📊 Titanic Dataset — EDA Findings

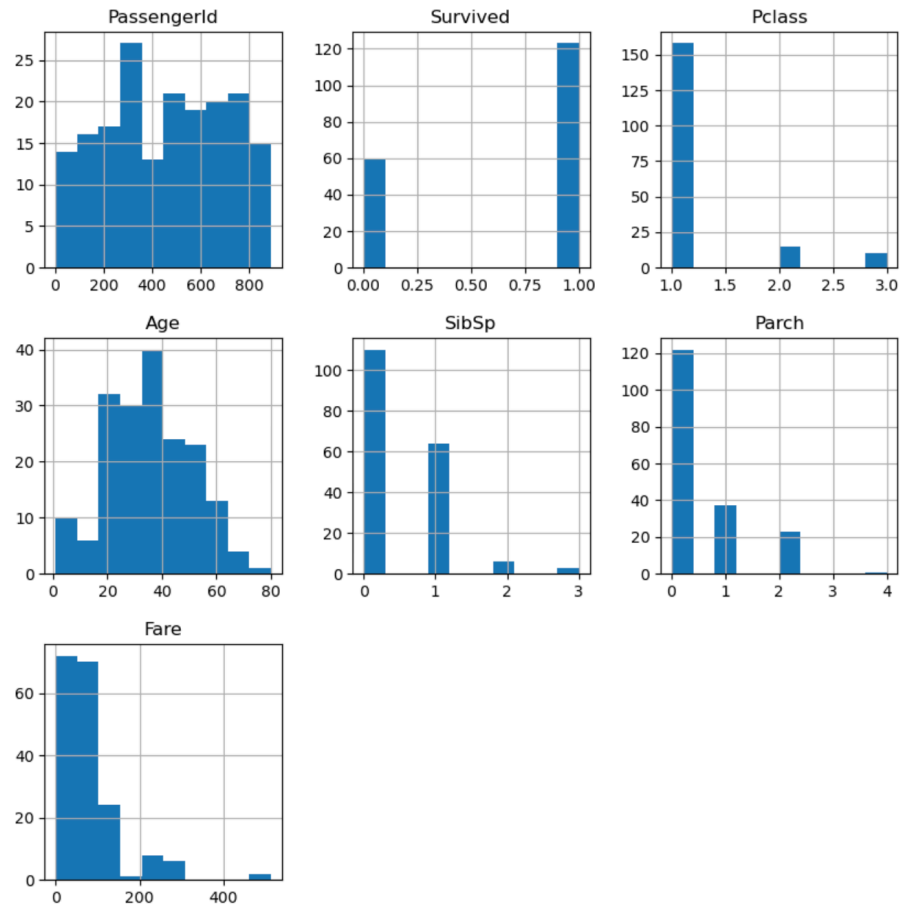
1. Data Overview:

- The dataset contains **891 rows** and **12 columns**.
- Main columns include: `Survived`, `Pclass`, `Sex`, `Age`, `Fare`, `Embarked`, etc.
- There were **missing values** in `Age`, `Cabin`, and `Embarked`.

2. Univariate Analysis:

- **Age Distribution**:
  - Most passengers were between **20 to 40 years** old.
  - Very few passengers were above 60 years.
- **Survival**:
  - About **38% survived**, while **62% did not survive**.

```
df.hist(figsize=(10,10))
plt.show()
```



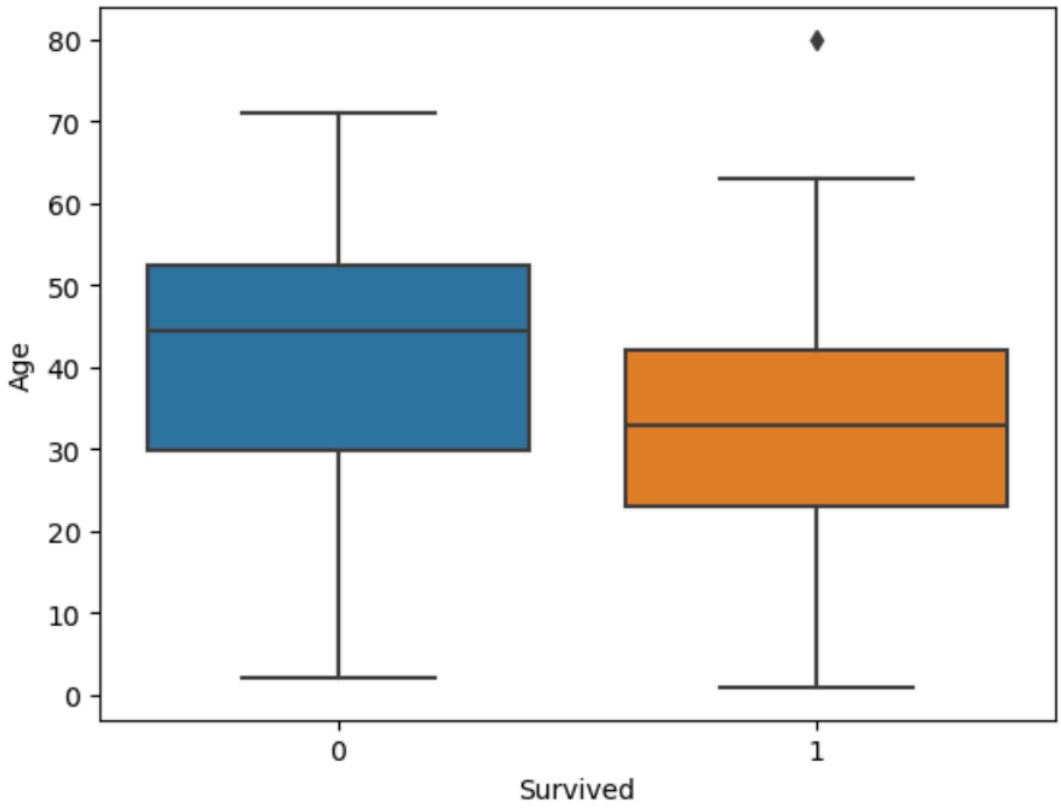
3. Bivariate Analysis:

