

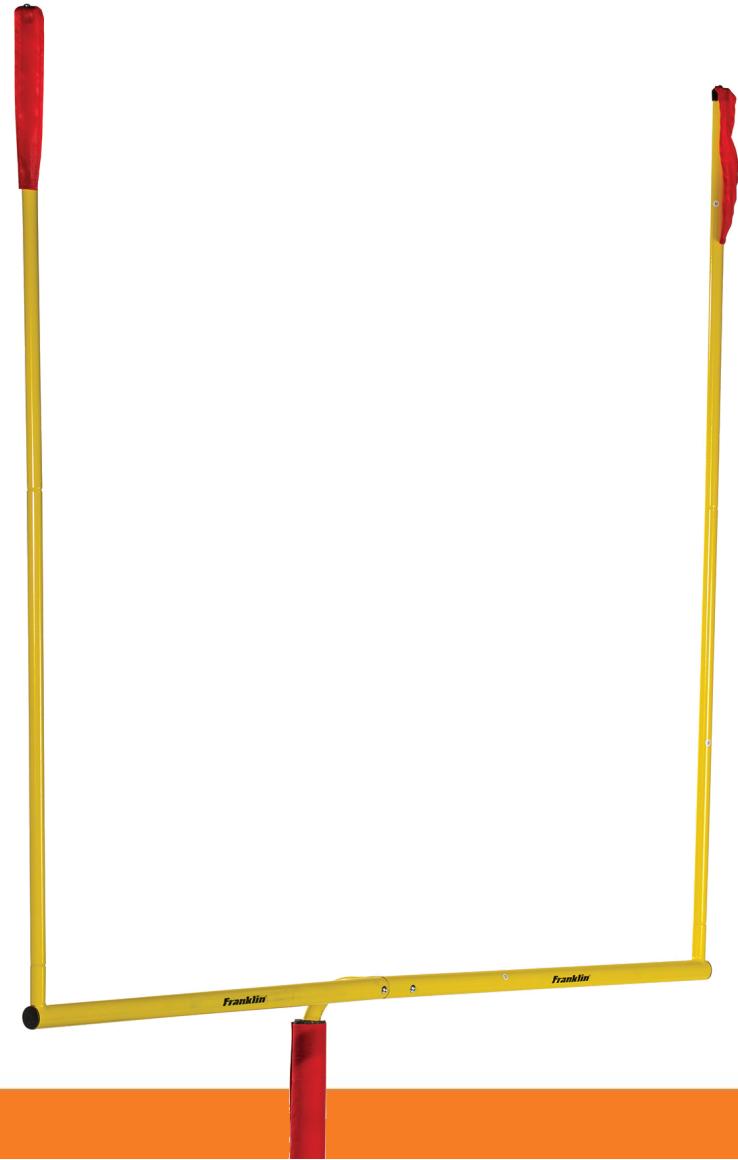
Big Picture





Goals

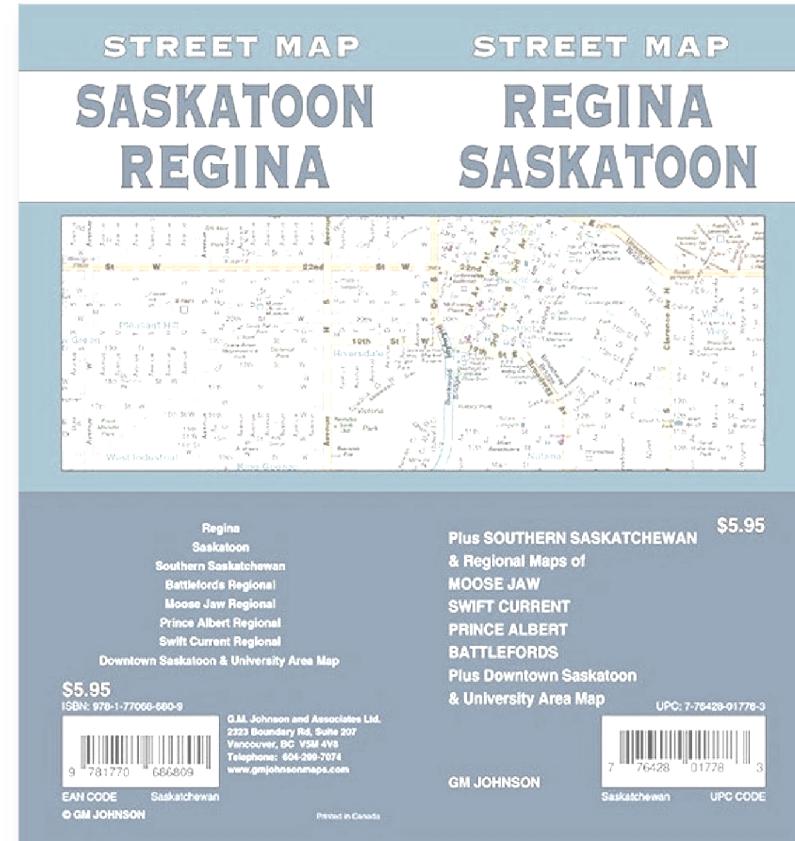
1. List 5 Python features
2. Define 'pythonic'
3. Devise a personal learning approach





