**Submission of Your Work**

You need to prepare and submit ONE SINGLE MS Word document to Canvas (in your lab section) as LastName\_FirstName\_Labxy.doc. It must contain:

* Your NAME as only content on page 1
* For each question:
  + Specify the question number.
  + Source code. Copy/Paste your final source code. You must include standard “comment header” even if code is provided. *Do Not* paste a snippet of your source code, it must be copy/pasted. This is second item in your report.
  + Output results. Paste in a snippet of output showing results proving your program works perfectly

### **Question 1**

Use the following code snippet as the basis for a program to test all possible combinations of pointer manipulation. Each of the 10 combinations must be tested separately since the pointer may move and array values may be changed:

int X[] = { 3, 7, 11, 17, 23 };

int \* xPtr = & X[2];

cout << X[1] << ' ' << X[2] << ' ' << X[3] << ' ' << xPtr << " : " << \*xPtr << endl;

cout << "Array content prior to pointer manipulation\n";  
// replace AAA in the following statement with selection from list of 10 pointer actions below, one at a time

cout << AAA << endl;

cout << endl << "Array content after ptr manipulation" << endl;

cout << X[1] << ' ' << X[2] << ' ' << X[3] << ' ' << xPtr << " : " << \*xPtr << endl;

Generate a concise summary report explaining the result of each of these pointer actions when inserted in place of AAA above. The report must identify if any array values were changed and, if the pointer moved, where and when it moved.

\*xPtr++

(\*xPtr)++

\*(xPtr)++

\*(xPtr++)

\*(++xPtr)

\*++xPtr

(\*++)xPtr

++\*xPtr

++ (\*xPtr)

(++\*)xPtr

### **Question 2**

Create an array of 100 integers, randomly generated to be in the range of -50 to +72.

1. Using standard array notation, print all values in the array on one line, separated by a space
2. Using array offset notation, print all values in the arrayfrom last index to first, on one line, each separated by a space
3. Using pointer notation, print all negative values on one line, separated by a space
4. Using pointer offset notation, print all positive values on one line, separated by a space

Reminder:

array notation myArray[ x ];

array offset notation \*(myArray + x);

pointer notation \* arrayPtr;

pointer offset notation \*(arrayPtr + x);

### **Question 3**

Starting with the shortest possible C++ program, have it display to the console the name of the executable that is running and how many arguments it has.