Q1. ROTATE AN ARRAY IN THE RIGHT

CODE:

```java
public class RotateAnArray {

    static void reverse(int arr[], int low, int high){
        while(low<high){
            int temp = arr[low];
            arr[low] = arr[high];
            arr[high] = temp;
            low++;
            high--;
        }
    }
    public static void main(String[] args) {
        int rotations = -3;
        int arr[] = {10,20,30,40,50};
        // rotations must be in range
        rotations = rotations % arr.length;
        // rotations negative
        if(rotations<0){
            rotations = arr.length + rotations;
        }
        // 1st part reverse
        reverse(arr, 0, arr.length-rotations-1);
        // 2nd part reverse
        reverse(arr, arr.length-rotations, arr.length-1);
        // full reverse
        reverse(arr, 0, arr.length-1);
        for(int ele : arr){
            System.out.print(ele + " ");
        }
        System.out.println();



    }
}
```

OUTPUT:

```
priyanshu@Priyanshus-MacBook-Pro Assignment 3 % cd "/Users/priyanshu/Documents/Technical Training
t 3/" && javac RotateAnArray.java && java RotateAnArray
40 50 10 20 30
```

Q2. FIND THE MISSING NUMBER

CODE:

```java
class MissingNumberInArray {

    static int missingNum(int array[],int n) {
        // Your Code H ere
        int sumOfGiven = 0;

        for(int ele: array){
            sumOfGiven += ele;
        }

        int sumOfFirstN = (n*(n+1))/2;  // using formula: (n*(n+1))/2;

        int missingNumber = sumOfFirstN - sumOfGiven;
        return missingNumber;

    }
    public static void main(String[] args) {
        int [] arr = {1,2,3,5};
        int n=5;
        int res = missingNum(arr,n);
        System.out.println(res);
    }
}
```

OUTPUT:

```
priyanshu@Priyanshus-MacBook-Pro Assignment 3 % cd "/Users/priyanshu/Documents/Technical Training/
t 3/" && javac MissingNumberInArray.java && java MissingNumberInArray
4
```

Q3. Addition and Subtraction of Two Array and Place the Result in the Third Array

CODE:

```
import java.util.ArrayList;
import java.util.Arrays;


public class AddAndSubOfTwoArray {

    static void addArrays(int [] arr1, int[] arr2){
        int carry = 0;
        int sum;
        ArrayList<Integer> res = new ArrayList<>();
        for(int i =arr1.length-1; i>=0;i--){
            sum = (arr1[i]+arr2[i]);
            if(sum > 9){
                res.add(0,(sum%10)+carry);
                carry = sum/10;
            }else{
                res.add(0,sum+carry);
                carry = 0;
            }
        }

        if(carry!=0){
            res.add(0, carry);
        }

        Integer[] arr = new Integer[res.size()];

        for(int i=0;i<arr.length;i++){
            arr[i] = res.get(i);
        }

        System.out.println(Arrays.toString(arr));
    }

    static void subArrays(int [] arr1, int[] arr2){
        if(arr1.length != arr2.length){
            System.out.println("Size of Both Array should be same");
            return;
        }

        int sub;
        ArrayList<Integer> res = new ArrayList<>();
        for(int i = Math.max(arr1.length, arr2.length)-1; i>=0; i--){
            sub = (arr1[i] - arr2[i]);
```

```
            if(sub<0){
                arr1[i] = arr1[i] + 10;
                arr1[i-1] = arr1[i-1] - 1;
                sub = arr1[i] - arr2[i];
            }
            res.add(0,sub);
        }

        Integer[] arr = new Integer[res.size()];

        for(int i=0;i<arr.length;i++){
            arr[i] = res.get(i);
        }

        System.out.println(Arrays.toString(arr));
    }

    public static void main(String[] args) {
        int [] arr1 = {9,1,4,2};
        int [] arr2 = {1,2,7,4};
        addArrays(arr1,arr2);
        subArrays(arr1, arr2);
    }
}
```

OUTPUT:

```
priyanshu@Priyanshus-MacBook-Pro Assignment 3 % cd "/Users/priyanshu/Documents/Technical Training/
t 3/" && javac AddAndSubOfTwoArray.java && java AddAndSubOfTwoArray
[1, 0, 4, 1, 6]
[7, 8, 6, 8]
priyanshu@Priyanshus-MacBook-Pro Assignment 3 %
```