Here's the **exploration of Titanic dataset** using Pandas, Matplotlib, and Seaborn:

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1. Dataset Overview

- **Rows**: 891 passengers
- **Columns**: 12 features (Survived, Pclass, Name, Sex, Age, SibSp, Parch, Ticket, Fare, Cabin, Embarked).
- **Missing Values**:
  - `Age`: 177 missing
  - `Cabin`: 687 missing (heavily incomplete)
  - `Embarked`: 2 missing

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2. Value Counts

- **Sex**: Male (577), Female (314) → More males.
- **Embarked**: Southampton (644), Cherbourg (168), Queenstown (77).
- **Pclass**: 3rd class (491), 1st class (216), 2nd class (184).

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3. Visual Explorations & Insights

□ Age Distribution (Histogram)

- Most passengers were between **20–40 years old**.
- Few infants and elderly.

□ Age vs Survival (Boxplot)

- Survivors had a **slightly lower median age** compared to non-survivors.
- Many children survived → possibly due to evacuation priority.

□ Fare vs Age (Scatterplot)

- Higher fares are concentrated among survivors (1st class).
- Younger + higher fare passengers had better survival chances.

□ Correlation Heatmap

- **Survived** correlates negatively with **Pclass** (-0.34) → Higher class = higher survival.
- **Fare** correlates positively with survival (0.26).
- **SibSp** and **Parch** show small positive correlation → Families had mixed outcomes.

 Pairplot (Survival Patterns)

- Clear separation: **Survivors had higher fares and were more likely in 1st class**.
- Age distribution shows overlap but younger passengers had slightly better chances.

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4. Summary of Findings

1. **Survival Rate**: About 38% survived (more females and children).
2. **Gender**: Females had a higher survival chance than males.
3. **Class Impact**: 1st class had the highest survival, 3rd class the lowest.
4. **Age Factor**: Children were more likely to survive than adults.
5. **Fare Factor**: Higher fares (wealthier passengers) correlate with higher survival.
6. **Embarkation**: Passengers from **Cherbourg (C)** had higher survival rates compared to Southampton (S).
7. **Cabin data is incomplete**, limiting its use in analysis.