

# Q4 (weeks 1-4)

⚠ This is a preview of the published version of the quiz

Started: Oct 11 at 10:32am

## Quiz Instructions



### Question 1

0.2 pts

Let  $N$  be the length of `nums`. The following code is  $O(N^2)$ . What optimization would make it be  $O(N)$ ?

```
nums = ... # hidden

def avg(values):
    return sum(values) / len(values)

big_nums = []
total = sum(nums) # line A
count = len(nums) # line B
for x in nums:
    if x > sum(nums) / len(nums): # line C
        big_nums.append(x) # line D
```

- ☐ Line C: replace "`len(nums)`" with "`count`"
- ☐ delete lines A and B
- ☐ line C: replace "`sum(nums)`" with "`total`"
- ☐ line C: replace "`sum(nums) / len(nums)`" with "`avg(nums)`"
- ☐ line D: replace the line with "`print(x)`"



### Question 2

0.2 pts

What are frames for?

- ☐ containing function code
- ☐ holding objects
- ☐ separating the methods of a class from methods in other classes
- ☐ holding variables

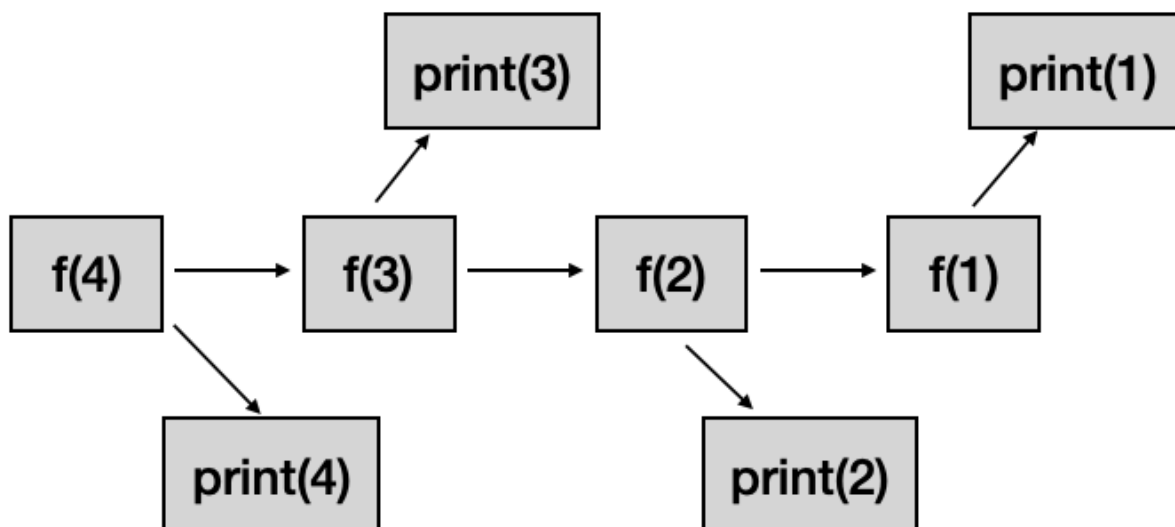
**Question 3****0.2 pts**

The Vehicle class is a parent of the Car class; both have an `__init__` method. Both `__init__` methods are guaranteed to run when a new instance of Car is created, regardless of the code in Car's `__init__` method.

- ☐ True
- ☐ False

**Question 4****0.2 pts**

Consider the following call graph drawn as somebody is tracing through a recursive function call, using the same technique demonstrated in the lecture:



What is the third number printed?

☐ 3

☐ 2

☐ 4

☐ 1



### Question 5

0.2 pts

Check all that are true.

☐ a root is a kind of leaf

☐ a tree is a kind of DAG

☐ a DAG is a kind of graph

☐ a graph is a kind of DAG

☐ a DAG is a kind of tree

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