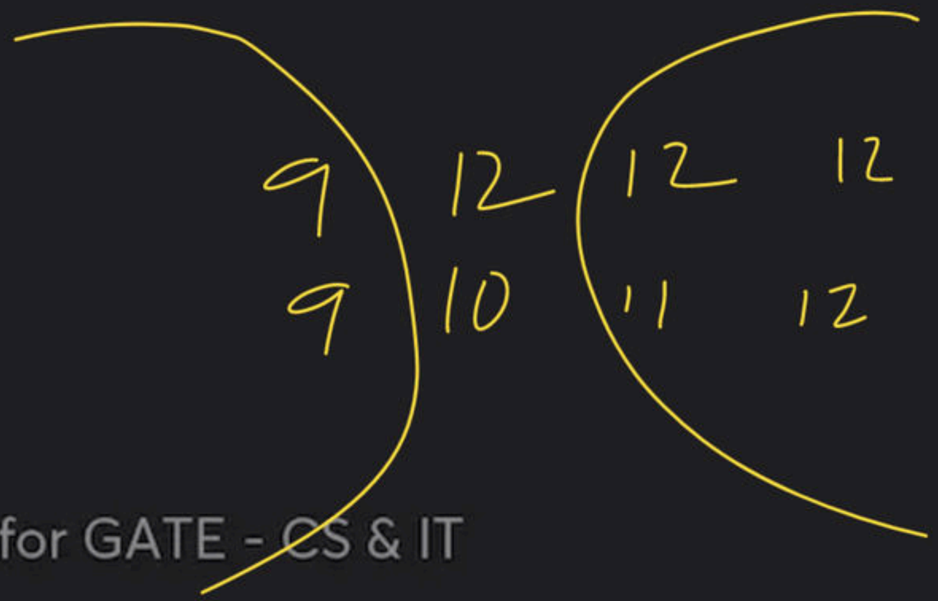
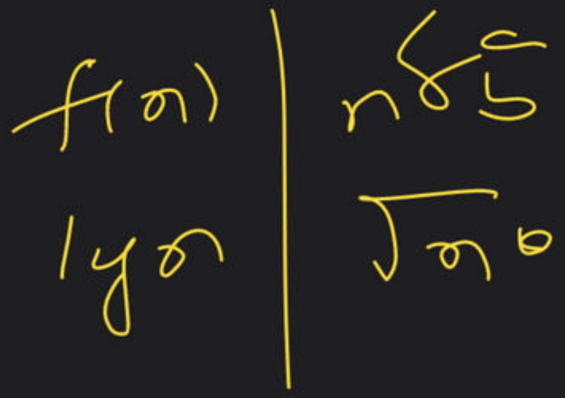


DAC - Part V

Complete Course on Algorithm for GATE - CS & IT



Subbarao Lingamgunta • Lesson 28 • Jan 1, 2023

ex

i/p: An array of n elements in which until some position all are integers and afterwards all are ∞ [assume n is unknown & afterwards all are #]

o/p: return position of 1st ∞.

TC? [Best Algo worst case Time]

A

80	90	-2	-7	46	56	28	99	44	1	2	3	4	60	80	98	∞	∞	∞	∞	∞	∞	∞	∞	∞	∞	∞	∞	∞	∞	#	#
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32 ...

```
i=1
while(a[i] != #)
    if(a[i] == ∞) w(i)
    else
    i++
```

⟹ n WC

⟹ LS

n, $n/2$, $n/2^2$, ..., $n/2^{\log n}$

$\log n + \log n$

$2\log n \Rightarrow \log n$

ex

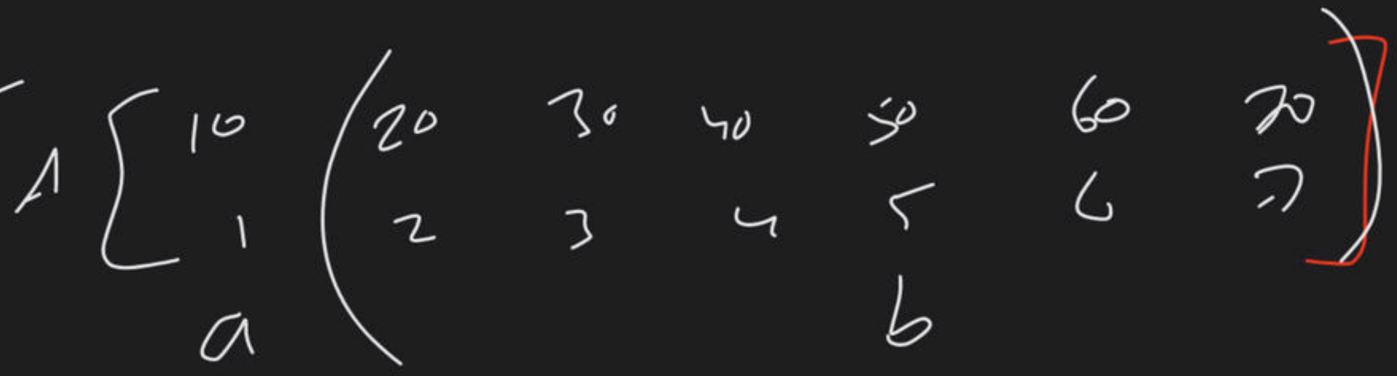
i/p: sorted array of n-distinct +ve integers.

o/p: find any 2 elements a & b such that

$a + b > 1000$

TC? [Best Also Worst]

ex



Sorted

3 ele | 4 ele

① n times LS(n) ⟹ n × n ⟹ n^2 {WC}

② n times BS(n) ⟹ n log n ⟹ n log n {WC}

③ return (Last 2-ele) ⟹ O(1) {EC}

Unsorted

① n times LS(n) ⟹ n^2

② 1. Sort ——— n log n
2. n times BS(n) ——— n log n
} n log n ⟹ n log n