Helpful Tip

Block Comment and Uncomment in VS Code

- Select what you want to comment and hit “Ctrl”+”K” then “Ctrl”+”C” to comment everything selected.
- “Ctrl”+”K” then “Ctrl”+”U” uncomments selected text.

THE TWO STATES OF EVERY PROGRAMMER

I AM A GOD.

I HAVE NO IDEA WHAT I'M DOING.

Documentation


LOOK AT OLD CODE FROM A YEAR AGO TO REFRESH MEMORY
DIDN'T WRITE A SINGLE COMMENT

When I wrote this code,
only God & I understood what it did.

Now...
only God knows.

In-Line Comments

Use “#” to input lines the computer won’t read

```
# Calculate the area
length = 20
width = 40
area = length * width
statement = "The area is " + str(area) + "."
print(statement)
```

Function (and Class) Documentation

```
def Add(number1, number2):
    '''
    Adds the two numbers.
    '''
    return number1 + number2
```

Retrieving the Documentation

```
print(Add.__doc__)


        Adds the two numbers.
```

That is two (2) “_”s on both sides!

Help

```
help(calculator)
```

```
Help on module calculator:

NAME
    calculator

DESCRIPTION
    Calculator Documentation
    This class holds the calculator functions and memory variables.

-- More  --
```

PyDoc

calculator

index
c:\users\worki\dropbox (personal)\python class\teacher resources\lesson 4\calculator.py

```
Calculator Documentation
This class holds the calculator functions and memory variables.
```

Functions

Add(number1, number2)
```
Adds the two numbers.
```

ClearCurrentValue()
```
Clears the current value.
```

Divide(numerator, denominator)
```
Divides the numerator by the denominator.
```

Invert(number)
```
Inverts the given number.
```

MemoryClear()
```
Clears the persistant memory.
```

MemoryRecall()
```
Retrieves the persistant memory value.
```

MemoryStore(number)
```
Stores the given number in the persistant memory.
```

Multiply(number1, number2)
```
Multiplies the two numbers.
```

Power(base, exponent)
```
Raises the base to the exponent.
```

Subtract(subtractFrom, subtractThis)
```
Subtracts subtractThis from subtractFrom.
```

Data

currentValue = None
memoryValue = None

Error Handling

Learning Python p.1127

“In fact, realistic C programs often have as much code devoted to error detection as to doing actual work. But in Python, you don’t have to be so methodical (and neurotic!).”

