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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 examples presented
 2. You will verify you can write a Python program to your Raspberry Pi “myPython” directory.



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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...

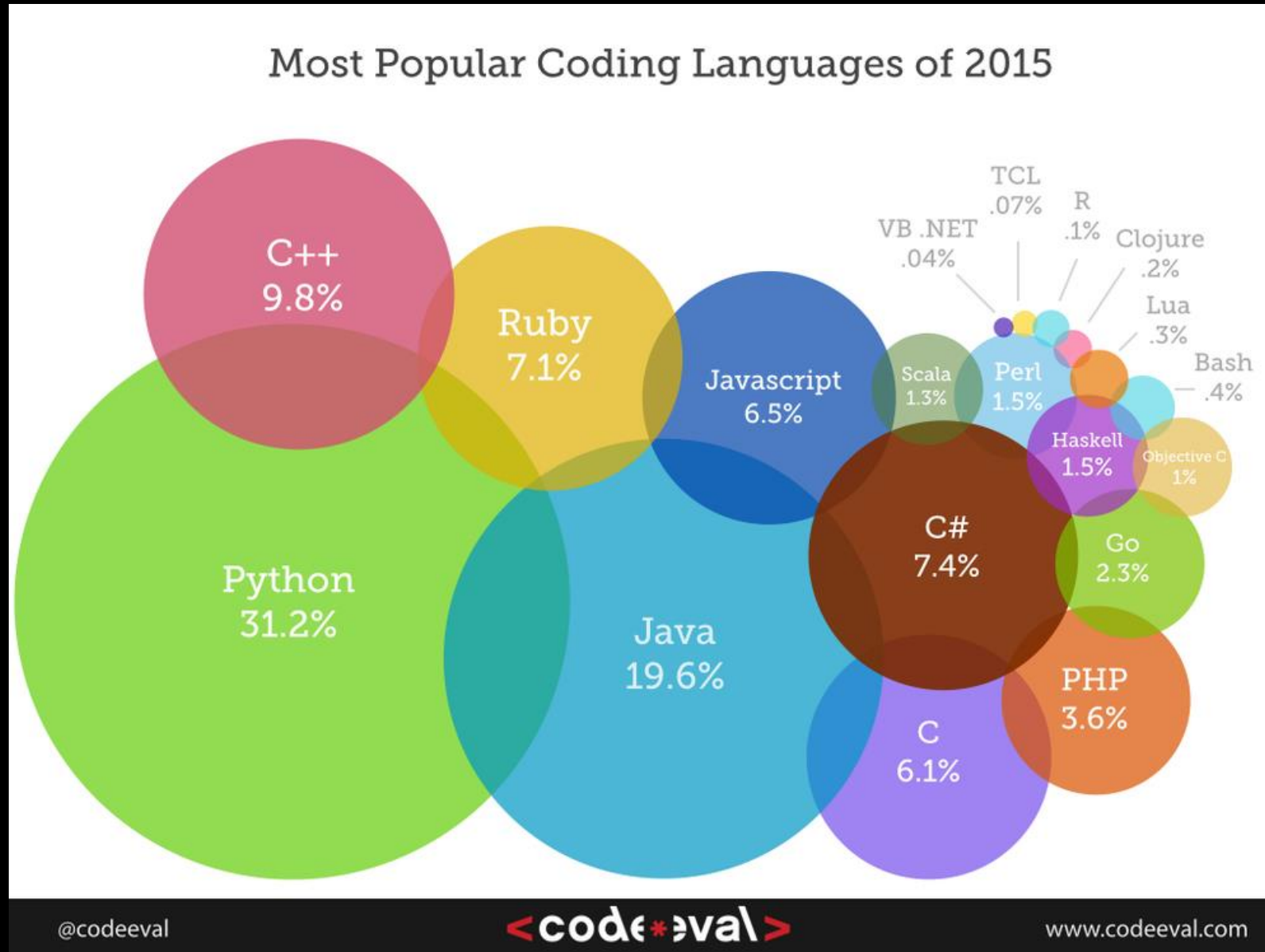
- Python



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WHY PYTHON?



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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



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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

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

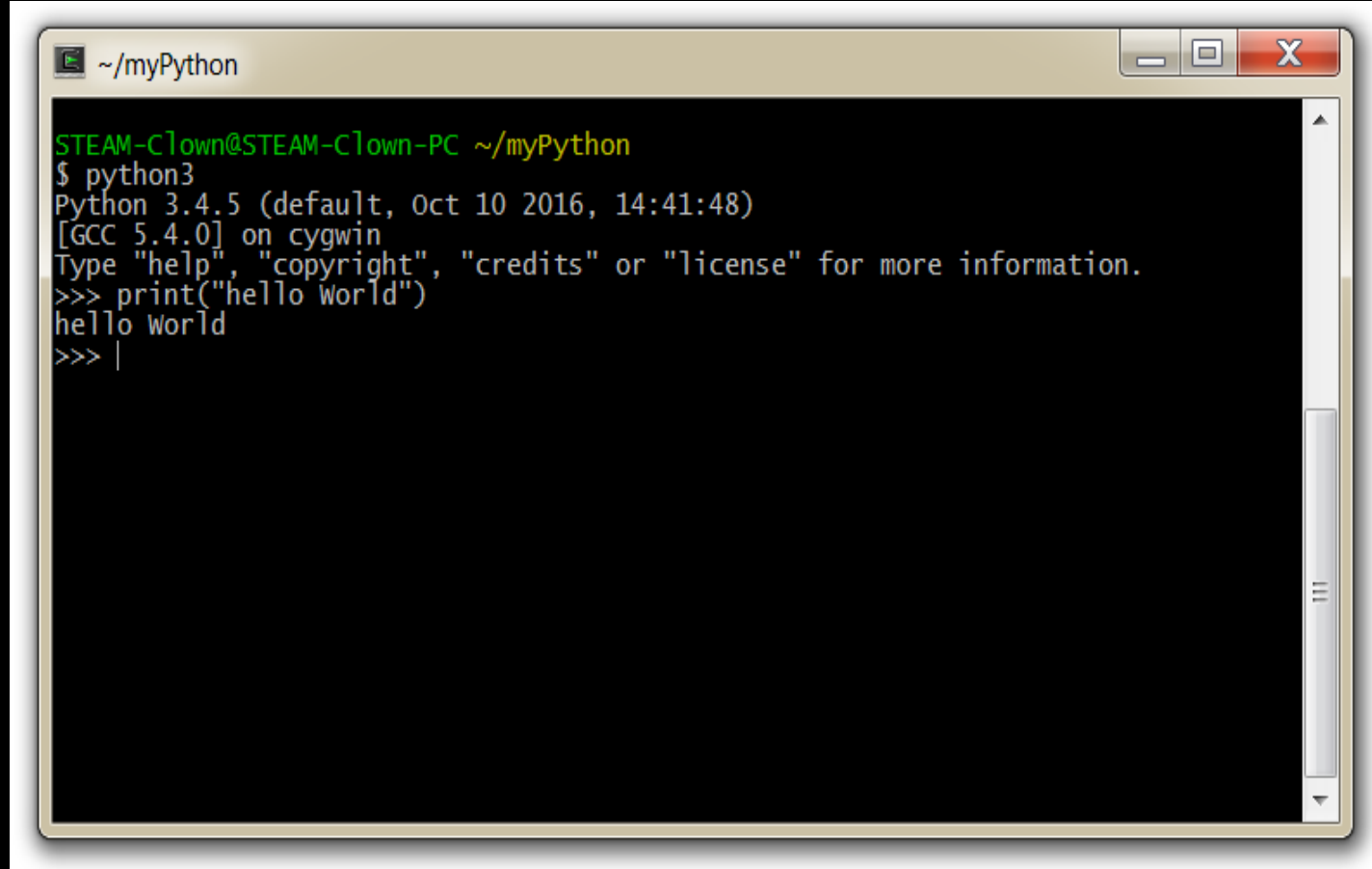
WHERE TO GET SOME HELP

- 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

A screenshot of a terminal window titled "~/myPython". The prompt is "STEAM-Clown@STEAM-Clown-PC ~/myPython". The user has entered "\$ python3", which has started a Python 3.4.5 shell. The shell output shows the version, date, and time, followed by the GCC version and the operating system (cygwin). It then prompts the user to type "help", "copyright", "credits", or "license" for more information. The user has entered ">>> print('hello World')", which has resulted in the output "hello world". The prompt is now ">>> |".

```
~/myPython
STEAM-Clown@STEAM-Clown-PC ~/myPython
$ python3
Python 3.4.5 (default, Oct 10 2016, 14:41:48)
[GCC 5.4.0] on cygwin
Type "help", "copyright", "credits" or "license" for more information.
>>> print("hello World")
hello world
>>> |
```



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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/>



