15-110 Hw3 Checkin 2 - Written Portion

Name:

AndrewID:

#1 - Lists and Loops - 12pts

Trace the code below. Fill in the table with what prints (one row for one line). You might not use all of the rows.

```
myList = [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 20, 30]
x = len(myList) // 2
for i in range(x):
    print(str(myList[i]) + "   " + str(myList[i + x]))
```


#2 - Shopping List - 15pts

Mary likes to add and remove shopping list items as she thinks of them. Below is the list of items she writes on her list (adds) and then crosses out (removes) when she finds them. Write lines of code in the table below that represent her list-making, including initializing the empty list, then fill in the table on the next page so that each row holds a list of the items in the list at that step. The last line should represent her list when she leaves the store. **Note**: you might not use all rows.

Paper List	Code for the List
Empty Paper	
Write down "tomatoes"	
Write down "bread"	
Write down "olives"	
Cross out "bread"	
Write down "bananas"	
Cross out "tomatoes"	
Cross out "bananas"	
Write down "eggs"	
Write down "pasta"	
Cross out "pasta"	

List at each line of code:

[ ]

#3 - Aliasing and Mutability - 8pts

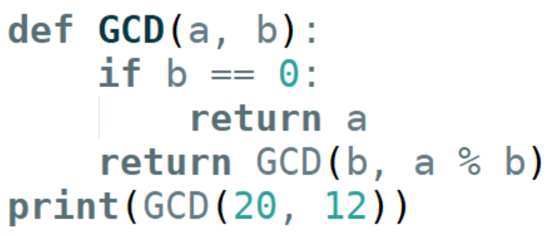
What are the values of each variable after execution? Is the id of X on line 1 the same as line 4? The id of Y on lines 2 and 5? The id of Z compared to Z1? The id of Z compared to Z2?

```
X = 5
Y = "15-110"
Z = [2,3,4]
X = X+5
Y = Y+"is great!"
Z1 = Z+[5]
Z2 = Z
Z2.append(5)
```

Variable	Value	ID same?
X		
Y		
Z1		
Z2		

#4 - Recursion Tracing - 10pts

Trace the following code for the values given. What values are the function called with for each recursive call, and what value is returned from those calls? You may not need all of the rows.



```python
def GCD(a, b):
    if b == 0:
        return a
    return GCD(b, a % b)
print(GCD(20, 12))
```

Function Call	Return Value
GCD(20, 12)	

Programming Problems

Each of these problems should be solved in the starter file available on the course website. They should be submitted to the Gradescope assignment Hw3 Checkin 2 (Programming) to be autograded.

Most programming problems may also be checked by running the starter file, which calls the function testAll() to run test cases.

#1 - reverse(L) - 15pts

Write a function reverse(L) that takes a list as input and returns a new list which reverses the elements in the original.
e.g., [1, 2, 3] becomes [3, 2, 1]

#2 - merge(L1, L2) - 15pts

Write a function merge(L1, L2) which takes two lists and creates a new list that interleaves the elements in the following way: L1[0], L2[0], L1[1], L2[1], ...
The length of the new list will be len(L1) + len(L2). You may assume the lists are the same length.

Note: do not modify or destroy either list.

#3 - removeDups(L) - 15pts

Write a function removeDups(L) which takes a list and returns a new list with the duplicate values removed.
Hint: think about when to add values to the new list rather than remove them.
[1, 3, 2, 1, 2, 4, 3, 4] -> [1, 3, 2, 4]

#4 - Edit removeVals(L) - 5pts

Edit the code in the starter file so that removing elements from L1 does not affect L2's value. Do not modify the return line, it is correct.

#5 - Edit insertVals(L) - 5pts

Edit the code in the starter file so that it modifies the original list instead of creating a new one.