PS 2: Problems 0, 1, and 2

Problem 0: Reading and response

Put your response to the reading below.

1. The most interesting idea in this article for me was that AIs constantly improve itself as it processes more information, algorithms, and data which is a terrifying notion as machines that already exist such as Watson and others could surpass humans.
2. AIs such as IBM Watson could be useful in applications such as translation and data encryption.
3. Even intelligent machines such as IBM Watson needs to pause/hesitate and spend more time on a question that it is unsure of which is quite human-like as we often pause when we are stumped on a question.

Problem 1: Tracing function calls

global variables

a	b
7	3
7	3
16	3

bar's local variables

a	b
14	7
6	3
10	5

foo's local variables

a	b	c
3	7	
3	7	6
3	16	6

output (the lines printed by the program)

```
7 3
bar: 14 7
7 3
bar: 6 3
bar: 10 5
16 3
```

Problem 2: Thinking recursively

2-1)

```
mystery(3, 7)
-------------
    a = 3
    b = 7
    myst_rest = mystery(2, 5) = 8
    return 7 + myst_rest

    mystery(2, 5)
    -----------------
        a = 2
        b = 5
        myst_rest = mystery(1, 3) = 3
        return 5 + myst_rest

          mystery(1, 3)
         -----------------
            a = 1
            b = 3
            myst_rest = mystery(0, 1) = 0
            return 3 + myst_rest

               mystery(0, 1)
                   -----------------
                       a = 0
                       b = 1
                       return 0
```

2-2) The value returned by mystery(3, 7) is 15

2-3) 5 stack frames

2-4) a = -1, b = -1
Any negative value for variables a and b will cause the function to produce infinite recursion because during each recursion the two values are subtracted by one and two respectively which cause the myst_rest value to be further and further away from the base case each time.