**Assignment #2: Addressing Salary Inequality with Variance and Standard Deviation (SD)**

**Deadline: Friday May 2nd, 2025, 06:00 PM**

**Background Context**

Imagine you are a data analyst hired by a company to analyze salary disparities between two engineering departments in the same company: **Computer Engineering** and **Mechanical Engineering**. The company wants to understand whether the salaries are equitable and identify any significant differences.

**Question 1: Calculating Key Metrics**

You are provided with the following data for monthly salaries (in $):

* **Computer Engineering Salaries**:  
  4500, 4800, 5100, 5300, 5500, 7000, 12000
* **Mechanical Engineering Salaries**:  
  3200, 3400, 3600, 4000, 4200, 4500, 8000

1. Calculate the **mean (average)** salary for each department.
2. Calculate the **median** salary for each department.
3. Calculate the **standard deviation** of salaries for each department.

*Tip: Use the standard deviation formula for a population.*

**Question 2: Comparing Salary Disparities**

1. Based on the calculated **mean** and **median**, which department has higher typical salaries?
2. Based on the **standard deviation**, which department has greater variability in salaries?
3. Interpret the results: What might the differences in standard deviation and median suggest about how salaries are distributed within each department?

**Question 3: Real-Life Implications**

The company’s HR team is concerned about salary equity. Based on your analysis, answer the following:

1. Do the results suggest a potential issue with salary equity between Computer Engineering and Mechanical Engineering? Justify your answer.
2. If you were to propose one action to reduce salary disparities (e.g., setting salary bands, conducting pay audits), what would it be and why?