Question 6.10 Cracking the Coding Interview

1) Divide the bottles into 10 groups of 100.

2) Get a drop of each into their own containers for testing

3) Test only 9 of the 10 groups. This would mean testing 900 of the bottles in their own respective groups of 10. If none of them return poisoned, then the untested group of 100 has poison in it. Assume proper labeling of each bottle and group has taken place. This process would take 16 days, as that's when the day 9 testing results would return back.

4) If none of them return poisoned, we would have 10 clean strips still by this point. If one did return poisoned, we have 9 strips. In both cases, with proper labeling, we've narrowed our search to one group of 100. For the purpose of this example, we should assume worse-case scenario of 9, as that's the more likely scenario.

5) Divide our determined group of 100 into 10 groups of 10, similar to what we did with the group at large. Once again, test each group with a combined drop of each in their own proper container excluding the last group of 10. This would require all 9 litmus papers getting tested. This, again, would take another 16 days.

6) The likely result would be that one of our tested groups would return negative again, bringing us down to 8 useable litmus papers, with a group of 10 bottles to test.

7) Take those 10 bottles and test 8 of them. This would take 15 days. If none of them return poison, check the remaining two. This would be another 8-9 days, depending on whether the first or second bottle was the one poisoned.

Entire possible time: 56 days