Dear Mom,

My friend Debra and I are starting a computer science academy in Ecuador. I already have a 501c3 charitable organization registered under my name that is doing nothing, as well as a knowledge of Python and SQL, which is what I bring to the table. Debra Ray brings an organizing ability that is like that of a force of nature, and she will teach the first classes. Victor is a Quito-based graphic designer in Ecuador who operates multimedia campaigns for a restaurant company. We have others on the team as well, including the cofounder of a coding bootcamp.

The secret to our success is that we’ve found that under section 501c3, organizations that receive less than $50,000 annually over the first three years only have to file an EZ tax form. We have someone to bring in the students, and the $50,000 we will raise is enough to cover expenses and more. We don’t believe in spending on things that don’t help the students. We will have an online presence for two purposes 1) to help fundraise (naturally) and 2) to provide information about our organization, our curriculum, and results, to help others start similar groups. We can’t be everywhere.

So I figured I would write the initial draft of the syllabus as a letter to you to ask you what you think. I think you have ideas about how a school should be operated and this is someone who is involved with a project of this type asking for your input. Try to read this as a student going to class for the first time in a subject they are unfamiliar with.

Best

Thomas

Syllabus

Codigo Ecuador

Intro to Computers with Python

Course Overview and Goals

The Codigo Ecuador Intro to Computers with Python course introduces students to programming and computer science. Students will learn to write programs in Python, scrape the web, and save their work in a database. They will further tune their intuition and shapen their logic and critical thinking skills for stronger performance in coding and any subject that requires problem solving or analysis. At the conclusion of the course, students will be empowered to use Python for software engineering, data science, and for automating their own daily tasks.

Programming Tools: Codigo Ecuador will provide each student with a Raspberry Pi. Each Pi will come with the case of All required programming tools are included on this computer. Students will use Python 3 using the IDLE programming environment.

Website: <http://www.codigoecuador.org>

Prerequisites

This course assumes no prior knowledge of computer science or programming. The material will be presented with enough complexity to understand the subject, and no more.

Schedule

This course will meet once a week on Saturdays at 1:00pm, and will continue until 4:00pm.

Course Breakdown

Week 1: Rasbperry Pi unboxing and introduction. A simple introduction to coding will enable the students to display text on the screen. Essential info/warnings: A discussion of the difference between Python 2 and Python 3, and how students should refrain from using Python 2. Initial discussion of exceptions.

Week 3: During this week we teach students that everything is an object in Python. An object is a thing, and two different objects of the same type will have the same features, even if the specifics are different. Students will collect user input. Introduction to variables. Discussion of the string, float and integer datatypes, and the + and – operators. They will understand how to convert numbers from string to integer format, and back, as well as the features of integers and floating point numbers. They will begin to learn the difference between datatypes including adding integers versus concatenating strings. Initial discussion of exceptions.

Week 3: Conditionality: use of the if/elif statement. Introduction to the Boolean datatype. Introduction to the datetime and date datatypes.

Week 4: Data Structures I: the list and tuple datatypes. Using a for loop to iterate through and print each element of a list. Using a while loop to do the same thing. Appending and changing lists. Discussion of how tuples are immutable, and what immutability means.

Week 5: Introduction to for loops, and while loops, and the distinction between them. Exception handling including try/accept statements. Introduction to the zip and enumerate functions, and their use in for loops.

Week 5: Introduction to functions. Functions that do not take an argument. Functions that take an argument. Return statements. Introduction to exceptions.

Week 6: Data Structures II: the dictionary and set datatypes. List comprehension. Introduction to the idea of a class (i.e. lists, strings, dictionaries are all classes), introduction to type checking. Introduction to external libraries. Further review of the datetime library.

Week 7: Data Structures III: String methods, splitting and rejoining strings using the map function. Introduction to the typing library. Introduction to the standard library, which is a collection of modules that come pre-packaged with each Python installation. Importing basic math functions.

Week 8: File operations. Creating, writing, and reading files. Storing text in each line of a file.

Week 24: Introduction to SQL.

Week 25: Introduction to SQLite module in python. Create a simple database application tracking class attendance with the sqlite module.

Week 26:

Week 28: SQL, SQLalchemy and the CMD module. Students will create a simple application using customized classes. Goal: to make use of the ordinary Python standary library functions as “glue” to connect the external libraries, which do most of the heavy lifting.

Week 42: Final project working period

Week 43: Final Project working period

Week 44: Final exam/project TBD