University of Waterloo
CS240 Fall 2017
Assignment 4 Post Mortem

Problem 1

a) Done well. Some answers had incorrect heights.

b) Done well

c) Some students forgot to ensure that the result was simplified as much as possible by compressing the node if possible after the recursive calls.

Problem 2

a) Done well. Some students did not always use $\lfloor \frac{n}{2} \rfloor$ as the median.

b) Done well.

Problem 3

a) A few students didn't draw all the y trees

b) Done well

c) Some students did the range counting query on the y-co-ordinate not on the top inside nodes, but on the boundary nodes.

Problem 4

a) Done Well. Some students missed the AB match near the end of iv, which was not present in part iii.

b) Poorly done. Most students just modified the equivalence check in the failure array algorithm and KMP search to consider wildcards to be equal to anything. The issue with this is that when there is a wildcard in the suffix the prefix will only match against the suffix if character in the prefix at the position of the wildcard in the suffix matches the character that wildcard matched against in the text. For full marks students should have handled this in some manner, e.g. by extending the failure array to take into account the possibilities the wildcard matches against in the text.

Problem 5

a) Many students did not submit this part.

Some students did too much work during the recursive step, making their code not be $O(n \log n)$, such as sorting, or using quick-select (worst case $O(n^2)$) to find the median before partitioning, rather than doing linear operations on pre-sorted arrays.

b) Reasonably well done. Some students did made claims that did not match their algorithms (e.g. doing $O(n \log n)$ operations in the recursive step and claiming that the recursive step is $O(k)$)