Week: 05 Date: 09/28/2023

| 15-110 Recitation Week 5 |
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**Reminders**

* [Recitation Feedback Form](https://forms.gle/MsTcE2TCpwYBvx7U7)
* Check 3 due Monday 10/02 @ Noon
* Check 2 and HW 2 revisions due 10/03 @ Noon
* Exam on 10/04
  + Review Sessions
  + Small Groups!
  + Also OH and Piazza are always there if you need individual help!

**Overview**

* List methods
* Recursion
* Aliasing
* Recursion (code writing)

| Problems |
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# **LIST CODE WRITING: REMOVE MATCHES**

Write a function removeMatches(L, matchList) that takes in a list of numbers L, and removes all of the elements in L that are also in matchList.Write this function both destructively and non-destructively

For example, removeMatches([1,2,3,4,5],[1,5,10,15]) should return [2,3,4] and L = [1,2,3,4,5]

And destructiveRemoveMatches(L,[1,5,10,15]) returns none, but L = [2,3,4]

Destructive: Non-Destructive:

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# **RECURSION INTRO**

General notes on recursion:

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Recreate the following function using recursion (write on the right empty space):

| def double(lst):   result = []  for i in range(len(lst)):  result.append(2 \* lst[i])  return result   #double([1,2,3]) -> [2,4,6] | def doubleRecursive(lst): |
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# **LIST ALIASING**

Code trace and compare the following two options for ways to create “empty” 2D lists:

Option 1:

inner = [0, 0, 0, 0]  
outer = [inner, inner, inner]

Option 2:

| rows = 3 outer = [] for row in range(rows):  outer.append([0, 0, 0, 0]) |
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**For each option**, after running the code above, what are the values in outer?

Option 1: outer =

Option 2: outer =

After adding the following line of code and running it:

outer[0][0] = 42

What are the values in outer?

Option 1: outer =

Option 2: outer =

Be sure you can explain what difference you are seeing, and which option you should use and why.

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# **RECURSIVE CODE WRITING**

Write the function sumOddMToN(m, n) that takes two integers and recursively calculates the sum of all odd integers between m and n, **not including n**. You are guaranteed that m > 0 and n > 0, and m < n.

Example: sumOddMToN(3,10) should return 24, as 3+5+7+9=24, while sumOddMToN(2,7) should return 8 as 3+5=8 (7 is not inclusive).

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