

## Java Koans (6 points)

A *koan* is a “teaching question” that is used in Buddhist discourse that seeks to provide deep insight into a problem. While the answer to a koan can be subtle, they are not meant to be tricky like a puzzle is. Koans have correct answers, but the intention of working through a koan is to understand its deeper meaning.

To gain a better understanding of the Java programming language, you will work through a series of Java koans during the first half of this course. Each koan is a small piece of code (about the size of a unit test) that demonstrates a particular feature or aspect of the Java language or API. The koans were originally authored by Mat Bentley and can found in their original form at <https://github.com/matyb/java-koans>.

To ease the configuration of the koans and to get you accustomed to working with Maven, I have created a Maven archetype for getting started with the koans. The following command line will create a Maven project for working with the Java koans. (Remember, the `\` character is the line continuation character in UNIX.)

```
$ mvn archetype:generate \
  -DarchetypeCatalog=https://dl.bintray.com/davidwhitlock/maven/ \
  -DarchetypeGroupId=edu.pdx.cs410J \
  -DarchetypeArtifactId=java-koans-archetype \
  -DarchetypeVersion=Summer2016 \
  -DgroupId=edu.pdx.cs410J.<login-id> \
  -DartifactId=koans \
  -Dversion=1.0-SNAPSHOT
```

Note that it is important that the `artifactId` be `koans`. Otherwise, the koan application won't work correctly.

After the Maven project is created, open in IntelliJ and import the `pom.xml` file into a new project.

Next, start the koan application with Maven. The application will instruct you what to do next and will give you feedback as you complete the koans.

```
$ cd koans
$ mvn exec:java
```

The objective of the koans is not complete them as fast as you can. In fact, it is pretty easy to reverse engineer the solutions. If you do that, though, you're missing the point. I recommend that you work on the koans a little bit every day along with your other assignments to gradually build up an understanding of the Java language. I also encourage you ask questions about the koans and share your insights with the rest of the class on the class Google+ Community.

When you have completed the Java koans, please submit your solutions (all of the Java files beneath the `koans/src` directory) using the `Submit` program:

```
$ java -cp /u/whitlock/jars/grader.jar edu.pdx.cs410J.grader.Submit \
  koans "Your name" <student-id> you@email.com koans/src
```