

University of Waterloo
CS240E, Winter 2024
Assignment 5 Post-Mortem

Question 1 [3+2+2=7 marks]

- This question was generally well-done.
- In part (a), many solutions used a polynomial product in $O(n \log n)$, but then still did a quadratic amount of work outside of the product.
- In parts (b), (c), many solutions solved the problem from scratch, while they could have used part (a).

Question 2 [3+2+3+3=11 marks]

- This question was generally well-done
- In part (c), several solutions used unnecessarily complicated. patterns and texts, that all were fundamentally the same idea as $T = a^{n-1}b$ and $P = a^n$.

Question 3 [2+4+7=13 marks]

- Q3c: Many people only gave one base case when they needed two. Some proofs never considered the parent node frequencies. Generally, a lot of solutions had trouble with the little (but important) details of this question, almost everyone would benefit from looking at the model solutions.

Question 4 [2+4+2=8 marks]

- Q4(b): almost everyone gave $n = 7878466$. One more character is needed, otherwise LZW does not add the new codeword that causes overflow.

Question 5 [2+2+3+3=10 marks]

- A common error was making a computation mistake in the recursive codes in Q5(b).