

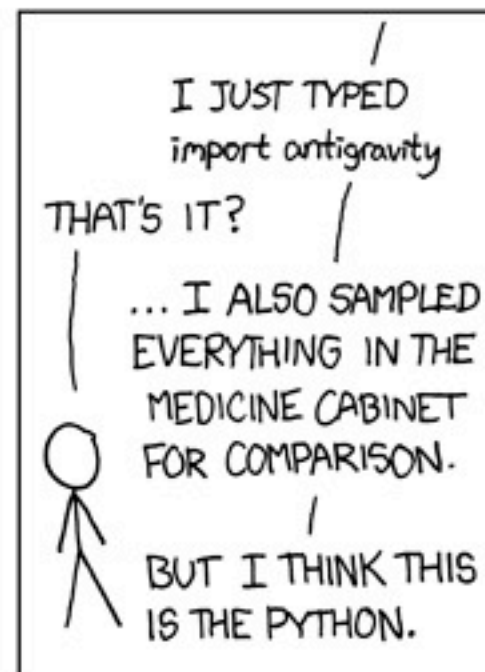
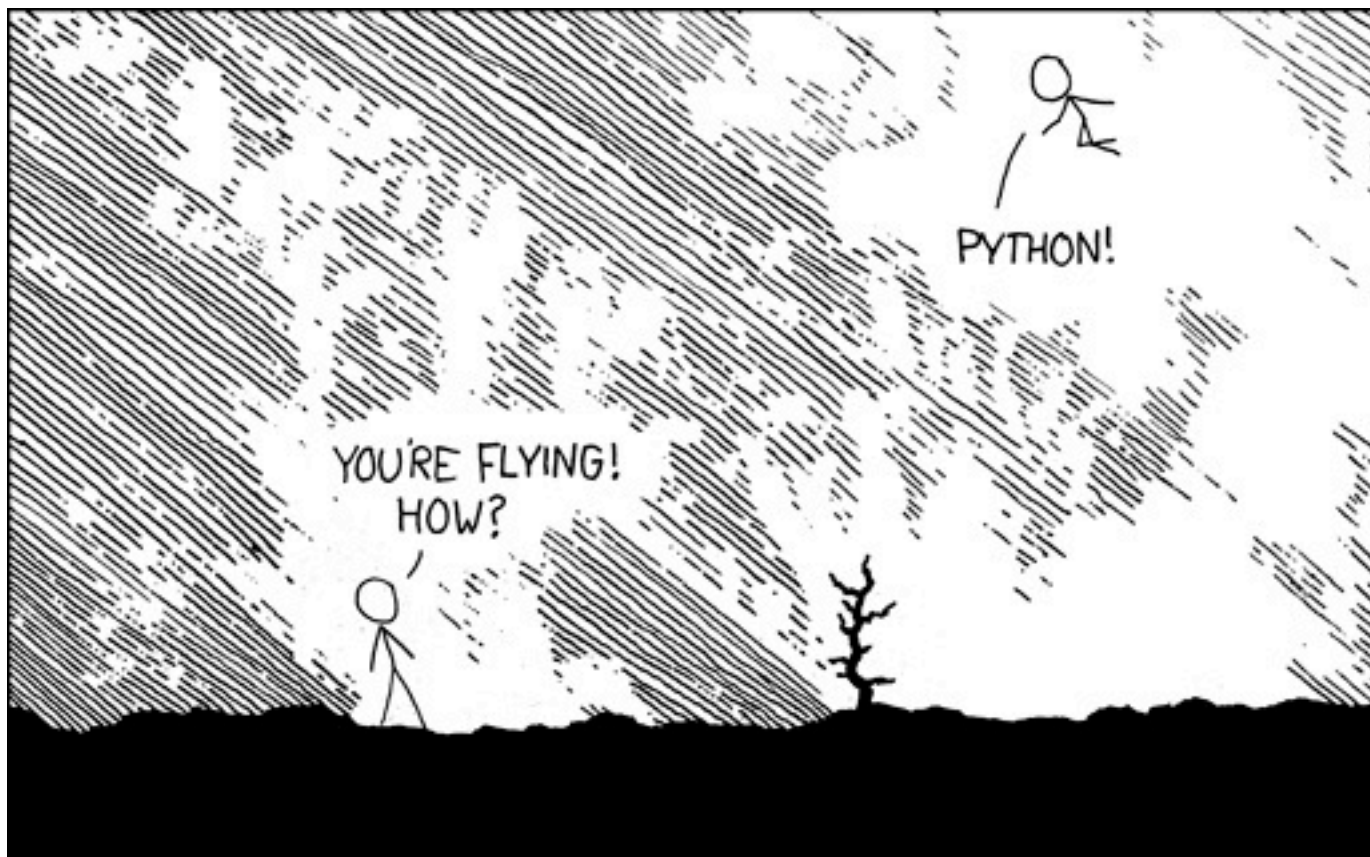
# An Introduction to Programming (with Python)

