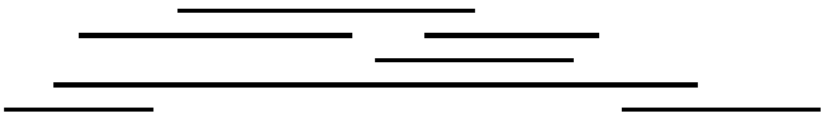
CS340 Analysis of Algorithms
Fall 2025

Lab:	**6**	**Professor:**	**Elizabeth Dinella**
Date:		**E-mail:**	`edinella@brynmawr.edu`
Title:	**Greedy Interval Scheduling**	**URL:**	**https://bmc-cs-340.github.io**

1 Greedy attempts

Consider the following greedy interval scheduling approaches. In each, we follow the listed greedy criterion (if there are multiple choices, choose any arbitrary one), add the corresponding interval to the solution set, remove any overlapping intervals from the data set and repeat if there are still intervals to choose from. For each approach, determine whether it produces a correct output for every possible input. If not, give a counter example.

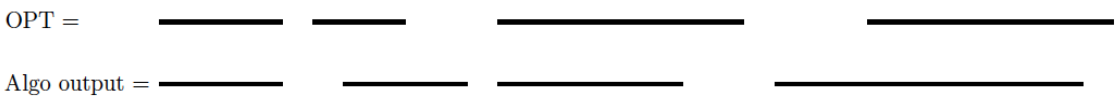


1. Choose the interval with the latest finish time.
    - Run this approach on the input above
    - Does this always work?
    - If you answered no, give a counter example
2. Choose the interval with the shortest length
    - Run this approach on the input above
    - Does this always work?
    - If you answered no, give a counter example
3. Choose the interval with the smallest number of overlaps with other intervals
    - Run this approach on the input above
    - Does this always work?
    - If you answered no, give a counter example

2 Understanding the proof of correctness for EFF

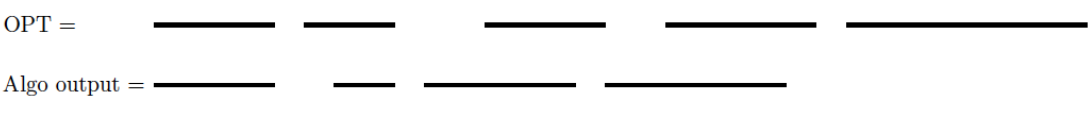
For each of the following senarios, determine whether the situation can plausibley happen. The top part of the figure shows an optimal solution (where the number of non-overlapping intervals is maximized). The bottom shows the intervals that our Earliest Finish First algorithm selected. Determine whether EFF could have selected this set of intervals, assuming the input interval set includes all depicted intervals.

1.



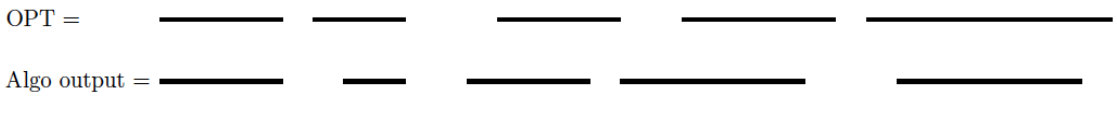
Could this happen? If you ansered no, highlight the interval(s) that EFF would definitely NOT choose, and state why

2.



Could this happen? If you ansered no, highlight the interval(s) that EFF would definitely NOT choose, and state why

3.



Could this happen? If you ansered no, highlight the interval(s) that EFF would definitely NOT choose, and state why