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PYTHON - INTRODUCTION

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OBJECTIVE, OVERVIEW & INTRODUCTION

- The Objective is to provide an Introduction to Python and make sure you can open the Python IDE IDLE 3. We will primarily be using the Raspberry Pi as the hardware where we run our Python programs

1. You will read from the class Python textbook, and try the exapmes presented
2. You will verify you can write a Python program to your Raspberry Pi “myPython” directory.

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See Appendix A,B,C, for Licensing & Attribution information

These slides are an adaption, to better target my SVCTE High School Mechatronics Engineering class, primarily from Dr. Charles R. Severance's Python for Everybody class https://www.py4e.com/ … but from other sources as well. See Appendix A

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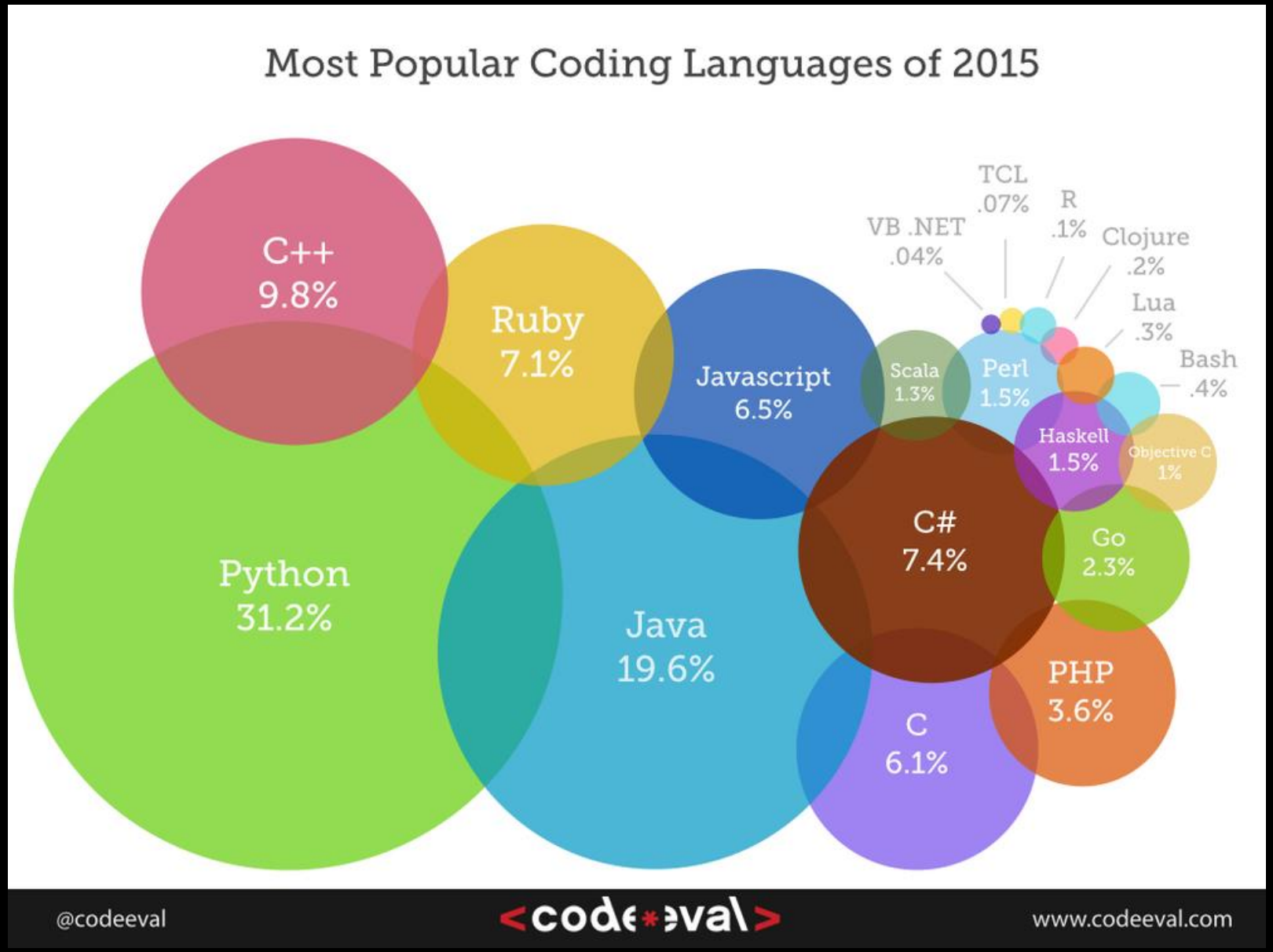
New Words or Concepts...

