

ITI1120D – Assignment 2
(100 points)

Purpose:

To allow you to exercise with a logical thinking process to formulate algorithms, and to implement the algorithms using the Python Programming Language. The logic will include simple inputs and outputs, looping, using counters, and conditional statements (if and else). This is an individual assignment.

Questions:

Write a separate Python program for each of the following:

- a. Print all the numbers divisible by three in the range [1,1000]. (Hint: you can check divisibility by using the modulus operator).
- b. Repeat (a), but this time, let the user decide their own range and divisibility criteria by providing:
 - i. A variable **start** to indicate the start of the range.
 - ii. A variable **end** to indicate the end of the range, and
 - iii. A variable **n** to indicate the number to check divisibility for.

For example, if the user inputs 1000 for start, 3500 for end, and 5, your program will print all the numbers divisible by 5 in [1000,3500].

- c. Let the user input ten numbers, and find and print their maximum. (Hint: use a loop, start by assuming maximum to be the first one that is input. Each time you find a number greater than max, make it the max, then at the end, print it out). You cannot use the max function in Python for this exercise.
- d. Let the user input ten numbers, and find and print the average of their maximum and minimum. Feel free to use the max and min functions if you wish.
- e. Input five numbers from the user, compute and print their standard deviation. The standard deviation is given as:

$$\sigma = \sqrt{\frac{1}{N} \sum_{i=1}^N (x_i - \mu)^2}$$

To compute the standard deviation, you are to:

- i. Compute the average of the five numbers.

- ii. Subtract the average from each number, then square the result, call this quantity the square of the difference.
- iii. Sum up all of the square of the differences.
- iv. Divide the square of the differences by 5.
- v. Compute the square root of the value in (iv).
- vi. Print the result.

Make sure each of the above steps is performed properly before you proceed with the next one.

You will be graded as follows for each problem (20 points each):

- 12 points for the correctness of the logic.
- 2 points for using meaningful names for variables.
- 2 points for documentation (inserting proper comments).
- 2 points for efficiency of your solution.
- 2 points for a professional judgment of your overall solution.