

# CS 0445 Spring 2024

## In Class Exercise 4

### Introduction:

In Assignment 3 you will be implementing recursive operations on ReallyLongInt2 class, which is implemented as a circular, doubly-linked list of digits.

One issue that will come up in the recursive implementation is with operations such as add() and subtract() when the operands have different numbers of digits. How can these lists both be accessed recursively when they are not of the same length?

To help with this idea we will perform a simple exercise today that adds the contents of arrays of Integer, where the arrays can be of different lengths. Clearly, arrays are different from linked lists, but the approach of handling different length arguments will be similar for both.

The requirement for this exercise is to implement the method below:

```
public static Integer [] addThem(Integer [] left, Integer [] right)
```

This method will create a new array equal in length to that of the longer of the two argument arrays. It will then fill the new array with data as follows:

- At a given index loc, if there is data in both arrays, store the sum of left[loc] and right[loc] in the result at loc
- If there is only data in one array (i.e. the longer of the two) just copy that data into the result at loc

Note that when this method is called, either array could be longer or they could be the same length. The method should work in all of these cases.

As we have seen several times already, the best way to approach this problem is to write two methods – one that satisfies the specification above and a second, recursive method that actually does most of the work. The recursive method will likely have additional parameters.

As a hint, consider creating the return array in the original method (having length of the longer of the two parameter arrays). Then pass that array as a parameter (with your other data) into the recursive method.

To do this exercise you should download and modify the file below:

[InClass4.java](#)

Your output should match that shown in [InClass4Out.txt](#).

As usual, during lecture I will give you hints and then we will go over a solution together.