



Week 1

basic Python programs,
defining functions

Special thanks to Scott Shawcroft, Ryan Tucker, and Paul Beck for their work on these slides.

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About Us

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Python!

- Created in 1991 by Guido van Rossum (now at Google)
- Useful as a **scripting language**
 - **script** : A small program meant for one-time use
 - Targeted towards small to medium sized projects
 - Why not PHP, Perl, etc?
- Used by:
 - Google, Yahoo!, YouTube
 - Many Linux distributions
 - Games and apps (e.g. Eve Online)



Installing Python

Windows:

- Download Python from <http://www.python.org>
- Install Python.
- Run **Idle** from the Start Menu.

Mac OS X:

- Python is already installed.
- Open a terminal and run `python` or run Idle from Finder.

Linux:

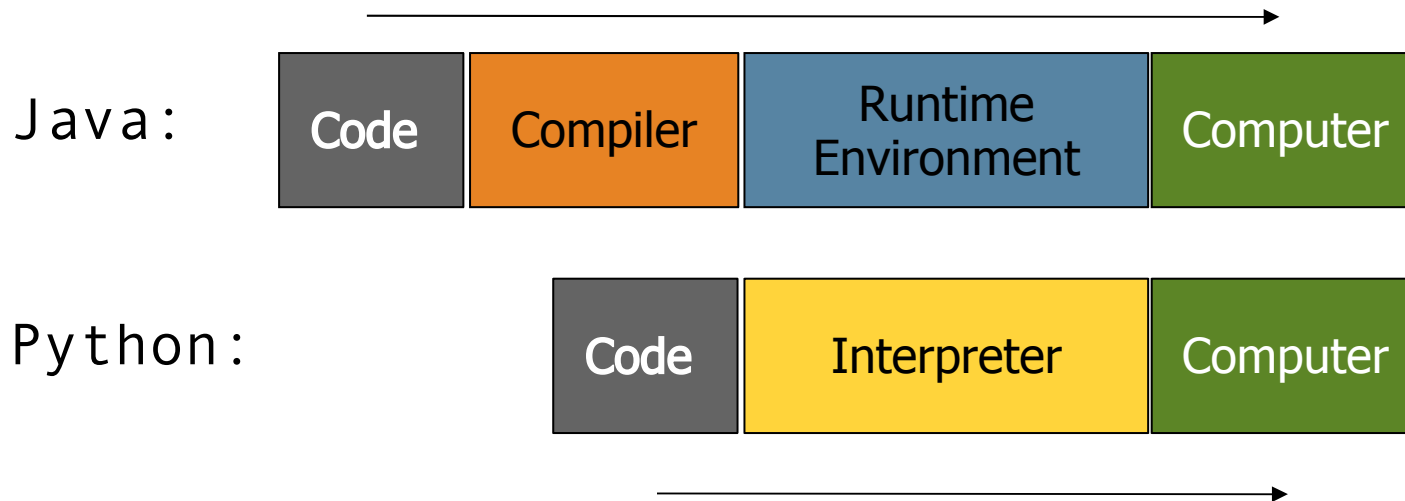
- Chances are you already have Python installed. To check, run `python` from the terminal.
- If not, install from your distribution's package system.

Note: For step by step installation instructions, see the course web site.

Interpreted Languages

- **interpreted**

- Not compiled like Java
- Code is written and then directly executed by an **interpreter**
- Type commands into interpreter and see immediate results



Chapter 1 Review

- Console output: `System.out.println`
- Static methods: `public static void <name> ()`
`{ ...`

Hello2.java

```
1 public class Hello2 {
2     public static void main(String[] args) {
3         hello();
4     }
5
6     public static void hello() {
7         System.out.println("Hello, world!");
8     }
9 }
```

Our First Python Program

- Python does not have a `main` method like Java
- The program's main code is just written directly in the file

hello.py

```
1 print "Hello, world!"
```

The `print` Statement

- Syntax:

```
print "<text> "
```

or

```
print                (a blank line)
```

- Python statements do not end with semicolons like Java's
- Escape sequences such as `\` are the same as in Java

swallow.py

```
1 print "Hello, world!"
2 print
3 print "Suppose two swallows \"carry\" it together."
```


Comments

- Syntax:
<comment text (one line)>

swallow2.py

```
1 # Suzy Student, CSE 142, Fall 2097
2 # This program prints important messages.
3 print "Hello, world!"
4 print                # blank line
5 print "Suppose two swallows \"carry\" it together."
```

Functions

- **Function** : Equivalent to a static method in Java.
- **Syntax:**

```
def <name> () :  
    <statement>  
    <statement>  
    ...  
    <statement>
```

hello2.py

```
1 # Prints a helpful  
2 message.  
3 def hello():  
4     print "Hello, world!"  
5  
6 # main (calls hello twice)  
7 hello()  
8 hello()
```

- Must be declared above the 'main' code
- Statements inside the function must be indented

Whitespace Significance

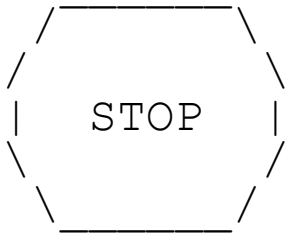
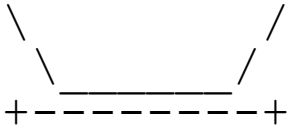
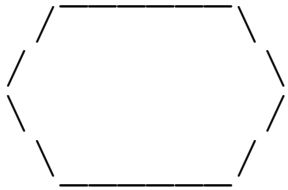
- Python uses indentation to indicate blocks, instead of { }
 - This was done to make the code simpler and more readable.
 - In Java, indenting is optional. In Python, you **must** indent.

hello3.py

```
1 # Prints a helpful message.
2 def hello():
3     print "Hello, world!"
4     print "How are you?"
5
6 # main (calls hello twice)
7 hello()
8 hello()
```

Exercise

- Rewrite the Figures lecture program in Python. Its output:



Exercise Solution

```
def egg():  
    top()  
    bottom()  
    print
```

```
def cup():  
    bottom()  
    line()  
    print
```

```
def stop():  
    top()  
    print "|   STOP   |"  
    bottom()  
    print
```

```
def hat():  
    top()  
    line()  
    print
```

```
def top():  
    print "           "  
    print " /_____\\ \"  
    print " /           \\ \"
```

```
def bottom():  
    print "\\           / \"  
    print " \\_____ / \"
```

```
def line():  
    print "+-----+"
```

```
# main  
egg()  
cup()  
stop()  
hat()
```