- **Survival by Gender**:
  - **Females** had a much **higher survival rate** than males.
  - Males had a much lower chance of survival.
- **Survival by Passenger Class (Pclass)**:
  - **1st class passengers** had the highest survival rate.
  - **3rd class passengers** had the lowest survival rate.

4. Correlation Analysis:

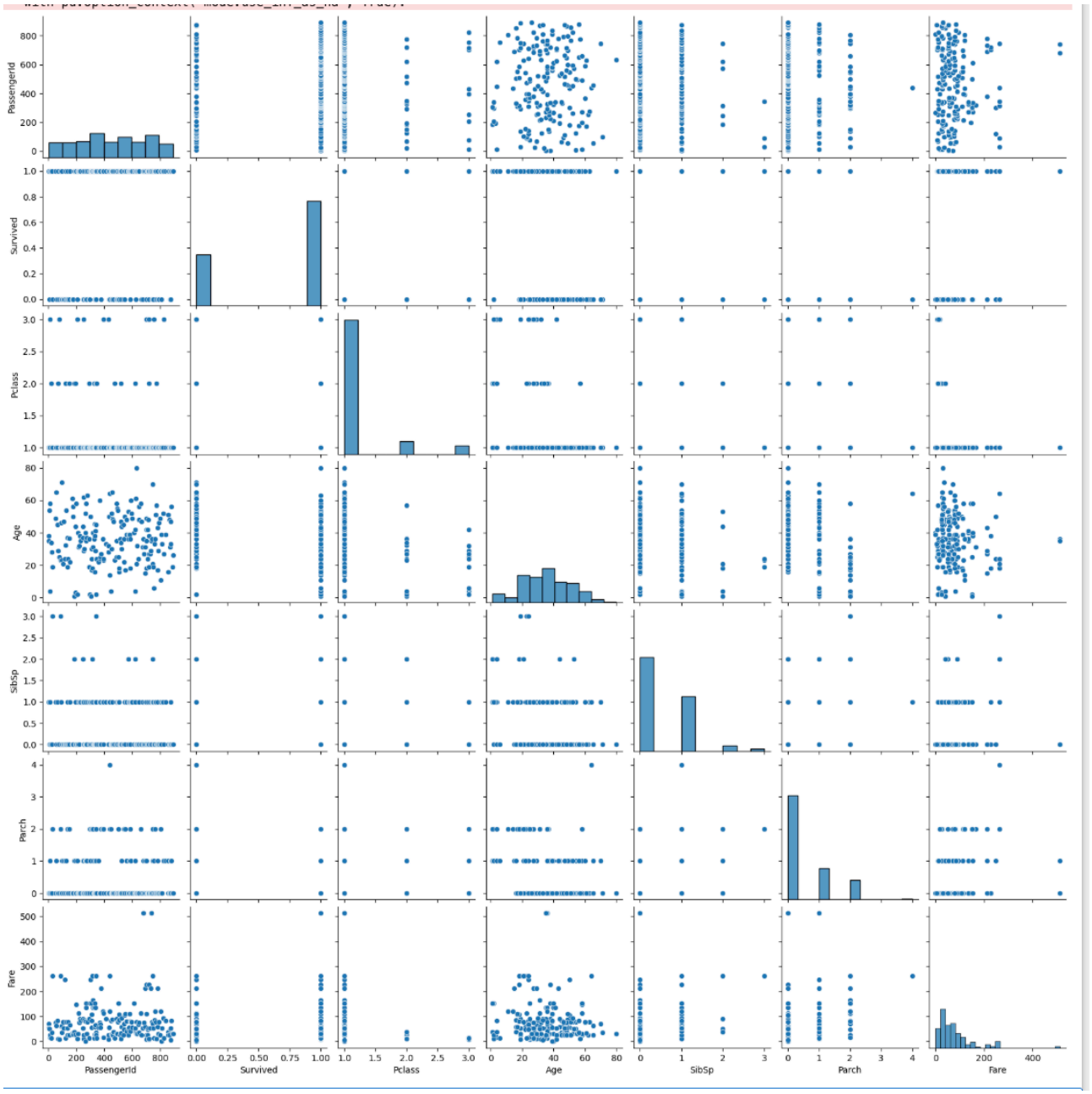
- **Fare** is **positively correlated** with **Survival** (`higher Fare → better chance of survival`).
- **Pclass** is **negatively correlated** with **Survival** (`lower Pclass number → higher survival chance`).
- Other features (like Age) show weaker correlation.

```
sns.boxplot(x='Survived', y='Age', data=df)
plt.show()
```



