Week 4 Assignment - Recursion

Submit Assignment

Due Monday by 11:59pm **Points** 10 **Submitting** a text entry box or a file upload

-- Final. Your submission must follow the guidelines posted by Harshini. No test cases provided this time. Please write your own.

1. Write a recursive function called *integerDivision* that given integers x and y returns the result of integer division of x by y, using only the subtraction and addition operation. This is the equivalent of // in python. It's also known as floor division.
2. Write a recursive function called logBase2Int that computes the integer part of the logarithm to the base 2. This produces the same result as int(math.log2()). (e.g, logBase2Int(26) is 4) You can only use division and subtraction operations. Using big-O notation, indicate the worst case running time of your algorithm on n. Place the answer in a comment in your code
3. Write a recursive function called *rearrange* that given an unsorted list of integers and an integer p, rearranges the elements such that all elements less than or equal to p come before any elements larger than p. Note that the values are not sorted. (You cannot use sort) Using big-O notation indicate the worst case running time of your algorithm on a sequence of n values. Place the answer in a comment in your code. [Also, note that the order of the bold values does not matter and the order of the italics values does not matter.]

	Before	**After**
▶	p = 6, [10, 9, 8, 7, 6, 5, 4, 3, 2]	[**4, 3, 2, 6, 5**, *7, 8, 9, 10*]
	p = 85, [85, 14, 18, 34, 89, 67, 21, 73]	[**85, 14, 18, 34, 73, 67, 21**, *89*]
	p = 57, [96, 54, 48, 57, 35, 86, 71, 16]	[**16, 54, 48, 57, 35,** *86, 71, 96*]