- Python

WHY PYTHON?



History of Python

- Python was conceived in the late 1980's by Guido van Rossum
- He started seriously writing and deploying code in December 1989
- Open Source

WHERE DID THE NAME COME FROM?

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VIDEO HISTORY

The History of Python

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Python is…

- Widely used general-purpose, high-level programming language
  - Easy to learn
- A design philosophy that emphasizes **code readability**
- A syntax that allows programmers to express concepts in **fewer lines of code**
  - Code Simplicity (Codability)
- While all languages have limitations, Python is robust and can handle most programming challenges

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Features of the Python Language

- Clear, readable syntax
- Object orientation
- Natural expression of procedural code
- Full modularity, supporting hierarchical packages
- Exception-based error handling
- High level dynamic data types
- Extensive standard libraries and third party modules for virtually every task
- Extensions and modules easily written in C, C++ (or Java for Jython)
- Embeddable within applications as a scripting interface

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Core Philosophy

- **Beautiful** is better than ugly
- **Explicit** is better than implicit
- **Simple** is better than complex
- **Complex** is better than complicated
- **Readability** counts
  - Indentation is the key to everything
  - Don’t need to wrap code in {}
  - But you do need to watch your indentations

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Python 3

- This class will target Python 3. All posted code will be targeting a Python 3 compiler/interpreter

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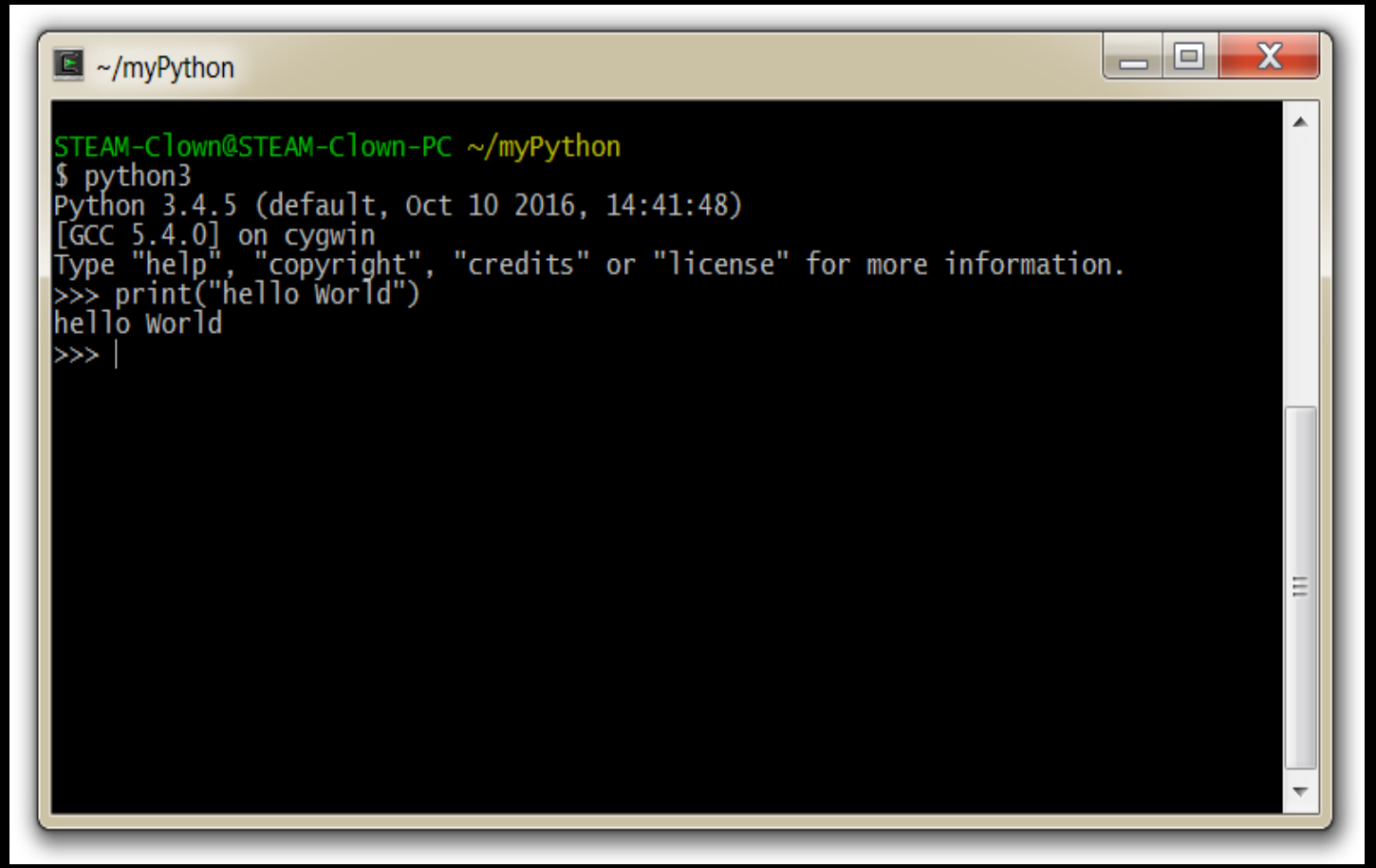
Where to get some help

