Getting Started with Python

A non-programming introduction

Class format

1. What Python is
2. How to use Python
3. Learning Python
4. Troubleshooting

Reasons to learn programming

- Biomedical research has become more computationally intensive
- Perform your [data analysis | data cleaning | data processing | statistics | data visualization] independently
- Be an informed collaborator
- Engage with new forms of big data research

What Python is

Defining Python

- Object oriented, C based programming language
- Emphasis on code readability
- Can be used for a wide variety of purposes
- A great “starter language”
- Free to use and open source

What Python looks like

- Python “syntax”: https://www.w3schools.com/python/python_syntax.asp

```
Input: >>> print(“Hello, World!”)
Output: Hello, World!
```

Python in healthcare

- Use Natural Language Processing (NLP) to gather information
- Automate routine tasks
- Use Machine Learning (ML) and Artificial Intelligence (AI) to improve services and perform analyses that predict disease prognoses

Python and health sciences

Why do biomedical researchers learn to program? An exploratory investigation

https://bit.ly/32Awfwf

Python in Healthcare

https://bit.ly/3htmJ43

How to use Python

Installation

python.org/downloads

Where to use Python (interfaces)

Python Console
Installed when you download Python

Integrated Development Environments
PyCharm CE & Spyder are free IDEs

Terminal or Command Line
Most basic way to use Python

Jupyter Notebooks
Or Google Colab Notebooks

Online Tutorials
Where Python runs in a web browser

Learning Python

Interactive online tutorials

- The Python Tutorial (httpss://docs.python.org/3/tutorial/
- W3Schools Python Tutorial (https://www.w3schools.com/python/default.asp)
- Learnpython.org (learnpython.org)

Longer online classes

- Python for Everybody on Coursera (https://www.py4e.com/)
- LinkedIn Learning (https://your.yale.edu/yale-link/linkedin-learning)

Texts

- Search for current research leveraging Python in PubMed or another database
- O’Reilly (publishing house) has great programming text books
- Many lists of recommendations available online: https://realpython.com/best-python-books/

Library Support

- See all data related classes taught through the library posted here: https://library.medicine.yale.edu/research-data/classes-materials
- Schedule a consultation meeting with me

Troubleshooting

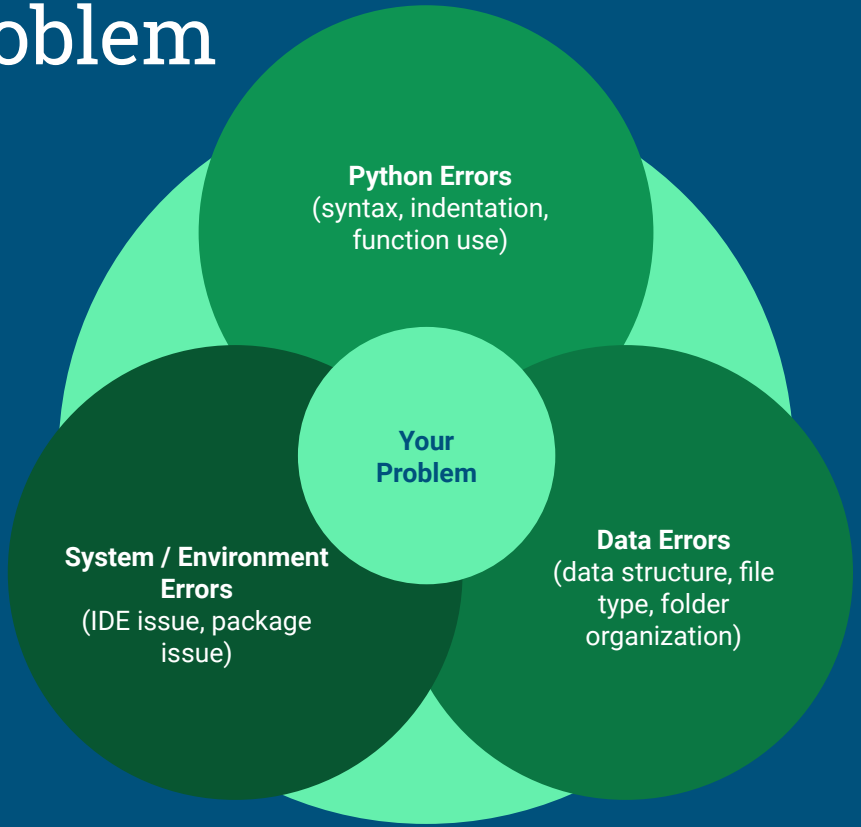
Look for errors in your code

- Python will generate error messages that can give you an idea of what your issue is
- Integrated Development Environments (IDEs) can indicate what line of your code an error is generated on
- Be mindful of syntax

Searching for answers online

- Google using details about what you are trying to accomplish, or what your error message is
- Look for similar problems on StackOverflow.com

Break down and identify your problem



Steps to getting started (summary)

1. Install python (slide 9)
2. Choose an environment or way to interact with Python (slide 10)
3. Choose a way to learn about Python further (slides 12 - 15)
4. Send me an email at sawyer.newman@yale.edu with questions

Questions and feedback

Contact me at sawyer.newman@yale.edu

Use the camera on your phone to access
The survey behind this QR code