

# Python Review: Functions and Modules

---

Answer the following questions.

1. Define each of the following terms, as they relate to functions.
  - a. function definition
  - b. function call
  - c. argument
  - d. the `return` statement
2. What is meant by variable scope?

Write *functions* that accomplish each task. Call your functions from your main program. Use proper conventions for variable names, input prompts, output statements, and program structure. Do not assume that the user will enter the correct data type.

3. Roll  $n$   $s$ -sided dice. Return the rolls as a list. For example, rolling three 10-sided dice might result in the list `[7, 1, 3]`.
4. Given a list of integers, determine the greatest difference between two adjacent values in the list. For example, the greatest difference the sequence 8, 5, 9, 2, 1, 6 is 7, since  $9 - 2 = 7$ . Return an integer representing the difference. Note that the sequence 8, 5, 2, 9, 1, 6 should produce the same result.
5. Determine whether a given integer is prime. Return True or False. Note that any prime number consisting of two or more digits must end with a 1, 3, 7 or 9. Use this function to improve the performance of your prime factorization program earlier.
6. In chess, a knight moves in an L-shaped pattern (two squares in one direction, then one square in a perpendicular direction). Given starting coordinates  $(x, y)$  on an 8 x 8 chess board, determine the coordinates of all points on the board where a knight could move from its starting position. Return the points as a list of tuples.

Write a module, named `text_tools`, that contains the following functions. Use `import` to use it in your main program.

7. `CountLetters(s)`: Given a string  $s$ , determine the number of letters it contains. Letters may be upper- or lowercase. Returns an integer representing the number of letters.
8. `CountWords(s)`: Given a string  $s$ , determine the number of words it contains. A word is defined as any continuous sequence of characters, separated from other sequences by one or more spaces. Returns an integer representing the number of words.
9. `LongestWord(s)`: Given a string  $s$ , determine the longest word it contains. Returns an integer representing the length of the word.