Name: _____ Wisc id: _____

Breakpoint Selection

1. You are driving on a straight road from Madison to Nosidam. Your car has a fuel capacity of C, which means that you can drive C miles after refueling. There are refueling stations along the way at $d_1, d_2, ..., d_n$. You drive from Madison with a full fuel tank. Your goal is to reach Nosidam with the fewest amount of times to refuel.

Solution:

Interval Stabbing

2. There are n intervals $[[a_1, b_1], [a_2, b_2], ...[a_n, b_n]]$. We say that a set of point S **stabs** all the intervals if every interval in the set contains at least one point in S. Find a minimal set of point S.

Solution:

Preemptible Job Scheduling

3. There are n jobs. Job i is available at time s_i, and it require p_i processing time. Jobs are preemptible. Design an algorithm to minimize $\sum_i c_i$, where c_i is the time when job i is completed. Prove its correctness.

Solution: