CS 3110-01: System Architecture

Fall 2009

Course meeting times: Monday/Wednesday/Friday 10:00 - 10:50 am
Credit hours: 3.0

Pre-requisites: CS 1301

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Introduction

This course is about understanding the role of the computer hardware as it relates to the software you develop. In particular:

- binary and hexadecimal numbers show how a computer represents all types of information, from numbers to strings to objects
- the central processing unit (CPU) illustrates mechanically how a program is executed
- the organization and management of the computer's internal memory illustrates how variables and objects are stored and accessed within your programs
- Course Objectives

CO-01.	Explain the function of, and the relationship among, the processor, the operating system, and the network.
CO-02.	Explain the internal representation of numeric and non-numeric data.
CO-03.	Use combinational logic to design simple circuits.
CO-04.	Explain the organization of the Von Neumann machine and its functional units and describe how an instruction is executed.
CO-05.	Demonstrate how high-level language constructs are implemented at the machine language level.
CO-06.	Identify the main types of memory technology.

CO-07.	Explain how interrupts and buses are used to implement input/output control and data transfer.
CO-08.	Describe virtual machine architectures.
CO-09.	Explain multiple OS architectures such as monolithic and micro-kernels.
CO-10.	Explain the algorithms used in memory and storage management.

Required Textbook

There is no required textbook for this course. Save your money for food and shelter!

Programming Language

This course will use the C programming language (and, possibly, its big brother C++) for many assignments. C holds a special place in Computer Science as it allows a developer to manipulate system resources -- in particular, main memory -- directly.

C is also very closely related to languages you already know. Both Java and C# are direct descendants of C, so much of it will look familiar:

- C functions have a format similar to Java/C# methods
- C has for- and while- loops just like Java/C#
- C has if-statements just like Java/C#
- C declares variables just like Java/C#

The main thing to remember about C that differs from Java/C# is that it does not have objects and classes, so it is much simpler to think about.

Attendance Policy

I will take roll but will not deduct points for absences. However, this course is difficult and you will likely not pass if you miss many class periods.

Further, if you miss many classes, do not expect leniency when I calculate your final grade.

Academic Honesty Policy

Preamble

The UWG Department of Computer Science Faculty pride ourselves on our student focus and teaching excellence. We place a very high value on the quality of the education we offer and

therefore expect professionalism and academic integrity from our students. While academic dishonesty takes many guises, we believe it is always harmful, even if its harmful effects are not tangible immediately:

- it harms the student who engages in dishonest activity. By attempting to shortcut the learning process, the student has circumvented the struggle to learn that is essential to real education. Community toleration of fraudulent activity reinforces this negative behavior and erodes the student's perception of the value of education

- it harms the dishonest student's classmates by denying the value of their efforts to learn and understand

- it harms the University community by lowering the perception of quality and value of a UWG education

- it harms the faculty involved, who must invest intellectual and emotional energy to detect and remedy academic integrity violations

Protecting the quality of our instruction and honoring the honest efforts of the vast majority of our students requires a robust response to violations of academic integrity. We believe that it is incumbent upon us as responsible educators to offer clear guidelines of students' academic responsibilities and to treat academic integrity violations seriously, always in the hope that a firm corrective response will prompt honest reflection and change in the student.

Overview

This policy is a set of guidelines as to what constitutes academic dishonesty in CS courses. Students enrolled in CS courses are required to have read and understood this document as a condition of their enrollment. If a student is caught engaging in any conduct that falls under this document's definition of academic misconduct the course instructor will, **at their option**, do one of the following:

- award a zero for the assignment, project, or test involved in the misconduct

- immediately fail the student for the course

In all cases, regardless of the disciplinary action, a letter detailing the incident will be sent to the Offices of the Vice President for Academic Affairs and Student Affairs. These offices may elect to pursue further disciplinary action.

The University policies for handling Academic Dishonesty are found in the following documents:

- The Faculty Handbook, sections 207 and 208.0401 http://www.westga.edu/~vpaa/handrev/

- Student Uncatalogue: "Rights and Responsiblities"; Appendix J.
  http://www.westga.edu/assets/docs/studentHandbook-current.pdf

Types of Academic Dishonesty

Plagiarism

Plagiarism is the copying of another person's work and passing it off as your own. It does not matter whether the source of the work is another student, a web site, a teaching assistant, or a professor.

In Computer Science courses, plagiarism usually occurs as source code copied from another student or a web site. However, any and all instances of plagiarism will be prosecuted, whether involving source code, written assignments, or other types of work.

In most cases of plagiarism, both the student copying the work and any student(s) supplying the copied work are guilty and will be prosecuted. See the section on Due Diligence below.

Unless otherwise stated, you are allowed to use snippets of source code from the Internet or other students **provided you state in your code comments where the copied code originated**. This act of *attribution* shields you from charges of academic misconduct. We encourage you to research answers and learn from others. Your instructor, however, will evaluate your code and award points based on your *original* contribution, not what you paste in from other sources.

Fair warning: plagiarism is **very easy** to detect. We use software that can detect plagiarism in source code even when the plagiarist takes action to "hide their tracks."

Assignments, Exams, and Grading

You grade for the semester will be based on your performance on:

- Homework Assignments (1-2 per week): 70%
- Midterm Exam (Oct. 7): 15%
- Final Exam (Dec. 9 from 8-10 am): 15%

The Final Exam is NOT comprehensive. Due to the sheer number of homework assignments, no make-up work will be allowed for homework. Make-up of exams will only be allowed in extreme circumstances (and I have the final say on what "extreme" means).

Submitting Assignments

All assignments will be submitted online unless otherwise specified. When submitting assignments via computer, please submit a single ZIP file containing all the files you generated for the assignment. (Fair warning: files compressed with any compression other than ZIP will NOT be accepted! This includes RAR and LZW!!!)

Student Responsibilities

In my courses I expect you to be responsible for your own learning. In particular, I expect:

1. That you treat your peers, your instructor, and yourself with respect and courtesy.
2. That you are proactive in knowing when assignments and tests are assigned and due. This means going to the course Moodle site every day as I may not announce assignments in class.
3. That, when faced with a problem, you research it online before asking someone. I greatly admire a student who takes such initiative.

With respect to #3 above, I deliberately do not give you all the information you need to complete assignments. Being in CS is about using your creativity and resourcefulness to "fill in the gaps."

Email Policy

From time to time I may send you e-mail with important information. You are responsible for providing me with a valid email address and for checking it regularly (at least once a day). I will send email to the address you list on your Moodle profile.

You are responsible for acting on any information I send via email.

Further, I receive a large volume of email and must prioritize it based on the sender and subject line. If you send me email, please include the following two pieces of information:

1. *Your full name*. I can not be expected to know who xb42.ub40@yahoo.com is.

2. *A useful subject line.* Please -- at the least! -- include "CS3110" in the subject line. Even better will be to include a short description of your problem. Good examples: "CS3110: question about the test", or "CS3110: can I schedule an appointment?" Bad example: "test", "help!", or, worst, nothing.

I greatly admire people who use proper grammar and punctuation when writing their email messages. Please, make your English professors proud!

Disability Services

Any student sanctioned by the office of Disability Services must have a Student Disability Report and a Disabled Student Handbook available to share with the Faculty before any graded work is determined in order to make appropriate arrangements as needed. For more information, please visit http://www.westga.edu/~dserve/menu.html.