

### Task 3

#### Queue Sorting with Limited Space

You have a queue of integers that you need to sort. You can only use additional space equivalent to one stack. Describe the steps you would take to sort the elements in the queue.

ANS:

```
package Assignmentday12.com;
import java.util.LinkedList;
import java.util.Queue;
import java.util.Stack;
public class Task3 {
    public static void sortQueue(Queue<Integer> queue) {
        Stack<Integer> stack = new Stack<>();
        while (!queue.isEmpty()) {
            int temp = queue.poll();
            // Step1 Move elements from stack to queue until a suitable
position is found
            while (!stack.isEmpty() && stack.peek() > temp) {
                queue.offer(stack.pop());
            }
            stack.push(temp);
        }
        // Step2 Move elements from stack to queue to complete the
sorting
        while (!stack.isEmpty()) {
            queue.offer(stack.pop());
        }
    }
    public static void main(String[] args) {
        Queue<Integer> queue = new LinkedList<>();
        queue.offer(5);
        queue.offer(3);
        queue.offer(7);
        queue.offer(1);
        queue.offer(9);
        System.out.println("Original Queue: " + queue);
        sortQueue(queue);
        System.out.println("Sorted Queue: " + queue);
    }
}
```

}

OUTPUT:

Original Queue: [5, 3, 7, 1, 9]

Sorted Queue: [9, 7, 5, 3, 1]