## Methods & Parameters

We're Moving!

• Okay, we've been ignoring the top white screen enough. From now on, we'll be doing most of our actual coding in the white screen!

• Specifically, the code we'll be writing in the top white space will be defining methods.

- We'll still have to use the black screen though, to **run** the methods we define in the white screen.
- Now, let's first see how this all works...

Writing a Method

• There are 2 main parts of any method:



Defining a Method

All methods start with this line, which declares that you're defining a method **def** [name of your method]():



Block of Code

- What you want your method to do goes inside your block of code. Think of it as the individual steps your method will do when you call (or run) the method.
- Everything *indented* into this block of code will happen when you call your method.

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1 2 3 4 5	<pre>def printCoordinatorNames():     print 'Victoria Bartolome'     print 'Hong Chau'     print 'Sarah Filman'     print 'Arushi Pasricha'</pre>			
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Getting Ready

These are the steps to take before you can run your method:

 Step 1: Save your method by going to File, then Save. You can name it whatever you want, but just make sure it's all one word (ex: myCoolMethod), and make sure you end it with .py (ex: myCoolMethod.py)

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More Getting Ready

• Step 2: Load your file (making sure it's the one you currently see in the white screen; otherwise open it and it will show in the white screen).

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Click it!	<pre>1 def printCoordinatorNames(): 2     print 'Victoria Bartolome' 3     print 'Hong Chau' 4     print 'Sarah Filman' 5     print 'Arushi Pasricha' </pre>
	Load UNLOADED Watcher Stop

If you ever make changes to your method, you must do these two steps *again* or else your method won't run with the changes!

Finally, Running Your Method

- To do this, go back down to the black shell.
- Call your method by simply typing in the name, and see it go!

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Why Methods?

• You're probably wondering why we need to write methods in the first place. After all, we've been able to do a LOT with just writing commands into the black screen.

• The answer is, that it makes things easier and more efficient. Just watch...

Parameters

- Methods are a lot more useful (and fun!) with parameters
- Parameters work like functions in math:

$$f(x) = x + 4$$
  
 $f(2) = 2 + 4$ 

The function f(x) takes a parameter x. This function is then *defined* as x + 4, so when we put in 2 for x, it gets substituted and we get 2+4.

## Parameters with Methods

 So if we were to write a method that calculates the cube of a number (in other words, a number to the 3<sup>rd</sup> power or exponent), we could write:

👹 JES - Jython Environment for Students - cube.py	
File Edit Turnin Watcher MediaTools Help	
$\begin{array}{c} 1 \\ \text{def cube}(\mathbf{x}): \\ 2 \\ \text{onever} \\ \frac{1}{2} \\ \text{vtyty} \end{array}$	→ cube(3)
answer = x*x*x 3 print answer	answer = 3*3*3
Load Watcher Stop	
>>> cube(3) 27 >>>	

## More Parameters

• You can use parameters for anything! Not just numbers and math functions. Look at this method:

👹 JES - Jython Environment for Students - madLib.py 🛛 🔳 🗖 🔀							
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1 2 3 4	<pre>def madLib(noun,verb,adj):     print 'Today I brought my new' ,noun, 'to Artemis.'     print 'Everybody thought I was' ,adj, ','     print 'and asked to' werb 'with my' noun, '.'</pre>						
	print 'and asked to' ,verb, 'with my' ,noun, '.'						
Load     Watcher     Stop       >>> madLib('frying pan', 'chat', 'cool')       Today I brought my new frying pan to Artemis.       Everybody thought I was cool,       and asked to shot with my fiving pan							
>>>	a Number 1 Dosition: 1						

Since you're printing a string in the method, you want to make sure your inputs are strings, too!

Do you see how parameters makes things more flexible? Instead of printing a new madLib in the black box every time you want new words for the blanks, a method with parameters let's you define the madLib story and makes it so that you JUST have to put the new input words every time. It's easy!

One More Example

- Say we wanted to calculate a meal for 20 people, and they each ate something of a different cost.
- This is how we would do it if we just worked with the shell:



The Easier Way

Methods make everything easier!

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6.03 >>> 6.33 >>> 8.44 >>>	Loa fin 375 fin 393 fin 404	d dTotalCos dTotalCos 75 dTotalCos 25	t(5.00) ) t(5.25) t(6.99)	Watche	Stop	
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Here, you would just have to define the method(6 lines) ONCE...

and then just use 1 line to call the method 20 times!

## ASSIGNMENT

• Remember the assignment yesterday where we made an if-else statement that told us if we passed or failed given our test score?

- For this assignment, you must write a **program** in the white space that does this for you. The parameter that you should pass in is your test score.
- Example first line: def passOrFail(score):