

Name: _____ Andrew Id: _____

15-112 Spring 2021 Quiz 07
25 minutes.

1. Reasoning Over Code [5 pts] For the following function, find a value `d` which will cause `roc(d)` to return True. **Put a box around your final answer.**

```
def roc(d):
    assert len(d) == 5
    s1 = set()
    s2 = set()
    for k in d:
        if d[k] not in d:
            s1.add(d[k])
        else:
            s2.add(d[k])
    return s1 == {42, "A", False} and s2 == {64, "B"}
```

2. Code Tracing [5 pts] Indicate what the following program prints. **Put a box around your final answer.**

```
def ct1(L):
    print("in:", L)
    if len(L) == 1:
        r = L[0]
    else:
        m = len(L)//2
        v1 = ct1(L[:m])
        v2 = ct1(L[m:])
        if v1 > v2:
            r = v1
        else:
            r = v2
    print("out:", r)
    return r

print(ct1([58, 17, 40, 86]))
```

3. Free Response [10 pts] This function must be written recursively. A solution that uses loops, comprehensions, generators, or iterative built-in functions such as range will receive no credit.

Without using strings, write the recursive function `onlyOddDigits(L)`, that takes a list `L` of non-negative integers (you may assume that), and returns a new list of the same numbers only without their even digits (if that leaves no digits, then replace the number with 0). So: `onlyOddDigits([43, 23265, 28, 58344])` returns `[3, 35, 0, 53]`. Also the function returns the empty list if the original list is empty. Remember to not use strings.