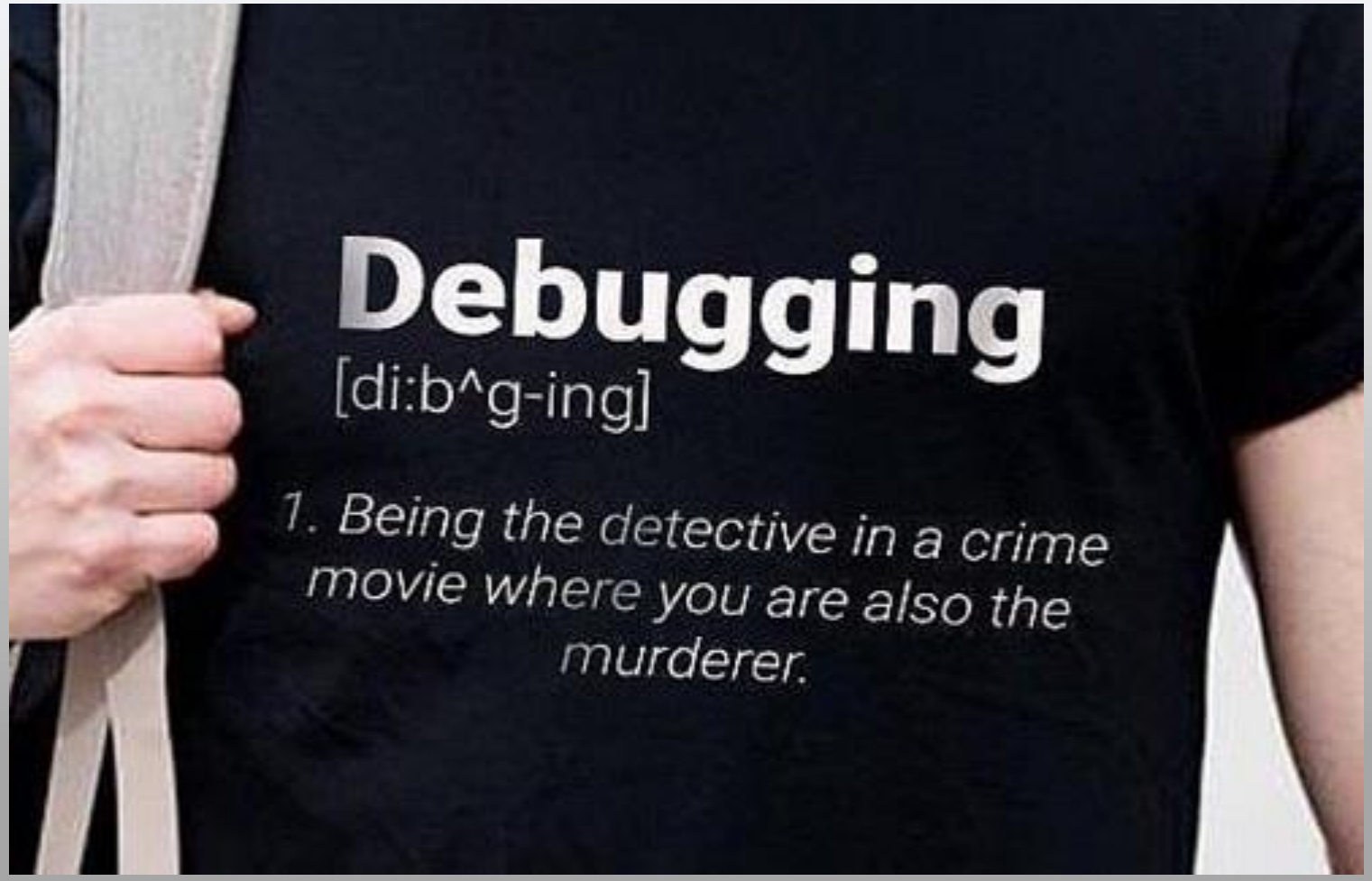
C++

```
try {
        // code block to try
}
catch (invalid_argument& ex) {
        cout << "An invalid-argument exception occurred: " << ex.what () << endl;
}
catch (...) {
        cout << "Something besides an invalid-argument exception occurred" << endl;
}
```

Python

```
try:
	print(5/0)
except ArithmeticError:
	print("You had an arithmetic error.")
except:
	print("You cannot do that!")
else:
	print("No errors.")
```

Debugging


Debugging
[di:b^g-ing]
1. Being the detective in a crime movie where you are also the murderer.

