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| **Java 2** |  | |
| **Faculty of Applied Computing and Technology** | | **Assignment #1** |

**Best Luck!**

In the following assignment, you will need to take screenshots of your code as it is running in the debugger. Feel free to use any screen clipping tool you like. A free screen clipping tool that I use is at <http://getgreenshot.org>. Feel free to use any one you wish.

A screenshot of a computer

Description automatically generated I used greenshot to capture this.

This assignment is to be completed in MSWord, where you will record your screenshots and explanations to the questions posed.

* Take a look at the included code. Run the program and look at the output. You are asked to take screenshots of the debugged code at certain points of the program. For each screenshot, ensure that the screenshot includes the Variables window (make sure you expand out the ‘this’ line) and the Call Stack window (make sure you expand out the ‘Thread’ line)
* Here is an example:

A screenshot of a computer

Description automatically generated

Now, using the debugger

* Place a breakpoint on the first line of the constructor for Student.
* Start debugging your program.
* Take a screenshot at the breakpoint in the constructor.
* As you click the down arrow through the entire constructor, explain what changes are happening inside the Variables window.
* Continue to click on the down arrow of the debugger menu until the thread of execution returns (remember the current location of the thread of execution is represented by the yellow highlight in VSCode) to the main method and gets to line 5:
  + A close-up of a text

    Description automatically generated
* Take another screenshot at this point and explain:
  + how and why the Call Stack has changed since your last screenshot
  + what is stored in the s1 variable?
  + When the s1 variable in the Variables window is expanded, we see nextStudentNumber, gpa, name, and studentNumber. Where in memory are each of these variables stored. Think about this one carefully!
* Explain what would have happened if we had passed -12 instead of 62 to s1.setGpa(62)
* Continue to click on the down arrow, until the thread of execution reaches line 8 of the main method. Explain why line 7 printed 100 and line 8 printed 101.