

COSC 311: ALGORITHMS

MINI 1

Due Wednesday, September 12 in class

1. Read the syllabus!

(a) Where is my office?

C215 Science Center

(b) When are my office hours?

Monday 2-3:30pm and Wednesday 3-5pm

(c) When and where are the TA help sessions?

Tuesday 7-9pm (Mackenzie and Jamie) and Thursday 7-9pm (Asa and Jamie), SCCE A013

(d) Under what circumstances are you allowed to get an extension on mini homework?

No extensions on mini homework

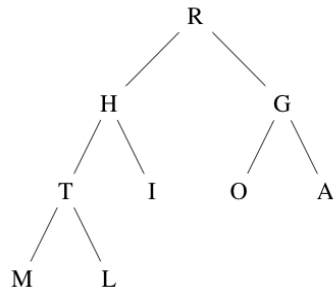
(e) Suppose Mackenzie has used up 1 late day already. The next homework assignment is due Friday in class, and Mackenzie submits it on Sunday at 5pm. How many penalty-free late days does she have left, and what is the maximum score she can receive on this assignment?

She has 1 penalty free late day left. Up to 50% of the credit

2. Heapify. Here's an unsorted array. Draw the array and the corresponding partially-heapified tree after each iteration of the `heapify` algorithm we wrote in class (include the initial unheapified tree, and leave blank boxes you don't need).

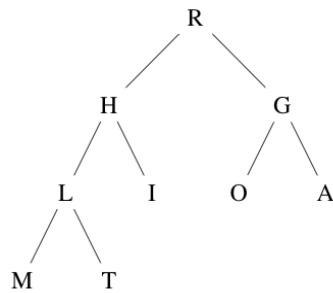
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Initially:



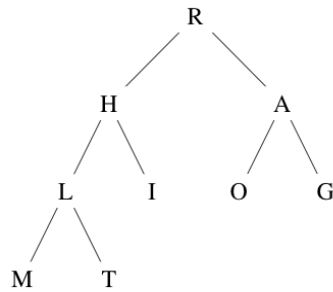
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After Step 1:



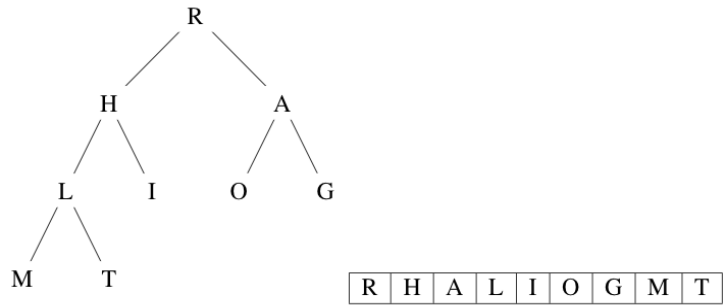
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After Step 2:

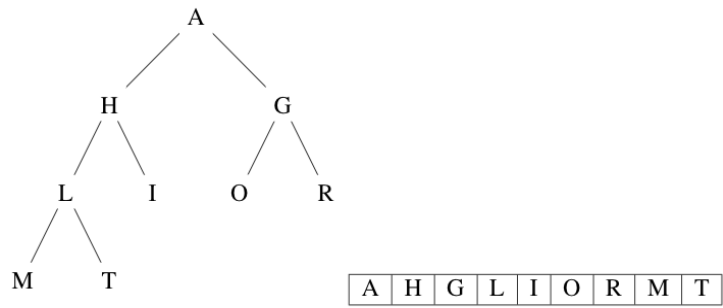


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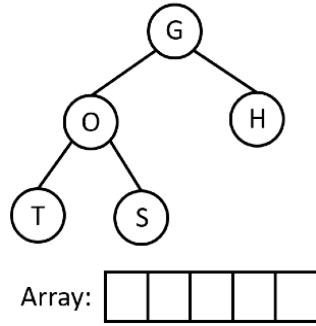
After Step 3:



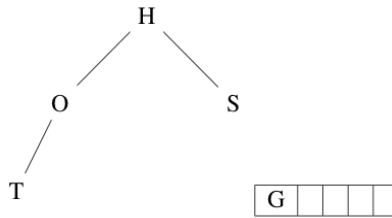
After Step 4:



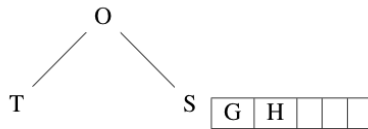
3. Heapsort. Here is a heap and an array, initially empty, into which all items in the heap are to be inserted in order from smallest to largest. Draw a picture of the heap and the array after each element is added to the array (there should be five pictures).



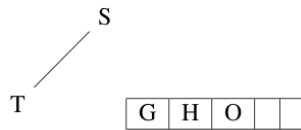
After Insertion 1:



After Insertion 2:



After Insertion 3:



After Insertion 4:

T

G	H	O	S	
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After Insertion 5:

(empty tree)

G	H	O	S	T
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