

CSCI 136 C++ programming

Lab exercise 1

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(a) Write a program that declares three variables with names of your choice of the following types:

- integer
- floating number
- Boolean

Try 2 approaches:

- don't initialize or assign your variables
- initialize your variable to some appropriate values depending on the type of the variable

In both cases, print the values of your three variables to the screen. Note the special case of the Boolean variable. No matter what integer value you assign, you are only going to observe either a 0 or a 1 (why?).

(b) Using the C++ operator `sizeof`, discover how many bytes each of your variables occupy in memory. For example, if your variable is called x , then `sizeof(x)` will evaluate to the number of bytes x occupies. Output this information on the screen for each variable.

(c) Discover where your variables are in memory. Note that when you output the value of a pointer, it will be displayed in Hex notation (base 16).

(d) Declare two pointer variables of appropriate types to store the address of your integer and your Boolean, and output the values of these pointers and make sure they are consistent with part (c).

(e) Declare another pointer variable to be the address of your integer, then try to change the value of your integer through both pointers using the de-referencing operator, e.g.

```
int main() {
    int x=2;
    cout<<x<<"\n";
    int * address_1=&x;
    int * address_2=&x;
    *address_1=3;
    cout<<x<<"\n";
    *address_2=4;
    cout<<x<<"\n";
}
```