Programming with Python

Lesson 3: Writing, Reading and Getting Funky with Functions!

November 15th, 2016

Last week’s goals

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Messing with files

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We are going to work through a log for our calculator!

File input and output

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Which mode should we use for a log for our calculator?

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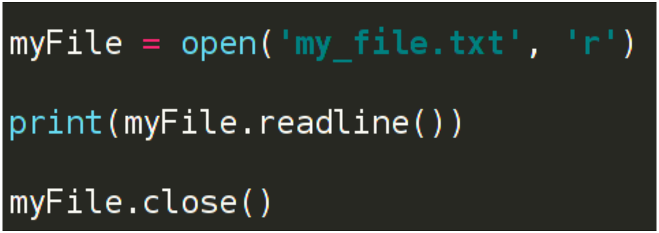
The *myFileObj.write()* function writes to a file.
The *myFileObj.read()* function reads from a file.

Reading from a file

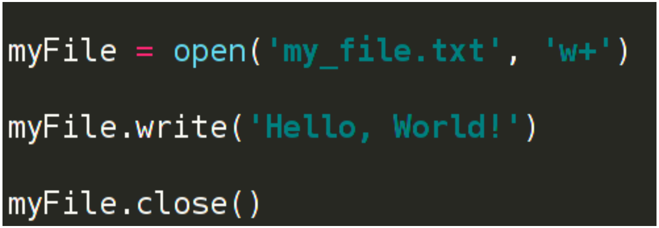


```
myFile = open('my_file.txt', 'r')

print(myFile.readline())

myFile.close()
```

Writing to a file



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myFile = open('my_file.txt', 'w+')

myFile.write('Hello, World!')

