



Beginning



# Why code...

- Code is fun! Code is everywhere...



# Plan for Today

- Use a new programming language...



- Use an IDE (Integrated Development Environment)
- Remembering things in Python (Memory and naming)
- Computer arithmetic (Maths)
- Using python libraries
- Be Cool.

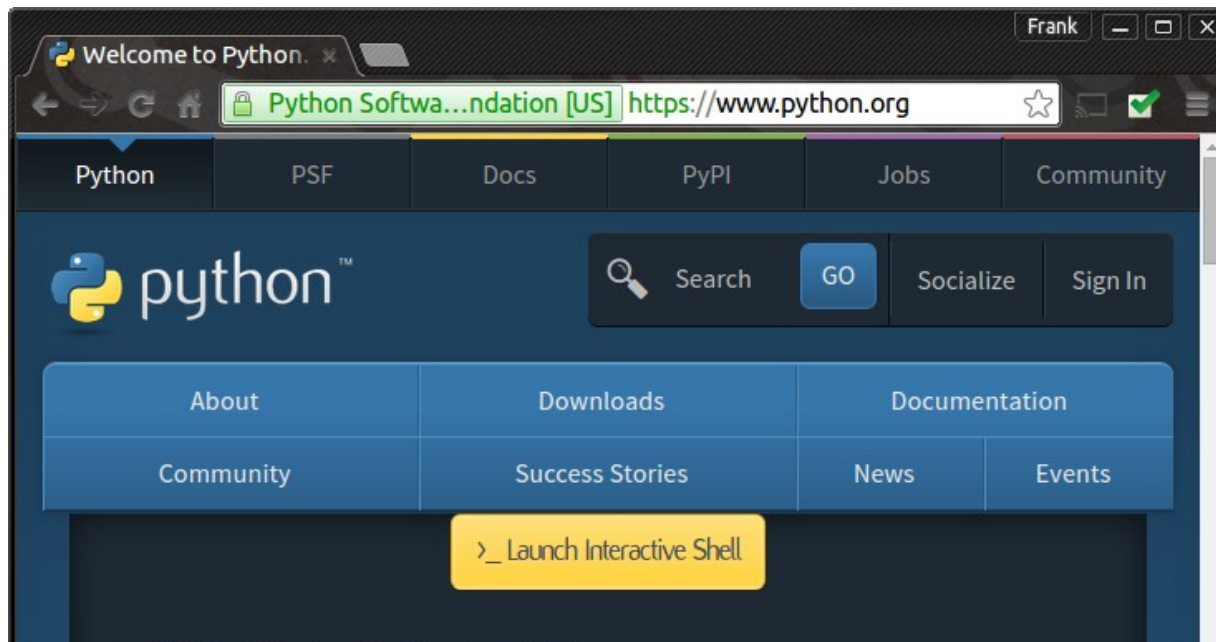
# “Above all, be cool...”

- Coders need to stay in the “coding zone”
  - We’ll take a break at 5ish.
  - Don’t leave without telling a mentor
- Help each other.
- Ask lots of questions.
- Concentrate...
- Share your code!!!



# Step 1: Install Python

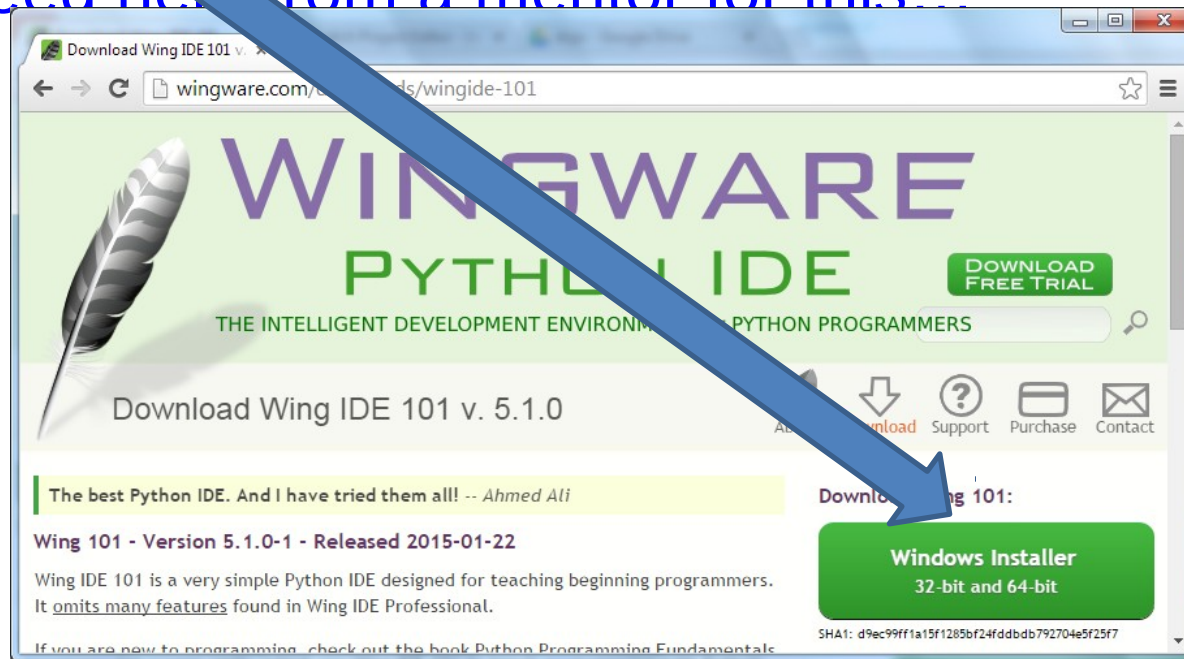
- You need to download Python to your laptop.
- Open an **Internet Browser** and type this address into the **Address Field**:  
<https://www.python.org/>
- The mentors can help you with this...



