived       0
Pclass         0
Name           0
Sex            0
Age            0
SibSp          0
Parch          0
Ticket         0
Fare           0
Embarked       0
dtype: int64
```

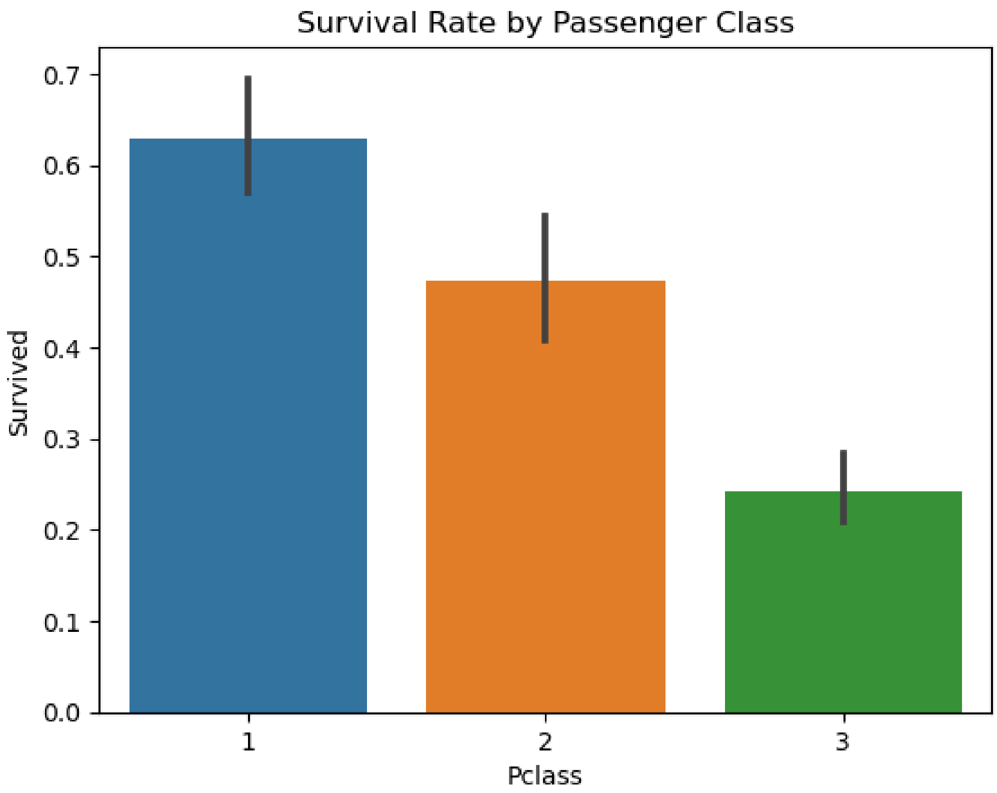
In [13]:

```python
# Exploratory Analysis
# Visualize survival rate by gender
sns.barplot(x='Sex', y='Survived', data=titanic_data)
plt.title('Survival Rate by Gender')
plt.show()
```



In [14]:

```python
# Visualize survival rate by passenger class
sns.barplot(x='Pclass', y='Survived', data=titanic_data)
plt.title('Survival Rate by Passenger Class')
plt.show()
```



In [15]:

```python
# Convert categorical variables ('Sex' and 'Embarked') to dummy variables
titanic_data = pd.get_dummies(titanic_data, columns=['Sex', 'Embarked'], drop_first=True
```

In [16]:

```python
# Define features (X) and target (y)
X = titanic_data.drop(['PassengerId', 'Name', 'Ticket', 'Survived'], axis=1)
y = titanic_data['Survived']
```

In [17]:

```python
# Split the data into training and testing sets (80% training, 20% testing)
X_train, X_test, y_train, y_test = train_test_split(X, y, test_size=0.2, random_state=42
```

In [18]:

```python
# Create and train the Logistic Regression model
model = LogisticRegression(max_iter=200)
model.fit(X_train, y_train)
```

Out[18]:

```
▾       LogisticRegression
LogisticRegression(max_iter=200)
```

In [19]:

```python
# Make predictions on the test set
y_pred = model.predict(X_test)
```

In [20]:

```python
# Evaluate the model
accuracy = accuracy_score(y_test, y_pred)
print(f'Accuracy: {accuracy * 100:.2f}%')
```

```
Accuracy: 81.01%
```

In [21]:

```
# Display the classification report
print("Classification Report:")
print(classification_report(y_test, y_pred))
```

```
Classification Report:
              precision    recall  f1-score   support

           0       0.83      0.86      0.84       105
           1       0.79      0.74      0.76        74

    accuracy                           0.81       179
   macro avg       0.81      0.80      0.80       179
weighted avg       0.81      0.81      0.81       179
```

In [ ]: