

Homework 6: assigned 11/25, due MONDAY 12 /7 at 9 am Pacific time

1. Exercise 20 on page 329
2. Exercise 21 on page 330
3. Exercise 24 on page 331
4. Exercise 8 on page 418
5. Exercise 12 on page 420

6. Given a sequence of numbers find a subsequence of alternating order, where the subsequence is as long as possible.

(that is, find a longest subsequence with alternate low and high elements).

As always, prove the correctness of your algorithm and analyze its time complexity.

Example

Input: 8, 9, 6, 4, 5, 7, 3, 2, 4

Output: 8, 9, 6, 7, 3, 4 (of length 6)

because  $8 < 9 > 6 < 7 > 3 < 4$

EXTRA problems (no collected)

(not collected)

1. Exercise 10 on page 419
2. Exercise 14 on page 421
3. Exercise 18 on page 424
4. Exercise 24 a on page 429
5. Exercise 33 on page 435
6. Exercise 1 on page 505
7. Exercise 2 on page 505

8. Exercise 3 on page 505

9. If you had an infinite supply of water and a 5 quart and 3 quart pail, how would you measure exactly 4 quarts?

Can you do this for any two jars of sizes A and B in order to measure exactly A-1? Justify your answer.

10. Given a list of non negative integers, arrange them such that they form the largest number.

For example, given [3, 30, 34, 5, 9], the largest formed number is 9534330.

(Note: The result may be very large, so you need to return a string instead of an integer.)

11. Given a binary tree and a sum, find all root-to-leaf paths where each path's sum equals the given sum.

For example, given the below binary tree and sum = 22,



the method returns the following:

[5,4,11,2],