Homework 4 (17 pts)

For this activity, you will create a .Rmd file and a corresponding HTML file that will **both** be uploaded to wolfware. See the R file submission guidelines for all requirements - substantial credit may be taken off if the guidelines are not followed.

The purpose of this activity is to practice writing functions, using for loops, and using vectorized functions.

Loops/Function

1) (3 pts) Create a for loop to find the value of 10 factorial (10! = 10*9*8*...*1).

   - Initialize an object to store the value in (a vector of length 1 set to 1 will work).
   - Iterate from 1 to 10, multiplying and overwriting the value at each iteration of the loop

2) (6 pts) Now write a function that finds the factorial of a given number (so only one input, the number to find the factorial of).

   - Set the default value to find to 10
   - Put in an if statement to check if the value of interest is greater than 100. If it is, stop the function and return a message saying the value is too large. If it isn't, compute the factorial.

More Function Writing

3. (3 pts) Create a function called `convert_cm_to_in` that converts centimeters to inches. Use your function to determine how many inches a 25cm object is.

   Next, evaluate your function at a vector of integers from 0 to 100 (1 meter).

4. (1 pt) Add an addition input to the function that rounds the result to two decimal places by default. Rerun your function on the vector from 0 to 100.

5. (4 pts) Create a function called `count_my_change` that adds up the total amount of money you input.

   - Include 5 arguments - dollars, quarters, dimes, nickels, and pennies
   - Set the default value of ALL the arguments to 0
   - Calculate a total value by multiplying each argument by its dollar value (i.e. 0.25*quarters, 0.01*pennies, etc.)
   - Create a string that says "Your total is $amount" with the total, and put it inside a `return` statement to send it back to the user.

   Try out the function with no inputs. Then try it with 5 dollars, 2 dimes, 3 quarters, 4 pennies, and 1 nickel.

End of Activity

Go back through and check that you have completed all questions. Upload both the .Rmd and the outputted .pdf file to moodle.