Roadmap

1. Python from 30,000'
2. Python Philosophy
3. Learning
4. Executing Python Code

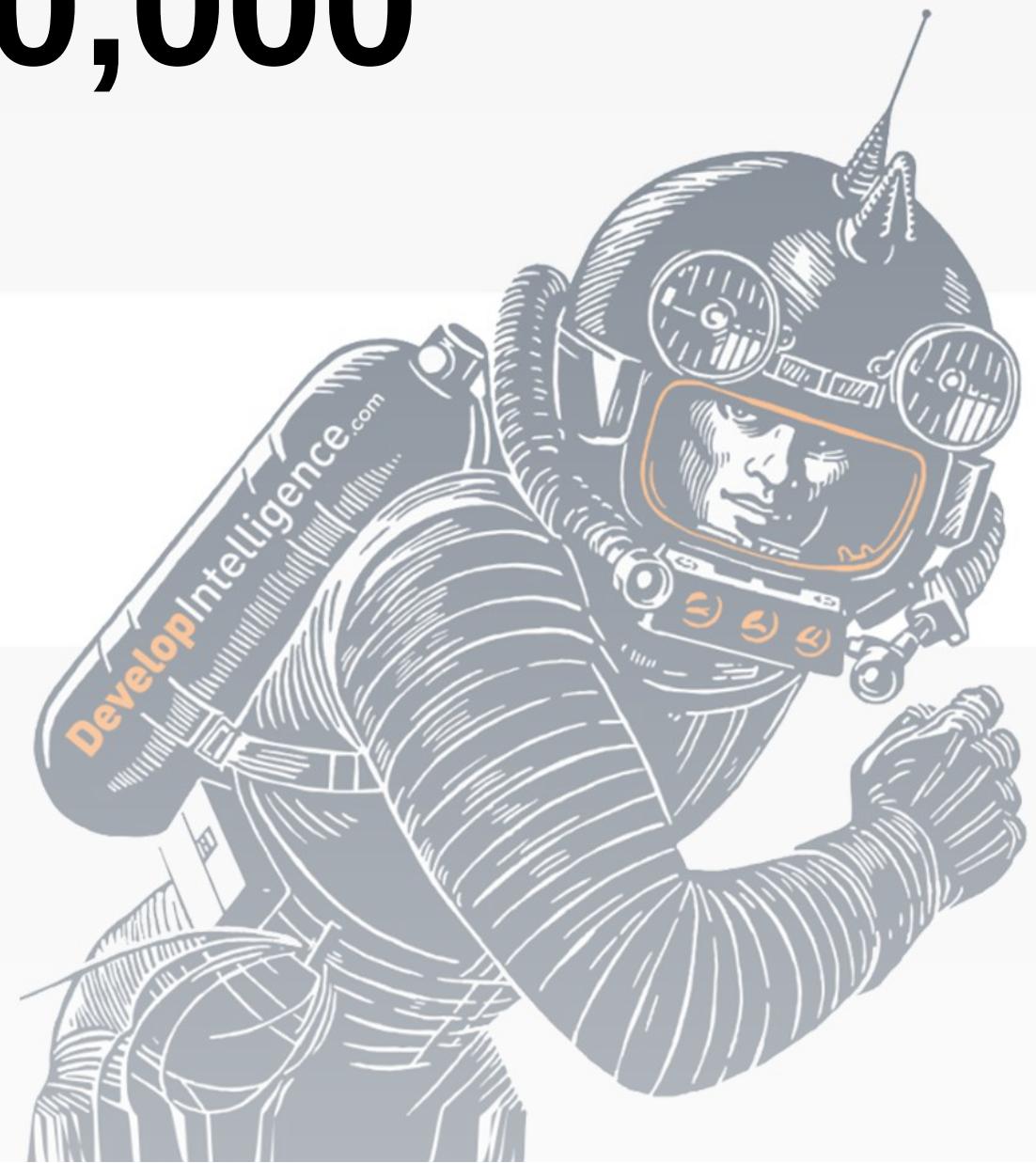




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Python from 30,000'





Python is...

