

15-110 Recitation Week 1

Reminders

- Check1 due at Noon EDT Monday 01/22!
- Post recitation feedback form: <https://forms.gle/dWgvmGvTSMbRi7rv5>

Overview

- TA + student introductions, Course Logistics
- Algorithms
- Abstraction
- More Algos and Abstraction
- Working with Thonny

TA + Student Introduction

Let us know your name, pronouns, major + year, and something fun you did over the break!

Problems

ABSTRACTION

First, write an algorithm at a **low** level of abstraction that instructs a person on how to wash their hands. Assume the person you are instructing has almost no prior knowledge.

Second, write an algorithm at a **high** level of abstraction that does the same. This time you can assume the person you're instructing has a little more prior knowledge- what soap is, what a sink is.

ALGORITHMS

Suppose you have quarters (25 cents), nickels (5 cents), dimes (10 cents), and pennies (1 cent) and want to make change for a certain number of cents, how would you get change in the fewest number of coins?

Write an algorithm to solve this, using moderate abstraction (assume the user understands basic arithmetic and the values of coins).

More Algos and Abstraction!

We will present two algorithms instructing someone on how to tie their shoes, however a couple lines of the algorithms are missing!

Algorithm A:	Algorithm B:
<ol style="list-style-type: none">1. Cross the left lace over the right lace.2. _____3. Make a loop.4. _____5. Push the lace through the gap to form a second loop6. Pull both loops tight to secure the knot.	<ol style="list-style-type: none">1. _____2. Cross the left lace over the right lace and pull it under the right lace.3. Pull both ends of the laces so that the cross tightens against the top of the shoe.4. Form a small loop with the left lace by folding it back towards your thumb.

	<ol style="list-style-type: none">5. Hold the loop with your left thumb and index finger.6. Use your right hand to bring the right lace over the left loop.7. _____8. Pull on both loops to tighten the knot, ensuring it sits flat against the shoe.
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Which Algorithm has a higher level of abstraction? Which has a lower level abstraction?

Thonny

Installation instructions:

1. Download and install Thonny [here](#).
 - If you are on a Mac, you may need to verify that Thonny is a safe application in your settings.
 - Go to System Preferences > Security & Privacy.
 - There should be a notification about Thonny being blocked. Click 'Open Anyway' to verify Thonny.

2. Launch Thonny.

3. For a simple Python3 test, type this line of code in the shell/interpreter (with ">>>"):

```
print(5/3)
```

then press Enter. You should not get 1 (which you would get if you are using Python2) but instead should get 1.666666667.

Now download the starter file from the website. Open the file in Thonny (Open -> select file) and then click the green play button to run the file (also found in Run -> Run current script). If you see the

message “Welcome to your 15-110 Recitation!” pop up in the interpreter, this means you’ve successfully ran your first python program in 15-110!

As a second exercise, change the print statement so that it says “Welcome to your **first** 15-110 Recitation” (add the word first). Re-run the program to assure that this works!

Additionally, change the print statement so that it welcomes the person next to you, for example “Welcome to your first 15-110 Recitation, Albert”