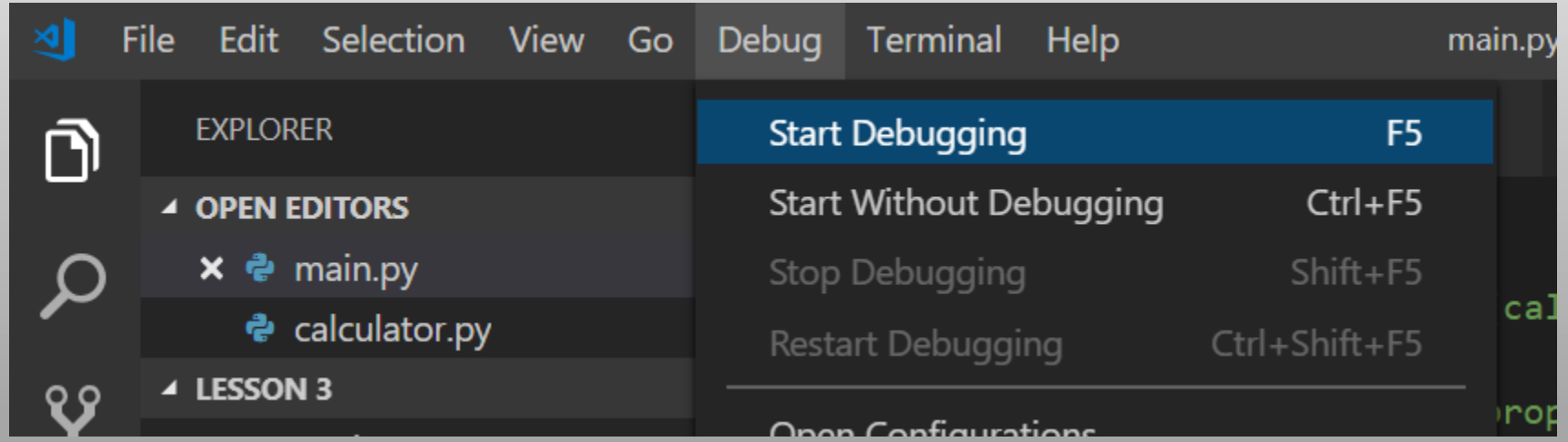
WHO WOULD WIN?

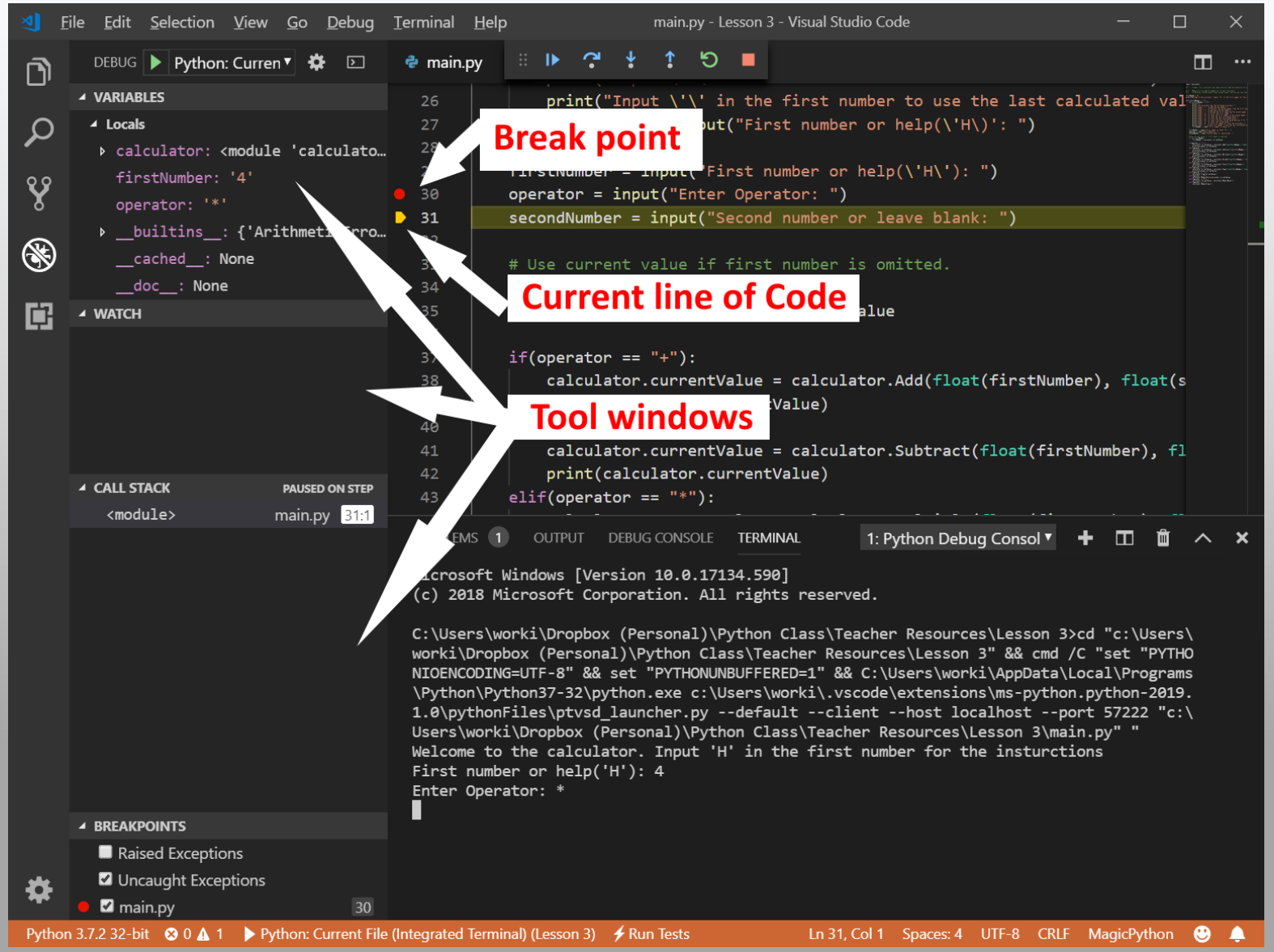
a computer program with millions of lines of code