- 30 years old
- Open source
- Interpreted (mostly)
- Benevolent dictator: Guido Van Rossum





Language Details



- High-Level
- Multi-paradigm
- Dynamic typing (mostly)
- Automatic memory management



Python is Scripty

*A script is what you give the actors,
but a program is what you give the
audience.*





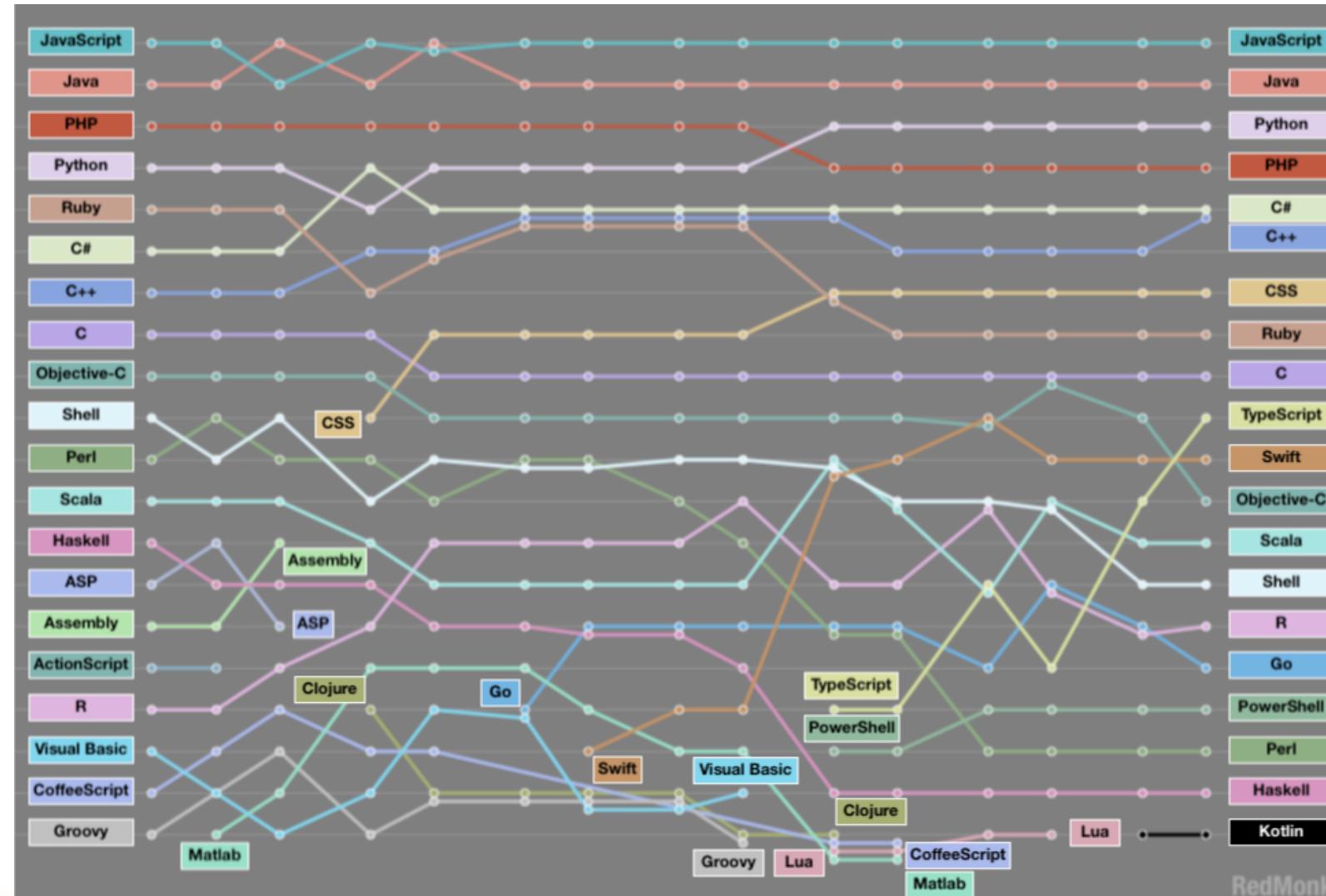
Python is Everywhere



- Multi-platform
- Widely used
- Lots of libraries
- Lots of learning resources



Python is *really* Popular





Popular is Good!



