

**University of Waterloo**  
**CS240 - Winter 2021**  
**Assignment 2 Post Mortem**

**Problem 1 [2+4+4 marks]**

- For part(a), many students forgot that the third largest can also be on level 2.
- For part(b), a few students think that the fix down would move elements one level down rather than trying until leaves.
- For part(c), many students forgot to provide correctness justification and runtime justification. Many students didn't specify the condition that the left/right child exists. Some students said that  $s$  nodes would be checked, when it should be  $3s$ .

**Problem 2 [5 marks]**

- Many students forgot to provide correctness justification and runtime justification.
- Some people did it as a quick sort algorithm, then split the list according to even and odd, this is actually a quite bad approach, since you can do this in one go of the array. There are a few who tried to only sort out the even entry and hope the rest of the list will sort itself out.
- Many students miss or get incorrect second round of partition.

**Problem 3 [4+4 marks]**

- For part(a), many students miss the base case. Some students don't understand how coinflip affects the relation.
- For part(b), a few students leave it as a geometric sequence. Many students gave the  $\theta$  bound instead of the exact formula.

**Problem 4 [4+3 marks]**

- For part(a), many students forgot the ceiling function. A few students tried to answer it without decision trees. Many students forgot to specify the base is 3.
- For part(b), many students wrote the wrong algorithm which returns counterfeit coins instead of genuine coin. A few students' answers don't match the answers in part(a).

**Problem 5 [6 marks]**

- Many students use  $R=10$  and think that the radixsort complexity will be  $O(n)$ .

**Problem 6 [1+2+2+4+4 marks]**

- For part(c), some students forgot that the it start counting by 0.
- For part(e), some students did not write the summation correctly. They used the recursive formula. Some students assumed  $i = j$  and they got the upper bound and lower bound wrong