

ACM SUMMER CHALLENGE

Editorial - SEARCHING

Dr. Stone's Formula

Problem prepared by: KRUNAL

Key idea: every positive number can be denoted by sum of 1 or more than 1 Fibonacci numbers.

First store all Fibonacci numbers $\leq 10^6$ in an array.

For a number N find greatest element less than or equal to it, say X. Subtract X from N.

Repeat process until $N > 0$ and count steps.

HACK THE SOLUTION

Problem prepared by: JITENDRA

Task – we have two tasks to do for a new element X. Finding number of elements with score $> X$ and inserting X in data structure.

First task can be solved using `std::upper_bound` or a simple binary search. In both ways sorted array is required.

It's intuitive that we can add new element X at position found from First Task to keep array sorted. For that we can use `std::vector`.

ASSIGNMENTS!!

Problem prepared by: MIHIR

This problem is to introduce “binary search the answer”. We have to solve problem by answer instead of question.

Key idea: Suppose that assignment can be completed in time X. then it is true that assignment can be completed in time $X+1$.

Hint1: for range $[0, Y-1]$ assignment cannot be completed and for range $[Y, \infty]$ assignment can be completed. We have to simply find Y by binary search.

Hint2: number of assignments completed in time $T = \sum_{i=1}^{i=N} T/a[i]$

If number of assignments completed in time $T \geq M$ then T belongs to $[Y, \infty]$.

Hint3: start binary search from $[0, \infty]$ and check for MID element . if number of assignments completed in time MID $< M$ then answer lies in interval $[MID+1, \infty]$ else $[0, MID]$.