QuACK Week 1 Practice Activity

Use comments in your script to make sections for each question and to give any written answers. Even though we give you some code and you could copy and paste it, try typing it out to practice!

1. Create a new script and save it as "week1_practice"

2. Use comments at the top of the script to make a header. Give the script a title, and add your name and the date

3. Create a vector named `nums1` that contains the numbers 1 through 10

4. Now create a vector named `nums2` using this code:

    `nums2 <- 1:10`

    Compare `nums1` and `nums2`. What do you think the `:` does?

5. Now create a third vector named `nums3` using this code:

    `nums3 <- seq(1, 10)`

    What do you think the function seq() does?

6. Create a vector called `nums_by2` using this code:

    `nums_by2 <- seq(1, 10, by = 2)`

7. Change the code for `nums_by2` so that you get only the even numbers instead of the odd numbers.

8. Create a vector called `all_fives` using this code:

    `all_fives <- rep(5, 10)`

    What do you think the function rep() does?

9. Now compare these two vectors:

    `fives_sixes1 <- rep(c(5, 6), 10)`

    `fives_sixes2 <- rep(c(5, 6), each = 5)`

    What is similar between them? What is different? What caused this difference?

10. Run the code: `nums1 + 5`. What happens?

11. Run the code: `nums1 + nums2`. What happens?

12. Run the code: `sum(nums1)`. What happens?

13. Run the code: `mean(nums1)`. What happens?

14. Run the code: `sd(nums1)`. What happens?

15. Make the following 2 vectors and name each of them uniquely:

   a. A vector that has all the numbers from 1 to 24

   b. A vector that has the all numbers between 1 and 48 that are multiples of 2

      ▪ Challenge: Can you figure out at least two different ways to do this?

   c. Now, make these two vectors into a data frame

16. Think of a categorical variable from the world around us. It can be anything, and have any number of levels

   a. Make two vectors, one with data that is being categorized, and one with the category it belongs to

   b. Be sure to make the vector with categories into a factor!

   c. Make these vectors into a data frame

Bonus:

1. What happens when you add these two vectors together?

   a. `num1 + c(1, 2)`

   b. `num1 + c(1, 2, 3)`

   c. Why do you think one command gives an error and the other does not?

2. Make a vector with 5 logicals (TRUE and FALSE). Use the sum function on this vector. What is the result? Why do you think this is?

3. Make a new vector that is the same as in (2), but replace all the TRUEs with 1 and all the FALSEs with 0. If you run sum on this new vector will you get the same result as in (2)? Test your hypothesis.