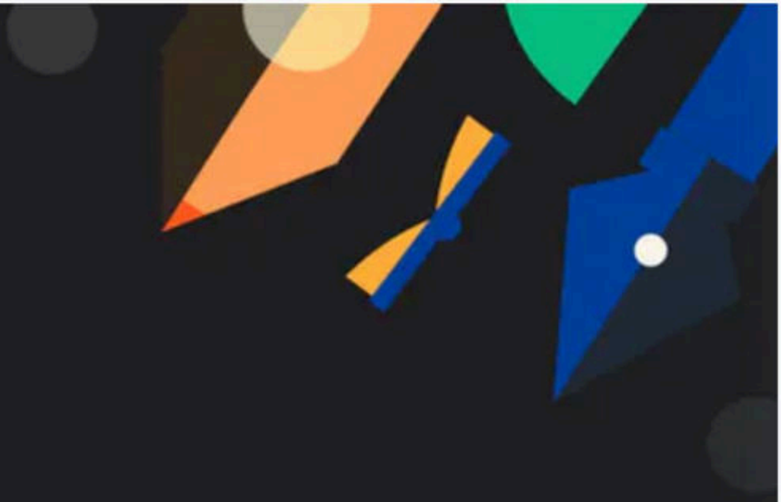


Mixed Problem Solving - I

Course on Basic Data Structures (C++)

Pulkit Chhabra • Lesson 6 • Jan 30, 2021

Binary Array ⇒ 0 / 1

1, 1, 0, 1, 0, 0 ⇒ 6

1-based indexing

2, 4 ⇒ 1, 0, 1, 0, 0, 0

1, 6 ⇒ 0, 1, 0, 1, 1, 1

4, 5 ⇒ 0, 1, 0, 0, 0, 1 ⇒ Ans

↳

1.) b = { 0, 0, 0, - - - - }

↳ b[l]++ , b[r+1]- -

2) Prefix sum of b.

3) if bs[i] is odd

↳ flip the i^{th} bit

else

↳ do nothing

1) b = { 0, 0, 0, ... }

flip(b[l]) flip(b[r+1])

pos[i] = even
b[i] = 0
pos[i] = odd
b[i] = 1

2) prefix xor.

3) if px[i] = 1
↳ flip the i^{th} bit of the original array
else
↳ do nothing

XOR

0	0	0
1	0	1
0	1	1
1	1	0

$\Rightarrow$ $a_0 \oplus a_1 \oplus a_2 \cdots a_{n-1}$

↳ odd $\Rightarrow$ XOR = 1

even $\Rightarrow$ XOR = 0.

b_i { 1, 0, 1, 1, 0 } 1.

$[l, (r-1)]$

1, 3

3, 4

5, 5

$\Rightarrow$ 1, 2, 4, 5

$b_{x=2}$ { 1, 1, 0, 1, 1 }

5, 10 $\Rightarrow$ $(\bar{5} - 1)$ $(11 = 1)$

5, 9 $\Rightarrow$

2nd.

