

[Courseware](#)[Updates & News](#)[Calendar](#)[Wiki](#)[Discussion](#)[Progress](#)

## L4 PROBLEM 1 (5/5 points)

### Part 1: Function Types

For each of the following functions, specify the type of its **output**. You can assume each function is called with an appropriate argument, as specified by its docstring.

If the output can be either an int or a float, select num, which isn't a real Python type, but which we'll use to indicate that either basic numeric type is legal.

In fact, in Python, booleans True and False can be operated on as if they were the integers 1 and 0; but it is ugly and confusing to take advantage of this fact, and we will resolutely pretend that it isn't true.

What are those lines under the function definitions?

1.

```
def a(x):  
    '''  
    x: int or float.  
    '''  
    return x + 1
```

Indicate the type of the output that the function `a` will yield.

num

2.

```
def b(x):  
    '''  
    x: int or float.  
    '''  
    return x + 1.0
```

Indicate the type of the output that the function `b` will yield.

float

3.

```
def c(x, y):  
    '''  
    x: int or float.  
    y: int or float.  
    '''  
    return x + y
```

Indicate the type of the output that the function `c` will yield.

num

4.

```
def d(x, y):  
    '''  
    x: Can be of any type.  
    y: Can be of any type.  
    '''  
    return x > y
```

Indicate the type of the output that the function `d` will yield.

boolean

5.

```
def e(x, y, z):  
    '''  
    x: Can be of any type.  
    y: Can be of any type.  
    z: Can be of any type.  
    '''  
    return x >= y and x <= z
```

Indicate the type of the output that the function `e` will yield.

boolean

6.

```
def f(x, y):  
    '''  
    x: int or float.  
    y: int or float  
    '''  
    x + y - 2
```

Indicate the type of the output that the function `f` will yield.

NoneType

### Explanation:

The last function, unlike the other ones, does not have a return statement. It only does an operation (the operation is `x+y-2`). Since it does not explicitly return anything, Python by default returns the value `None` whose type is `NoneType`. So this function and any other that does not have a return statement can be rewritten as:

```
def f(x, y):  
    x + y - 2  
    return None
```

### Part 2: Transcript

Below is a transcript of a session with the Python shell. Assume the functions from Part 1 (above) have been defined. Provide the type and value of the expressions being evaluated. If evaluating an expression would cause an error, select `NoneType` and write 'error' in the box. If the value of an expression is a function, select function as the type and write 'function' in the box.

1. `a(6)`

int

**Answer: 7**

2. `a(-5.3)`

float

**Answer: -4.3**

3. `a(a(a(6)))`

int

**Answer: 9**

4. `c(a(1), b(1))`

float

**Answer: 4.0**

5. `d('apple', 11.1)`

boolean

True

**Answer:** True

6. `e(a(3), b(4), c(3, 4))`

boolean

False

**Answer:** False

7. `f`

function

function

**Answer:** function

Check

Hide Answer

Show Discussion

 New Post





EdX offers interactive online classes and MOOCs from the world's best universities. Online courses from MITx, HarvardX, BerkeleyX, UTx and many other universities. Topics include biology, business, chemistry, computer science, economics, finance, electronics, engineering, food and nutrition, history, humanities, law, literature, math, medicine, music, philosophy, physics, science, statistics and more. EdX is a non-profit online initiative created by founding partners Harvard and MIT.

© 2015 edX, some rights reserved

[Terms of Service and Honor Code](#)

[Privacy Policy \(Revised 4/16/2014\)](#)

## About edX

[About](#)

[News](#)

[Contact](#)

[FAQ](#)

[edX Blog](#)


[Donate to edX](#)

[Jobs at edX](#)

## Follow Us

 [Twitter](#)

 [Facebook](#)

 [Meetup](#)

 [LinkedIn](#)

 [Google+](#)