Introduction for CSCI 1320

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Personal Introduction

- Education
  - 1996 BS in Computer Science and BS in Physics from Trinity
  - 1998 MS in Astrophysics and Planetary Science
  - 2000 MS in Computer Science
  - 2001 Ph.D. in Astrophysics and Planetary Science
- Extracurricular activities: basketball and volleyball

Research Interests

- Dissertation was on "Collisional Dynamics of Strongly Perturbed Planetary Rings"
- I have research interests in Programming Languages Theory, Parallel Computing, Quantum Computing, and Large Scale Simulation.

Syllabus Overview

▌ Course Webpage –
http://www.cs.trinity.edu/~mlewis/CSCI1320-F01

▌ Text – "An Introduction to Object-Oriented Design in C++" by Perry and Levin

▌ You might also want to have other reference materials. I have listed a few on the syllabus though anything you might have access to should work as long as it is not too old.

Course Overview

▌ This class is intended to be an introduction to Computer Science. This will focus on algorithm development and implementing those algorithms in the C++ programming language.

▌ Computer Science is much more than just programming though and as such part of the objective of this course is to give you a larger field of the field.

Assignments

▌ There will be 8 programming assignments during the course of the semester that will test your understanding of and ability to use the concepts that have been covered in the course.

▌ You will want to start these well in advance of when they are due as the process of finding errors (debugging) can potentially take long periods of time.

Academic Integrity

- Unfortunately this is a very important issue in CS teaching. As with normal composition, copying work that you did not create is plagiarism. Unlike normal writing, at this level you should not even be quoting other people's work. Please only submit your own code, it is the only way you will really get anything out of this class.

Coding Practices

- This is something that I will mention more later in the semester, but you should be aware that your code needs to be "clean" when it is submitted or when you ask me questions about it. As you will come to understand, reading code that isn't properly formatted and is poorly commented can be very difficult at best.

Grading

- The course grade will come from 4 sources.

Assignments (8)	50%
Quizzes (6 drop 1)	10%
Tests (2)	30%
Class Participation	10%

General Comments

- I want you to THINK! This class should not be about memorizing obscure facts.
  - Part of getting you to do this is having you participate in class discussions.
- Different students will inevitably have very different abilities and experience levels when it comes to computers and programming. I will try to accommodate this as much as possible.

Hardware and Software

- Hardware is the name given to the physical object that is a computer.
- Software is what we call the instructions that are given to the computer to make it perform tasks.
- This distinction is concrete for a given machine, but exactly where the line is drawn can change with machines.

What is an Algorithm?

- An algorithm is "a finite, well defined sequence of steps for solving a problem." - Perry and Levin.
- Recipes in cooking are a type of algorithm though they are not always sufficiently well defined and they lack the "power" of the methods we will discuss in this class.
- We often develop algorithms in an outline type format with different levels of detail.
  - Think about how you would describe to someone how to blow up a balloon for the next class.

Computer Storage and Representation

▌ Everything that is stored on a computer in binary format. This can be imagined as a series of boxes, each of which has either a 0 or a 1 in it.

▌ Each on of those boxes, or each digit in storage is called a bit. Meaning is given to these by grouping them in specific ways and interpreting them as binary numbers.

Binary Numbers

▌ Binary or base 2 numbers are just like the decimal numbers we are used to only they only have 2 types of digits to choose from, 0 and 1.

▌ Remember when you were learning number systems they would talk about how the right most digit might represent single boxes, the next was lines of 10, the next squares of 100, etc. Same thing for 2s only now you are using powers of 2.

  ▌ 1, 2, 4, 8, 16, 32, 64, 128, …

Minute Essay

▌ Do you have any questions about the syllabus? Do you have any questions about the class?

▌ What are you hoping to get out of this class? What will you have to learn to consider it a success?

▌ This is also a format where you can feel free to give me any feedback that you want to. It can't be anonymous though because I need to know who is handing in the minute essays.

▌ Read Ch. 1 for next Wednesday.