

University of Waterloo
CS240E, Winter 2023
Programming Question 1 Post Mortem

This document goes over common errors and general performance on the assignment questions. We create it using feedback from the graders. It is meant to be used as a resource to understand common areas that we can improve in.

Question 1 [18 marks]

This part refers to correctness.

- Many submissions could not handle intermixed inserts/deletes. One way to catch that during testing is to test our implementation against *a sorted array*. To extract minimum, we remove the first item from the array; to extract maximum, we remove the last item. We ensure they match with assertions.
- To help catch errors in structural properties, we can write a helper routine to check for the heap invariants at every node, after operations are performed. We can iterate over all nodes, and ensure that the order of its key relative to its parent's and grandparent's keys is correct.

Please attend ISA office hours, or email the course account if you would like to discuss implementation.

Question 2 [2 marks]

This part refers to readability and documentation.

- Most submissions used approaches of fixing-up/down, which is easy to interpret at the level of CS240E.
- Most submissions were well-organized and readable.