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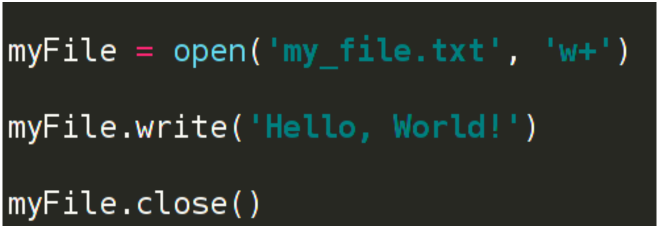
```

Writing to a file



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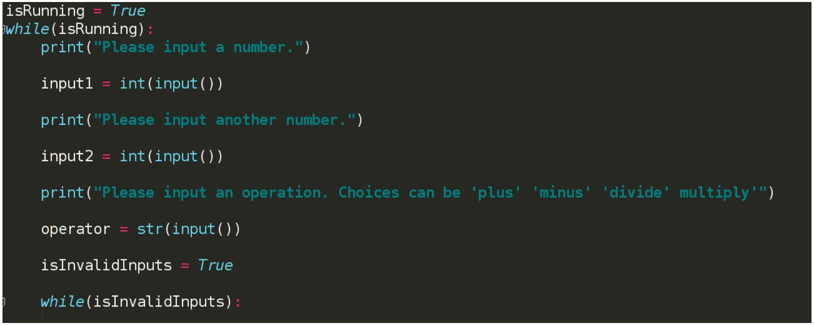
Note, if a file does not exist, it will be created.

Time for a little live coding example!

Time for some code cleaning!

Before we add file IO to our program, we should have a quick look at it.



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isRunning = True
while(isRunning):
    print("Please input a number.")

    input1 = int(input())

    print("Please input another number.")

    input2 = int(input())

    print("Please input an operation. Choices can be 'plus' 'minus' 'divide' multiply'")

    operator = str(input())

    isInvalidInputs = True

    while(isInvalidInputs):
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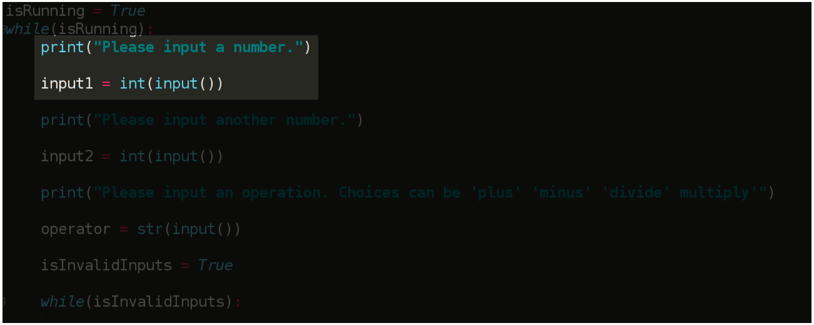

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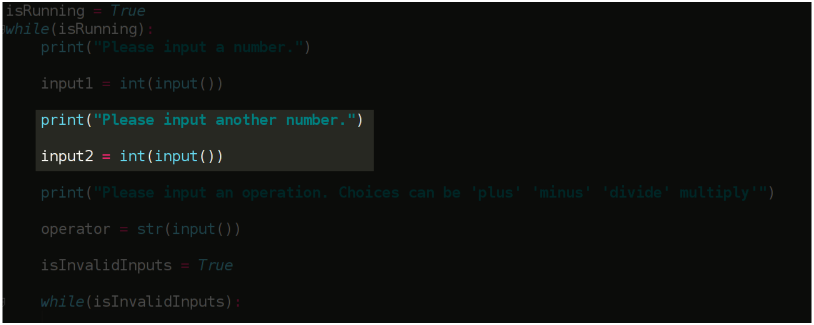

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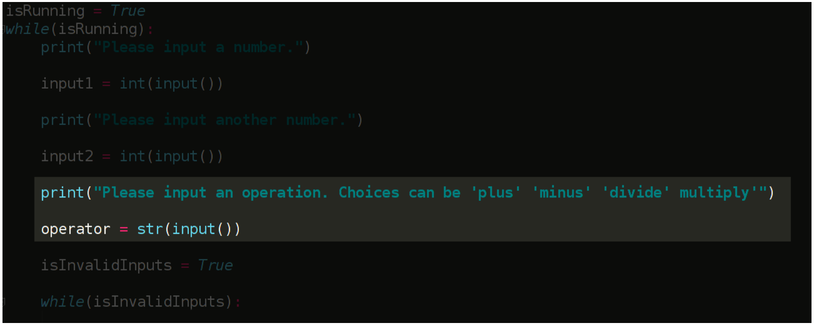

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Repeating yourself makes updating/maintaining code horrible and it makes finding bugs in your code impossible!

Functions

Functions - the cause of, and solution to all of life's problems!

Getting funky with functions

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All functions are, are bits of code put together, so we don't have to copy and paste loads of lines everywhere!

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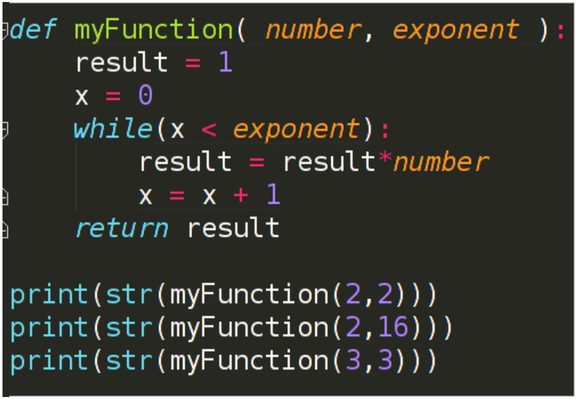
All functions are, are bits of code put together, so we don't have to copy and paste loads of lines everywhere! Functions usually take in values (called arguments or parameters) and usually return a value (though this is not always the case).

An example function



