

arr (sorted)

$\hookrightarrow [L, R] \longrightarrow \text{lower_bound / upper_bound}$

$LB(5) = 3$
 $UB(10) = 8$
 $[5, 10] \rightarrow 5$

Lower_bound

idx \rightarrow	0	1	2	3	4	5	6	7	8
value \rightarrow	1	3	3	6	7	8	10	10	15

$[5, 10]$

$LB(5) = 5$ (যদি $(1, 3, 3) = 3$)

$\text{lower_bound}(3) = 1$

$\text{upper_bound}(3) = 3$

$UB(10) = 10$ এর সমান বা ছোট $(1, 3, 3, 6, 7, 8, 10, 10) = 8$

$UB(10) - LB(5) = 8 - 3 = 5$

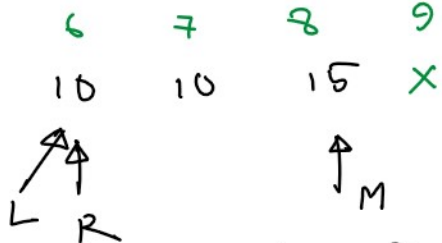
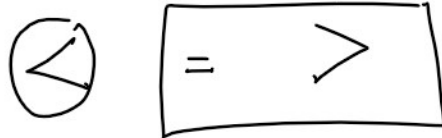
$UB(R) - LB(L)$

$UB(x) = LB(x+1)$

$LB(10)$

$L = M + 1$

$R = M$



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while (L < R)
{
    M = (L + R) / 2
    if (arr[M] < v)
        L = M + 1
    else
        R = M
}
    
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return 2;

$$O(T Q \log(N))$$

$T = 5$
 $Q = 5 \times 10^4$
 $N = 10^5$

$5 \times \textcircled{5} \times 10^4 \times \textcircled{17} \rightarrow 5 \times 10^6$
 $\textcircled{20}$

$$\frac{5 \times 10^6}{10^8} = 5 \times 10^{-2}$$
$$= 0.05 \text{ s}$$