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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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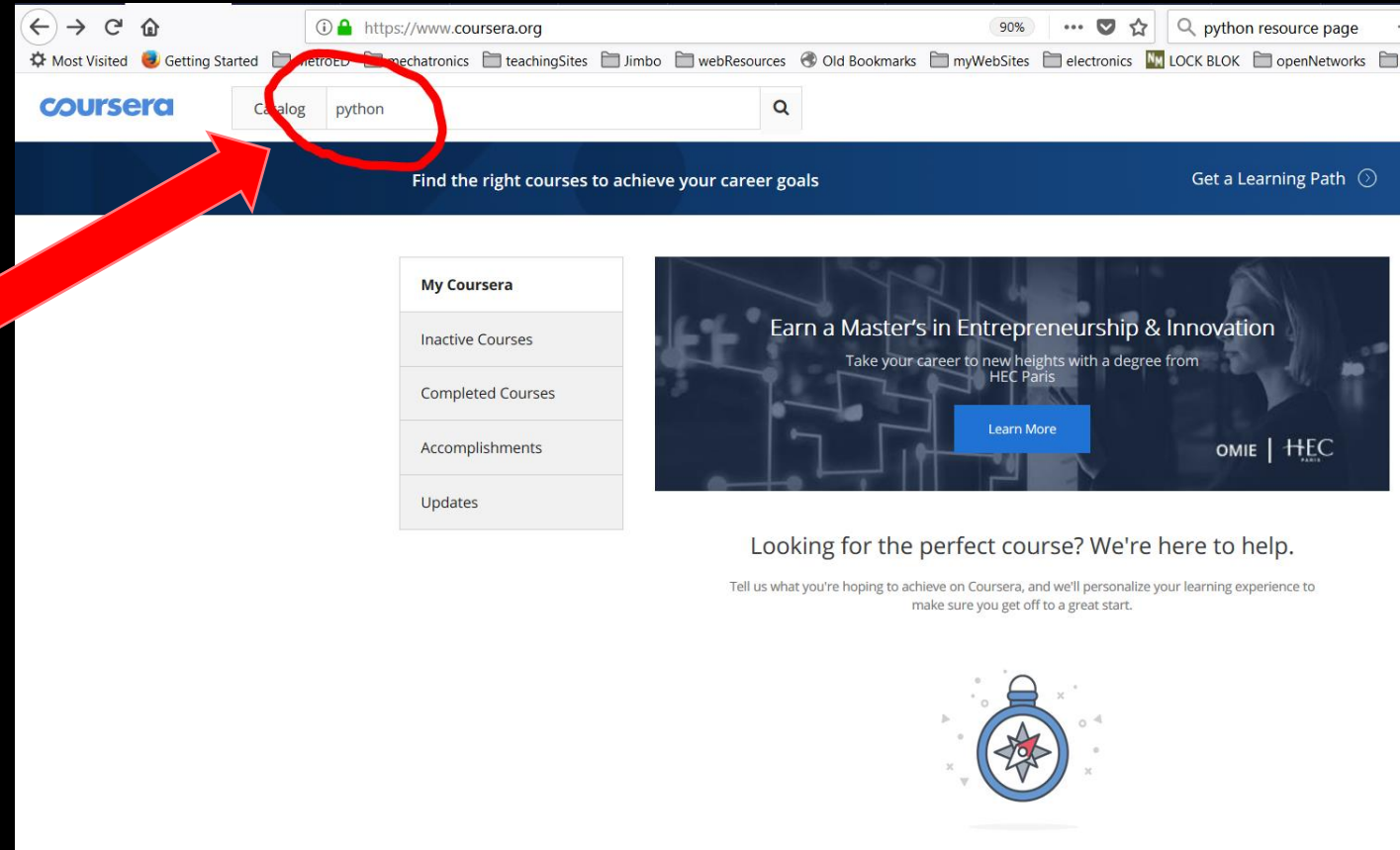


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REGISTER FOR A COURSERA CLASS

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




Python




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PROGRAMMING FOR EVERYBODY

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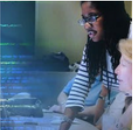
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All Topics

<input type="checkbox"/> Computer Science	101
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Courses and Specializations



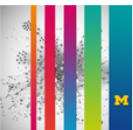
Python for Everybody
5-course Specialization · University of Michigan



Programming for Everybody (Getting Started with Python)
University of Michigan



Python Data Structures
University of Michigan



Applied Data Science with Python
5-course Specialization · University of Michigan



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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...

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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



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REFERENCE SLIDES



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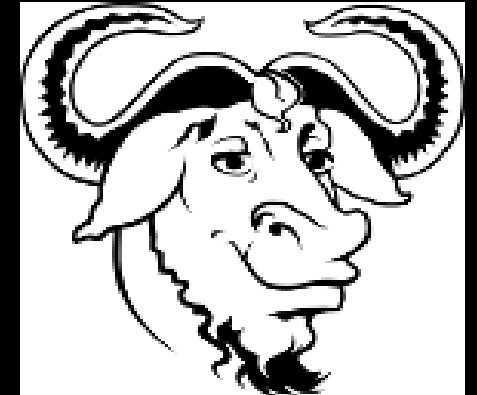


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 - Initial Development: Charles Severance, University of Michigan School of Information
 - Modifications and Adaptions by Jim Burnham, Top Clown @ www.steamclown.org
- Another great Python site is Barbara Saurette AKA [mechanicalgirl](#) and her [Github 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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