- Tons of software:
 - Libraries
 - Tooling
- Tons of resources:
 - Books
 - Videos
 - Blogs



Who Uses Python?



- CS departments
- **Some** software engineers
 - e.g. Dropbox
 - e.g. Instagram
- **Lots** of non-software people who write lots of software
 - As a calculator
 - Instead of Excel
 - e.g. Finance, IT Operations, Big Data, Math, Science



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Python Philosophy





Vocab: Pythonic



*The idioms of a programming language are defined by its users. Over the years, the Python community has come to use the adjective **Pythonic** to describe code that follows a particular style.*

Pythonic Means...

*Python programmers prefer to be **explicit**, to choose **simple over complex**, and to maximize **readability**.*



Zen

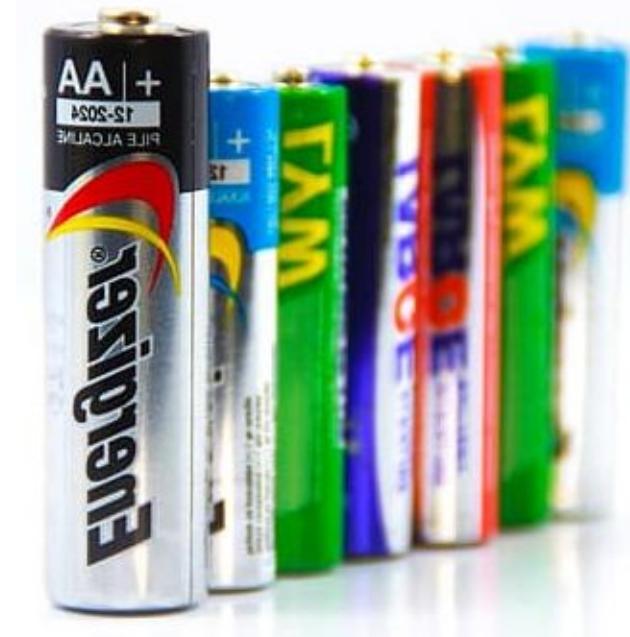
- Beautiful is better than ugly.
- Explicit is better than implicit.
- Simple is better than complex.
- Complex is better than complicated.
- Flat is better than nested.
- ...

```
1 | import this
```



Batteries included

Python has long maintained the philosophy of "batteries included" -- Having a rich and versatile standard library which is immediately available, without making the user download separate packages.





Example Batteries



- Examples
 - Web Server
 - Math & Statistics
 - File compression
 - Unit tests
 - Performance profiling
- ***Batteries*** are often better for prototyping than production
- ***Some*** are seriously old and busted



Pythonic syntax

- C Sharp

```
1 // Lots of ceremony
2 using System;
3 public class Program {
4     public static void Main(){
5         Console.WriteLine('Hello World');
6     }
7 }
```

