Week: 05 Date: 9/29/2022

15-110 Recitation Week 5

Reminders

- Recitation Feedback Form
- Check 3 due Monday 10/03 @ Noon EDT
- Check 2 and HW 2 revisions due Tuesday 10/4 @ Noon EDT
- Exam on 10/05
    - Review Sessions
    - Small Groups

Overview

- List methods
- 2D lists
- Recursion (code writing)
- Aliasing

Problems

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:

RECURSION INTRO

General notes on recursion:

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

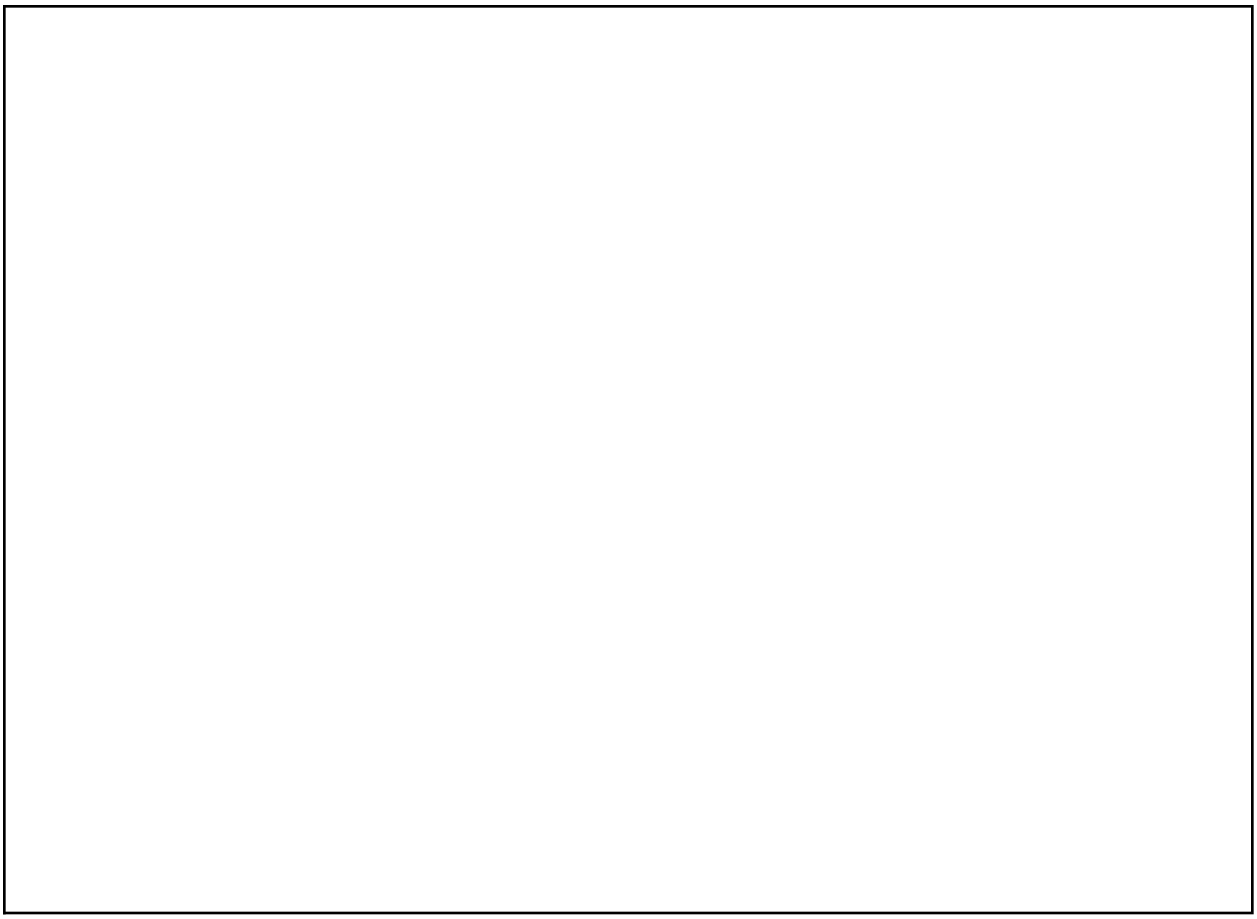
```python
def double(lst):
    result = []
    for i in range(len(lst)):
        result.append(2 * lst[i])
    return result


#double([1,2,3]) -> [2,4,6]
```

```python
def doubleRecursive(lst):
```

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).



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])
```

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.