Python - Level One

Let’s learn something!

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- Welcome to Python Level One!
- We've learned so much already that it may seem a bit crazy that we are only reaching Python now!
- Your previous programming experience will make learning Python a breeze!

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- Over Level One and Level Two we will be covering a lot of the same general programming topics from Javascript and then expanding these to learn about Object Oriented Programming.

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- If you have already taken a Python course you may already know a lot of what we are going to cover.
- You may find it easier to skip ahead to a section instead of starting from the beginning.

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- Let’s outline the topics of both Levels to give you an idea of where to start!

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- Python Level One
    - Numbers,Strings,Lists,Dictionaries
    - Tuples, Sets, Booleans
    - Control Flow
    - Functions

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- Python Level Two
    - Scope
    - Object Oriented Programming
    - Errors and Exceptions
    - Decorators
    - Regular Expressions

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- Utilize the curriculum outline to jump to the lecture you feel is the most appropriate starting point for you!
- Or if you are a complete beginner, just start from here!

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- It has been a long learning journey so far just to reach this point, congratulate yourself!
- Everything you've learned so far is challenging material, so remind yourself that you are awesome!

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- Python Level One and Two are the only things standing between you and the main course topic - Django.
- So let's dive in and get started with setting up Python and Atom text editor!

Python Installation and Set-up

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- For this course we will install Python using the Anaconda distribution.
- A distribution is just a version of Python that also come pre-packaged with additional useful libraries.

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- The Anaconda distribution is quite large, so we will be leaving the full download of it as optional.
- We will show how to install miniconda, a smaller version of Anaconda without the additional packages.

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- If you already have Anaconda or Python on your computer feel free to skip this installation lecture, but make sure to watch the ending where we set-up and configure Atom to have a terminal.
- Let's get started!

Part 1 - Numbers

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- Numbers in Python have two main forms
  - Integers
  - Floating Point Numbers
- Integers are whole numbers, floating point numbers have a decimal in them
  - Integer: 23   Floating Point: 23.5

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- Let’s quickly walk through some examples of very basic arithmetic for Python.
- We will also cover variable assignment in Python and what makes it a dynamic programming language.

Part 2 - Strings

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- Strings in Python are used to hold text information and are indicated with the use of single or double quotes.
- They are a sequence of characters, meaning they can be indexed using bracket notation.

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- Let’s explore the basics of strings, some useful methods, and more with Python!

Part 3 - Lists

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- Lists are Python's form of Arrays.
- They behave very similarly to a Javascript Array.
- Let's begin to understand their important features with Python!

Part 4 - Dictionaries

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- Dictionaries are Python's version of Hash Tables (Objects back in Javascript)
- They allow us to create a "mapping" with key-value pairs.
- They don't retain any order!
- Let's get started!

Part 5 - Tuples, Sets, Booleans

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- Tuples are immutable sequences.
- Sets are unordered collections of unique elements.
- Booleans are just True and False as before.
- Let’s get started!

Part 6 - Exercise Review

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- You've learned about the basic data types and structures in Python, now it is time to put your new skills to the test!
- The Part6_Exercise_Review.py file has commented tasks for you to complete, let's take a quick look!

Part 6 - Exercise Review Solutions

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Part 7 - Control Flow

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- In this lecture we will discuss the Python syntax for control flow, this will include operators, if/else if/ else statements, and loops.
- We won't cover the main principles, just the general syntax.

Part 8 - Functions

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- Functions in Python use the def keyword.
- We will also talk a bit more about some useful methods, which behave as function you can call off of an object.
- Let’s get started!

Part 9 - Function Exercises

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- Let’s take a look at some function exercises for you to answer!
- Relevant files are:
    - `Part9_Functions_Exercises.py`
    - `Part9_Functions_Exercises_SOLUTIONS.py`

Part 9 - Function Exercises - Solutions

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Part 10 - Simple Game Project

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- We've learned enough Python for you to create a simple command line game.
- Let's discuss the rules of the game and then show you an example run through of a finished game!

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- The computer will think of 3 digit number that has no repeating digits.
- You will then guess a 3 digit number
- The computer will then give back clues.
- Based on these clues you will guess again until you break the code with a match!

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- The possible clues are:
    - **Close:** You've guessed a correct number but in the wrong position
    - **Match**: You've guessed a correct number in the correct position
    - **Nope**: You haven't guess any of the numbers correctly

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- You will need to look-up a few things on your own to complete this project, check out the hints left for you in this file:
    - Part10_Simple_Game.py

Simple Game Project Solutions

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