**Use Case: Employee Data Analysis**

**Scenario**

You work as a data analyst at a company that wants to analyze its employee data. The data is stored in CSV files, and your tasks include cleaning the data, analyzing employee demographics, calculating statistics, and preparing reports for management.

**Dataset**

* employees.csv: Contains employee information like EmployeeID, Name, Age, Department, Salary, DateOfJoining, etc.
* departments.csv: Contains department information like DepartmentID, DepartmentName, and ManagerID.

**Questions and Solutions**

**1. Load the datasets**

**Question:** How do you load the employee and department datasets into pandas DataFrames?

**2. Inspect and clean the data**

**Question:** How do you inspect the data for missing values, and how do you handle them?

**3. Convert data types**

**Question:** How do you convert the DateOfJoining column to a datetime object and ensure that Salary is numeric?

**4. Filter the data**

**Question:** How do you filter employees who have joined in the last 5 years and are earning more than $70,000?

**5. Group and aggregate data**

**Question:** How do you calculate the average salary by department?

**6. Merge the data**

**Question:** How do you merge the employee data with department data to include department

**7. Apply a custom function**

**Question:** How do you apply a custom function to calculate the tenure of each employee in years?

**8. Pivot the data**

**Question:** How do you create a pivot table showing the average salary by department and age group?

**9. Export the data**

**Question:** How do you export the final dataset to a new CSV file?

**10. Visualize the data**

**Question:** How do you create a simple bar plot to visualize the average salary by department?