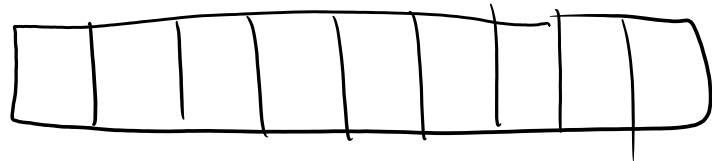


2018-09-06 Variables & Commands

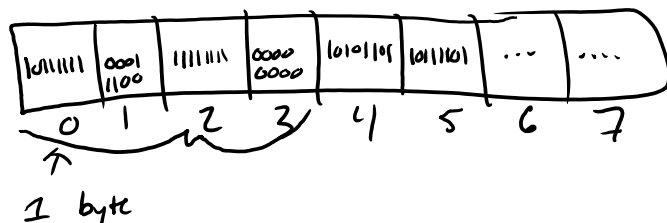
Thursday, September 6, 2018 8:38 AM

Feedback

- Suggestions for note taking in CS lectures and labs
 - Remember, all code is posted on github.
 - For labs, you don't have to necessarily copy the comments that I write
 - However, instead write little notes to yourself
 - In class, try to capture what you're thinking especially if your thought is associated with a particular command.
 - If you're on a computer, feel free to explore a command or idea further, just be sure to not completely check out
 - For a complete "lab" setup, you can always visit vlab.humboldt.edu
- What is return 0?
 - The C++ standard says that all functions must return something.
 - Often, compilers (including VS2017) don't always follow the rules.
- Questions related to memory
 - Difficulty with cubbyhole metaphor



- Why must variables take up a fixed amount of space?
 - All programs must report to the OS how much memory they need to load
 - If numbers do not have a fixed space (e.g. INTs take up 4 bytes), then the computer does not know where to start interpreting data.



int num = ?

- Questions related to variables
 - When is it a good idea to use floats (C++ variable type or generic data type?)
 - See <http://www.ntu.edu.sg/home/ehchua/programming/java/datarepresentation.html#zz-4>.
 - Shorts vs. Ints vs. Longs :
 - <https://stackoverflow.com/questions/18353168/why-long-int-has-same-size-as-int-does-this-modifier-works-at-all>
 - <https://softwareengineering.stackexchange.com/questions/317670/does-a-long-ban-make-sense>
 - ASCII Table
- Difficulty with knowing when to do what
- Difficulty in working with various editors (VSC, VS2017)
- How do string sizes work?
 - <https://www.prismnet.com/~mcmahon/Notes/strings.html>

Agenda

- Arrays

- Defined: (In C++) A collection of like data types. Or a sequence of data.

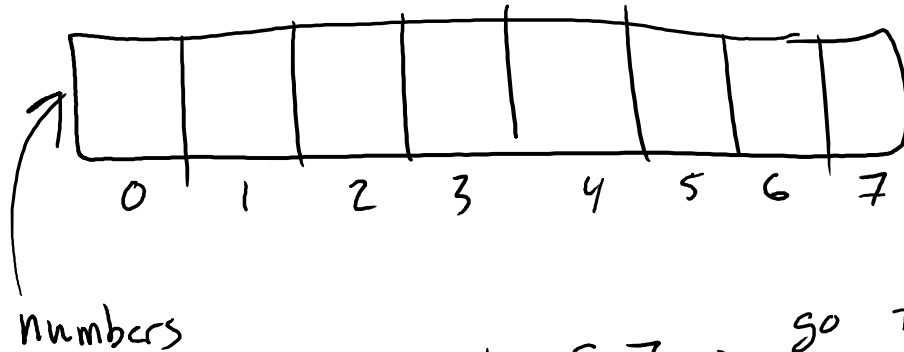
$numbers = \{1, 2, -5, 7, 12\}$

In math, to reference the first number in the sequence, we would write:

$numbers_1 \rightarrow$ more generally $numbers_i$

- In programming

- subscripts are impossible
- Everything always starts at 0
- Thus, we would write $numbers[0]$ to reference the first item.
- Or $numbers[i]$ to reference a generic item.



$numbers[0] \rightarrow$ go to numbers,
add 0 boxes,
set that value

$numbers[5] \rightarrow$ go to numbers,
add 5 boxes,
set that value

- File operations

- See lecture code

- Pointers

- Allow variables to "point to" other variables
- This allows a programmer to indirectly modify variables