1 Stack Implementation Using Two Queues

A stack is a LIFO (Last In, First Out) data structure, while a queue is a FIFO (First In, First Out) data structure. The challenge here is to simulate stack behavior using queues. We can use two queues, q1 and q2, to implement a stack. The key idea is to:

Push operation: 1. Enqueue the new element into q2. 2. Dequeue all elements from q1 and enqueue them into q2. 3. Swap the names of q1 and q2.

Pop operation: 1. Dequeue and return the front element of q1.

2 After pushing 52

Queue 1

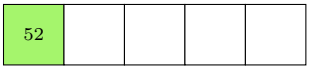
Queue 2

3 Final state after pushing 52

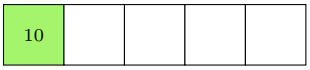
Queue 1

Queue 2

4 After pushing 10

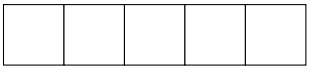


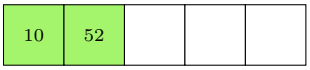
Queue 1



Queue 2

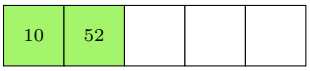
5 During push (transferring elements)


Queue 1

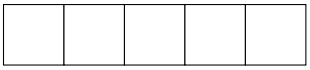


Queue 2

6 Final state after pushing 10



Queue 1


Queue 2

7 Final state after popping 10

Queue 1

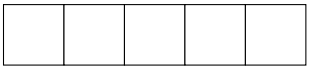

Queue 2

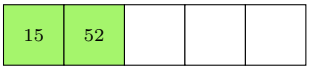
8 After pushing 15

Queue 1

Queue 2

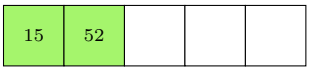
9 During push (transferring elements)


Queue 1

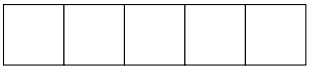


Queue 2

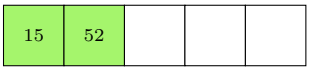
10 Final state after pushing 15



Queue 1


Queue 2

11 After pushing 20



Queue 1

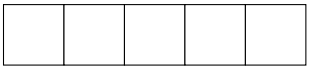
Queue 2

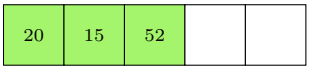
12 During push (transferring elements)

Queue 1

Queue 2

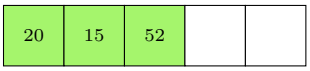
13 During push (transferring elements)


Queue 1



Queue 2

14 Final state after pushing 20



Queue 1


Queue 2