1st ⇒ l_1

2nd ⇒ l_2) → $(l_2 - l_1)$

1 → 2 → 3 → 4 → 5 → 6

-1 → 0 → -1 → 2 → 5 →

1st

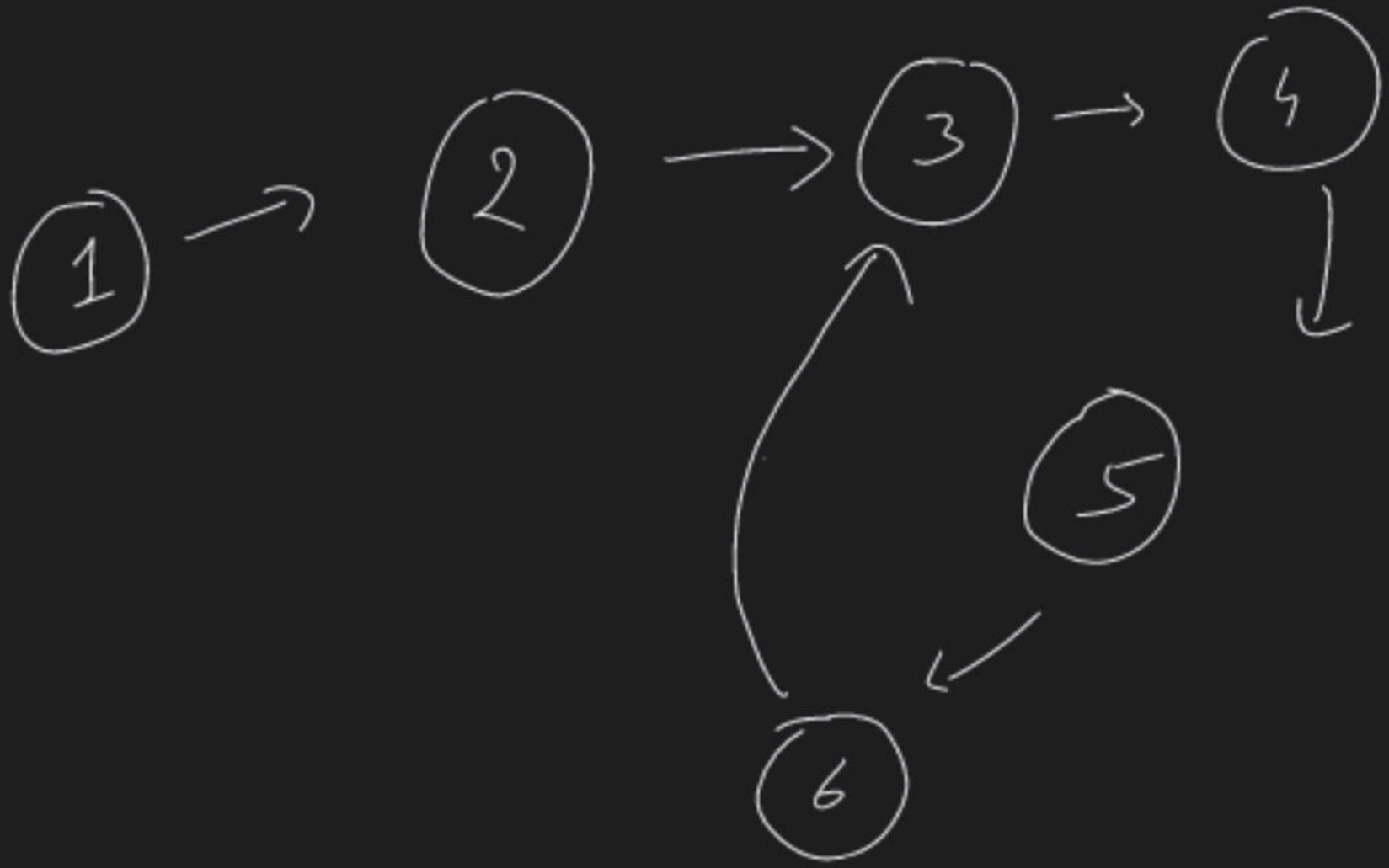
$|l_2 - l_1|$

1. Time → $O(N * M)$ ⇒ Brute

