

CPSC 131: Introduction to Computer Programming II

Programming Assignment 1: Arrays

Due by September 16, 2015

1 Description of the Program

In this assignment, you will write four methods that use arrays, and test the methods by invoking them in the `main()` method. You can name your file name as `ArrayApps.java`. The detailed descriptions about these four methods are as follows:

- Method 1: `printArray`.

```
/**
 * A method to print out the elements in an array, separated by '|'
 *
 * @param values, an array of integers
 * @param size, the actual number in array 'values'
 */
public static void printArray(int[] values, int size)
{
    // your work
}
```

- Method 2: `tripleArray`.

```
/**
 * A method to triple all the elements in an array
 *
 * @param values, an array of integers
 * @param size, the actual number in array 'values'
 */
public static void tripleArray(int[] values, int size)
{
    // your work
}
```

- Method 3: `reverseElements`

```

/**
    A method to reverse all the elements in an array.

    @param values, an array of integers
    @param size, the actual number in array 'values'

    */
public static void reverseElements(int[] values, int size)
{
    // your work here
}

```

- Method 4: swapMiddleElements.

```

/**
    A method to swap middle elements in an array.

    For an array of odd length, you don't need to swap.
    For an array of even length, there are TWO middle values, so swap.

    @param values, an array of integers
    @param size, the actual number in array 'values'

    */
public static void swapMiddleElements(int [] values, int size)
{
    // your work here
}

```

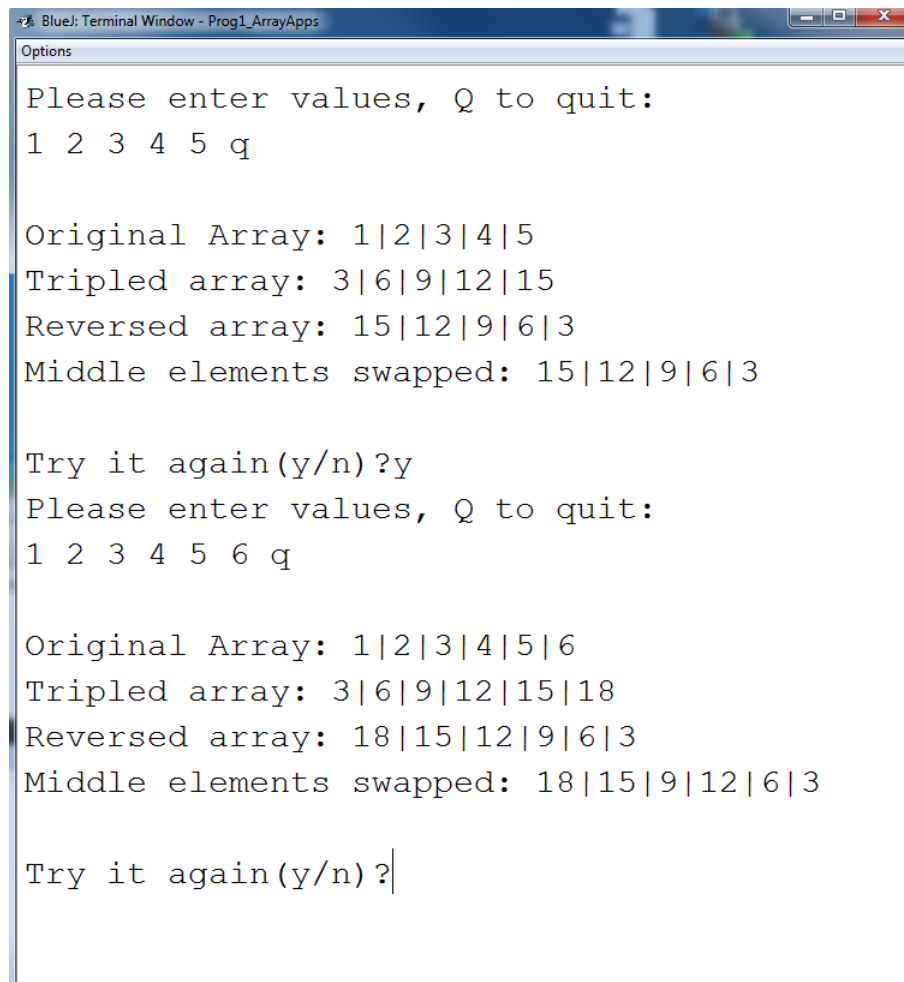
In your `main()` method, you test these four methods by declaring an array, filling up the array values from the keyboard, and then invoking these methods, and printing out corresponding values you expect to see (See a sample screenshot of the output). Particularly, you should do the following

- Print out the original array using the method of `printArray`;
- Triple the values in the original array using the method `tripleArray`;
- Print out the tripled array using the method of `printArray`;
- Reverse the values in the tripped array using the method `reverseElements`;
- Print out the reversed array using the method of `printArray`;

- Swap the middle elements in a reversed array using the method `swapMiddleElements`;
- Print out the final array using the method of `printArray`;

Additional requirements of your program:

1. Your program should allow users to try as many times as we they want.
2. You should test your program with the inputs of (a) array with odd lenght, and (b) array with even length. Save a screenshot of your outputs like I did in Figure 1.
3. Your program should have good style (indentation, whitespace, comments, vertical alignment, ...).



```

Blue: Terminal Window - Prog1_ArrayApps
Options
Please enter values, Q to quit:
1 2 3 4 5 q

Original Array: 1|2|3|4|5
Tripled array: 3|6|9|12|15
Reversed array: 15|12|9|6|3
Middle elements swapped: 15|12|9|6|3

Try it again(y/n)?y
Please enter values, Q to quit:
1 2 3 4 5 6 q

Original Array: 1|2|3|4|5|6
Tripled array: 3|6|9|12|15|18
Reversed array: 18|15|12|9|6|3
Middle elements swapped: 18|15|9|12|6|3

Try it again(y/n)?|

```

Figure 1: A sample screenshot of your program output.

2 Submission

1. **Electronic submission** (Due by Wednesday, September 16, 2015 11:59PM)

- (a) Make sure that they run correctly in `BlueJ`;
- (b) Zip up the whole folder `Program1_FirstNameLastName`
(e.g., `Program1_DongshengChe`);
- (c) Upload the zip file onto D2L Dropbox.

2. **Hardcopy submission** (Due by Thursday, September 17, 2015 in class)

- (a) Your hardcopy should include:
 - Grading sheet (top)
 - Source codes (middle): print out through `BLUEJ` (with line numbers)
 - Output screenshots (bottom)