Object Oriented Programming Lab File

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Experiment 3: Arrays

1) Given an integer array nums of size n, find the maximum and minimum elements in the array and return them as a pair.
Example:
Input: [1, 5, 7, 2, 9, 3]
Output: [9, 1]

```
public class question1MinMaxElements {
    public static void main(String[] args) {
        int numbers[] = {1,2,4,4,6,-1};
        int max = Integer.MIN_VALUE, min = Integer.MAX_VALUE;
        for (int i : numbers){
            max = (max < i) ? i : max;
            min = (min > i) ? i : min;
        }
        System.out.printf("[%d, %d]", max, min);
    }
}
```

```
[6, -1]
```

2) Given an array of size n, return the majority element.
The majority element is the element that appears more than
[n / 2] times. You may assume that the majority element always exists in the array.
Example:
Input: nums = [2,2,1,1,1,2,2]
Output: 2

```
import java.util.HashMap;
public class question2MajorityElement {
    public static void main(String[] args) {
        int numbers[] = {1,2,4,6,4,4,4};
        HashMap<Integer, Integer> frequencyMap = new HashMap<>();
        for (int i : numbers) {
            if (frequencyMap.containsKey(i)){
                frequencyMap.put(i, (frequencyMap.get(i)+1));
            }
            else{
                frequencyMap.put(i, 1);
            }
        }
        for (int i : frequencyMap.keySet()) {
            if (frequencyMap.get(i)>(numbers.length/2)){
                System.out.println(i);
                break;
            }
        }
    }
}
```

```
4
```

3) Given an integer array nums, move all 0's to the end of it while maintaining the relative order of the non-zero elements.
Example:
Input: nums = [0,1,0,3,12]
Output: [1,3,12,0,0]

```
public class question3Shift0ToEnd {
    public static void main(String[] args) {
        int numbers[] = {0,2,0,4,0,5,1,0};
        int resNumbers[] = new int[numbers.length];
        int zeroCount = 0, resIndex = 0;
        for (int i : numbers){
            if (i != 0){
                resNumbers[resIndex++] = i;
            }
            else{
                zeroCount++;
            }
        }
        for (int i = 0; i<zeroCount; i++){
            resNumbers[resIndex++] = 0;
        }
        for (int i : resNumbers){
            System.out.print(i+" ");
        }
    }
}
```

```
2 4 5 1 0 0 0 0
```

4) Given a string s, reverse the words of the string.
Example 1:
Input: s="This is decent"
Output: "decent is This"

```
import java.util.Scanner;

public class question4ReverseSentence {
    public static void main(String[] args) {
        String sentence;
        try (Scanner in = new Scanner(System.in)){
            sentence = in.nextLine();
        }
        String splitSentence[] = sentence.split(" ");
        for (int i = splitSentence.length-1; i>=0; i--){
            System.out.print(splitSentence[i]+" ");
        }
    }
}
```

```
This is decent
decent is This
```