2. Time → $O(N + M)$ ⇒ Using hashset

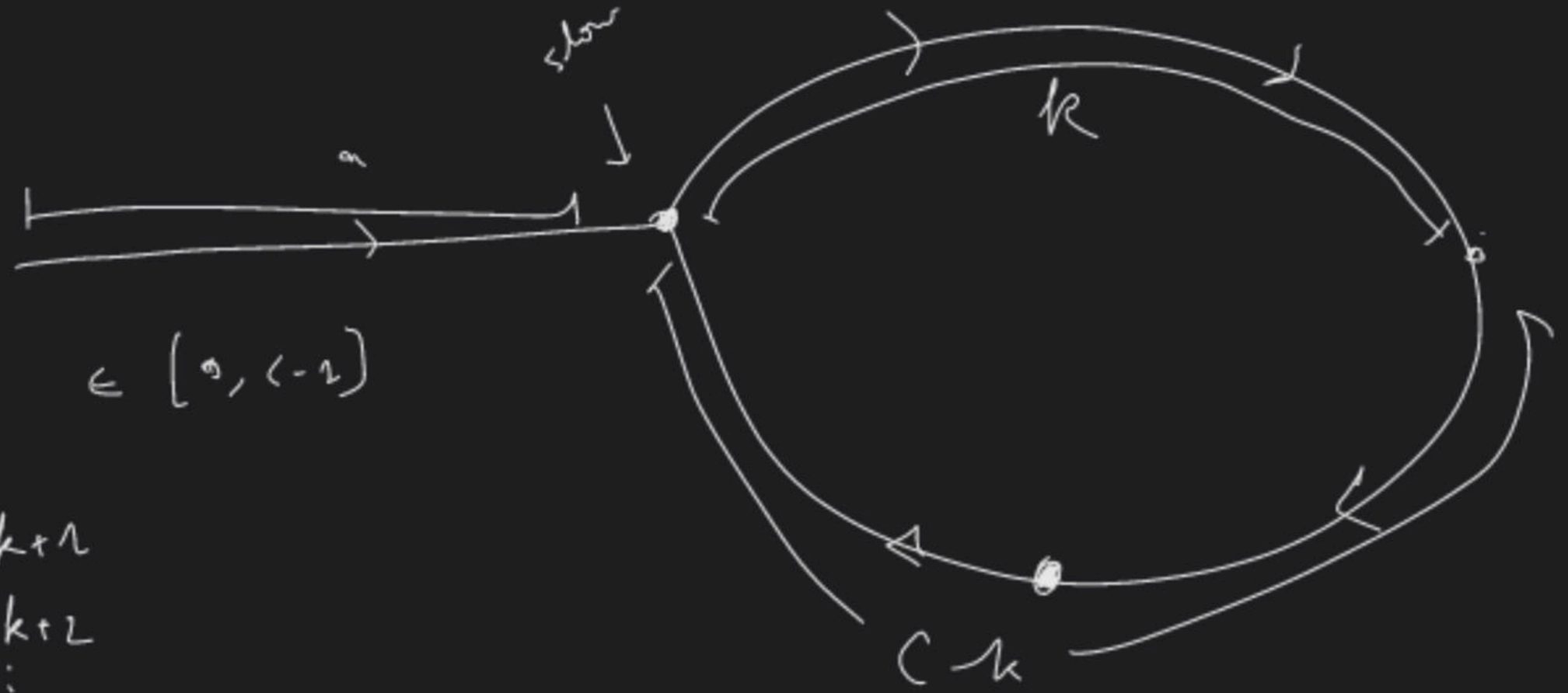
3. Find lengths and give an edge of $|l_1 - l_2|$ to one of the pointers ⇒ $O(N + M)$

