

Introduction to Python

Python Module 1

What is Python?

- Python is a **programming language**: a way to tell a computer what you want it to do.
- Python is **multi-purpose**: not just for data science!
- Python has two versions that are currently active: Python 2.x and Python 3.x. We'll be using Python 3. (caution: slight differences between versions!)

What does Python look like?

- Python is an **interpreted language**:
lines of code are executed one at a time.
- Each line of code is written as plain text.

```
score = 17
total = 20
pct = score / total * 100
print("the percentage is:", pct)
```

```
the percentage is: 85.0
```

Three ways to run a Python program

- **Using the REPL** (Read-Eval-Print-Loop). Execute either `python` or `ipython` in a terminal, type code line-by-line.
- **Put your code in a file** (e.g. `test.py`), then execute `python test.py` in a terminal to run the file line-by-line.
- **Use an IDE** (integrated development environment) such as Jupyter Notebook. Provides productivity tools such as `syntax highlighting`, `auto-completion`, `debugging`...

Anatomy of a Python program

Code is made up of **tokens**:

Identifiers are names of things:

(score, total, pct, print)

Literals are data (literally!):

(17, 20, "the percentage is:")

Operators are symbols that can perform certain actions: (= / *)

```
score = 17
total = 20
pct = score / total * 100
print("the percentage is:", pct)
```

the percentage is: 85.0

Syntax highlighting makes it easier to visually parse your code by assigning different colors to different types of tokens. IPython, Jupyter Notebooks, and many other programs will do this for you.

Identifier rules

Identifiers are the names we give to variables, functions,...
They can be user-defined (like `score`) or built-in (like `print`).

- Can only contain alphanumeric and underscore (A-z,0-9,_)
 - ✓ `nbr_students`, `physics_marks` ✗ `#students`, `physics.marks`
- Cannot start with a number
 - ✓ `student_34_marks`, `_34_marks` ✗ `34_student_marks`
- Names are case-sensitive
 - `age`, `Age`, `AGE` are all different!

Keywords

Keywords are special words reserved by Python and cannot be used as identifiers. Here they are:

False	await	else	import	pass
None	break	except	in	raise
True	class	finally	is	return
and	continue	for	lambda	try
as	def	from	nonlocal	while
assert	del	global	not	with
async	elif	if	or	yield

(they are typically highlighted in a special way in the IDE)

Comments

- Comments are annotations used to make code more readable by others (and yourself, later!). Use them!
- Single line comments are put after a hashtag

```
# This is a single line comment
```

- Multiline comments are put between three quotes

```
"""  
This multiline comment  
takes up two lines  
"""
```

You will get a lot of errors when you start coding, that is OK!

What I Thought Marathon



What It Actually Is Obstacle Course