- Python:

```
1 # Straight to the point
2 print("Hello World")
```



Python Complaints



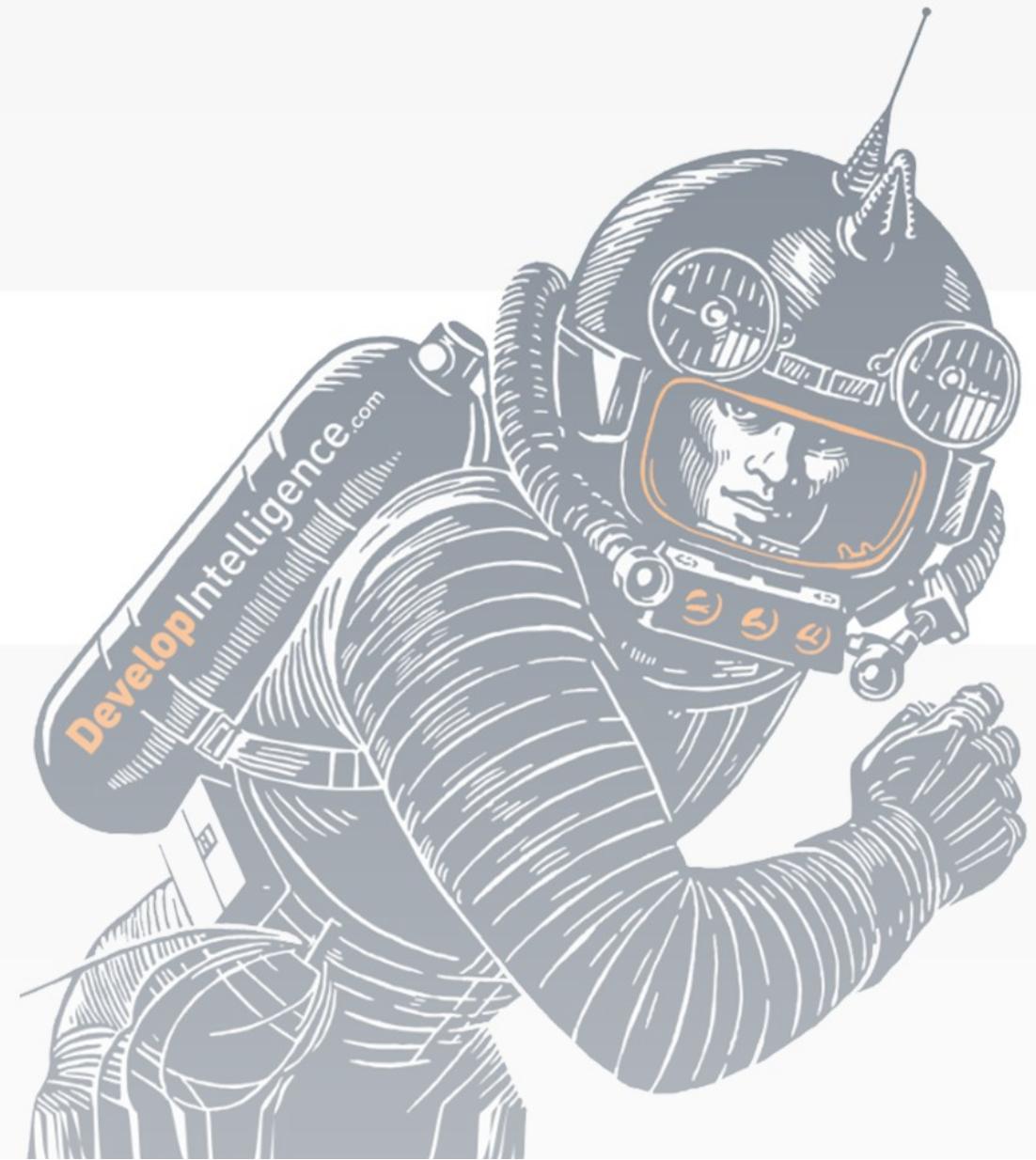
1. Hacky e.g. *Dunder methods*
2. Not always fast
3. ~~No static type checking (historically)~~
4. ~~Not great dependency management~~
5. Not great mobile
6. Paradox of choice



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Learning





Know Thyself



- Active engagement
- Multiple tracks work best
- Accept you will suck for a while

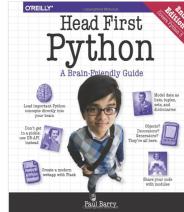


Tracks

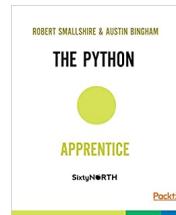
- Books
- Videos
 - Youtube, Pluralsight
- Koans
 - e.g. Project Euler
- Flash Cards
- Projects



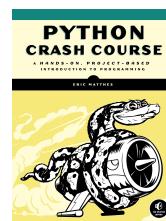
Resources: Books



Head First Python



The Python Apprentice



Python Crash Course

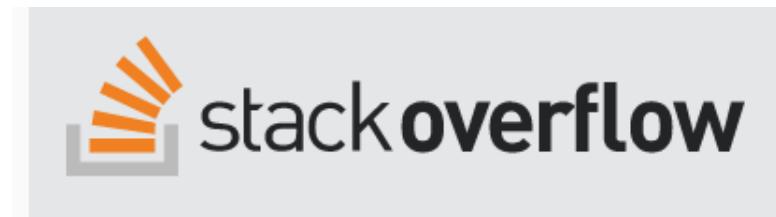


Resources: Online



[w3schools.com](https://www.w3schools.com)

