

Programming Assignment 04

-

For loops

Instructions

This programming assignment consists of **2 programming exercises**.

You have to:

1. **download** the empty Python files on NYU Classes
2. **edit** them according to the assignment
3. **verify** on your computer that it works
4. **upload** them back on NYU Classes (**do not change the filenames**)

Exercise 1 - Draw a Diamond

Write a program (in the file `exercise1.py`) which asks the user to enter a positive integer `N` and then draws an diamond of the corresponding size (`2 * N - 1` lines).

The diamond is obtained by drawing lines containing spaces and stars `*`.

Sample examples (the user input is in red, the printed output is in blue):

Enter a positive number: 3

```

  *
 * *
*   *
 * *
  *

```

Enter a positive number: 6

```

    *
   * *
  *   *
 *     *
*       *
*     *
 *   *
  * *
   *
    *

```

Exercise 2 - Word statistics

Write a program (in the file `exercise2.py`) that does the following:

1. **Generate a random number between 3 and 6, inclusive** - this will determine how many words to ask for
2. Display: `I'll need [number] words:`
3. Proceed to ask for each word, one at a time: `Word #[number] please >`
4. At the end, your program should **print out**:
 - (a) the longest word (the most recently entered longest if there is a tie)
 - (b) the shortest word (the most recently entered shortest if there is a tie)
 - (c) the average length of all of the words (up to the second decimal point)

Sample examples (the user input is in red, the printed output is in blue, and the prompt is in black):

```
I'll need 4 words:
Word #1 please > wow
Word #2 please > oh
Word #3 please > amazing
Word #4 please > program
Shortest: oh
Longest: program
Average Length: 4.75
```

```
I'll need 3 words:
Word #1 please > hi
Word #2 please > hi
Word #3 please > hi
Shortest: hi
Longest: hi
Average Length: 2.00
```

```
I'll need 5 words:
Word #1 please > hello
Word #2 please > computer
Word #3 please > python
Word #4 please > world
Word #5 please > homework
Shortest: world
Longest: homework
Average Length: 6.40
```