CSCI 160 Wrapup: 2021 (F21N01-2)

- I hope you have good fluency in basic C++ plus an understanding of core goals and principles in design and development
- learning your next programming language will be easier than learning the first!
- I hope the course was also interesting and useful, please send feedback about what worked well for you and what could use improvement (David.Wessels@viu.ca)
- hopefully I see many of you next term in CSCI 161, and again next fall in Software Engineering (CSCI 265)!

Topics covered

We covered a pretty wide range of topics:

Some about programming in general:

- the edit/compile/test cycle
- commenting, style, and standards
- top-down design
- incremental development
- basic debugging strategies
- basic testing strategies
- abstract data types and design

Many about C++ programming specifically:

- primitive data types (int, char, float, bool, etc)
- constants and variables
- computation in C++
- use of functions and libraries
- defining functions, parameters, returns
- pass by value, pass by reference
- variable and constant scope (global, local, loop)
- if/else/switch
- loops (while, for, do while) and nested loops
- arrays, special handling of char arrays and '\0'
- searching and sorting
- file i/o
- command line arguments
- structs (and -> notation for pointers to structs)
- pointers and their uses
- dynamic allocation and deallocation of arrays, structs
- dynamic data types, linked lists
- short intro to classes and object oriented programming

The final exam

- 3 hour exam, held in the gym on Dec 16th 1-4pm

  http://csci.viu.ca/~wesselsd/courses/csci160/gymExamRules.PDF
- closed book, closed notes, no electronics
- a C++ reference sheet will be provided with the exam

  http://csci.viu.ca/~wesselsd/courses/csci160/exams/formulaSheet.C
- typically between 8 and 10 equally weighted questions
- mostly applied questions, but may be some theory/discussion
- questions may cover lecture material, lab material, quiz material, and project material
  - will not do exam questions on file i/o, command line args, stringstream, linux, or classes, and only limited coverage of linked lists

Common question styles

- show the precise output from the following C++ code...
- given the compiler error messages, identify the syntax errors in the following C++ code...
- write a complete and correct C++ program to do the following...
- write a C++ function to do the following...
- modify the following program or function to do the following...
- given the prototypes for a set of functions, write a function that uses them to do ...
- explain the benefits and drawbacks of the following language feature...
- discuss the appropriate use of the following language feature...

Preparing for the exam

- writing/debugging C++ code using different features is best overall practice
- review code examples, your programs, and your quiz answers, thinking about what you'd do differently now, how you could improve it
- review past exam questions
  - this year will be mostly cin/cout rather than printf/scanf
  - http://csci.viu.ca/~wesselsd/courses/csci160/exams.html
- Dave's office hours on zoom before the exam:
  - Mon(13th)/Wed(15th) 1pm-3pm
  - (or email David.Wessels@viu.ca)
- Help centre hours before the exam:
  - Mon(13th)/Wed(15th) 5pm-7pm

During the exam

- go through all the exam questions briefly, look for the ones that seem easiest/most obvious for you
- answer questions from easiest to hardest, don't spend more than 15 minutes on any question on first pass
  - after the first pass, decide where to spend your remaining time
  - sometimes after answering the other questions you think of an approach for a question that looked difficult the first time around
- part marks are better than no marks:
  - if you only know part of the answer write that down
  - if you can't remember the syntax write down your closest approximation