# Outline

- Why?
- Who uses Python?
- Basic Programming Concepts
- Variables and Data Structures
- Environments
- Have a go.
- Syntax
- More & Resources

# Why Python?

- Easy to learn (apart from whitespace.)
- Great starting point;
  - procedural,
  - object orientated,
  - even functional.
- But, it's about the concepts. Python does that well.



# What use is Python?

- Web (Django/Flask)
  - reddit, Guardian, Instagram, Rdio
- Games
  - Civilization, Eve, Battlefield
- Science & Engineering (SciPy/NumPy)
  - CERN, NASA, and, er, me.
- Utilities, Scripts, et. al.
  - Blender (3D modeling), Red Hat (installer), Industrial Light & Magic and Pixar (RenderMan), TermiBot.

# And now for some programming concepts:

```
print 'Hello World!'
```

---

```
a = 'world'
```

---

```
def hello(thing):  
    print 'Hello, %s' % thing  
  
hello('world')
```

# Variables & Data Structures

- One of the foundations.
  - Hold things.
  - Multiple things.
- 
- Variables for one item.
  - Lists for multiple related items.
  - Dictionaries for storing items by name.

# Environments & “Projects”

- In scripting languages, they’re usually “environments”.
- But also known as “projects” because of IDE conventions.
- They contain everything your project needs, so:
  - Your code.
  - Any libraries (known as dependencies.)
  - Documentation
  - Tests
- There are tools to make it easier keeping everything together and working.
  - e.g.: virtualenv

