Fundamentals of Python (Aptamer Stream)

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Prerequisites

A good understanding of algebra is needed, along with basic knowledge of biochemistry. Reading supplements will be provided to allow for independent study ahead of weekly meetings. No prior programming experience is required nor expected, but completing the exercises and attending meetings when possible will greatly improve your ability to learn new material. Please bring a laptop if you have one that you can use Python 3 on. Otherwise, you can practice at home or in a computer lab.

Introduction

Many scientists use programming to construct models or perform complex tasks that are suited for automation. Knowing even just the basics of programming can help with logically thinking about solutions to problems. Familiarity with the constraints of programming can also provide a sense of what is realistically possible and what is not. This course is meant to teach programming fundamentals with Python as the language of choice due to its utility and popularity in science. Meetings are held weekly on Fridays, typically with lecture slides and live coding, and exercises are assigned weekly to reinforce concepts from meetings as well as teach concepts not directly covered in person. Many exercises will be related to biochemistry. These meetings will be around an hour long (11 AM – 12 PM). Email me if you can't make it to these meetings. Advanced exercises may be provided for students with prior programming experience. For students already proficient in Python or C/C++, there may be opportunities to assist in teaching. Hopefully this will be fun for everyone!

When emailing me, please use a relevant and appropriate email subject line.

Timeline

Week of…	Topic
March 14	(spring break, assigned reading in the meantime)
March 21	Introduction, Computers, Variables & Types, Operations
March 28	Functions, Logic, Exceptions, and String Manipulation
April 4	Loops, Preview of Lists, Reading and Writing Files
April 11	Lists and Dictionaries
April 18	Object-Oriented Programming
April 25	Brief Look at PyMOL and the SciPy Stack (if we get this far)
May 2	(reserved in case a previous week is canceled)