[HW#7] 자료구조론 실습

Queue

2014037901 컴퓨터공학
나 윤 환

```
class Queue{

    private Node head;
    private Node tail;

    // Double Linked List를 위한 Node Class
    private class Node{

        private char data;
        private Node nextNode;
        private Node prevNode;

        Node(char data){
            this.data = data;
            nextNode = null;
            prevNode = null;
        }

        Node(){
            nextNode = null;
            prevNode = null;
        }
    }
```

```
public Queue(){
    this.head = new Node();
    this.tail = new Node();
    head.nextNode = tail;
    tail.prevNode = head;

}
```

```
public void Enqueue(char data){
    Node newNode = new Node(data);

    newNode.nextNode = tail;
    newNode.prevNode = tail.prevNode;
    tail.prevNode.nextNode = newNode;
    tail.prevNode = newNode;
}
```

```
public char Dequeue(){
    if(!empty()){
        Node getNode = head.nextNode;

        head.nextNode = getNode.nextNode;
        getNode.nextNode.prevNode = head;

        return getNode.data;
    }
    return ' ';
}
```

```java
public void printQueue(){

    for(Node curNode = head; curNode != null; curNode = curNode.nextNode) System.out.print(curNode.data);
    System.out.println();

}

public boolean empty(){
    return head.nextNode == tail;
}
```

```java
class Run{

    public static void bracketCheck(String s){
        Queue queue = new Queue();
        Stack stack = new Stack();

        for(int i = 0; i < s.length(); i++){
            queue.Enqueue(s.charAt(i));
        }

        while(!queue.empty()){
            char getChar = queue.Dequeue();

            if(getChar == '(') stack.push(getChar);
            else if(getChar == ')'){
                if(stack.empty()){
                    System.out.println("\nError!");
                    return;
                }
                stack.pop();
            }

            System.out.print(getChar);
        }

        if(!stack.empty()) System.out.println("\nError!");
        else System.out.println("\nOK");

        // queue.printQueue();
    }
```

```java
public static void main(String[] args) {

    String a1 = "((142+(2+(3-24)))+23)+(1414+(14-11))";
    String a2 = "(142+2(32)4+14((1))4+(1(4-11)";
    String a3 = "(142+2324)+1414)+14";
    String a4 = "((((((()))))()()))(((((((()))())))(((())(((((()))))))))))";

    bracketCheck(a1);
    bracketCheck(a2);
    bracketCheck(a3);
    bracketCheck(a4);


}
```

```
nayunhwan-ui-MacBook-Pro:src nayunhwan$ java Run
((142+(2+(3-24)))+23)+(1414+(14-11))
OK
(142+2(32)4+14((1))4+(1(4-11)
Error!
(142+2324)+1414
Error!
((((((()))))()()))(((((((()))())))(((())(((((()))))))))))
OK
nayunhwan-ui-MacBook-Pro:src nayunhwan$
```