one C U R L Y B O Y with no friend

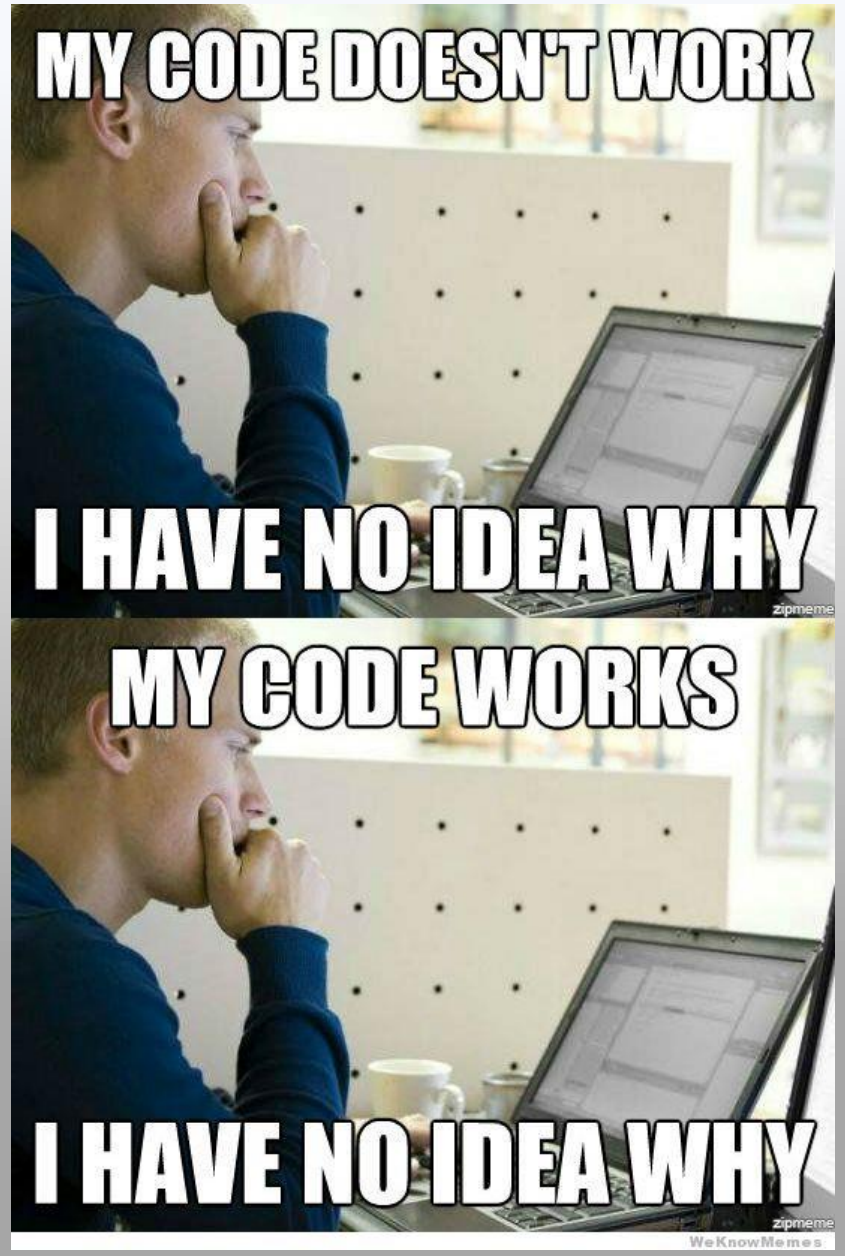
{

Visual Studio Code Debugger

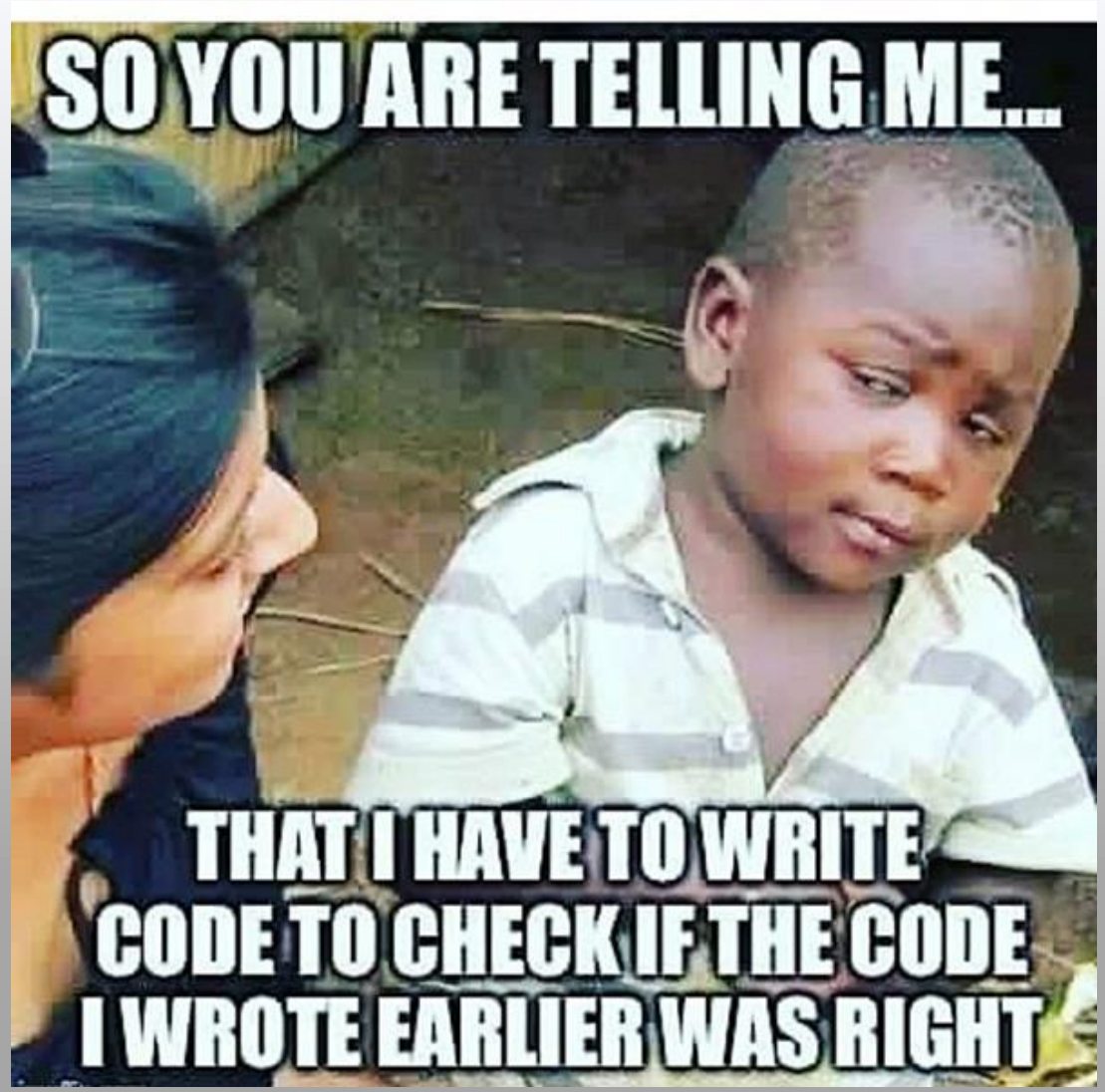



File Edit Selection View Go Debug Terminal Help
main.py - Lesson 3 - Visual Studio Code
DEBUG
Python: Curren
main.py
VARIABLES
Locals
calculator: <module 'calculato…
firstNumber: '4'
operator: '*'
__builtins__: {'Arithmeti
__cached__: None
__doc__: None
WATCH
CALL STACK
PAUSED ON STEP
<module>
main.py
31:1
BREAKPOINTS
Raised Exceptions
Uncaught Exceptions
main.py
30
print("Input \'\' in the first number to use the last calculated val
ut("First number or help(\'H\)': ")
First number or help(\'H\'): ")
operator = input("Enter Operator: ")
secondNumber = input("Second number or leave blank: ")
# Use current value if first number is omitted.
alue
if(operator == "+"):
calculator.currentValue = calculator.Add(float(firstNumber), float(s
Value)
calculator.currentValue = calculator.Subtract(float(firstNumber), fl
print(calculator.currentValue)
elif(operator == "*"):
Break point
Current line of Code
Tool windows
EMS 1
OUTPUT
DEBUG CONSOLE
TERMINAL
1: Python Debug Consol
icrosoft Windows [Version 10.0.17134.590]
(c) 2018 Microsoft Corporation. All rights reserved.
C:\Users\worki\Dropbox (Personal)\Python Class\Teacher Resources\Lesson 3>cd "c:\Users\worki\Dropbox (Personal)\Python Class\Teacher Resources\Lesson 3" && cmd /C "set "PYTHONIOENCODING=UTF-8" && set "PYTHONUNBUFFERED=1" && C:\Users\worki\AppData\Local\Programs\Python\Python37-32\python.exe c:\Users\worki\.vscode\extensions\ms-python.python-2019.1.0\pythonFiles\ptvsd_launcher.py --default --client --host localhost --port 57222 "c:\Users\worki\Dropbox (Personal)\Python Class\Teacher Resources\Lesson 3\main.py" "
Welcome to the calculator. Input 'H' in the first number for the insturctions
First number or help('H'): 4
Enter Operator: *
Python 3.7.2 32-bit
0 1
Python: Current File (Integrated Terminal) (Lesson 3)
Run Tests
Ln 31, Col 1
Spaces: 4
UTF-8
CRLF
MagicPython


99 little bugs in the code.
99 little bugs in the code.
Take one down, patch it around.
127 little bugs in the code...


MY CODE DOESN'T WORK
I HAVE NO IDEA WHY
zipmeme
MY CODE WORKS
I HAVE NO IDEA WHY
zipmeme
WeKnowMemes

Unit Tests


SO YOU ARE TELLING ME...
THAT I HAVE TO WRITE
CODE TO CHECK IF THE CODE
I WROTE EARLIER WAS RIGHT

Bill Sempf
@sempf

QA Engineer walks into a bar. Orders a beer. Orders 0 beers. Orders 999999999 beers. Orders a lizard. Orders -1 beers. Orders a sfdeljknesv.

unittest

```
import unittest
import calculator

class TestAddMethods(unittest.TestCase):

	def testPositives(self):
		self.assertEqual(calculator.Add(3, 6), 9)

	def testNegatives(self):
		self.assertEqual(calculator.Add(-3, -4), -7)

if __name__ == '__main__’:
	unittest.main()
```