University of Waterloo
CS240E, Winter 2022
Assignment 2 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   [6 marks]

- Generally well done. Some students who sorted in linear time used a two-pointer approach to check if there were elements differing by 10. Some students used radix 10 and claimed that m, the maximum number of digits was a constant. Some students also didn't give enough details about why their solution doesn't miss the correct answer.

Question 2   [5+3=8 marks]

- a) was well done.

- b) Several students figured out they need to use the lower bound for comparison-based sorting but they didn't provide enough details about why their solution doesn't miss the correct answer.

Question 3   [4+1+6+6(+5)=17(+5) marks]

- a) One of the most common errors was that students used $log(n)$ (or 2^x) directly without even discussing the runtime for it.

- b) Generally well done.

- c) Most students did well.

- d) Some students did not state the time units for amortized analysis.

Question 4   [4+2+5+3+4=18 marks]

- a) One of the most common errors was that students used $log(n)$ (or 2^x) directly without even discussing the runtime for it.

- b) Some students did not correctly handle the floor function in the analysis, often going from ... $>= floor(logn)$ to ... $>= logn$ without justification, but sometime directly putting $floor(logn) >= logn$ (with the same log base).

- c) Generally well done.

- d) Some students had circular/incomplete logic, often stating that "the height of p must have decreased" after rebuilding without justification.