Lab7 Questions

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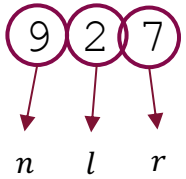
Lab7.A Modify

- Recently, Andrea got a list with only one element n. Since she doesn't like anything other than 0 and 1, she performed some operations on this list. In each operation, she removed every element x, such that $x > 1$ from the list. Then, in the same position, she added $\left\lfloor \frac{x}{2} \right\rfloor, x \bmod 2, \left\lfloor \frac{x}{2} \right\rfloor$ into the list. She stopped the operations until the list contained only 0 or 1.
- Now, she wants to know the sum of the elements whose indexes are in the range $[l, r]$. Given n, l, r, please tell her the answer.

Input:



[9]

9 → 4, 1, 4

[4, 1,4]

4 → 2, 0, 2

[2, 0, 2, 1, 2, 0, 2]

2 → 1, 0, 1

[1, 0, 1, 0, 1, 0, 1, 1, 1, 0, 1, 0, 1, 0, 1]

index: 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

l r

sum = 3

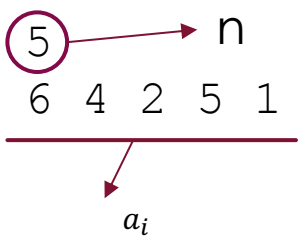
Output:

3

Lab7.B The Best Way to Wipe out a Friendship

- Andrea is wise, rich, noble, famous, sacred, sociable, powerful, diligent and intelligent, so she has a lot of friends. However, she has gotten bored and she wants to reduce the number of her friends.
- Andrea has listed the names of n friends of hers on a piece of paper and assigned a number a_i ($i \in [1, n]$) for each friend. She is going to keep an interval and abandon other friends. Every friend is also a believer in Andrea. The remaining interval $[\boldsymbol{l}, \boldsymbol{r}]$ is religious, if and only if there is some integer $\boldsymbol{m} \geq \boldsymbol{2}$, such that $\boldsymbol{a_l \bmod m = a_{l+1} mode m = \ldots = a_r \bmod m}$.
- Can you find out **the maximal length of a religious interval**?

Sample Input 1：



6 4 2 5 1

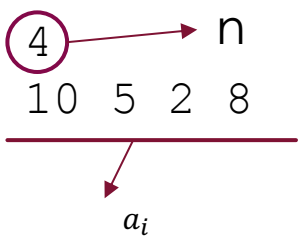
6 % 2 = 4 % 2 = 2 % 2 = 0

the maximal length

Sample Output 1：

3

Sample Input 2:



10 5 2 8

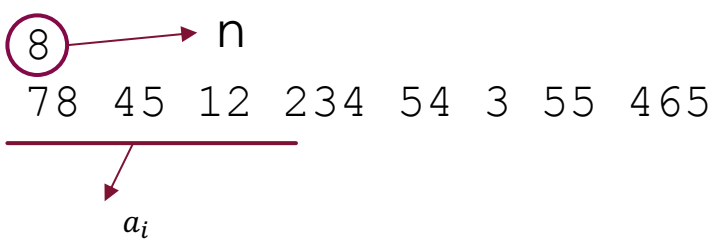
5%3 = 2%3 = 8%3 = 2

the maximal length

Sample Output 2:

3

Sample Input 3:



78 45 12 234 54 3 55 465

%3 = 0

the maximal length

Sample Output 3:

6