

Homework Day 3 Instructions

Problem 1

Modify the code below to calculate the total cumulative sum of all the integers from 134 to 189—i.e., $134 + 135 + \dots + 188 + 189$. (Hint: you will need to define and use an extra variable!)

```
total_sum = 0
while True:
    total_sum = total_sum + 1
print(total_sum)
```

Problem 2

Write code to calculate the cumulative (total) sum of all the integers from 134 to 189 (the same task as Problem 1!), using a FOR loop. (Hint: check that your answers for problem 1 and problem 2 agree!)

```
total_sum = 0
#your for loop code here!
print(total_sum)
```

Problem 3

Update the guessing game code from class to tell the user if they are guessing too high or too low each time. You should print the number of guesses it took the user to find the correct secret number at the end of the code.

```
secret_number = 10
guessed_number = int(input('guess a number! '))
while guessed_number != secret_number:
    guessed_number = int(input('nope! guess again! '))
print('finally!')
```

Problem 4

Write a script that calculates the sum of the following sequence: $1 + 1/3 + 1/6 + 1/9 + 1/12 + \dots + 1/999$

Put this total in the variable `total_sum` and print its value. You can pick whether to use a FOR loop or WHILE loop.

Optional challenge: write two versions of the code, with each type of loop!

```
total_sum = 0
# your code here
print(total_sum)
```

Problem 5

The factorial of an integer n , denoted by $n!$ in mathematics, is the product of that number and all of the positive integers less than it. (e.g., $5! = 5 * 4 * 3 * 2 * 1 = 120$)

Write a script to calculate $N!$ where N is an integer. Use the command `while`. Store the result of your computation in the variable `fac_res`, which should be printed at the end of the code. Python has a built-in function to calculate the factorial of an input, but we ask you to not use it as we want you to write your own code.

```
N = 5 # test with multiple values!  
# edit the following code  
fac_res = 0  
print(fac_res)
```