

Name: \_\_\_\_\_ Andrew Id: \_\_\_\_\_

### 15-112 Spring 2019 Quiz 1

Up to 15 minutes. No calculators, no notes, no books, no computers. Show your work!  
Do not use string indexing, loops, lists, dictionaries, try/except, or recursion on this quiz.

1. **Code Tracing:** Indicate what the following two programs print. Place your answers (and nothing else) in the boxes next to the code.

(a) (20 points) CT1

```
def a(x):  
    print("A")  
    return x%2==0  
def b(x):  
    print("B")  
    return x//5 == x/5  
def ct1(x):  
    print(a(x))  
    print(b(x))  
    if a(x) and b(x):  
        return True  
    else:  
        return False  
  
print(ct1(7))  
print(ct1(10))
```

A  
False  
B  
False  
A  
False  
  
A  
True  
B  
True  
A  
B  
True

(b) (20 points) CT2

```
import math  
def p(x): # print and return x  
    print(x)  
    return x  
def g(x):  
    return p(int(x-x/2))  
def h(x):  
    return p(math.ceil(x-x/2))  
def ct2(x, y, z):  
    return p(z+y**x)  
  
print(ct2(g(5), g(8), h(5)))
```

2  
4  
3  
19  
19

2. (20 points) **Reasoning Over Code:** Find an argument (the value of  $n$ ) for the following function that makes it return True. Place your answer (and nothing else) in the box below the code:

```
def rc1(n):  
    a = (n//1000)%10  
    b = n%10  
    c = (n//10)%100  
    return (a == b+1) and (c == a + b) and (c > 9) and (n > 6000) and (n < 7000)
```

6115

3. (40 points) **Free Response:** Write the function `pairedNumber(n)` that returns True if the six digit number `n` contains a matching set of three, two digit numbers in order, and False otherwise. For example...
- `pairedNumber(121212)` returns True (the three, two digit numbers are 12, 12, and 12)
- `pairedNumber(121312)` returns False (one of the two digit numbers is 13)
- `pairedNumber(1212)` returns False (there are only two, two digit numbers)
- `pairedNumber(565656)` returns True
- `pairedNumber(555)` returns False

```
def pairedNumber(n):  
    if((n//10000== ((n//100)%100)) and (n//10000==n%100)):  
        return True  
    return False
```