# Step 2: Get Wings

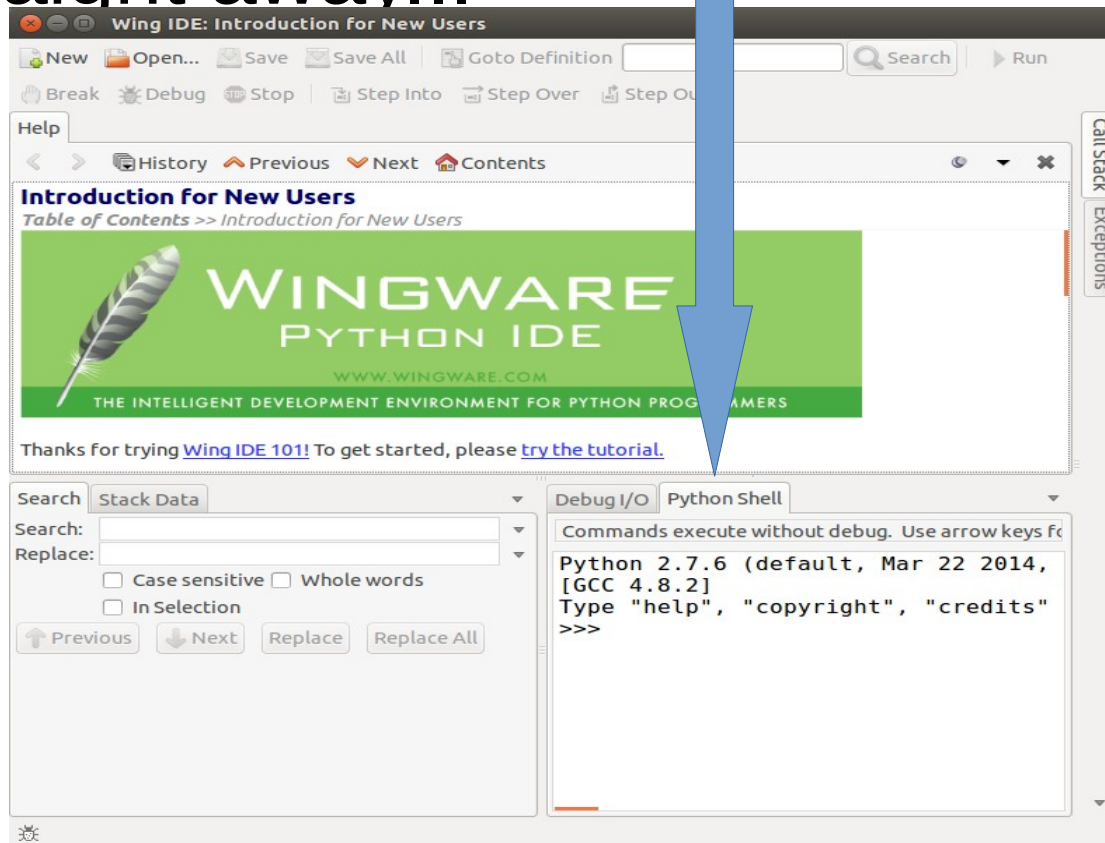
• In your **Internet Browser**, type this address into the **Address Field**:

- <http://wingware.com/downloads/wingide-101>
- Click on “Installer” button
- You may need help from a mentor for this...



# Step 3: Find the Python Shell

- Find the “Python Shell” in Wings. The Python Shell allows us to start coding with python straight away...