⇒ Space ⇒ $O(1)$


1
2
3
4
5
6

$\lambda_2 = a + c$

cycle length $\geq c$



$k \in [0, c-2]$

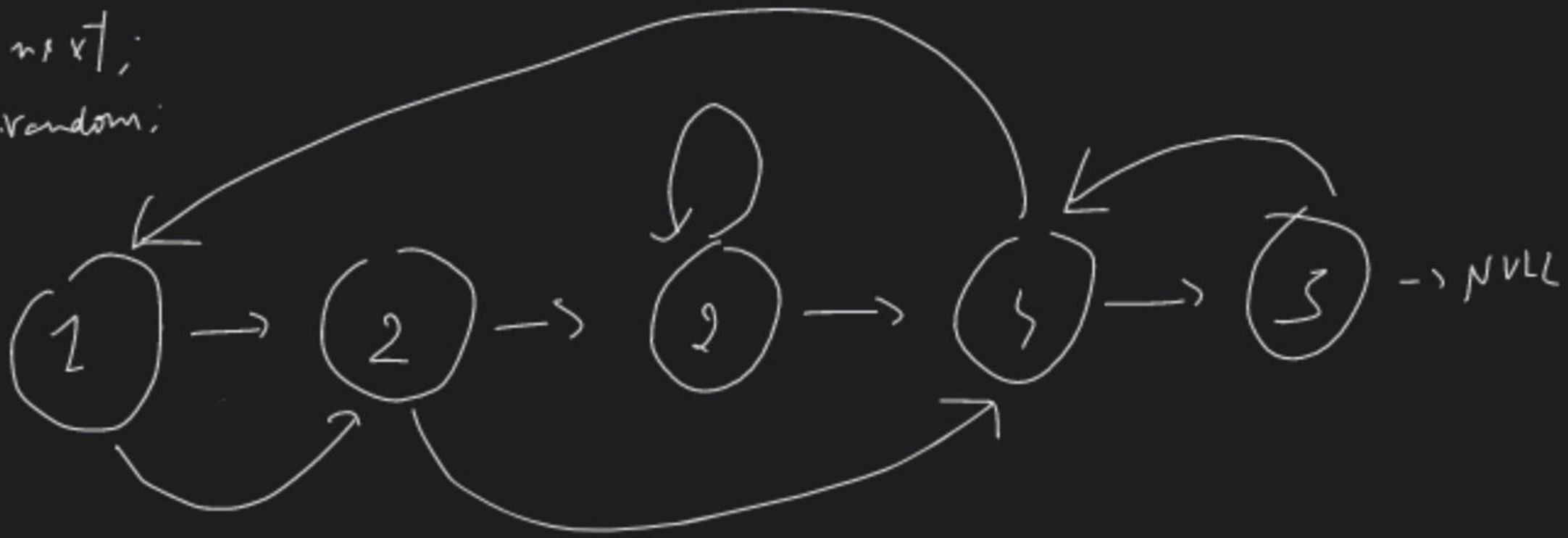
$\hookrightarrow k+\lambda$

$\hookrightarrow k+2$

$\vdots$

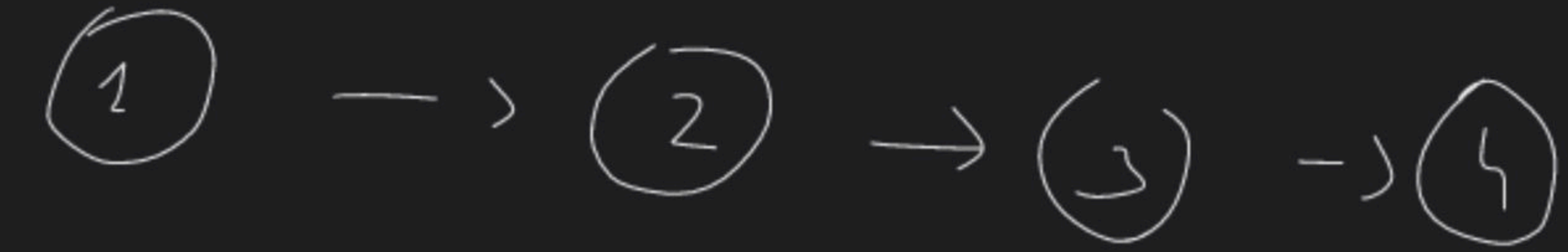
c

```
int val;
node * next;
node * random;
```




```
node = newhead = new node(head->data);

while(head->next)
{
    ---- newnext = new node(head->next->data);
    newhead->next = newnext;
    head = head->next;
    ne = ---->next;
}
```


1
2
3
4


1
2
3
4

node *, node *.

node * new cur, m[cur], * cur_random. cur->random;

new cur -> random = m[cur->random];