Assignment 1 Instructions

PSYC417

This assignment is going to test your skills in data types, data structures, conditionals, and loops. You may get to the answer **using any of the techniques we specify in class, unless the question requests otherwise. If so, you must use that technique.** Do not use techniques or code we didn't learn in class (e.g., from a package we haven't used or a function we haven't covered). This will result in a deduction.

Write each question/number into the Quarto document as text and place any code or text to answer the question on the lines below it. In short, it should look something like below:

Question 1 - Text from question 1. (MAKE THIS ONE OF THE HEADER STYLES SO IT'S EASIER TO READ.)

Code chunk, if applicable.

Text answering question, if applicable.

Question 2 - Text from question 2. (MAKE THIS ONE OF THE HEADER STYLES SO IT'S EASIER TO READ.)

…. and so on.

Questions

The data for this assignment are a sample of exam scores from an introductory psychology class. The data come from the code below (which you may copy and paste):

exam_scores <- c(75, 70.5, 82, 89, 93, 98, 77, 85.5, 90, 72, 93, 79)

5pts: Create a Quarto document titled "Assignment 1" with you as the author. **Make sure the document type is .html. (It may be a .pdf, but only if you're familiar with LaTeX. Do not spend any time trying to get this to work otherwise, it can be tricky.)** When uploading the assignment to ELMS, ensure you upload both the .qmd and .html files or you will lose 3 pts on this question. (No fixing this after the deadline if you forget.)

20pts: Use commands in R to tell you the following: How many exam scores are there total? What are the minimum and maximum scores? What is the ratio of the highest to the lowest score (rounded to two decimal places)?

DO NOT USE ANY PRE-EXISTING COMMANDS LIKE MEAN() OR SD() FROM HERE ON OUT. You will use these to check your answers, but you must hard-code everything.

25pts: Compute the sample mean (i.e., average) of all the numbers. Store this in a variable called "samp_avg" and print the object.

25pts: Compute the sample variance (s^2) of the scores and store the result in a variable called "samp_var". Remember, the formula for variance is:

$$s^2 = \frac{\sum(x_i - \bar{x})^2}{n-1}$$

As a reminder, you must compute the variance by hand. You can use the $\bar{x}$ object you created in the previous question. YOU MUST USE A LOOP TO ANSWER THIS QUESTION. **You cannot calculate n by hand or use the length() command. You must figure out how to do this in the loop.** (You may want to start at counter at 1 and go from there…) Print samp_var.

25pts: Determine the letter grade of each exam and store it in a vector called **letter_grades**. YOU MUST USE A LOOP AND CONDITIONAL STATEMENTS TO DO THIS. You do not need to use +/-, just whether the grade is an A, B, or C. Print the **letter_grades** object at the end.

Render the document and upload the .qmd and .html files to ELMS.

Thank you! :)