CS1073
FR03B
Lab#6

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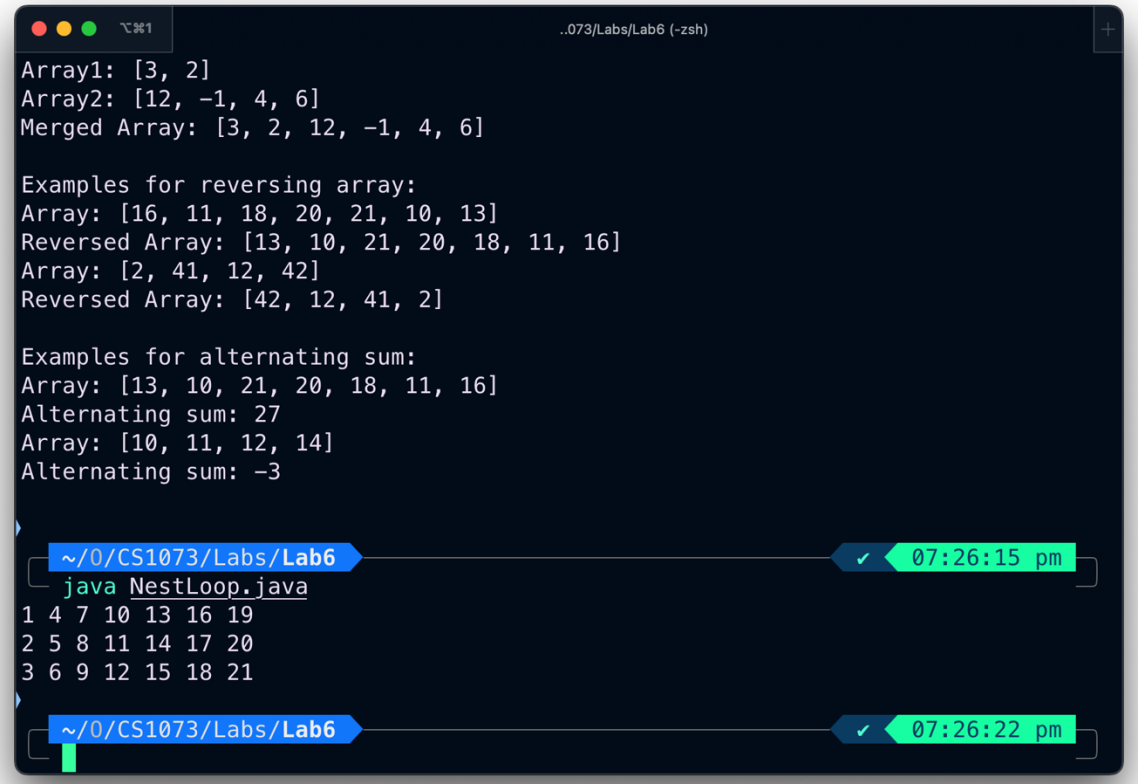
Question 1:

```
/**
@author Daniyal Khan 3765942
*/

public class NestLoop {
	public static void main(String[] args) {
		int[][] numbers = new int[3][7];
		int count = 1;
		int increment = 0;
		//assigning values to the array
		for(int i = 0; i < numbers.length; i++){
			for(int j = 0; j < numbers[i].length; j++){
				numbers[i][j] = count + increment;
				increment += 3;
			}
			increment = 0;
			count++;
		}
		//printing the array
		//(do not make any changes to this code)
		for(int i = 0; i < numbers.length; i++){
			for(int j = 0; j < numbers[i].length; j++){
				System.out.print(numbers[i][j] + " ");
			}
		System.out.println();
		}
	}
}
```

Output:


..073/Labs/Lab6 (-zsh)
Array1: [3, 2]
Array2: [12, -1, 4, 6]
Merged Array: [3, 2, 12, -1, 4, 6]
Examples for reversing array:
Array: [16, 11, 18, 20, 21, 10, 13]
Reversed Array: [13, 10, 21, 20, 18, 11, 16]
Array: [2, 41, 12, 42]
Reversed Array: [42, 12, 41, 2]
Examples for alternating sum:
Array: [13, 10, 21, 20, 18, 11, 16]
Alternating sum: 27
Array: [10, 11, 12, 14]
Alternating sum: -3
~/O/CS1073/Labs/Lab6
07:26:15 pm
java NestLoop.java
1 4 7 10 13 16 19
2 5 8 11 14 17 20
3 6 9 12 15 18 21
~/O/CS1073/Labs/Lab6
07:26:22 pm