- SVCTE Mechatronics Python Resource link
  - Python Resources on STEAM Clown's Mechatronics Site

Hello World

- Like C++ Python has functions
- Print(“hello World”)



Update with IDLE

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THE MAGIC OF PYTHON

- The “>>>” is a Python *prompt* indicating that Python is ready for us to give it a command. These commands are called *statements*

python

```
>>> print "Hello World“
Hello World
>>> print 2+3
5
>>> print "2+3=", 2+3
2+3= 5
>>>
```

python3

```
>>> print("Hello World“)
Hello World
>>> print(2+3)
5
>>> print("2+3=", 2+3)
2+3= 5
>>>
```

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OK, BEFORE WE GET TOO DEEP… LET'S GET SOME HELP FROM DR. CHARLES R. SEVERANCE

- We are going to use a few resources on the internet…
- Bookmark and remember a few sites…
  - SVCTE Mechatronics Python Resource link
    - Python Resources
- Python 4 Everybody - https://www.py4e.com/

HTTPS://WWW.PY4E.COM/

Python for Everybody

Hello and welcome to my site where you can work through my course materials related to my free Python for Everybody text book. You can take this course for a certificate as the Python for Everybody Specialization on Coursera.

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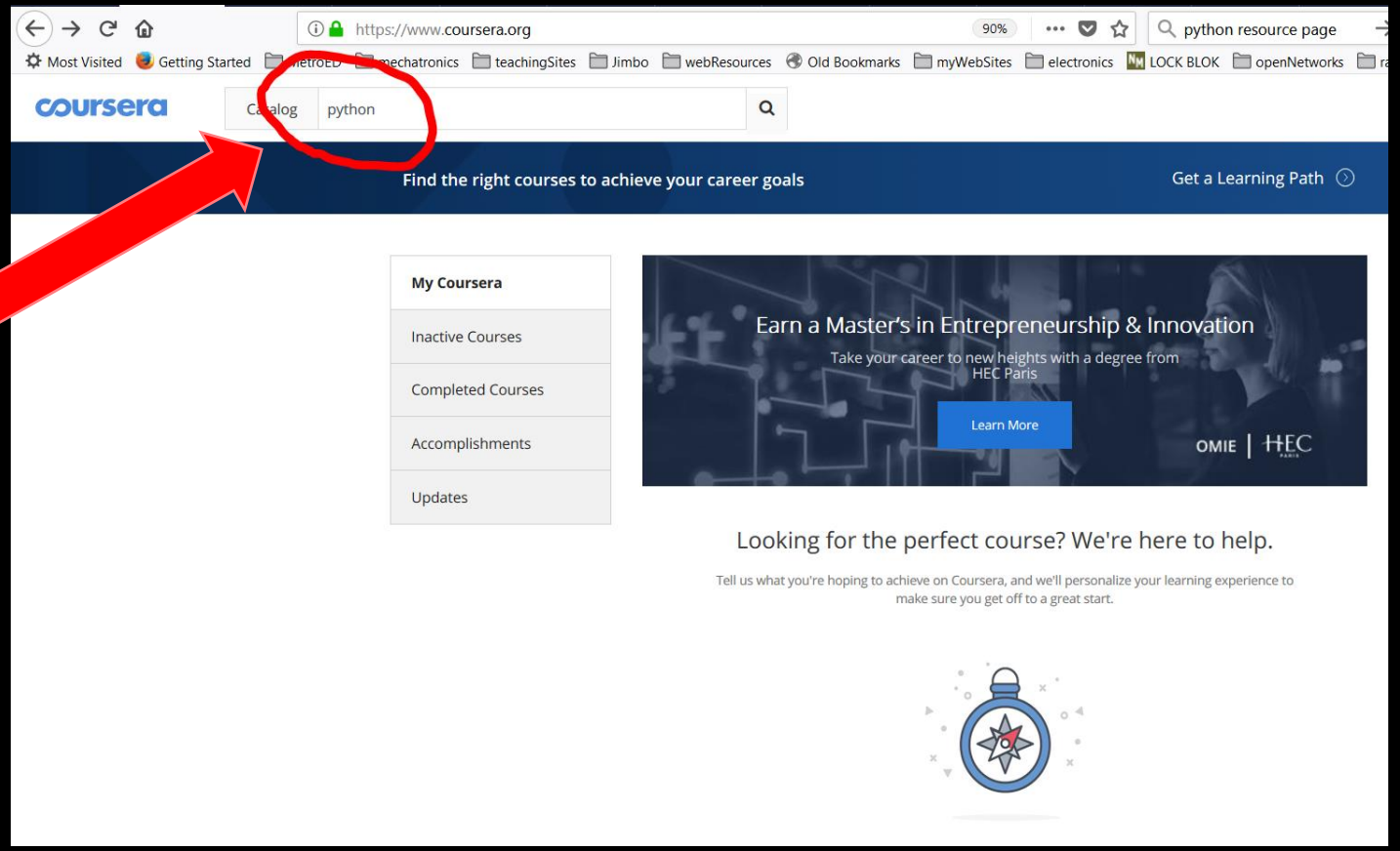
The code for this site including the autograders, slides, and course content is all available on GitHub. That means you could make your own copy of the course site, publish it and remix it any way you like. Even more exciting, you could translate the entire site (course) into your own language and publish it. I have provided some instructions on how to translate this course in my GitHub repository.

This site uses Tsugi framework to embed a learning management system into this site and provide the autograders. If you are interested in collaborating to build these kinds of sites for yourself, please see the tsugi.org website and/or contact me.

