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Exercise: power recur

Finger Exercises due Aug 5, 2020 20:30 -03 *Completo*

Exercise: power recur

5.0/5.0 points (graded)
ESTIMATED TIME TO COMPLETE: 7 minutes

In Problem 1, we computed an exponential by iteratively executing successive multiplications. We can use the same idea, but in a recursive function.

Write a function `recurPower(base, exp)` which computes base^{exp} by recursively calling itself to solve a smaller version of the same problem, and then multiplying the result by `base` to solve the initial problem.

This function should take in two values - `base` can be a float or an integer; `exp` will be an integer ≥ 0. It should return one numerical value. Your code must be recursive - use of the `**` operator or looping constructs is not allowed.

```
def recurPower(base, exp):
    '''
    base: int or float.
    exp: int >= 0

    returns: int or float, base^exp
    '''
    # Your code here
    if exp == 1:
        return base
    elif exp == 0:
        return 1
    else:
        return base * recurPower(base, exp-1)
```

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

Correta

```
def recurPower(base, exp):
    '''
    base: int or float.
    exp: int >= 0

    returns: int or float, base^exp
    '''
    # Base case is when exp = 0
    if exp <= 0:
        return 1

    # Otherwise, exp must be > 0, so return
    #  base* base^(exp-1). This is the recursive case.
    return base * recurPower(base, exp - 1)
```

Test results

See full output

CORRECT

See full 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 `recurPower`. Thank you for understanding.

Hints

What should your base case be?

To figure out what **base case** to use, think about what the smallest value of `exp` can be.

Smallest value of exp?

Recall that `exp` will be an integer greater than or equal to zero - so, the smallest value of `exp` is zero. What is the value of base^{exp} when `exp` equals zero, for any value of `base`?

Thinking about recursion

A good way to think about recursion is that recursion is the process of solving a given problem with a smaller instance of the same problem.

So, how could we express base^{exp} as a smaller instance of an exponential equation?

How to break down the equation

$$\text{base}^{\text{exp}} = \text{base} \cdot \text{base}^{\text{exp}-1}$$

To convince yourself this is true, put in real numbers for `base` and `exp`; then, work through the recursion over and over until you reach your base case.

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

Enviar

Answers are displayed within the problem

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SPOILER: Recursion + While is soo powerfull.	def iterPower(base, exp): ''' base: int or float. exp: int >= 0 returns: int or float, base^exp ''' while e...	3
The answer or the question condition are confuse	Hi dear all!, The problem said: This function should take in two values - base can be a float or an i...	4
SO MUCH EASIER with Recursion	About 10 minutes to figure out the iterative right with while / for, greater or equals, etc. Just 30 se...	6
[SPOILER] I got correct but I am still doubt	When I run on spyder recurPower(2, 3) I get 16, and that isnt the right answer, but when I paste m...	2
(Spoiler) What's wrong with this one? I'm still getting only 4.38/5.	def recurPower(base, exp): ''' base: int or float. exp: int >= 0 returns: int or float, base^exp ''' # You...	2
Not sure why I'm getting a "needs recursive call" error [spoilers]	Hi TAs, To be fair, this is not the most elegant of code, but there is a recursive element. So I'm not...	2

can not post in a while loop My provious code with a while True: but when I submit it shows error without a loop. temp = 0 w...	3
using different base case Shouldn't using the base case if exp == 1 then return base also work. I got less points when I sub...	1 new
Grader Says 'Processing' Even After Several Hours Hi, I submitted my code several hours ago but the grader is still 'Processing'. Can a TA take a look ...	3
The grader grades me as incorrect with negative bases and exp == 0 I'm in the understanding that any negative number at exp 0 is equal to -1, and my code evaluates ...	4
Difficulty in understanding recursive methodology Please guide me	2
Spoiler - Is there a neater way to solve this? My answer here was as follows: def recurPower(base, exp): ''' base: int or float. exp: int >= 0 retur...	4
Spoiler - ** is blocked, but its alternative isn't Just as a heads up, returning pow(base, exp) is marked as correct, probably worth blocking that in...	1