



MITx: 6.00.1x Introduction to Computer Science and Programming Using Python

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Problem 2

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Problem 2-1

1 point possible (graded)

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

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You have used 0 of 1 attempt



Problem 2-2

1 point possible (graded)

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)
```

☐

☐

☐

☐

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Problem 2-3

1 point possible (graded)

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

1 point possible (graded)

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

1 point possible (graded)

The complexity of _____ is

☐ constant

☐ logarithmic

☐ linear

☐ polynomial

☐ exponential

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