### 🐼 Problem 1: Employee Salary Insights 💰

**📌 Scenario:**  
A company maintains employee records in a Pandas **DataFrame**. Each employee has a **name, department, age, salary, and years of experience**. The HR department needs insights into salary distribution, promotions, and department-wise analysis.

**🔹 Given DataFrame:**

import pandas as pd  
  
data = {  
 'Employee': ['Alice', 'Bob', 'Charlie', 'David', 'Emma', 'Frank', 'Grace', 'Hannah'],  
 'Department': ['HR', 'IT', 'IT', 'HR', 'Finance', 'Finance', 'IT', 'HR'],  
 'Age': [25, 32, 29, 41, 37, 45, 26, 38],  
 'Salary': [50000, 70000, 65000, 80000, 75000, 90000, 62000, 85000],  
 'Experience': [2, 7, 5, 15, 10, 20, 3, 12]  
}  
  
df = pd.DataFrame(data)

**📝 Tasks:**

1. Find the **average salary** of employees in each department.
2. Find the **highest-paid employee** in each department.
3. Determine how many employees have **more than 5 years of experience** and earn a salary above **$65,000**.
4. Add a new column **“Seniority”**:
   * **“Junior”** (Experience < 5 years)
   * **“Mid-Level”** (Experience between 5-10 years)
   * **“Senior”** (Experience > 10 years)
5. Sort employees **by salary in descending order**, showing only **“IT”** department employees.

### 📊 Problem 2: Analyzing Student Grades 📚

**📌 Scenario:**  
A university maintains student grade records for a semester. You have a **DataFrame** containing student names, subjects, marks (out of 100), and their attendance percentage. You need to analyze performance trends.

**🔹 Given DataFrame:**

import pandas as pd  
  
data = {  
 'Student': ['John', 'Sara', 'Mike', 'Anna', 'David', 'Emily', 'Chris', 'Sophia'],  
 'Subject': ['Math', 'Science', 'Math', 'Science', 'Math', 'Science', 'Math', 'Science'],  
 'Marks': [85, 72, 90, 65, 78, 88, 92, 55],  
 'Attendance': [92, 80, 95, 70, 85, 90, 97, 60]  
}  
  
df = pd.DataFrame(data)

**📝 Tasks:**

1. Find the **average marks** for each subject.
2. Identify students who scored **above 85** and had **less than 90% attendance**.
3. Add a new column **“Grade”** based on marks:
   * 90+ → **“A”**
   * 80-89 → **“B”**
   * 70-79 → **“C”**
   * < 70 → **“D”**
4. Count how many students received each grade.
5. Find out if **attendance affects performance** by calculating the **correlation** between marks and attendance.