Problems for Challenge 2

Problem Name - Smallest Window

Given a string, find the length of the smallest window that contains every distinct character. Characters may appear more than once in the window.

For example, given “jiujitsu”, you should return 5, corresponding to the final five letters.

Problem Name - Minimum steps

Given a positive integer N, find the smallest number of steps it will take to reach 1.

There are two kinds of permitted steps:

- You may decrement N to N-1.
- If a*b = N, you may decrement N to the larger of a and b.

For example, given 100, you can reach 1 in five steps with the following route:

100 -> 10 -> 9 -> 3 -> 2 -> 1.

Problem Name - Listeners and Towers

You are the technical director of WSPT radio, serving listeners nationwide. For simplicity’s sake we can consider each listener to live along a horizontal line stretching from 0(west) to 1000(east).

Given a list of N listeners, and a list of M radio towers, each placed at various locations along this line, determine what the minimum broadcast range would have to be in order for each listener’s home to be covered.

For example, suppose

listeners = [1, 5, 11, 20], and
towers = [4, 8, 15]

In this case the minimum range would be 5, since that would be required for the tower at position 15 to reach the listener at position 20.