Problem Set 6, Problems 0, 1, and 2

Problem 0: Reading and response

Put your response to the reading below.

Response to question 1:

I would stand for the middle position when discussing whether computational models help our society or not. I would argue that computational models help the society when it comes to scientific disciplines because the models give a general picture of what the future would be like, but when it comes to non-scientific disciplines, the models might hurt our society by providing misleading predictions. According to the article, in scientific fields, computational models help our society by advancing technologies. For example, computational models help aeronautical engineers to design more powerful jet engines, enable chemists in the pharmaceutical industry to develop better drugs by simulating the way they interact with their target and the body, and assist atmospheric scientists to predict the paths of hurricanes. As the models mentioned in the examples could be tested in laboratories, these models would certainly be helpful and important for the development of our society. Also, as mentioned in New York Times, even though the model for predicting future weather might be somewhat inaccurate, the prediction could still warn us to prepare for environmental protection in advance. However, when it comes to non-scientific fields, such as economics, computational models might provide misleading predictions, which causes people to take inappropriate action and hurts the society. And also, financial models might somewhat make inaccurate assumptions of human behaviors, which is the reason why many scientists argued that “the computer models used by banks to gauge the risk of each of their investments were partially to blame for 2007 financial meltdown and the resulting banking crisis”. Hence, I would argue that computational models might hurt our society when it comes to non-scientific fields.

Problem 1: Tracing function calls

global variables

a	b	c
3	5	2
3	15	2

foo's local variables

a	b	c
2	3	5
6	3	5
6	3	15
19	3	15

bar's local variables

a	c	b
15	6	
15	6	9
15	6	19

mystery's local variables

c	a
15	18
15	9
6	9
6	10

output (the lines printed by the program)

```
3 5 2
foo 6 3 15
bar 15 9 6
foo 19 3 15
3 15 2
```

Problem 2: Understanding loops

2-1)

i	values[i]	values[i-1]	count
-	-	-	0
0	4	1	0
1	7	4	0
2	3	7	1
3	5	3	1
4	8	5	1
5	1	8	2

return value = 2

2-2)

a	b	value printed
8	3	8 3
5	2	7
3	1	4
2	0	2