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def myFunction( number, exponent ):
    result = 1
    x = 0
    while(x < exponent):
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print(str(myFunction(2,2)))
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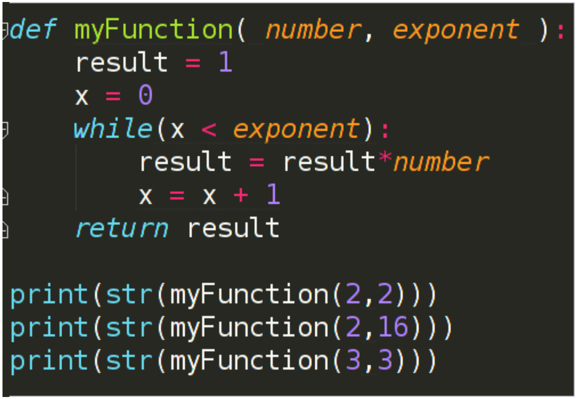

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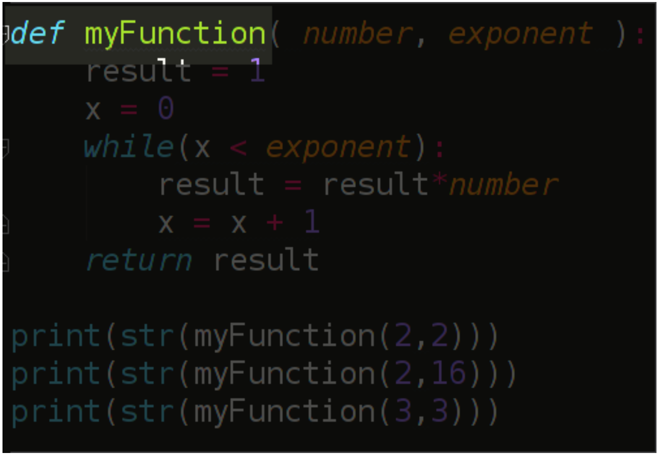
Anyone know what myFunc does?



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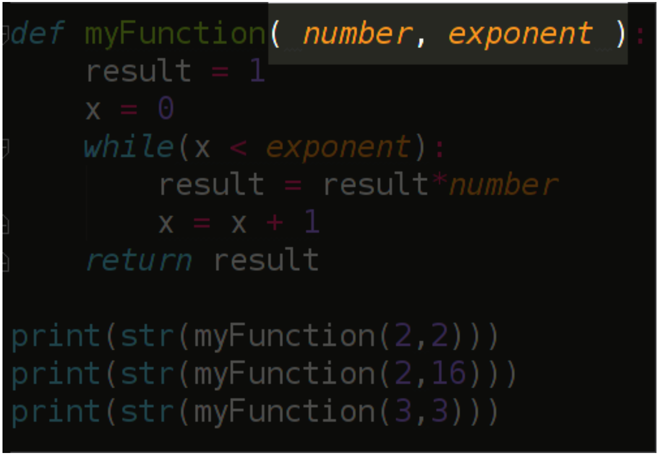

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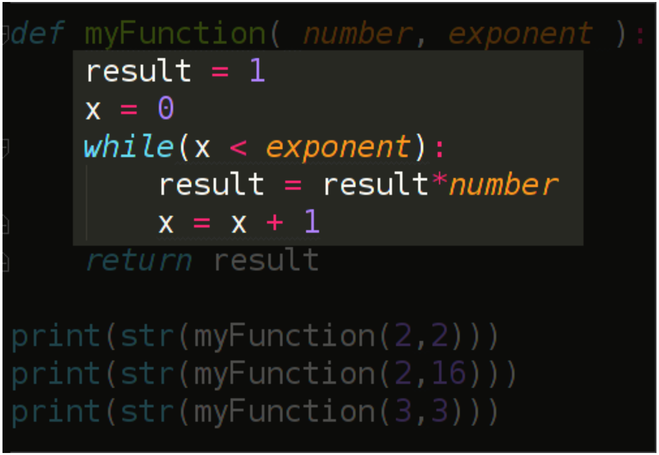

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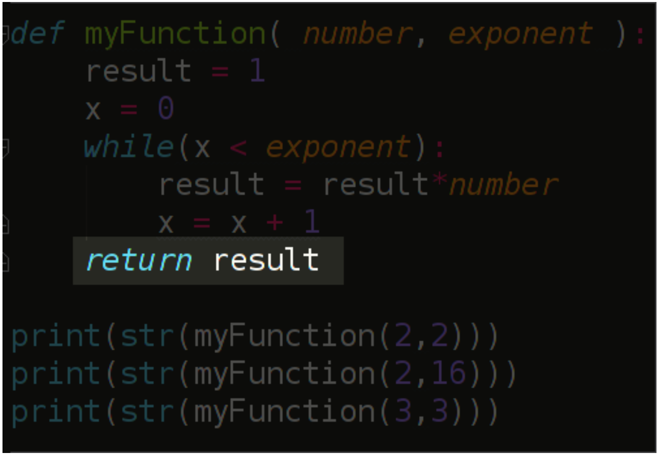

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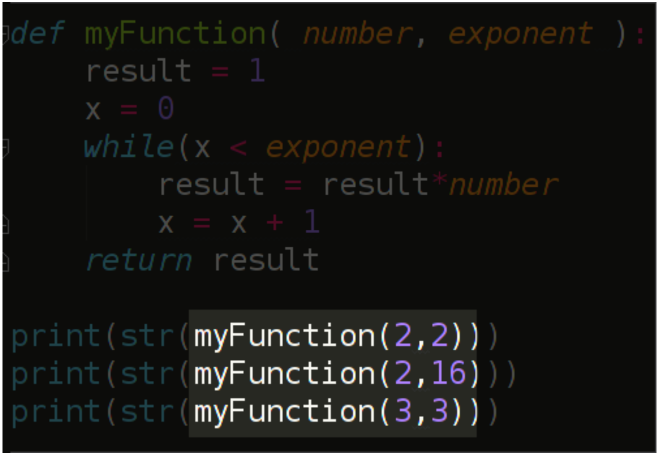

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Bringing it all together

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Challenge: Can anyone make a program which reads out the log?

Comments

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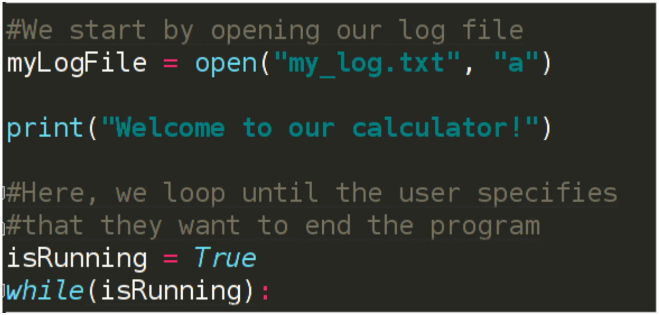

```
#We start by opening our log file
myLogFile = open("my_log.txt", "a")

print("Welcome to our calculator!")

#Here, we loop until the user specifies
#that they want to end the program
isRunning = True
while(isRunning):
```

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- We have learnt about opening and closing files
- We have learnt to write to, and read from files using the file object
- We have learnt about the importance of functions and keeping code clean
- We have used functions to make our code more readable, as well as to write to a log

For next week

Source code plus lecture slides will be available online soon after the lesson.
If you are new to HackSocNotts, please join us on *http://hacksocnotts.slack.com*.
If you have any questions, feel free to ask now or over slack.