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## ASSIGNMENT 02

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### OBJECTIVES

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- Learn how to write correctly-specified functions
- Learn how to divide functionalities into functions
- Implement a simple menu-driven user interface
- Learn to use lists, tuples and dictionaries.

### REQUIREMENTS

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- Use simple feature-driven software development process.
  - The program must provide a menu-driven user interface.
  - Represent each complex number using a tuple or a dictionary.
  - Use **getter** and **setter** functions to access numbers' *real* and *imaginary* parts.
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## PROBLEM STATEMENT

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Implement a **menu-driven** console application that provides the following functionalities:

1. Read a list of complex numbers (in  $z = a + bi$  form) from the keyboard.
2. Print the entire list of numbers.
3. Print to console the longest sequence that observes a given property. Each student will receive 2 of the properties from the list provided below.
4. Exit the application.

The source code will include:

- Specifications for the functions related to point 3 above.
- 10 suitable complex numbers already entered in the program.

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## SEQUENCE PROPERTIES

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The sequence (consists of):

1. Numbers with a strictly increasing real part.
2. Contains at most 3 distinct values.
3. Numbers having the same modulus.
4. Numbers having increasing modulus.
5. Real numbers.
6. Distinct numbers.
7. The difference between the modulus of consecutive numbers is a prime number.
8. The modulus of all elements are in the  $[0, 10]$  range.
9. Consecutive number pairs have equal sum.  
(e.g.  $1+3i$ ,  $1-i$ ,  $1+3i$ ,  $1-i$ )
10. Sum of its elements is  $10+10i$
11. Real part is in the form of a mountain (first the values increase, then they decrease).  
(e.g.  $1-i$ ,  $2+6i$ ,  $4-67i$ ,  $90+3i$ ,  $80-7i$ ,  $76+i$ ,  $43-12i$ ,  $3$ )
12. Both real and imaginary parts can be written using the same base 10 digits,  
(e.g.  $1+3i$ ,  $31i$ ,  $33+i$ ,  $111$ ,  $11-313i$ )