HOF

Part 1 Nested functions

```
def maxpower(n,exp):
    def count(m,cnt):
        if m >= exp:
            return cnt
        return count(m*n, 1+cnt)
    return count(1,0)
```

Expression	Output
>>> maxpower(2,1000)	
>>> maxpower(3,1000)	

Which variables live in the scope of **count** but not a local variable of **count**?

```
def partial(op):
    def action(a,b):
        print(op(a,b))
    return action
f1 = partial(lambda x,y : x*2 + y*2)
```

Expression	Output
>>> f1(5,10)	
>>> f2 = partial(f1) >>> f2(5,10)	

Part 2 Lambda Expressions

Expressions	Output
(lambda a,b,c : a + b)(1,2,3)	
(lambda a,b,c : a + b + c)(1,2)	
(lambda a: lambda b: a + b)(1)	
(lambda a: lambda b: a + b)(1,2)	
(lambda a: lambda b: a + b)(1)(2)	
(lambda x: x (lambda y: y))(lambda z : z)(1)	