

## Final Exam

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### 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
<p>Load the TrainingHours column into a NumPy array.</p> <ul style="list-style-type: none"><li>• Convert to float datatype</li><li>• Find <b>mean &amp; standard deviation</b></li></ul> <p><b>Final output:</b> Two numeric values</p>	

Question : 2	20 Marks
<p>Handle missing values (if any):</p> <ul style="list-style-type: none"><li>• Fill missing <b>Salary</b> with department-wise median</li><li>• Calculate <b>total Salary sum for employees with ExperienceYears &gt; 12 and ProjectCount &gt; 5</b></li></ul> <p><b>Final output:</b> One numeric value</p>	

Question : 3	20 Marks
<p>Filter employees who:</p> <ul style="list-style-type: none"><li>• Department = "IT" or "Finance"</li><li>• Age between 30–45</li><li>• PerformanceScore &gt; 88</li><li>• Sort by <b>Salary descending</b></li></ul> <p><b>Final output:</b> Table with Name, Department, Salary, PerformanceScore</p>	

<b>Question : 4</b>	<b>20 Marks</b>
<p>Add new column <b>SalaryPerHour</b> = <math>\text{Salary} \div (\text{WorkHoursPerWeek} \times 4)</math></p> <ul style="list-style-type: none"> <li>• Filter top 5 employees by <b>SalaryPerHour</b></li> </ul> <p><b>Final output:</b> Table(5 Rows) with Name, <b>SalaryPerHour</b></p>	

<b>Question : 5</b>	<b>20 Marks</b>
<p>Create a <b>stacked bar chart</b> showing the count of employees in each <b>Department</b>, separated by <b>Gender</b>.</p> <p><b>Dataset Columns Used:</b></p> <ul style="list-style-type: none"> <li>• Department → Categorical variable (IT, Finance, HR, Marketing, Management)</li> <li>• Gender → Categorical variable (Male, Female)</li> </ul> <p><b>Expected Output</b></p> <ul style="list-style-type: none"> <li>• A <b>stacked bar chart</b> where: <ul style="list-style-type: none"> <li>◦ x-axis → Department</li> <li>◦ y-axis → Number of employees</li> <li>◦ Each bar split into Male and Female segments</li> <li>◦ Colors differentiate gender</li> </ul> </li> </ul>	

