



## **Assignment 1: An Exercise in Control (10%)**

**Due:** October 1

This assignment uses the skills that we discuss in the first two weeks of the course. These skills include variable assignment, commenting code, using Python's built-in functions, if-then statements, and while/for loops.

### **Instructions**

Submit a Jupyter notebook or Python script through Dropbox or Github. Your submission should include answers to the following questions:

1. This problem is taken from [Project Euler](#). If we list all the natural numbers below 10 that are multiples of 3 or 5, we get 3, 5, 6 and 9. The sum of these multiples is 23.

Find the sum of all the multiples of 3 or 5 below 1000.

2. Write a Python program that takes in three numbers from the user and displays the lowest number, the highest number, and the sum of the numbers.
3. Write a program that asks the user to guess a random integer between 1 and 25. Your program should make sure that the user puts in an integer and should terminate when the correct number is guessed.
4. Write a paragraph (5-7 sentences) explaining, in your own words, the best places to write comments in the code. Be sure to include justification for your choices.

Please refer to the rubric at the end of this document for evaluation details.

### **Requirements**

- a. Working Jupyter notebook or Python script.
- b. Make sure to include clear comments in your code.
- c. Each code snippet or program should include a for/while loop or a conditional statement. In some cases, you will need both. Since the purpose is to use the power of the programming language, no brute force code will receive full marks (see Week 1 Interactive Notes for a description of brute force code).

### **Submission**

Submit your assignment through Dropbox or Github on Oct 1.

Note: Some code may require an introduction/explanation. If this is the case with your code, please prepare the introduction in advance. Each student will be given 5 minutes to present.

## Evaluation

This assignment is graded out of 12 points using the following rubric and is worth 10% of the final grade.

Learners may receive partial scores or a zero for unacceptable work.

Criteria	Does Not Meet Expectations 1	Partially Meets Expectations 2	Meets Expectations 3	Exceeds Expectations 4	Max Points
<b>Content</b>	Missing one or more elements of the assignment.  The content is unclear and difficult to follow.	All elements or questions are addressed but could be developed further.	All elements of assignment are well developed and clear.  The content is comprehensive.	Includes all the elements of the assignment plus additional elements that make the assignment unique.  The content is clear and engaging.	4
<b>Analysis</b>	Level of analysis is limited in scope; self-reflection is limited in quality and depth	Self-reflection is evident and is applied to course topics.	Author critically analyzes the questions as they apply to themselves and the course content.	Author draws insightful conclusions.  Writing is purposeful and focused with a strong point of view.	4
<b>Creativity</b>	The assignment lacks creativity.  The audience is not engaged by the product.	The assignment shows some creativity.  The audience is neutral about the outcome.	The assignment is creative and original.  The audience is engaged by the product.	The assignment is exceptionally creative and provokes an emotional response from the audience.	4