Faculty of Science and Engineering

COMP125 Fundamentals of Computer Science
Workshop Week 5

Learning outcomes

Following are this week's learning outcomes,

a. Experiment with regards to time complexity

b. Write methods and test them using JUnit tests

c. Correct someone else's buggy code using JUnit tests

d. Write JUnit tests for given methods (that may or may not be buggy)

Import the project from archive file timeComplexityJUnit.zip

Questions

1. **(Assessed)** Correct the following methods in class `Fraction` based on tests in `TestFraction`,
   a. multiply
   b. equals
2. **(Assessed)** Complete the following test methods in class `TestFraction`,
   a. testAdd
   b. testSubtract

   Which method, `add` or `subtract`, in class `Fraction` has a bug? Remove the bug.

Experiments with time complexity

3. Compare the running times in `TimeComplexityClient` for two versions for finding the index of the first occurrence of an item in an array. The methods, in `TimeComplexityService` are,
   a. inefficientSearch
   b. efficientSearch

   Go through the two methods and determine why the method that is more efficient is so.
4. Repeat the previous exercise for `sumVersion1` vs. `sumVersion2`.
5. **(Assessed)** Improve the efficiency of the method `meFailEnglishThatsUnpossible`.
6. Write down the time complexities in Big-O notation for the methods,
   a. foo1
   b. foo2
   c. foo3