

SD121 Digital Computation

Preamble

(c) David A. Clausi

Expectations

- Attend lectures, do labs, read course readings, participate, and (most importantly) learn as much as you can
- Outcome: ability to convert algorithms into a language the computer can understand; improved problem solving skills
- Dedicate course to C++, but many concepts cover any language that uses object oriented programming
- *Overall Goal: prepare you for entry-level C++ co-op position*

(c) David A. Clausi

My Background - Synopsis

- Completed doctorate in Systems Design (1996)
 - Topic? In a nutshell ... Automated interpretation of satellite-based remote sensing images
- After, worked as a software engineer at Mitra Imaging (medical imaging systems)
- Hired as a faculty member at U. of Calgary (Geomatics Engineering)
- Hired as faculty member in SysDes in 1999
- Fourth time teaching SD121 – lots of experience
 - I am always enthusiastic about teaching this course!

(c) David A. Clausi

SD121 as a Stepping Stone

- SD121 is a core course required for many future courses eg.
- Programming course: Data Structures, Numerical Methods, Software Design
- Some courses have programmed assignments: Controls, Pattern Recognition, Machine Intelligence, any CS or SE elective course, etc.

(c) David A. Clausi

Diversity

- Impossible to deliver course that suits the individual needs of 90 students
- Variety of experiences for students starting SD121 eg.
 - Some have extensive programming experiences (eg. jobs, competitions)
 - Others have not even compiled a piece of code!!

(c) David A. Clausi

My Approach ...

- Must “tune” course to those who have never programmed ie. start with basics
 - otherwise, these students may never catch up
- Inexperienced students may find the pace quick; experienced students may find things a bit slower

(c) David A. Clausi

Layout

- First half of the course contains some topics that students may have seen previously
- 2nd half of course deals with object oriented concepts (although we do use 'objects' in the first half of the course!); most students find this topic more challenging
- Catch? Workload (for all courses) tends to increase after the midterm exams
- Overhead notes for first few sections, will use blackboard afterwards

(c) David A. Clausi

Strategies for All

- Keep up with the course!! (sometimes easier said than done!)
- Read assigned readings prior to class
- Do attempt to understand core concepts; don't attempt to memorize the textbook
- Complete the lab problems on your own
- Learn to ask your instructor and TAs meaningful questions (you need to understand what you don't know!)

(c) David A. Clausi

Strategy for First Time Programmers

- Learning how to program can be frustrating
- Even more frustrating to watch colleagues complete assignments easily while you struggle
- Be patient! Your colleagues have already gone through the initial learning process. Your efforts will pay off!!

(c) David A. Clausi

Asking Questions in Class – Do's

- Do ask questions for clarification purposes - sometimes concepts require a second explanation.
- Do correct typos found on the board.
- Do ask questions that are part of the natural flow of the discussion.
- Do catch me at the start or end of class to clarify concepts (I normally arrive early and stay late to answer any questions).
- Do speak up when asking a question – the classroom is large.

(c) David A. Clausi

Asking Questions in Class – Don't's

- Avoid asking a question that was just asked.
- Some questions are geared towards a future lecture – I'll normally let the future lecture answer the question.
- If material has been placed on the board, give the instructor an opportunity to talk about it prior to asking a question.
- Asking detailed questions about "what happens if I do this?" is awkward during lectures. Many "what if" questions are quickly answered by implementing them yourself.
- Most importantly ... Restrain from speaking to your neighbour. Be courteous to your classmates.

(c) David A. Clausi

Tutorials / Labs

- Tutorials planned on a week-by-week basis
 - Primarily used as a setup for the lab
- Labs are three-hours in length
 - May have to use extra time to complete lab
 - Labs assigned week before
 - Should arrive at the lab prepared

(c) David A. Clausi