**lab 05: Pointers**

int x=7, arr[5]={0, 10, 20, 30, 40};

For questions 1-14, the answers are each exactly **ONE** line of C++ code. Also, you may assume an previous line of code you wrote are active.

1. Declare a pointer p1 that is initially pointing at x.
2. Change the value of x to 33 without using x.
3. Declare a pointer named p2 pointing at the first item in arr.
4. Change the first item in arr to 5 without using arr.
5. Change the 3rd value (the 20) in arr to 15 using [ ] and without using arr.
6. Change the 4th value (the 30) in arr to 35 without using [ ] and without using arr.
7. Change p2 to point to the third item in arr without using arr.
8. Change the item pointed at by p2 to 77 without using arr.
9. Write a Boolean expression that returns true iff p1 and p2 are pointing to an equivalent value.

1. Write a Boolean expression that returns true iff p1 and p2 are pointing to the exact same location.

1. Make p1 point to a dynamically allocated integer (make sure to create that integer!)
2. Free the memory at p1.
3. Make p1 point to a dynamically allocated array of x integers (again, create that array!)
4. Free the memory at p1.

15) (4 points) Describe what is wrong with the following code segment, assuming it is all part of main(). Indicate if something is a compile time or runtime error or just bad programming. Also indicate how you would fix it. Line numbers have been added in ( ) for ease of reference. There are several things with the code and for full credit you must find all of them.

(1) int \*p;  
(2) \*p=5;  
(3) p=new int();  
(4) \*p=7;  
(5) p=new int();  
(6) \*p=9;  
(7) delete p;  
(8) \*p=15;

Problems:

16) (2 points) Describe the difference between statically (stack) and dynamically(heap) allocated memory. Why does C++ support **both** types?

***Due: September 6, 2017 2359 as a .pdf!***