W3Schools



Stack Overflow



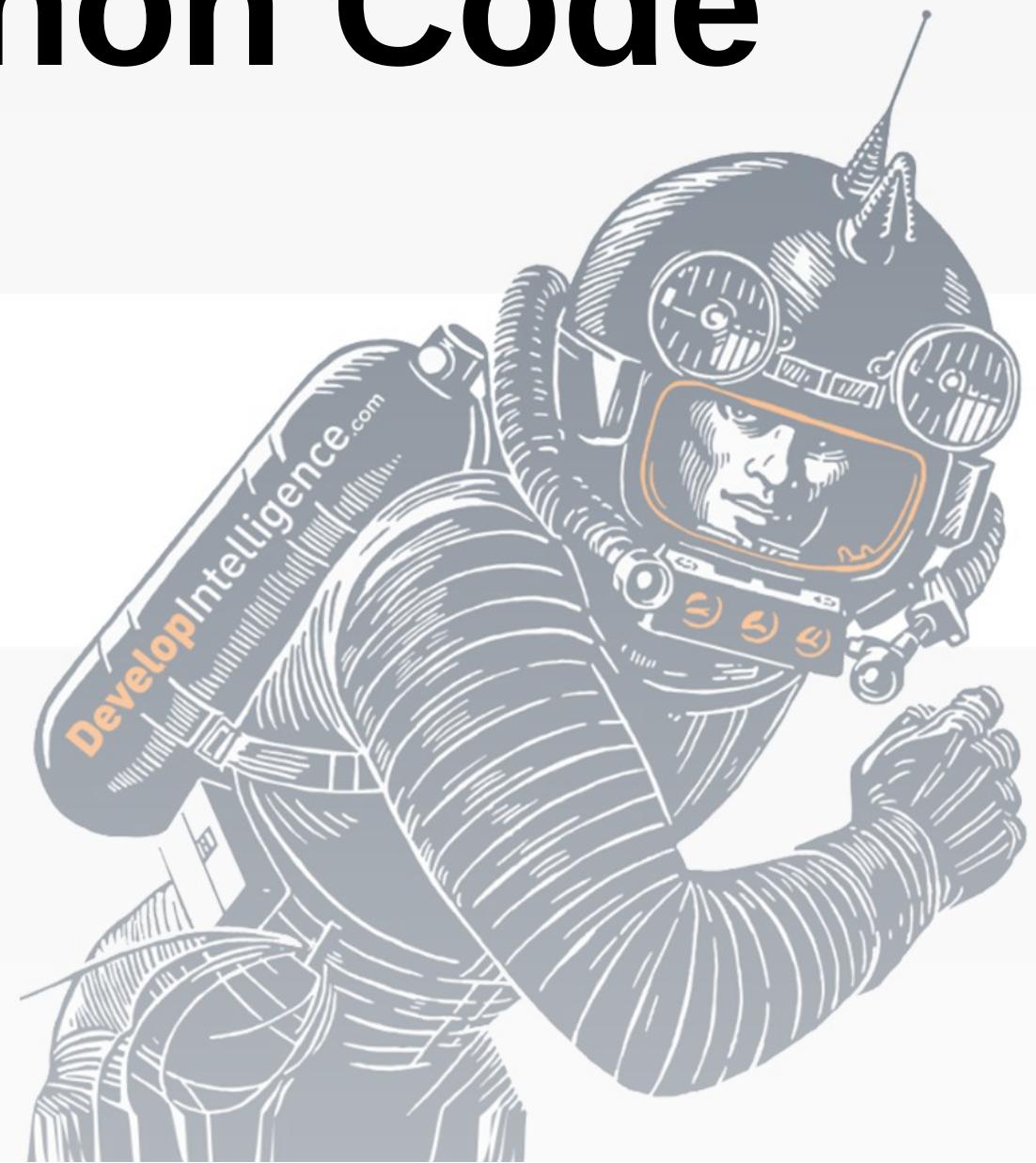
Real Python



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Executing Python Code





Options

1. Interactively via command-line REPL
2. Interactively via IDE
 - e.g. VS Code
1. Via interpreter
2. Natively (e.g. py2exe)



Firing up the REPL



- For Linux/MacOS

```
1 | python3
```

- For Windows

```
1 | py
```

- To quit, type exit()



Using IDLE



- Integrated Development Environment
- Comes with Python
- Not very good
- Proto version of Jupyter



Jupyter



- Multi-language, but Python-
- Interactive
- Popular with data people
- *Makes the scientific paper obsolete* -- The Atlantic



Lab 0: Whirlwind Tour





Setup & Casting



- Let's get set up
- Follow along
- Goals
 1. Acquire
 2. Install
 3. Run
 4. Poke around



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Review

1. List 5 Python features
2. Define 'pythonic'
3. Devise a personal learning approach

