

# Reverse a String

This interview question requires you to reverse a string using recursion. Make sure to think of the base case here.

Again, make sure you use *recursion* to accomplish this. **Do not slice (e.g. `string[::-1]`) or use iteration, there must be a recursive call for the function.**

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## Solution

In order to reverse a string using recursion we need to consider what a base and recursive case would look like. Here we've set a base case to be when the length of the string we are passing through the function is length less than or equal to 1.

During the recursive case we grab the first letter and add it on to the recursive call.

```
In [1]: def reverse(s):  
  
    # Base Case  
    if len(s) <= 1:  
        return s  
  
    # Recursion  
    return reverse(s[1:]) + s[0]
```

```
In [2]: reverse('hello world')
```

```
Out[2]: 'dlrow olleh'
```

## Test Your Solution

Run the cell below to test your solution against the following cases:

```
string = 'hello'  
string = 'hello world'  
string = '123456789'
```

```
In [3]: '''  
RUN THIS CELL TO TEST YOUR FUNCTION AGAINST SOME TEST CASES  
'''  
  
from nose.tools import assert_equal  
  
class TestReverse(object):  
  
    def test_rev(self, solution):  
        assert_equal(solution('hello'), 'olleh')  
        assert_equal(solution('hello world'), 'dlrow olleh')  
        assert_equal(solution('123456789'), '987654321')
```

```
        print('PASSED ALL TEST CASES!')

# Run Tests
test = TestReverse()
test.test_rev(reverse)
```

PASSED ALL TEST CASES!

## Extra Notes

The "trick" to this question was thinking about what a base case would look like when reversing a string recursively. It takes a lot of practice to be able to begin thinking like this, so don't worry if you're struggling! However it is important to fully understand the solution!

**Good Job!**