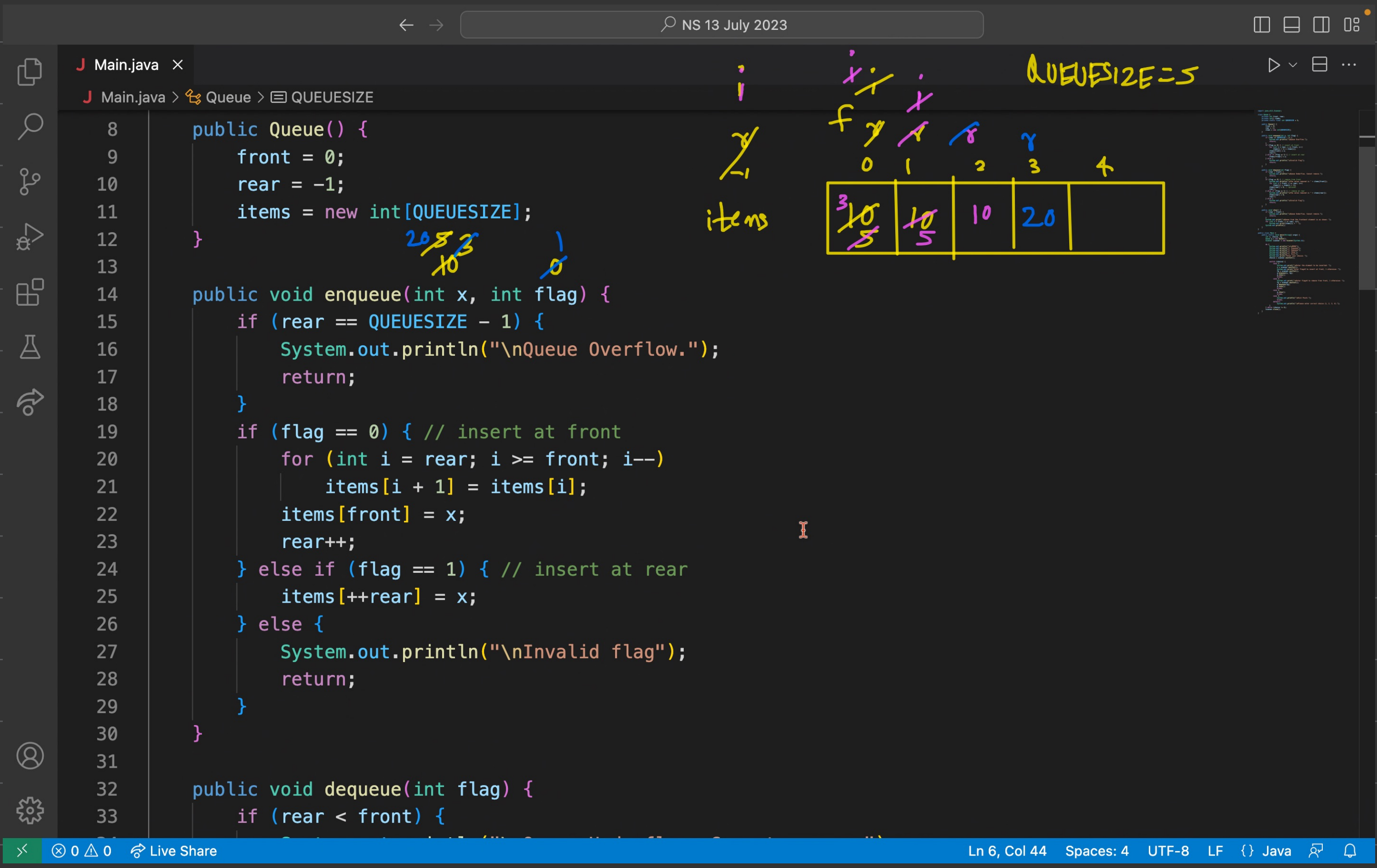
