



Basic Software

By Friend

Pre-workshop

- <https://www.students.cs.ubc.ca/~cs-221/2019W2/resources/shortcourse/>
Watch Sunday video and follow along (it's 2 hrs so allocate your time well)

If there's a word you don't understand in the slide, let me know and I'll add it here



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Note

- While it's important to be able to have an IDE on your laptop and compile and run your program, I won't teach it since there's a lot of OS/machine specifics that's different for you all. We'll use online GDB for today.

Agenda

- We'll create a sample system to review some cpp topics you saw in the video
- We'll do some LeetCode questions to practice problem solving



Part 1: C++ practice

Sample problem: team membership

- UBC Rapid has members, each with their own info (name, contact info, position, subteam, year joined, etc.)
- It would be good to be able to quickly tell:
 - How many members are on the team?
 - Who are the execs? Who are the captains?
 - What are the members' contact info?
 - Who are on each subteam?

Sample problem: team membership

- Whenever you see a problem, break it down into steps
- Sounds like we need team class, member class, and a few functions
- There are many ways to do this; this is just one of them

Get started

- Go here
https://www.onlinegdb.com/online_c++_compiler to start writing
- There's a cpp file in the repo called "starter.cpp" that when run, should print stuff that's specified
- Use that file to guide you on what functions/classes to write
- Use online references to find syntax and data structures

Hint

Sample steps:

1. Make member class with each field being each personal info associated with member, and a constructor that takes those fields
2. Make team class with a list of members to store all members, and functions to read that list and return whatever is asked for

<https://appdividend.com/2019/06/12/cpp-list-tutorial-with-example-list-in-c-standard-template-library-stl/> <- Helpful



Part 2: Problem solving

Fizz Buzz

- Leetcode is a popular platform for coding interview questions
- Fizz Buzz is a fairly well known and simple coding question
- Try this out
<https://leetcode.com/problems/fizz-buzz/>
- Most easy problems have solutions available

Two Sum

- <https://leetcode.com/problems/two-sum/>



Part 3: Other info



Quick concepts related to Marlin

- Think of Marlin code like Arduino code
- Board runs `setup()` when it starts, then runs `loop()` till it's shut down
- Instead of defining everything in a single cpp file, you define stuff in header file (.h) and then `#include` that header file into your cpp code
 - <https://docs.microsoft.com/en-us/cpp/cpp/header-files-cpp?view=vs-2019>

Some further readings

- Get an IDE, and compile and run your code
 - If you use VS Code:
<https://code.visualstudio.com/docs/languages/cpp>
- Look at these references
<https://www.students.cs.ubc.ca/~cs-221/2019W2/info/syllabus/#c-reference>
- Second part to the pre-workshop video tutorial covers more advanced object-oriented programming concepts
- CPSC110 (intro to programming) is free on edx
<https://edge.edx.org/courses/course-v1:UBC+CPSC110+2020S/course/>
- <https://github.com/MarlinFirmware/Marlin>
 - Try cloning Marlin and skimming through it
 - <https://github.com/MarlinFirmware/Marlin/blob/2.0.x/Marlin/src/MarlinCore.cpp>
This cpp file is a good entry point to start reading
 - Ctrl-F “setup()” and “loop()”