

University of Waterloo
CS240E, Winter 2022
Assignment 1 Post Mortem

This document goes over common errors and general student performance on the assignment questions. We put this together using feedback from the graders once they are done marking. It is meant to be used as a resource to understand what kind of stuff we look at while marking and some common areas where students can improve in.

Question 1 [1+2=3 marks]

- Generally well done.

Question 2 [7 marks]

- Most students did well. Some students did not correctly show that $f(n) \notin O(n^d)$ for $\frac{1}{2} \leq d < 1$ and $f(n) \notin \Omega(n^d)$ for $d = 1$, or they did not correctly show a boundary case (e.g. $d = 1/2$ or $d = 1$).

Question 3 [2+6+4=12 marks]

- a) was well done.
- Some students thought it was sufficient to only give an upper bound for b).
- For c) some students mistakenly said the height was 3 because they counted three levels in the tree.

Question 4 [3+7=10 marks]

- Both generally well done. Some students used inefficient methods to report the items, such as repeatedly appending reported items to a list through recursive calls, when it is much more efficient to only add one item to the list of items to report in each call.

Question 5 [1+1+2(+5) = 4(+5) marks]

- a) was generally well done.
- b) was well done. Some students' algorithms stopped too early (e.g. v may need to be moved to the root).

- c) The most common error was thinking that one could repeatedly swap a node with its left child if there was a violation of the order property.