

## Homework 2 – Profiling in AspectJ

### CS 420/520

Assigned: March 3, 2021

Due: April 5, 2021

### Honors Statement

The work that you submit must be your own. You should not receive detailed help from any other student regarding this assignment, and you should not offer your solution to another student. Nor should you go out to a newsgroup, GroupMe, or any social media and ask for help from the global community. You should not ask questions about the assignment to other students – all questions should be addressed to Jeff for clarification purposes.

### How to Submit

You must submit a SINGLE zip file on Blackboard. This filename should be named by your last name (lastname.zip). This zip file must contain your solution files (only the AspectJ and any Helper files, not the four provided files).

The assignment must be submitted by midnight (Apia time -ha!) on the due date and follows the late policy from the syllabus.

### Common Files Needed

The AspectJ tool is available on the Google Drive under HW2. We will do live examples on March 8 so you can understand how to use AspectJ.

You will also be provided with the code that you must instrument. This is the same four classes from HW1. Your job is to write the aspect(s) that will adapt each base class to the described profiling capability. These files will be used to grade your submission. You do not have to include the four base files in your submitted zip.

### Simple Profiling using AspectJ

In this problem, you must write AspectJ code that will simulate the idea of profiling. The idea will be to instrument several base classes with the code that will trace the entrance and exit of a method, along with the amount of time spent in each method. This is the same concept as HW1.

Your submission for this problem should contain the aspect(s) for your solution and also the source for any helper classes you create (may not be required, but if you need helper classes, we need all code for compiling your solution). You should not have to modify the header of the base files (different from HW1). You should submit everything needed for us to grade your solution.

The output from a successful project will resemble the following (only the output of the aspect(s) is included below – there is also output from the base classes, but not included here):

```
Entering HW2::main...
Entering A::foo...
Entering A::bar...
Leaving A::bar. Time spent: <some time here>
Leaving A::foo. Time spent: <some time here>
Entering B::foo...
Entering B::bar...
Leaving B::bar. Time spent: <some time here>
Leaving B::foo. Time spent: <some time here>
Entering C::foo...
Entering C::bar...
Leaving C::bar. Time spent: <some time here>
Leaving C::foo. Time spent: <some time here>
Entering A::foo...
Entering A::bar...
Leaving A::bar. Time spent: <some time here>
Leaving A::foo. Time spent: <some time here>
Leaving HW2::main. Time spent: <some time here>
```

## **Additional Work for CS 520**

The students in CS 520 must do additional work for this assignment. In addition to displaying the time in each individual call as shown above, the 520 students must give a final report of the cumulative time spent in each method call during the entire execution. For example, a successful 520 solution will not only provide the output shown above, but also produce the following output at the end of the execution (the output below does not need to be sorted, but all of the methods visited must be presented):

```
<SAME OUTPUT AS CS 420>
Total time spent in each method call (cumulative):
A::Foo: <some time here>
A::Bar: <some time here>
B::Foo: <some time here>
B::Bar: <some time here>
C::Foo: <some time here>
C::Bar: <some time here>
HW2::main: <some time here>
```