Case: Titanic Dashboard

You have been tasked with creating an interactive R Shiny dashboard for analyzing the famous Titanic dataset. The goal of the dashboard is to allow users to explore key patterns and relationships within the dataset to understand the factors influencing survival on the Titanic. This dashboard will be used by data analysts, historians, and enthusiasts who want to gain insights into the Titanic disaster, its passengers, and the resulting survival rates.

The dataset includes various features such as passenger demographics (age, sex, class, etc.), the ticket fare, the port of embarkation, the number of siblings/spouses aboard, the number of parents/children aboard, and whether the passenger survived or not. Your task is to design the dashboard in a way that is interactive, intuitive, and informative for a variety of user profiles.

Task:

To create a truly useful R Shiny dashboard, you need to identify the types of analyses that users would most likely want to perform, and argue for your choices of which questions to explore and why

You should focus on building functionality that will allow users to answer a range of interesting questions. These could e.g. be:

- **Survival by Demographics:** How did survival rates differ across different passenger demographics, such as sex, age, class, and embarkation port?
- **Correlations Between Variables:** Which features are most strongly associated with survival? For example, how does age correlate with survival chances, or how does passenger class influence survival?
- **Visual Insights on Passengers:** Who were the survivors? What was the age distribution of survivors versus non-survivors?
- **Fare Analysis:** What was the relationship between fare price and survival? Did wealthier passengers have a higher chance of survival?
- **Exploratory Data Analysis (EDA):** Allow users to run general exploratory analysis such as identifying trends or outliers across multiple features in the dataset.

You decide what features should go into the dashboard.

You are required to provide arguments for the choices you make.

If you need to make any assumptions to solve the task, please state these assumptions clearly.

Data:

data: `titanic_case.csv`

Here's a detailed description of the key variables (columns) in the Titanic dataset:

1. Survived (`Survived`)

- **Type**: Factor (binary)
- Description

  : This column indicates whether a passenger survived or not.

  - **0** = No (Did not survive)
  - **1** = Yes (Survived)

2. Pclass (`Pclass`)

- **Type**: Factor (3 levels)
- Description

  : The passenger's class, which is an indicator of socio-economic status.

  - **1** = First class
  - **2** = Second class
  - **3** = Third class

3. Name (`Name`)

- **Type**: Character
- **Description**: The name of the passenger. This may include titles like "Mr.", "Mrs.", "Miss.", etc., which can sometimes be useful for extracting additional features like gender or social status.

4. Sex (`Sex`)

- **Type**: Factor (2 levels)
- Description

  : The gender of the passenger.

  - **male** = Male
  - **female** = Female

5. Age (`Age`)

- **Type**: Numeric
- **Description**: The age of the passenger in years. Some values might be missing, especially for older adults or individuals without documented ages.

6. SibSp (`SibSp`)

- **Type**: Numeric
- **Description**: The number of siblings or spouses the passenger was traveling with. This can give insight into family relationships and the possibility of traveling with dependents.

7. Parch (`Parch`)

- **Type**: Numeric
- **Description**: The number of parents or children the passenger was traveling with. Similar to `sibsp`, this column helps identify passengers traveling with family members.

8. Ticket (`Ticket`)

- **Type**: Character
- **Description**: The ticket number of the passenger. This might have been used for seating arrangements and could potentially give clues about groupings of passengers in terms of cabins, classes, or routes.

9. Fare (`Fare`)

- **Type**: Numeric
- **Description**: The fare the passenger paid for the ticket. This can provide insights into the socio-economic status of the passenger, as higher fares generally correspond to higher classes.

10. Cabin (`Cabin`)

- **Type**: Character (missing values)
- **Description**: The cabin number where the passenger stayed. This is often sparsely populated, but the available values might provide insight into the location of the passenger during the sinking, which could relate to their likelihood of survival.

11. Embarked (`Embarked`)

- **Type**: Factor (3 levels)
- **Description**: The port where the passenger boarded the Titanic.
  - **C** = Cherbourg
  - **Q** = Queenstown
  - **S** = Southampton

12. SurvivalP (`SurvivalP`)

- **Type**: Numeric
- **Description**: The estimated probability of survival given the characteristics of the passenger.