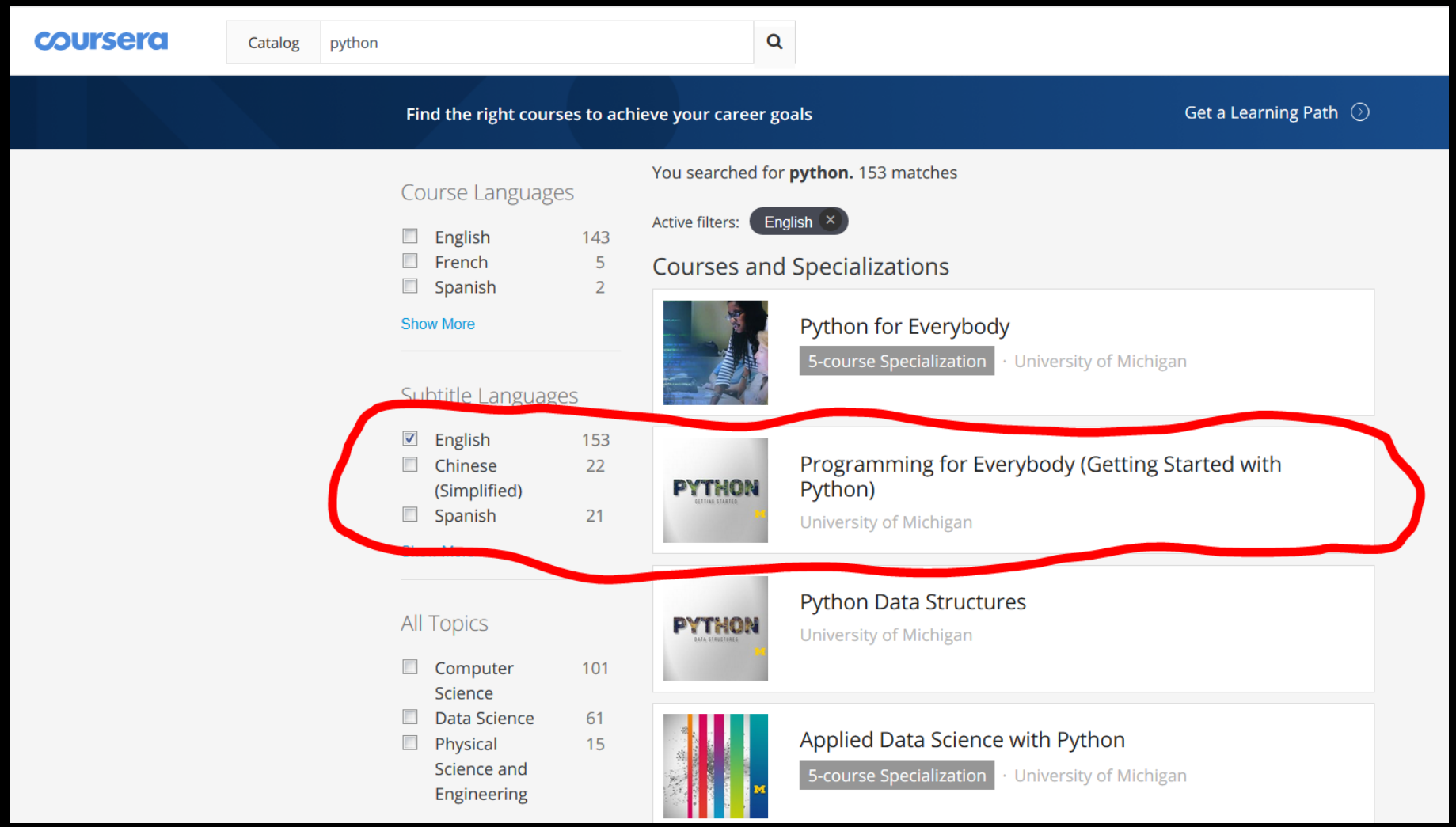
Register for a Coursera Class

- Go to https://www.coursera.org/

Python



PROGRAMMING FOR EVERYBODY



Lets play with Python…

- Continue in Chapter 3 of Simon Monks “Programming the Raspberry Pi – Getting Started with Python”
- Register for the Coursera Python for Everyone class
- Take a look at the PY4E site too…
-

SUMMARY

- Intro to Python
- Checked that Python is installed
- Can run a Python print(“Hello World”) statement
- Registered for PY4E
- Registered for CodeSchool.com
- Have a bookmark for where to find resources

REFERENCE SLIDES

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APPENDIX

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CAN I GET A COPY OF THESE SLIDES? YES, PROBABLY…

Most presentation lecture slides can be found indexed on www.steamclown.org and maybe blogged about here on Jim The STEAM Clown's Blog, and on STEAM Clown's Mechatronics Engineering Google site, where you can search for the presentation title. While you are there, sign up for email updates

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Appendix C: Primary Sources & Attribution for Material Used

- Charles R. Severance slides can be found on the https://www.py4e.com/ site are Copyright 2010 - Charles R. Severance (www.dr-chuck.com) of the University of Michigan School of Information and made available under a Creative Commons Attribution 4.0 License. Please maintain this last slide in all copies of the document to comply with the attribution requirements of the license. If you make a change, feel free to add your name and organization to the list of contributors on this page as you republish the materials.
  - Initial Development: Charles Severance, University of Michigan School of Information
  - Modifications and Adaptions by Jim Burnham, Top Clown @ www.steamclown.org
- Another great Python site is Barbara Saurette AKA mechanicalgirl and her Github site
- Additionally used some content from slide deck from Mr Ganesh Bhosale found https://github.com/gdbhosale/python-rpi/blob/master/python1.pdf

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