

C M S I 3 8 6

Quiz 2

The test is open-everything with the sole limitation that you neither solicit nor give help while the exam is in progress.

You don't need to turn this in. It doesn't count for anything. Please practice, though.

Problem	You got	Out of
1		20
2		20
3		20
4		20
5		20
TOTAL		100

1. What does this script print under (a) static scope rules and (b) dynamic scope rules?

```
var x = 1
function h() {var x = 9; return g();}
function f() {return x;}
function g() {var x = 3; return f();}
print f() * h() - x
```

2. This fragment of Java code illustrates something about scope. Or does it? Relate it to other similar problems we've seen regarding scope. (Don't forget to come across as being articulate and intelligent in your discussion.)

```
public void fail() {  
    class Failure extends RuntimeException {}  
    throw new Failure();  
}
```

3. Consider the following pseudocode:

```
function f (x) {  
    var y;  
    return function (z) {  
        return x * y + z;  
    }  
}
```

Why do many languages prohibit this sort of thing? (Yes, I do expect you to know exactly what I mean by "this sort of thing")

4. Does the following Python code serve as a valid experiment as to whether Python is statically or dynamically scoped? Why or why not?

```
x = 3
def f():
    print x
def g():
    x = 5
    f()
g()
```

5. If `Foo` is an abstract class in a C++ program, why is it acceptable to declare variables of type `Foo*`, but not of type `Foo`? Does this problem even make sense to ask in Java or Python?