Implementing a Queue Using Two Stacks

A queue follows the First In First Out (FIFO) principle, while a stack follows the Last In First Out (LIFO) principle. We aim to mimic the behavior of a queue using two stacks.

Solution Approach

For enqueue operation, simply push the element to stack1. For dequeue operation, if stack2 is empty, transfer all elements from stack1 to stack2. Then pop from stack2.
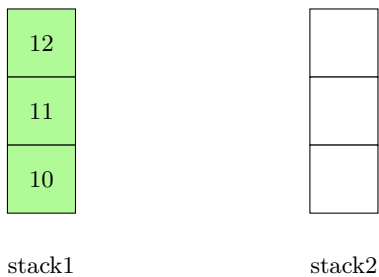
1 Enqueue(10)

10

stack1

stack2

2 Enqueue(11)

11
10

stack1

stack2

3 Enqueue(12)

12
11
10

stack1

stack2

4 Enqueue(13)

stack1	stack2
13	
12	
11	
10	

stack1   stack2

5 Enqueue(14)

stack1	stack2
14	
13	
12	
11	
10	
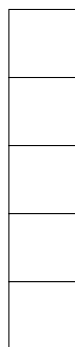
stack1   stack2

6 Enqueue(15)

stack1	stack2
15	
14	
13	
12	
11	
10	
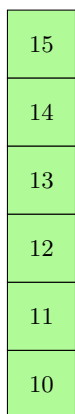
stack1   stack2

7 Transferred stack1 to stack2

stack1

stack2
10
11
12
13
14
15

8 Dequeue(): 10

stack1

stack2
11
12
13
14
15
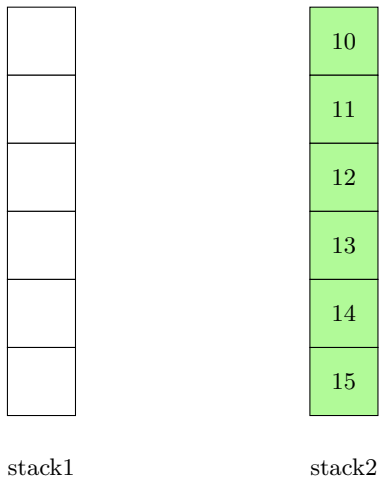
9 Dequeue(): 11
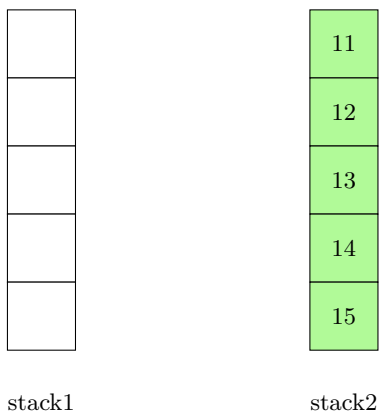
stack1
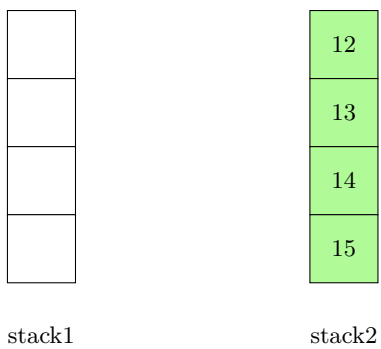
stack2
12
13
14
15

10 Dequeue(): 12

stack1		stack2
(empty)		13
(empty)		14
(empty)		15
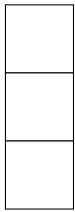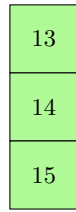
stack1   stack2

11 Dequeue(): 13

stack1		stack2
(empty)		14
(empty)		15

stack1   stack2

12 Dequeue(): 14

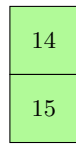| stack1		stack2
(empty)		15

stack1   stack2

13 Dequeue(): 15

stack1   stack2