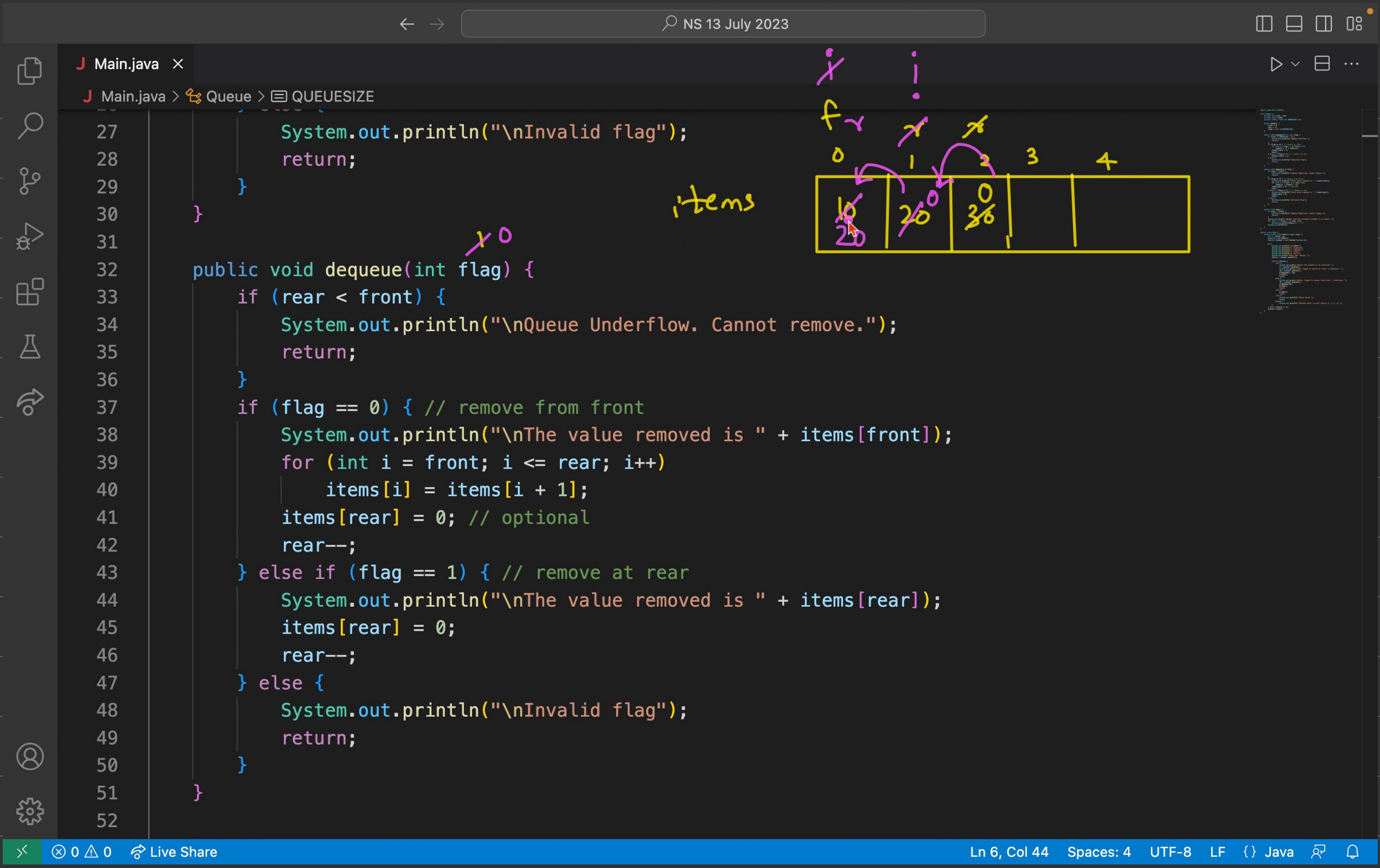
13 July 2023