Question 2:

```
/**
This class performs operations on integer arrays.
@author Daniyal Khan 3765942
*/
public class IntArrayUtil{

	/**
	This method returns the maximum value in the array
	@param arr array of integer values
	@return the maximum value of the array
	*/
	public static int max(int[] arr){
		int larger = arr[0];;

		for(int i = 0; i < arr.length - 1; i++ ) {
			if (larger < arr[i+1]) {
				larger = arr[i+1];
			}
		}
		return larger;
	}


	/**
	This method combines one integer array after another
	and returns that as a new array.
	(The parameters themselves are not altered.)
	@param arrA array of integer values
	@param arrB array of integer values
	@return a new array containing values from both parameters
	*/
	public static int[] join(int[] arrA, int[] arrB){
		int totalLength = arrA.length + arrB.length;
		int[] arr = new int[totalLength];

		for(int i = 0; i < arrA.length; i++) {
			arr[i] = arrA[i];
		}
		for(int i = arrA.length, j = 0; i < arr.length; i++, j++) {
			arr[i] = arrB[j];
		}
```

```
        return arr;
    }


    /**
    This method reverses the sequence of elements in an integer
    array and returns that in a new array.
    (The parameter itself is not altered.)
    @param arr array of integer values
    @return a new array with values reversed
    */
    public static int[] reverse(int[] arr){
        int[] reverseArr = new int[arr.length];

        for(int i = arr.length - 1, j = 0; i >= 0; i--, j++) {
            reverseArr[j] = arr[i];
        }
        return reverseArr;
    }

    /**
    This method computes and returns the alternating sum
    of all elements in the integer array that is
    passed in via its parameter
    @param arr array of integer values
    @return the alternating sum
    */
    public static int alternatingSum(int[] arr){
        int altSum = 0;

        for(int i = 0; i < arr.length - 1; i=i+2) { //incrementing with 2 everytime
            altSum += arr[i] + (int) Math.pow(-1, i+1) * arr[i+1]; // adding the one
value of array with the other value with negative pattern
        }
        if (arr.length % 2 == 1) { // if the length is odd
            altSum += arr[arr.length - 1]; // adding the last value that was missed
because of incrementing by 2 in the loop
        }


        return altSum;
    }

}
```

Driver:

```
import java.util.Arrays;
/**
This class is a test driver for IntArrayUtil class
@author Daniyal Khan 3765942
*/

public class Driver{
	public static void main(String[] args){
		System.out.println("Examples for max value:");
		int[] arr1 = {13, 10, 21, 20, 18, 11, 16};
		System.out.println("Array: " + Arrays.toString(arr1));
		System.out.println("Max Value: " + IntArrayUtil.max(arr1));
		int[] arr12 = {1001, 200, 1003, 101, 1200, 1400};
		System.out.println("Array: " + Arrays.toString(arr12));
		System.out.println("Max Value: " + IntArrayUtil.max(arr12));
		System.out.println();

		System.out.println("Examples for merged array:");
		int[] arr21 = {3, -4, 6, 9};
		int[] arr22 = {16, 11, 18, 20 ,21, 10, 13};
		System.out.println("Array1: " + Arrays.toString(arr21));
		System.out.println("Array2: " + Arrays.toString(arr22));
		System.out.println("Merged Array: " + Arrays.toString(IntArrayUtil.join(arr21,
arr22)));
		int[] arr28 = {3, 2};
		int[] arr29 = {12, -1, 4, 6};
		System.out.println("Array1: " + Arrays.toString(arr28));
		System.out.println("Array2: " + Arrays.toString(arr29));
		System.out.println("Merged Array: " + Arrays.toString(IntArrayUtil.join(arr28,
arr29)));
		System.out.println();

		System.out.println("Examples for reversing array:");
		int[] arr41 = {16, 11, 18, 20 ,21, 10, 13};
		System.out.println("Array: " + Arrays.toString(arr41));
		System.out.println("Reversed Array: " +
Arrays.toString(IntArrayUtil.reverse(arr41)));
		int[] arr42 = {2, 41, 12, 42};
		System.out.println("Array: " + Arrays.toString(arr42));
```

```
            System.out.println("Reversed Array: " +
Arrays.toString(IntArrayUtil.reverse(arr42)));
            System.out.println();


            System.out.println("Examples for alternating sum:");
            int[] arr51 = {13, 10, 21, 20, 18, 11, 16};
            System.out.println("Array: " + Arrays.toString(arr51));
            System.out.println("Alternating sum: " + IntArrayUtil.alternatingSum(arr51));
            int[] arr52 = {10, 11, 12, 14};
            System.out.println("Array: " + Arrays.toString(arr52));
            System.out.println("Alternating sum: " + IntArrayUtil.alternatingSum(arr52));
            System.out.println();
        }
}
```

Output: