



Bookmar

- Overview
 - Entrance Survey
 - Week 1
 - Week 2
 - Week 3
 - Week 4
 - Quiz
 - Week 5
 - Week 6
 - Week 7
 - Week 8
 - Exit Survey
 - ▼ Final Exam
- Final Exam**
Final due Mar 15, 2016
at 23:30 UTC
- Sandbox

Final Exam > Final Exam > Problem 2



Bookmark

Problem 2-1

You have the following class hierarchy:

```
class A(object):  
    def foo(self):  
        print 'hi'  
class B(A):  
    def foo(self):  
        print 'bye'
```

Which of the following is correct?

☒ When `a = A()` we say that `a` is an instance of `A` ✓

☐ When `b = B()` we say that `b` is a subclass of `A`

☐ Both of the above

☐ Neither of the above

You have used 1 of 1 submissions

Problem 2-2

Consider the function `f` below. What is its Big O complexity?

```
def f(n):  
    def g(m):  
        m = 0  
        for i in range(m):  
            print m  
    for i in range(n):  
        g(n)
```

☐ $O(1)$

☐ $O(\log(n))$

☐ $O(n)$

☒ $O(n^2)$ ✖

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Problem 2-3

A dictionary is an immutable object because its keys are immutable.

☐ True

☐ False because its keys can be mutable

☒ False because a dictionary is mutable ✔

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Problem 2-4

Consider the following two functions and select the correct choice below:

```
def foo_one(n):  
    """ Assume n is an int >= 0 """  
    answer = 1.0  
    while n > 1:  
        answer *= n  
        n -= 1  
    return answer  
  
def foo_two(n):  
    """ Assume n is an int >= 0 """  
    if n <= 1:  
        return 1.0  
    else:  
        return n*foo_two(n-1)
```

- ☐ The worst case Big Oh time complexity of `foo_one` is worse than the worst case Big Oh time complexity of `foo_two`.
- ☐ The worst case Big Oh time complexity of `foo_two` is worse than the worst case Big Oh time complexity of `foo_one`.
- ☒ The worst case Big Oh time complexity of `foo_one` and `foo_two` are the same. ✓
- ☐ Impossible to compare the worst case Big Oh time complexities of the two functions.

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Problem 2-5

The complexity of $1^n + n^4 + 4n + 4$ is

- ☐ constant
- ☐ logarithmic

☐ linear☒ polynomial ✓☐ exponential

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