

## Training Assignment 08

NUMA01: Computational Programming with Python  
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In this exercise we define some classes to start to become familiar with the principle syntax and methods.

This assignment has 10 tasks.

## Warming-up Exercises

### Task 1

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Read Chapter 8 of the course book.

### Task 2

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Obtain the `RationalNumber` example for the lecture and add a method for subtraction. Use the operator `__sub__`.

## Exercises

### Task 3

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Define a class `ComplexNumber` and write an appropriate `__init__` method.

### Task 4

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Write a method which returns the complex number's real part, and one which returns the imaginary part.

### Task 5

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Write a method `is_imaginary` and `is_real`. They should return Boolean answers.

## Task 6

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Write a representation method which represents a complex number in the mathematical notation  $a+ib$

## Task 7

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Write a method which returns the complex number's argument and absolute value.

## Task 8

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Write a method which checks if two complex numbers are equal.

## Task 9

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Define methods for operations such as addition, subtraction, multiplication, division and power of complex numbers. These methods should work also for operations between complex numbers, integers and real numbers (floats). Where appropriate, make sure that the result is independent of the order of the arguments.

## Task 10

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Test your implementation by comparing to the Python native `complex` implementation.

Good luck!