

The Python Language (Part 1)

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Objectives

- We will cover:
 - A subset of Python...
 - That is appropriate for COS 333...
 - Through example programs

Agenda

- **Overview**
- Simple programs
- Building and running
- Functions
- Standard library

Overview



Guido
Van Rossum

Overview

- Characteristics:
 - Dynamically typed
 - Rich standard library
 - Expressive

“Python is the most powerful language you can still read.”

-- Paul Dubois

Overview

- Why study Python?
 - It's elegant
 - It's popular
 - It can illustrate much of the course's material
 - You are new to it?
- We'll use **Python 3.12**

Agenda

- Overview
- **Simple programs**
- Building and running
- Functions
- Standard library

Simple Programs

- See **hello1.py**

```
$ python hello1.py  
hello, world  
$
```

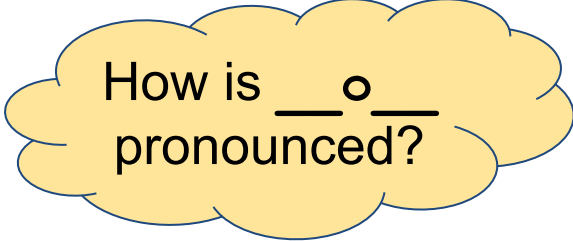
What features of
Java must a
novice learn to
understand
Hello.java?

What features of
Python must a
novice learn to
understand
hello.py?

Simple Programs

- See hello2.py

```
$ python hello2.py  
hello, world  
$
```



How is o
pronounced?

Agenda


- Overview
- Simple programs
- **Building and running**
- Functions
- Standard library

Building and Running


- Initially...
 - Perform the instructions in the *A COS 333 Computing Environment* document
- Then...
 - Activate your cos333 virtual environment

```
$ activate333
```

Building and Running

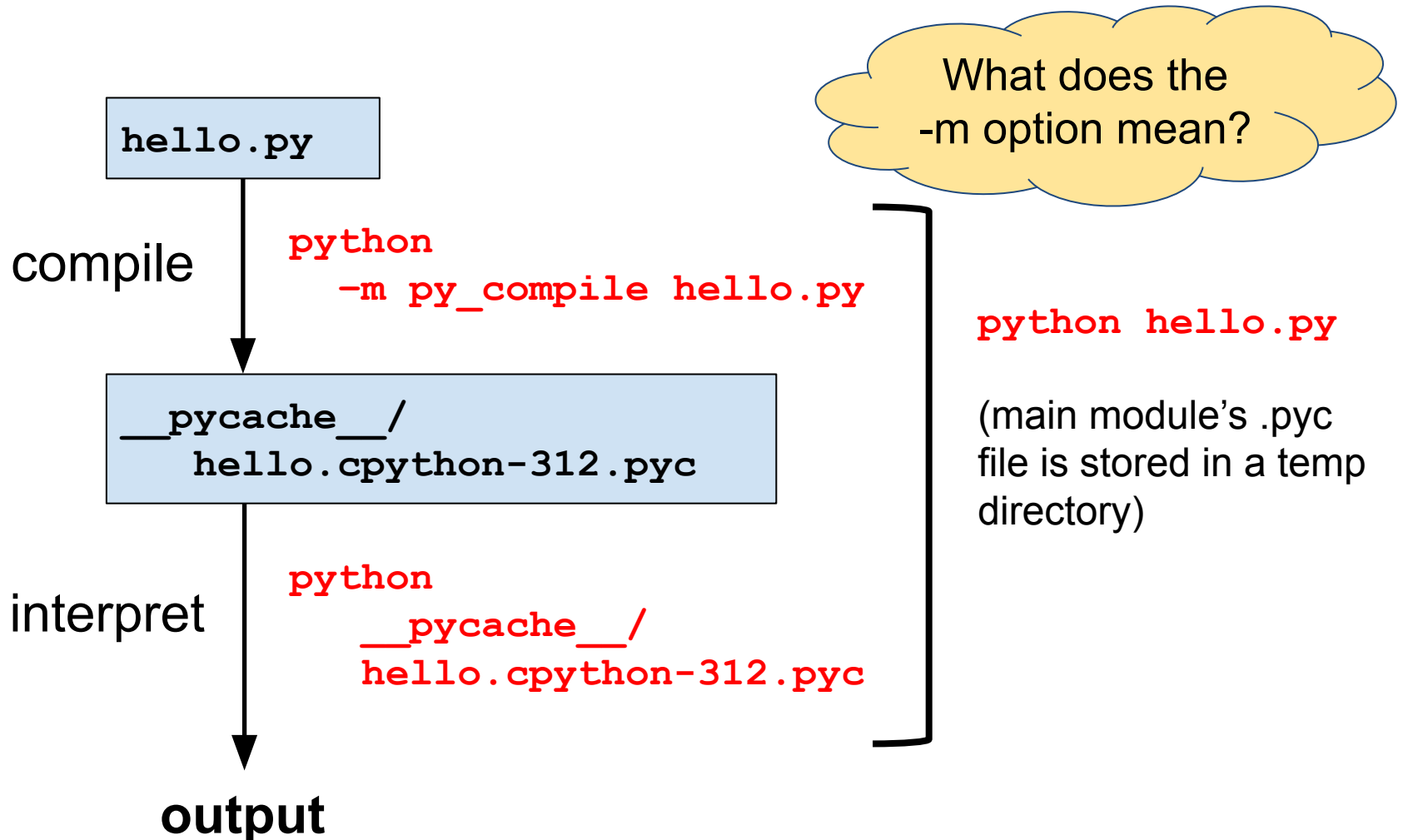
A yellow cloud-shaped callout box with a blue outline, containing text about building and running a Java program.

How many
commands does
it take to build
and run
Hello.java?

A yellow cloud-shaped callout box with a blue outline, containing text about building and running a Python program.

How many
commands does
it take to build
and run
hello.py?

Building and Running



Building and Running

Procedure 1 (Mac/Linux/Windows):

```
$ python hello.py
```

Procedure 2 (Mac/Linux):

```
$ chmod 700 hello.py  
$ ./hello.py
```

Procedure 3 (Windows):

```
C:\>hello.py
```

Building and Running

- Finally...
 - Deactivate your cos333 virtual environment

```
$ deactivate
```

Agenda

- Overview
- Simple programs
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- **Functions**
- Standard library

Functions

- See **sub.py**

```
$ python sub.py  
3  
5  
3  
$
```

The
subtract()
function can be
called with 1 or 2
arguments. How
would you
compose such a
method in Java?

Agenda

- Overview
- Simple programs
- Building and running
- Functions
- **Standard library**

Standard Library

- See **squareroot1.py**

```
$ python squareroot1.py  
1.4142135623730951  
$
```

Standard Library

- See **squareroot2.py**

```
$ python squareroot2.py  
1.4142135623730951  
$
```

Lecture Summary

- In this lecture we covered these aspects of Python:
 - Overview
 - Simple programs
 - Building and running
 - Functions
 - Standard library
- See also:
 - **Appendix:** Interactive Python

Appendix: Interactive Python

Interactive Python

```
$ python
Python 3.12.3 (main, Apr 10 2024, 05:33:47) [GCC
13.2.0] on linux
Type "help", "copyright", "credits" or "license" for
more information.
>>> print(1 + 2)
3
>>> 1 + 2
3
>>> quit()
$
```

Interactive Python

Interactive Python is valuable for **learning**

```
$ python
Python 3.12.3 (main, Apr 10 2024, 05:33:47) [GCC
13.2.0] on linux
Type "help", "copyright", "credits" or "license" for
more information.
>>> import math
>>> math.sqrt(2)
1.4142135623730951
>>> quit()
$
```


Interactive Python

Interactive Python is valuable for **learning**

```
$ python
Python 3.12.3 (main, Apr 10 2024, 05:33:47) [GCC
13.2.0] on linux
Type "help", "copyright", "credits" or "license" for
more information.
>>> from math import sqrt
>>> sqrt(2)
1.4142135623730951
>>> quit()
$
```

Interactive Python

Interactive Python is valuable for **testing**

```
$ python
Python 3.12.3 (main, Apr 10 2024, 05:33:47) [GCC
13.2.0] on linux
Type "help", "copyright", "credits" or "license" for
more information.
>>> import hello1
hello, world
>>> quit()
$
```

Interactive Python

Interactive Python is valuable for **testing**

```
$ python
Python 3.12.3 (main, Apr 10 2024, 05:33:47) [GCC
13.2.0] on linux
Type "help", "copyright", "credits" or "license" for
more information.
>>> import hello2
>>> hello2.main()
hello, world
>>> hello2.main()
hello, world
>>> quit()
$
```

Interactive Python

Interactive Python is valuable for **testing**

```
$ python
Python 3.12.3 (main, Apr 10 2024, 05:33:47) [GCC
13.2.0] on linux
Type "help", "copyright", "credits" or "license" for
more information.
>>> from hello2 import main
>>> main()
hello, world
>>> main()
hello, world
>>> quit()
$
```