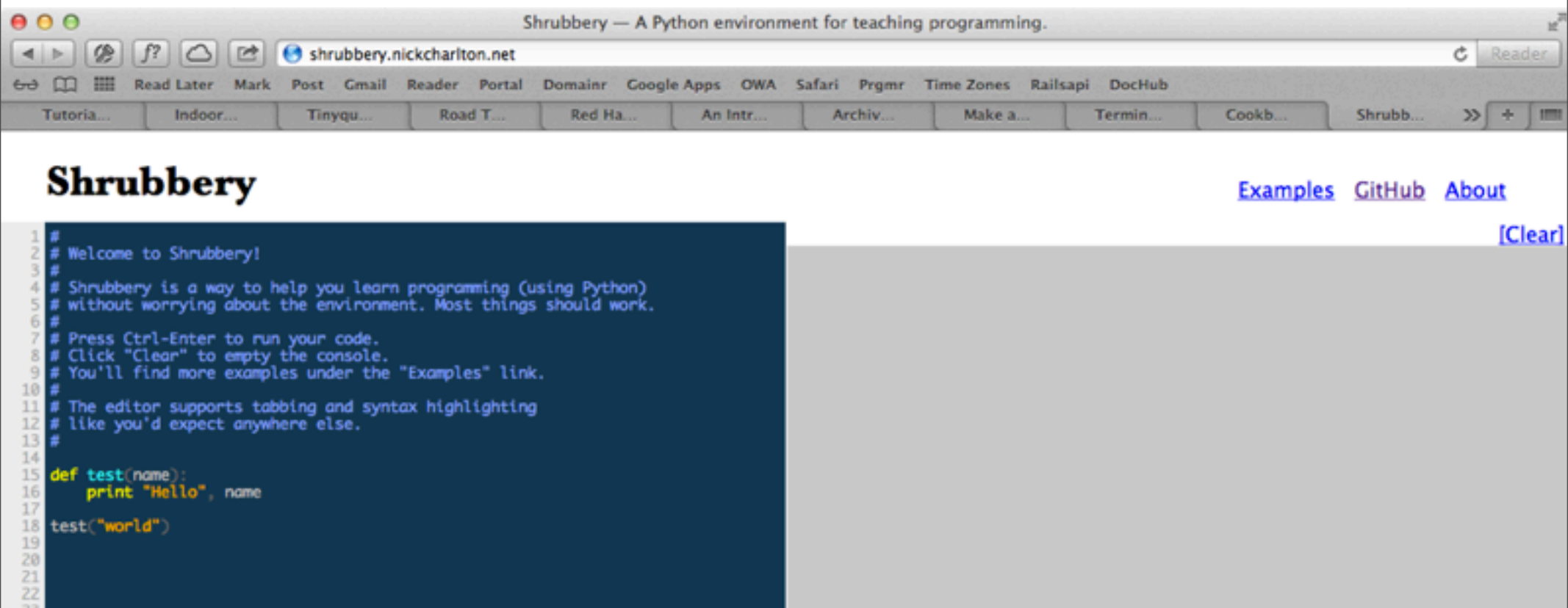


# Where to code?

- Text Editors
  - Vim
  - Emacs
  - Notepad++
  - Sublime Text, TextMate, etc.
- Integrated Development Environments (IDEs)
  - Visual Studio
  - Eclipse
  - Whatever the hell the cool kids use these days.

# Play Live.

<http://shrubby.nickcharlton.net/>



# Some Syntax...

```
print 'Hello World!'
```

---

## Variables

```
phrase = 'Hello World!'  
number = 1  
accuracy = 0.9999
```

---

## Data Structures

```
numbers = [1, 2, 3, 4]  
words = {one => 'thing',  
         two => 'another'}
```

# A bit more Syntax...

## Control Structures

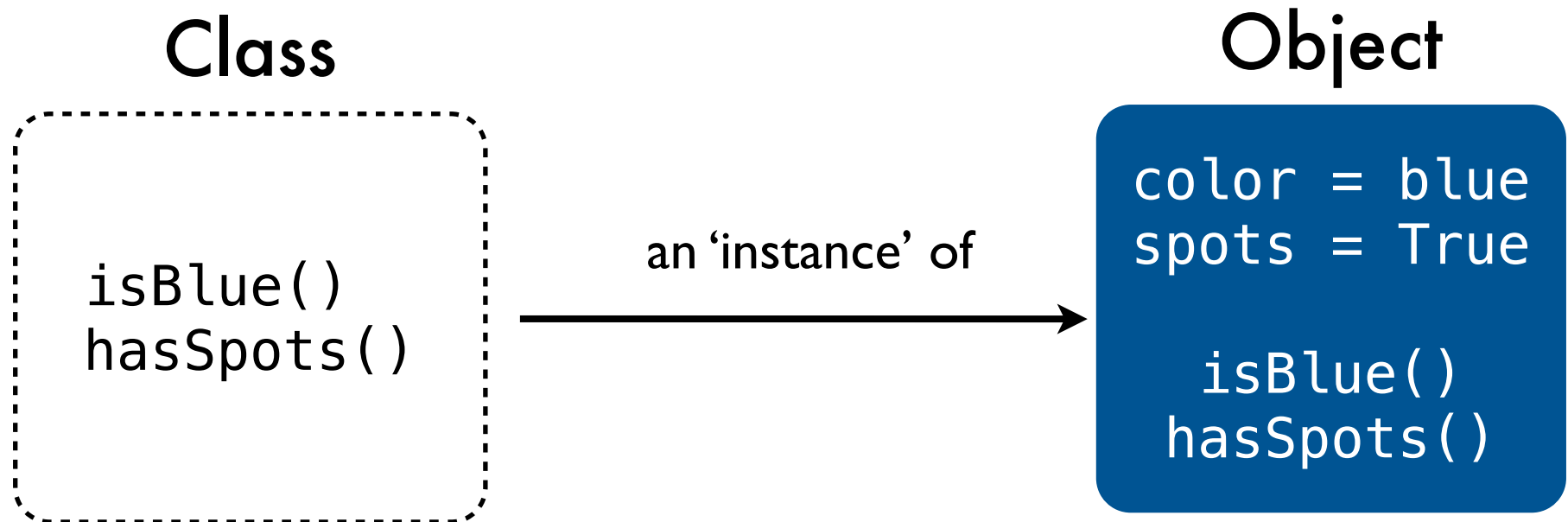
```
if thing == another:  
    print 'Oh, yes!'
```

```
while something:  
    print 'Yep!'
```

```
for thing in list:  
    print thing
```

# Object Orientation

- A pretty crucial concept in modern programming.
- That seems utterly confusing.
- But it's reasonably sensible once you understand all of the bits that make it up.



# More?

- Other Data Structures;
  - Tuples
  - Sets
- Modules
- Packages & PyPI

# Resources

- All of this: <http://github.com/nickcharlton/python-tutorial>
- From before:  
<http://github.com/nickcharlton/termisoc-python-tutorial>
- The Hitchhikers Guide to Python:  
<http://docs.python-guide.org/>
- Python Docs: <http://docs.python.org/>
- Python Pocket Reference by Mark Lutz:  
<http://cl.ly/JytA>