Pairplot Insights:

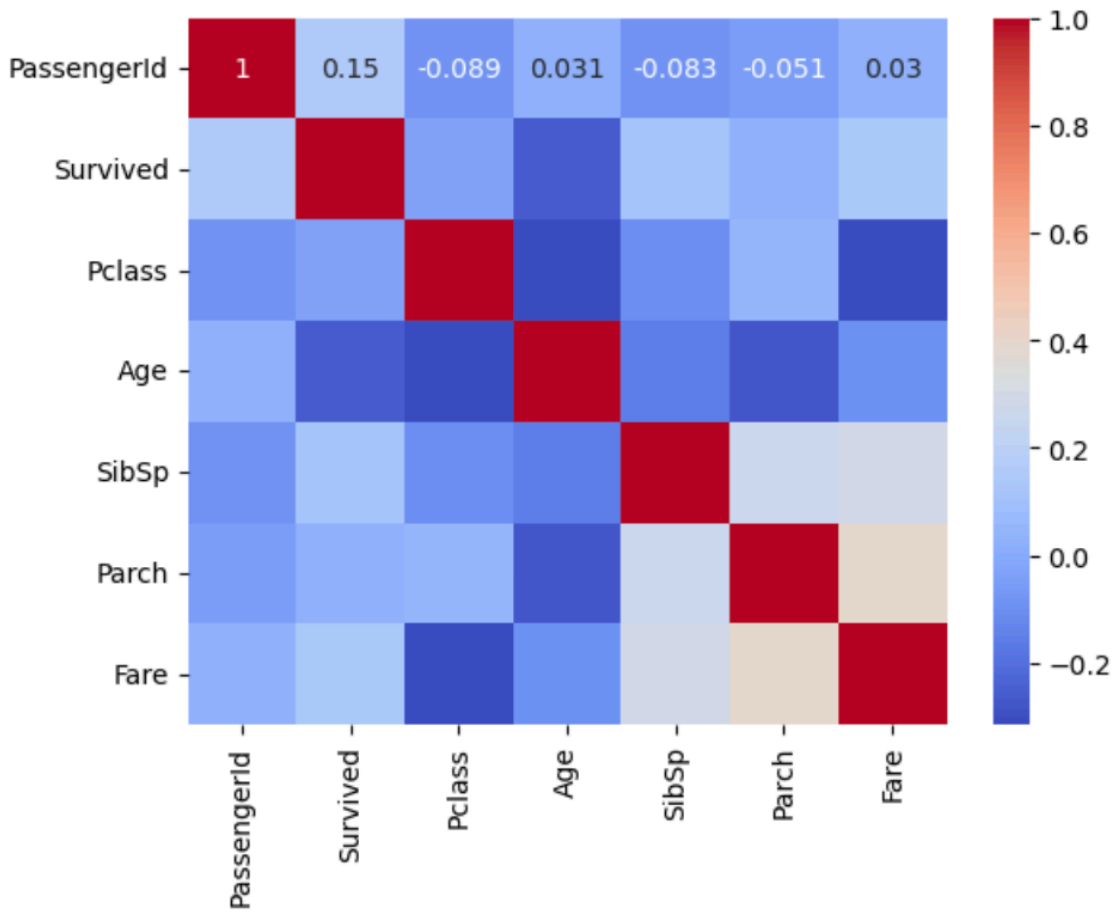
- Passengers who paid **higher Fare** and were **younger** had a slightly better survival probability.
- The 1st class cluster had more survivors compared to 2nd and 3rd classes.



6. Final Summary:

- **Women survived** more compared to men.
- **Younger passengers** (especially aged 20–40) survived more.
- **Rich passengers** (high Fare, 1st Class) survived more often.
- **Embarkation points** (Embarked) could also influence survival slightly, but not very strong.

```
numeric_df = df.select_dtypes(include=['number'])
sns.heatmap(numeric_df.corr(), annot=True, cmap='coolwarm')
plt.show()
```



Conclusion:

Survival on the Titanic was influenced mainly by **gender**, **class**, and **fare** — where **being female, in 1st class, and paying higher fares** significantly increased survival chances.