

Welcome to Java Programming!

This summer assignment is required for all students taking Honors Introduction to Java Programming (1641/1642). This class is designed to take students beyond introductory programming topics and to provide the framework necessary to understand and explore object-oriented programming.

Classroom Expectations:

- Be an active learner/participant
 - Respect me, your classmates, and yourself
 - Help each other with ideas, but do not share code or look at another person's program
 - Take organized notes
 - Understand that programming is not just about writing code, coding is just one part of the design cycle
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Expected Prior Knowledge:

- Primitive Data Types
- Algebraic & Boolean Expressions
- Conditional Control Structures (If/Else)
- Iterative Control Structures (Loops)
- Arrays
- Functional Decomposition
- Designing Simple Algorithms

Learning Objectives For This Course:

- To understand the concepts behind object-oriented software design and programming
 - To learn and apply correctly the programming concepts defined by the AP Java subset
 - To be able to compare and select appropriate algorithms and data structures for a given problem
 - To be able to examine and discuss ethical and social issues related to the use of computers
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Description of Summer Assignment:

The primary goal of the summer assignment is to review important programming topics that are part of the prerequisites of the course. Because these topics are present in nearly every programming language and because a computer programmer should be comfortable learning new languages, this assignment uses the Python programming language. Python is a very popular language and being knowledgeable in it is possibly more marketable than knowing Java. There are also a number of great online resources for Python and it can be run on any home computer or even online.

Your summer assignment will be to read and understand six chapters of an online Python textbook. To practice and explore the programming concepts covered in those chapters, you are asked to complete a number of online programming assignments on the codingbat.com website.

For JAVA Programming, summer assignments will be due the first week of class, graded as a homework assignment, and used to review for a formative assessment.

Enjoy your summer and I'll see you in August!

Mr. Rossetti

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Online Textbook and Reference Library:

The textbook for this summer assignment is available free online (in PDF and HTML format).

Think Python: How to Think Like a Computer Scientist, by Allen B. Downey

<http://www.greenteapress.com/thinkpython/>

Although you would not want to read all of the Python 2.* Reference Library, you might find it useful to look up the particulars of available commands and functions: <https://docs.python.org/2/reference/>

Programming Environment(s):

One reason that I chose Python for the summer assignment is the number of programming environments for it. I have used the on-line compiler environments ideone.com and www.compileonline.com. www.skulpt.org also looks like an interesting choice. For a downloadable IDE, the current favorite seems to be www.jetbrains.com/pycharm/. Any of these will be great for trying out examples in the textbook or exploring functionality on your own. However, all the programming assignments are to be completed in the codingbat.com/python environment (see below), which provides you instant feedback for both compilation and logic errors in your code.

Readings:

The readings are designed to give you an introduction to Python as well as general knowledge about programming. Like many programming languages, there are many online resources for Python. Feel free to explore resources other than the ones I've listed, but they should not be necessary for this assignment.

Think Python: How to Think Like a Computer Scientist (~ 28 pages).

- Chapter 1 (The way of the program), sections 1.1 to 1.6
- Chapter 2 (Variables, expressions and statements), sections 2.1 to 2.10
- Chapter 3 (Functions), sections 3.1 to 3.12
- Chapter 5 (Conditionals and recursion), sections 5.1 to 5.7
- Chapter 6 (Fruitful functions), sections 6.1 to 6.4

Programming Assignments:

Create an account at codingbat.com:

- Enter a unique account name (needs to look like an email, but does not need to be valid)
- *Remember* the password so you can log back in anytime -- we'll use this for Java too!
- When logged in, click on "prefs" and add the following email to "Teacher Share"
nrossetti@lowell.k12.ma.us
- *You must set the teacher preference and be logged in each time to record your progress!*

codingbat.com Programming Assignments:

- All 12 problems in codingbat.com/python/Warmup-1 (hints provided if needed)
- 3 of the 11 problems in codingbat.com/python/String-1 (you choose which 3)
- 5 of the 9 problems in codingbat.com/python/Logic-1 (you choose which 5)
- 3 of the 7 problems in codingbat.com/python/Logic-2 (you choose which 3)