

CSE 4252: Lab 3 (15 Points)

Due Date: October 3rd (11:59 PM)

Overview

These exercises will allow you to have some practice with C++ basic concepts including arrays, variables and pointers.

FOR ALL EXERCISES: Make proper comments to describe your function or code.

Exercise 1 Description

For this exercise you will need to write a program, **arrayPointer.cpp**, using pointers. Create an array1 of short integers with a size given by a variable `NUMBER_ELEMENTS`, input by the user. Using pointers, set all the elements in the array1 to a value corresponding to the position in the array (e.g. 0, 1, 2, ...`NUMBER_ELEMENTS`-1).

ZERO POINTS will be given if you do not use pointers.

Create an array2 to copy the values in the odd position (e.g. 1, 3, 5, 7 ...) of array1 into array2 (half the size). **Use pointers for both reading and writing.**

Write the program, compile it and test your code with at least **two test cases** to verify that it is running for **different values of `NUMBER_ELEMENTS`**. Before using a pointer, one must check that it has a value and it isn't null pointer. (C++11 adds keyword `nullptr`. Before that, value 0 or constant `NULL` was used). Additionally, one must release all the memory allocated for pointers, otherwise it “leaks” and reduces total available memory.

You should submit the `cpp` file and evidence of the compilation results, tests as well as the execution. Record the *script* in **Lab3_1.txt**. Your script should prove that you verified your results with 2 test cases.

Exercise 2 Description

1. Show one example code **refSegFault.cpp** when reference variables can lead to segmentation fault (basically your code should lead to seg fault)
2. Is there any problem if you return a reference of a local variable? Write a function **getRefVar()** **in the same file** to do this. Give your thoughts as part of comment before the function definition.

Record the *script* in **Lab3_2.txt**.

Submission Instructions

Make sure your programs compile and run correctly before submitting. To submit, create a single zip file named **Lab03.zip** that contains the files from the different exercises. Maximum possible points are mentioned below within [].

arrayPointer.cpp [6 points]

Lab3_1.txt [3 points]

refSegFault.cpp [5 points]

Lab3_2.txt [1 points]