



[Curso](#) > [Week 2...](#) > [4. Func...](#) > [Exercis...](#)

Audit Access Expires Ago 5, 2020

You lose all access to this course, including your progress, on Ago 5, 2020.

Upgrade by Jul 1, 2020 to get unlimited access to the course as long as it exists on the site. **Upgrade now**

Exercise: gcd recur

Exercise: gcd recur

5.0/5.0 points (graded)

ESTIMATED TIME TO COMPLETE: 6 minutes

The greatest common divisor of two positive integers is the largest integer that divides each of them without remainder. For example,

- $\text{gcd}(2, 12) = 2$
- $\text{gcd}(6, 12) = 6$
- $\text{gcd}(9, 12) = 3$
- $\text{gcd}(17, 12) = 1$

A clever mathematical trick (due to Euclid) makes it easy to find greatest common divisors. Suppose that `a` and `b` are two positive integers:

- If $b = 0$, then the answer is a
- Otherwise, $\text{gcd}(a, b)$ is the same as $\text{gcd}(b, a \% b)$

[See this website for an example of Euclid's algorithm being used to find the gcd.](#)

Write a function `gcdRecur(a, b)` that implements this idea recursively. This function takes in two positive integers and returns one integer.



```
1 def gcdRecur(a, b):
2     '''
3     a, b: positive integers
4
5     returns: a positive integer, the greatest common divisor of a & b.
6     '''
7     # Your code here
8     if b == 0:
9         return a
10    elif a == 0:
11        return b
12    else:
13        return gcdRecur(b, a%b)
```

Press ESC then TAB or click outside of the code editor to exit

Correta

```
def gcdRecur(a, b):
    '''
    a, b: positive integers

    returns: a positive integer, the greatest common divisor of a & b.
    '''
    # Base case is when b = 0
    if b == 0:
        return a

    # Recursive case
    return gcdRecur(b, a % b)
```

Test results

[Hide output](#)

CORRECT

Test: gcdRecur(17, 204)

Output:

Test: gcdRecur(15, 345)



Output:

15

Test: gcdRecur(60, 9)

Output:

3

Test: gcdRecur(168, 182)

Output:

14

Test: gcdRecur(153, 153)

Output:

153

Test: gcdRecur(400, 352)

Output:

16

Test: gcdRecur(175, 14)

Output:

7



Test: gcdRecur(270, 255)

Output:

15

Test: gcdRecur(18, 22)

Output:

2

Test: gcdRecur(112, 176)

Output:

16

[Hide output](#)

Note: In programming there are many ways to solve a problem. For your code to check correctly here, though, you must write your recursive function such that you make a recursive call directly to the function `gcdRecur`. Thank you for understanding.

If you are getting the error stating that "Your code should be recursive" when you already make a call to `gcdRecur`: check your indention -- specifically, a common mistake is that your function and docstring do not start at the same indentation level.

Enviar

i Answers are displayed within the problem

Exercise: gcd recur

Ocultar discussão

Topic: Lecture 4 / Exercise: gcd recur



Show all posts	▼	por atividade recente	▼
💬	Finding GCD by Euclid's algorithm using iteration	2	
	In last exercise, we used iteration to find GCD by the conventional method of dividing and checki...		▼
?	How does python know at each time which of the two a or b is smaller to do the calculation?	4	
	Hello everybody, I solved it but finding first which one is the smallest to assign b and a%b in follo...		▼
💬	Video to help expain the principle	1	
	Hi all, I really struggle with recursion, and found a video particularly helpful for the Euclidian prob...		▼
💬	Mind Blowing Realization	2	
	I initially only understood why the code work when a was greater than b. The reason it works whe...		▼
💬	Hints in the question too obvious?	8 new_	
	I feel like the hints given in the question already provide 90% of the solution. Maybe that's why so...		
?	Understanding the implication of my answer	4	
	I was able to write this program in the previous exercise when it said this program was recursive. ...		▼
💬	I am the smartest man alive!!!!	1 new_	
	Obviously, far from it, but solving this one made me feel like the smartest man who's ever lived fo...		
?	I got the answer but don't know how	1 new_	
	well after so many trial and error I got the correct answer for the problem but still scratching my...		
💬	Check out the Euclidean algorithm wikipedia page and explore a bit.	1	
	There's some pretty interesting sets of alternative pseudocode solutions on the [Euclidean algorit...		▼
💬	Still unclear how I got my answer...	2 new_	
	Well I got it right, but I kind of stumbled upon it, lucky me. I put it in python tutor and the steps m...		
?	It's now been a few days since I've submitted my answer, the grader process is still running though	3	
	It's now been a few days since I've submitted my answer. The grader process is still running thou...		▼
💬	Not sure why the code is incorrect?	4	
	In the output results all the answers of my code are coming as none whereas at my end its runni...		▼

