Final Exam

Submission instructions :

1. First of all, watch the assignment instruction video very carefully
2. Must use this dataset: https://github.com/phitronio/Python-for-ML/blob/main/final-employee-ds.csv
3. Create a Google Collaboratory File in your google drive, write all of the answers of the questions in that single .ipynb (colab) file
4. For each question create a **Text cell** with the question number and then a **Code cell** containing the solution.
5. Print or return sample outputs shown in the question so graders can verify results easily.
6. Share the colab file in '**Anyone with the link**' & '**Viewer**' Mode , copy the link and just submit that link

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Question : 1	**20 Marks**
Load the TrainingHours column into a NumPy array. • Convert to float datatype • Find **mean & standard deviation** **Final output:** Two numeric values	

Question : 2	20 Marks
Handle missing values (if any): • Fill missing **Salary** with department-wise median • Calculate **total Salary sum for employees with ExperienceYears > 12 and ProjectCount > 5** **Final output:** One numeric value	

Question : 3	20 Marks
Filter employees who: • Department = "IT" or "Finance" • Age between 30–45 • PerformanceScore > 88 • Sort by **Salary descending** **Final output:** Table with Name, Department, Salary, PerformanceScore	

Question : 4	20 Marks

Add new column **SalaryPerHour** = Salary ÷ (WorkHoursPerWeek × 4)

- Filter **top 5 employees by SalaryPerHour**

Final output: Table(5 Rows) with Name, SalaryPerHour

Question : 5	20 Marks

Create a **bar chart** showing the count of employees in each **Department**, separated by **Gender**. You can solve the question with any of the package (Matplotlib , Seaborn , Plotly)

Dataset Columns Used:

- Department → Categorical variable (IT, Finance, HR, Marketing, Management)
- Gender → Categorical variable (Male, Female)

Expected Output

- A **bar chart** where:
    - x-axis → Department
    - y-axis → Number of employees
    - Each bar split into Male and Female segments
    - Colors differentiate gender