

## Contest Discussion - 2

Question 1 : Number Game with friend - 1

Given  $a[N]$ , find product of numbers which are greater than their adjacent left number.

Since, product can be very large, return  $ans \% 10^9+7$

$$1 \leq |A| \leq 10^5$$

$$1 \leq A[i] \leq 10^9$$

eg  $A = [5]$   $ans = 0$

$A = [6 \ 5 \ 4]$   $ans = 0$

$long\ ans = 0$

for ( $i=1; i < n; ++i$ ) {

if ( $a[i] > a[i-1]$ ) {

if ( $ans == 0$ )  
     $ans = 1;$

$ans = (ans \times a[i]) \% 10^9+7$

}

}

TC:  $O(N)$   
SC:  $O(1)$

return ans

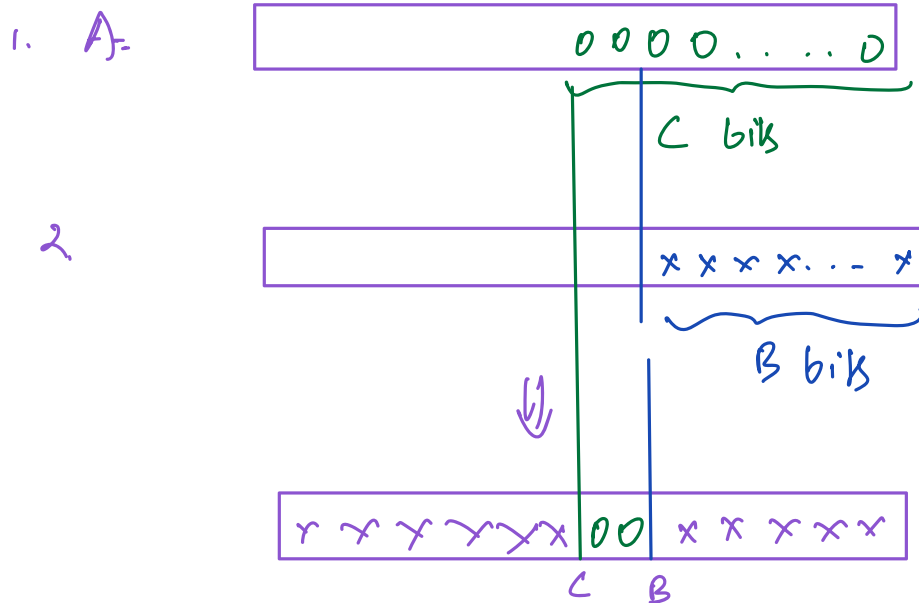
## Question 2 - Unset Bits in a Range

Given  $A, B, C$ .

1. Unset  $C$  bits in  $A$  from right.
2. Restore  $B$  bits in  $A$  from right.

$$1 \leq A \leq 10^9$$

$$1 \leq B \leq C \leq 30$$



$$\begin{array}{cccccccc} 7 & 6 & 5 & 4 & 3 & 2 & C & 1 & 0 \\ A = & 1 & 1 & 0 & 1 & 0 & 1 & 1 & 0 \\ & & & & & & \boxed{0} & \boxed{1} & \\ & & & & & & \downarrow & \downarrow & \\ & & & & & & 0 & 0 & \end{array}$$

$$C = 4 \quad B = 2$$

$$1 \ 1 \ 0 \ 1 \ 0 \ 0 \ 1 \ 0$$

$\Rightarrow [B, C-1]$  bits are modified

for (i=B; i<C; ++i)  $\} \rightarrow [B, C-1]$

TC:  $O(C)$   
:  $O(1)$

A |= (1<=i)

A^ = (1<=i)

}

To unset :

1. set (OR)

2. toggle (XOR)

Question 3 : Alice & AP

Given  $a[N]$  ,  $B$  .

Check if we can arrange array s.t. it become an AP with common difference  $B$  .

$$1 \leq N \leq 10^5$$

$$0 \leq A[i] \leq 10^9$$

$$0 \leq B \leq 10^9$$

AP:  $a, a+b, a+2b, \dots$

1. Sort the array.

1 copy  $A \rightarrow \text{temp} \rightarrow O(N)$

$\text{sort}(\text{temp}) \rightarrow O(n \log n)$

for ( $i=1; i \leq n; ++i$ ) {  $\rightarrow O(N)$

if ( $\text{temp}[i] - \text{temp}[i-1] \neq B$ )

return "NO"

TC:  $O(N \log N)$

SC:  $O(N)$

}

return "Yes"