

**CS 211 Introduction to Programming**  
**Fall 2019**

**Programming Assignment 7**

(Assigned: October 24, 2019; Due: October 31, 2019)

*The goal of this assignment is to write a program that reads and modifies an integer array. Arrays are introduced in Sections 7.1 and 7.3 of the textbook.*

Write a C++ program that prompts the user to enter:

- the **size** (between 1 and 10) of an integer array,
- **all values** of that array,
- a **new integer value** to be inserted into this array, and
- the **position** (i.e. index) where this new value should be inserted.

Insertion of the new value at an index involves shifting all values in the original array at that or a higher index to their next higher index.

Your program should then display the contents of the original array and the new array obtained after inserting the new value.

**Notes:**

- The name of your source file **must** be: **pa7.cpp**
- You should check that the size  $s$  of the array is between 1 and 10. Also, check that the position  $p$  of the new value is between 0 and  $s$ . If either  $s$  or  $p$  is incorrect, simply read again, until a correct value is entered.
- A typical sample run of your program should look like (output **blue**, input **red**) :

```
Input array size (1 - 10): 4
Element 0: 73
Element 1: -6
Element 2: 4
Element 3: 42
Input the new value to be inserted: 31
Input the position of the new value (0 - 4): 1
Old array: 73 -6 4 42
New array: 73 31 -6 4 42
```

- Another run could look like (output **blue**, input **red**) :

```

Input array size (1 - 10): 7
Element 0: 14
Element 1: 0
Element 2: -3
Element 3: 5
Element 4: 5
Element 5: 58
Element 6: -16
Input the new value to be inserted: 9
Input the position of the new value (0 - 7): 5
Old array: 14 0 -3 5 5 58 -16
New array: 14 0 -3 5 5 9 58 -16

```

### **Grading Rubric:**

Your program submission will be graded according to the following rubric:

The name of the submitted program source file is <b>pa7.cpp</b> (not <b>pa7.c</b> or <b>Pa7.cpp</b> or <b>PA7.cpp</b> etc.)	1
The first two lines (student's name, and student ID) of the required comments at the top of the program are included	1
The variable identifier names used are descriptive (single letter names for loop counters are OK)	1
A good indentation scheme is used throughout the program	2
The program compiles and links with no errors or warnings	5
The program works correctly for the above two sample inputs	10
<b>TOTAL</b>	<b>20</b>