# Lab: Understanding and Modifying an Existing Codebase

Offering Solutions Without Completely Understanding Everything

## Introduction

When starting a new job or internship you will be introduced to a codebase where you might not completely understand everything, even after a couple of months. It is in these moments that you must learn to offer improvements to code while knowing that your solution will not break the code in other places. To do this you need to play around with the code and become familiar with it, using the techniques discussed in the reading.

The program you will be looking at today are the barebones for a student simulator that your company wants you to review. You will more than likely not be able to understand how the program is doing some of the things it is doing. However, there will be bugs that you find that you can fix even with your evolving knowledge of the Java language.

## Lab

Start by downloading the Source.zip files and putting them in your src folder of a new IntelliJ project. Make sure you read the README file before you start playing with the code so you know how it should be functioning. Your hypothetical company has given you a list of bugs to fix (listed on the next page) while learning the codebase. Your job is to find the bugs listed in the next section and fix them.

To make grading easier,  inside the README we typed in caps the areas that you should look for bugs in the program. After you finish the README, see if you can find and fix the bugs in the areas hinted at. No test files were provided for this Lab, but that certainly doesn't restrict you from making tests of your own to help ensure the integrity of your program.

## Bugs

Your company has assigned you to fix the following bugs:

1. A user reported that the intelligence for their Student doesn't increase when they do homework, shown in the screenshot below.

```
status
Student: Joe
Current motivation level: 0
Current intelligence level: 0
Tests completed this semester: 0
Stressed: false
DS
You are now stressed but wiser
status
Student: Joe
Current motivation level: 0
Current intelligence level: 0
Tests completed this semester: 0
Stressed: true
```

2. A user reported that the program has a typo. They took a screenshot to show us.

```
You are no longer stressed, but yourmotivation has dropped a little
```

3. A user reported that their student didn't pass the test when he should have.

```
status
Student: John Joe
Current motivation level: 5
Current intelligence level: 20
Tests completed this semester: 0
Stressed: false
TT
You couldn't pass the test, the stress of it all gets to you and you don't
Next test with new material is coming soon, your intelligence has been set
```

4. A user reported that their student passed enough tests that the program kept on running when they expected the program to state that the student graduated and then end the program.

5. Another user reported that when they exit the program it always says that their student graduated (even when it shouldn't).

Fix the bugs, and make comments in the code indicating where you made your changes as well, showing your company why your change was necessary.