**Directions:**

**For this assignment, you will answer the following questions on a sheet of paper or document of your choosing and upload a picture or a screenshot for grading. Here are some things to keep in mind:**

* **Show your work: no points will be granted if you only provide an answer**
* **Each question is worth 15 points. This assignment is worth a total of 30 points**
* **This assignment is due by Tuesday September 12 at 11:50 pm CST**

**There are 2 types of assignments:**

1. **Paper work: No programming. Calculate and write the statistical values on paper or in this word document.**
2. **Python Work: Write codes in Jupyter. Copy the code and answers in this word document.**

**Subjects:**

1. **Statistical values on paper**
2. **Statistical values in Python**

**Questions:**

**Paper Work:**

**1- Find the mean and standard deviation of A.**

**A = {9,10,11,7,13, 7,4,11,13,10}**

**Solution:**

The mean of A = {9,10,11,7,13, 7,4,11,13,10} is calculated as follows:

**Mean of A (µ) =**

[Ai – ith element of the array, n – number of elements in the array]

**Mean of A = (9+10+11+7+13+7+4+11+13+10)/10 = 9.5**

The standard deviation of A = {9,10,11,7,13, 7,4,11,13,10} is calculated as follows:

**Standard deviation of A (σ) =**

[Ai – ith element of the array, n – number of elements in the array, µ – mean of array]

**Standard deviation of A (σ) =**

**= √7.25= 2.6925824035673**

**Python Work:**

**3- Write a code in Python:**

1. **Enter vector A of question 1 in Python. Copy the code. (Hint: A<- c(2,4,…))**

**Solution:**

**Copying the data into a python list**

**A screen shot of a computer

Description automatically generated**

1. **Find the mean and standard deviation of A. Copy the code.**

**Solution:**

**import** math

**def** calc\_mean**(**A**):**

**return** **sum(**A**)/len(**A**)**

**def** calc\_standard\_deviation**(**A**):**

mean\_A **=** calc\_mean**(**A**)**

res **=** 0

n **=** **len(**A**)**

**for** x **in** A**:**

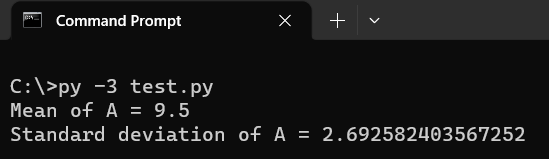
res **+=** **((**x**-**mean\_A**)\*\***2**)**

**return** math**.**sqrt**(**res**/**n**)**

A **=** **[**9**,**10**,**11**,**7**,**13**,**7**,**4**,**11**,**13**,**10**]**

**print(**"Mean of A = "**+str(**calc\_mean**(**A**)))**

**print(**"Standard deviation of A = "**+str(**calc\_standard\_deviation**(**A**)))**

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1. **Do your results match question 1?**

**Solution:**

**The values calculated via python code match the theoretical calculations**