Intro to Python Practice

Stevens Python Club

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1 Fibonacci Sequence

Define a function called sum_fib that has one parameter, "max, with a default value of 4 million. The function should return the sum of all even numbers in the Fibonacci sequence that are less than our max value.

A reminder on the Fibonacci sequence: the next value of the sequence is always the sum of the previous two values. So starting with 0 and 1 the sequence would go 0, 1, 1, 2, 3, 5, 8...

To test that you're on the right track you can try doing the calculations manually on a small set of values, such as all numbers in the sequence less than 10.

2 Power Digit Sum

Define a function called power_digit_sum that has two parameters, "base" and "exp". The function should calculate the value of $base^{exp}$ and then return the sum of the digits of that value. $2^{15} = 32768$ and the sum of its digits is $3 + 2 + 7 + 6 + 8 = 26$. Brownie points if you can do it in one line.

3 Sum Square Difference

The sum of the squares of the first ten natural numbers is, $1^2+2^2+...+10^2 = 385$. The square of the sum of the first ten natural numbers is, $(1 + 2 + ... + 10)^2 = 55^2 = 3025$ Hence the difference between the sum of the squares of the first ten natural numbers and the square of the sum is $3025 - 385 = 2640$. Define a function called "ssd" that has one parameter, "x", that finds the difference between the sum of the squares of the first x natural numbers and the square of the sum. Brownie points if you can do it in one line.