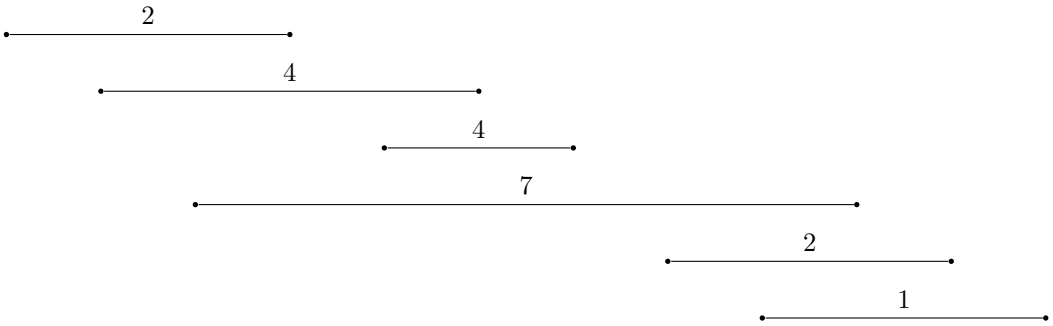
This is due at 9:59 AM on the morning of Friday, April 30. You will need to submit to GradeScope. For grade purposes, this is worth half of one reinforcement exercise set. The purpose of this is to help prepare you for lecture on that day. This should not take you more than a dozen minutes to complete.

1. We are given a set of n intervals, each of which has a start time s_i, a finish time f_i, and a value v_i. Our goal is to select a subset of the intervals such that no two selected intervals overlap and the total value of those taken is maximized. What is the optimal solution for the following set of weighted intervals?

   Note: I am not asking you for an algorithm. I am asking you to solve this specific input case.



2. We are given a set of n intervals, numbered $1 \ldots n$, each of which has a start time s_i and a finish time f_i. For each interval, we want to compute a value $p[i]$, which is the interval j with the *latest* finish time f_j such that $f_j \leq s_i$; that is, the last-ending interval that finishes before interval i starts. If no intervals end before interval i begins, then $p[i] = 0$.

   Give an $\mathcal{O}(n \log n)$ time algorithm that computes $p[i]$ for all intervals. You may assume that the intervals are already sorted by finish time.