Double Ended Queue / Deck:
Insertion and Deletion operations are not restricted to one end, rather can be performed on either of the two ends.

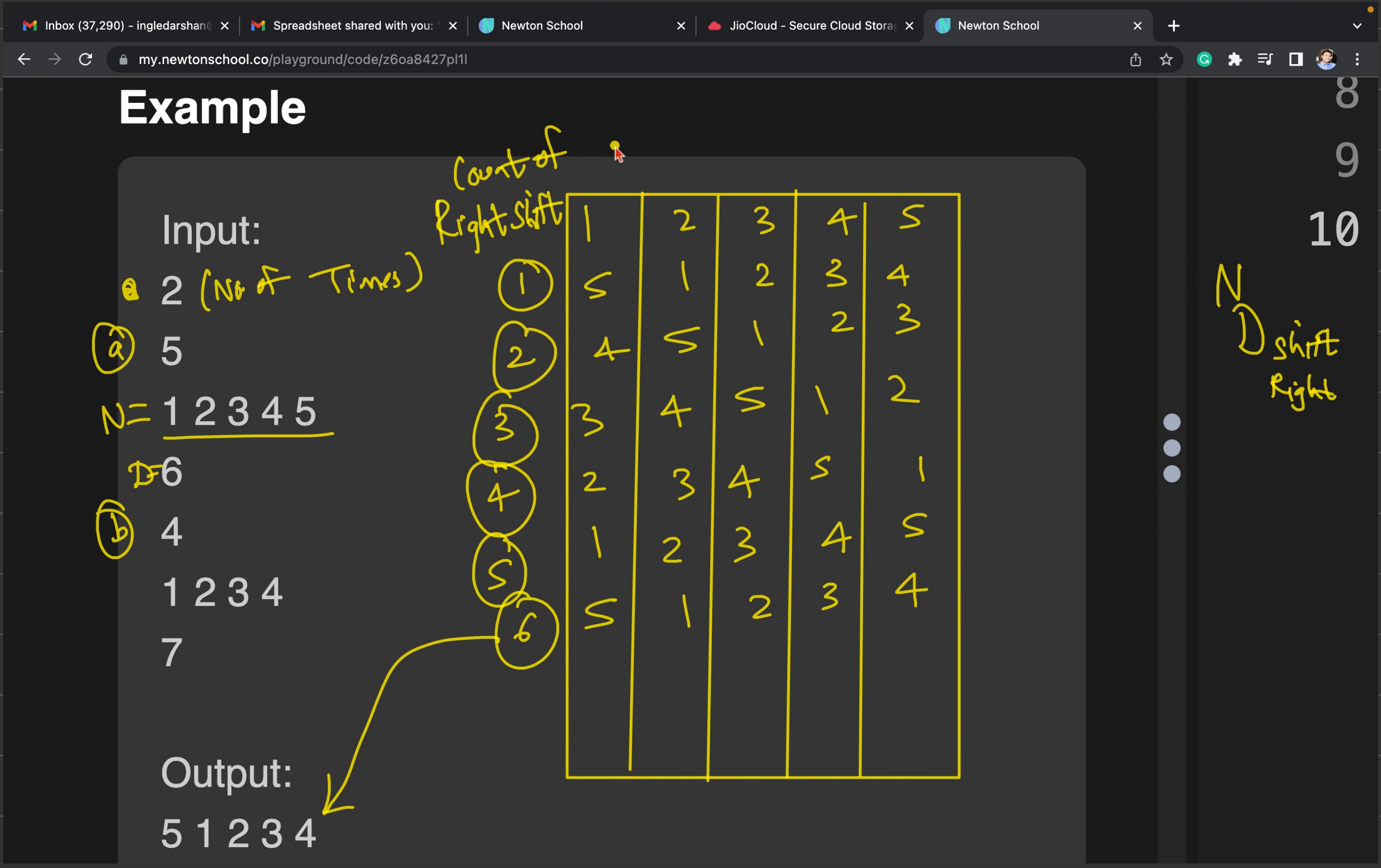
A Deque can be categorised into two categories:
>Input Restricted Deque: insertion is restricted to one end but the deletion can take place at either end of the list
>Output Restricted Deque: deletion is restricted but the insertion can take place at either end of the list



```java
    public Queue() {
        front = 0;
        rear = -1;
        items = new int[QUEUESIZE];
    }

    public void enqueue(int x, int flag) {
        if (rear == QUEUESIZE - 1) {
            System.out.println("\nQueue Overflow.");
            return;
        }
        if (flag == 0) { // insert at front
            for (int i = rear; i >= front; i--)
                items[i + 1] = items[i];
            items[front] = x;
            rear++;
        } else if (flag == 1) { // insert at rear
            items[++rear] = x;
        } else {
            System.out.println("\nInvalid flag");
            return;
        }
    }

    public void dequeue(int flag) {
        if (rear < front) {
```



```java
                System.out.println("\nInvalid flag");
                return;
            }
        }

        public void dequeue(int flag) {
            if (rear < front) {
                System.out.println("\nQueue Underflow. Cannot remove.");
                return;
            }
            if (flag == 0) { // remove from front
                System.out.println("\nThe value removed is " + items[front]);
                for (int i = front; i <= rear; i++)
                    items[i] = items[i + 1];
                items[rear] = 0; // optional
                rear--;
            } else if (flag == 1) { // remove at rear
                System.out.println("\nThe value removed is " + items[rear]);
                items[rear] = 0;
                rear--;
            } else {
                System.out.println("\nInvalid flag");
                return;
            }
        }
```


Inbox (37,290) - ingledarshan
Spreadsheet shared with you:
Newton School
JioCloud - Secure Cloud Stora
Newton School
my.newtonschool.co/playground/code/z6oa8427pl1l
8
9
10
N
D shift
Right

Example

Input:

a 2 (No of Times)

(a) 5

N= 1 2 3 4 5

D 6

(b) 4

1 2 3 4

7

Output:

5 1 2 3 4

Count of Right shift	1	2	3	4	5
1	5	1	2	3	4
2	4	5	1	2	3
3	3	4	5	1	2
4	2	3	4	5	1
5	1	2	3	4	5
6	5	1	2	3	4