CS218 HW 2 Programming

due Thursday, April 18, 23:59 PM

Problem A // ID: 255780934

Given that the solution set is monotonic, and checking if a solution is valid is simple, I used binary search to pick the optimal solution, and verified it in the "feasible" method if the solution was valid. This is a divide and conquer approach.

Runtime: $O(n * log(n))$ due to the feasible function with $O(n)$ time being called $O(log(n))$ times; Space Complexity: $O(1)$, constant amount of space.

Problem B // ID: 255782777

The minimum votes needed come from the smallest departments, so sort the list of departments in ascending order. Then, only $\lceil n/2 \rceil$ people from $\lceil n/2 \rceil$ departments are needed. Simple addition gets this result. Runtime: $O(n * log(n))$ due to sorting the department sizes; Space Complexity: $O(1)$, simple counter to track the minimum number.