# Step 4: Remembering things

- Python can remember things, so let's tell it to remember our secret word.
- Type the following into the Python Shell

```
>>> secret = 'crocodile'
>>>
```

In Scratch, this is the same as :

A Scratch 'set' block with 'secret' in the variable dropdown and 'crocodile' in the text field.

- Now tell Python to print something by using the “print” command:

```
>>> print(secret)
crocodile
>>>
```

- Python will remember the secret until you quit Wings. So you can always go back and print your secret again by saying “print secret.”

Now try to print something Python doesn't know:

```
>>> print(number)
Traceback (most recent call last):
File "", line 1, in
NameError: name 'number' is not defined
>>>
```

- Python didn't know what number was. Try the following code to “tell” Python what number is.

```
>>> number = 43
>>> print(number)
43
>>>
```



# Step 5: Python Calculator

- Your computer is better than any calculator at doing maths. Try the following in the Python Shell

```
>>> print(2+33)
```

```
35
```

```
>>> print(33333333 * 44444444)
```

```
1481481451851852
```

```
>>> n=123456789
```

```
>>> print(n*n*n)
```

```
1881676371789154860897069
```

```
>>>
```



- Multiplication and division are done using the \* and / symbol.
- Now use the shell to find the answer to  $254 * 341$ ?...

# Step 6: Python Functions - random

- Python has lots of functions help you write programs
- Let's tell Python to pick a random number. Get the "random" library by typing this:

```
>>> import random
```

- Now we can say "random.randint(1,100)" to pick a random number from 1 to 100.

```
>>> random.randint(1,100)
```

```
45
```

```
>>>
```

- Which random number did you get???

# Step 7: Python Functions – len and str

- Coders often call words “strings”.
- The “len” function will count how many letters are in a word. Try the following:  

```
>>> len(secret)
```

```
9
```
- This means that there is 9 letters in the word “crocodile”. Remember we used secret to remember the word crocodile

# Step 8: Words and Numbers

What happens when you try to use words in maths? Try the this:

```
>>> print 'red' + 'yellow'
```

```
redyellow
```

```
>>> print 'red' * 3
```

```
redredred
```

```
>>> print 'red' + 3
```

```
Traceback (most recent call last):
```

```
File "", line 1, in
```

```
TypeError: cannot concatenate 'str' and 'int' objects
```

```
>>>
```

If you add two words, it sticks them together

If you multiply a word by 3, it makes three copies

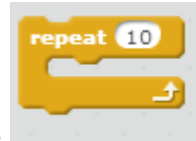
Python doesn't know how to add a word and a number!!

- A word that you put in quotes is just a string of letters called a "str" in python.
- Numbers that don't have a decimal point are integers and are called "int" in python.
- You can't add a str and an int. But you can turn a number into a string if you use the str() function. Try this:

```
>>> print 'red' + str(3)
```

```
red3
```

# Step 9: Repeating Things



- Remember this in Scratch:
- In Python, we can repeat things using a “for” command.
- If you say "for *something* in *something*:" with a colon (:) at the end, python will look for any **indented** lines afterwards and repeat them. Try this:

```
>>> for letter in secret:  
...     print(letter)
```

```
...
```

```
c
```

```
r
```

```
o
```

```
c
```

```
o
```

```
d
```

```
i
```

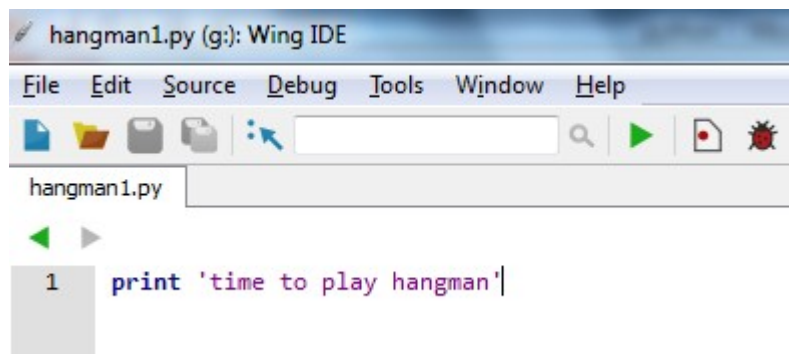
```
l
```

```
e
```

- It is saying "for every letter in the secret, do this next thing." The computer repeats "print letter" nine times, once for each letter in 'crocodile'.
- This can be tricky. If it doesn't work try again or ask a mentor for help.

# •Step 10: Create a Program

- Now we will start to use python to make a game of hangman.
- A python program is just a file with code in it. Let's make one.
  - In Wings, go to File -> New
- Now type in the following into the Editor and Save the file with the name "hangman1.py" on your desktop.



- To run your program, click on the Run button. You should see 'time to play hangman' appear in you shell. Put some other lines of code in and run it. Next week we'll continue to code Hangman...