CSC502 – Compiler Design
Spring 2013

This course is an advanced compiler design course. We will be studying the GCC compiler tool suite and architecture. GCC is a state-of-the-art compiler and tool suite -- the gcc C-compiler is used to compile the Linux system. A version of gcc is also used in Mac OSX Darwin.

You will learn how to write advanced compiler front-ends. You will also learn how to take advantage of the tool suite to generate code.

This is a project-based class, we will meet once a week to for a student led presentation and discuss projects/problems/progress *etc*.

Prerequisites: CSC402 or equivalent, a working knowledge of C.

Required Text: *Engineering a Compiler*, 2nd Edition, K. Cooper and L. Torczon, Morgan-Kaufman, 2012.

Website: http://homepage.cs.uri.edu/faculty/hamel/courses/2013/spring2013/csc502/

Grading:
Projects   70%
Presentation   20%
Participation   10%

Scheduling: We 11-11:50, Pastore Hall 122

Instructor: Prof. Lutz Hamel, Tyler Hall Rm 251, email: hamel@cs.uri.edu

Policies:
- Check the website (often)! I will try to keep the website as up-to-date as possible.
- Class attendance, promptness, participation, and adequate preparation for each class are expected. If you are absent, it is your responsibility to find out what you missed (e.g. handouts, announcements, assignments, new material, etc.)
- **Late assignments:** Late assignments will **not** be accepted.
- Make-up quizzes and exams will **not** be given without a valid excuse, such as illness. If you are unable to attend a scheduled examination due to valid reasons, please inform myself, or the department office in Tyler Hall, prior to the exam time. Under such circumstances, you are not to discuss the exam with any other class member until after a make-up exam has been completed.
- All work is to be the result of your own individual efforts unless explicitly stated otherwise. Plagiarism, unauthorized cooperation or any form of cheating will be

brought to the attention of the Dean for disciplinary action. See the appropriate sections (8.27) of the University Manual.

- Software piracy will be dealt with exactly like stealing of university or departmental property. Any abuse of computer or software equipment will be subject to disciplinary action.

Tentative Course Outline:

Part I Front End
Scanners and Parsers
Type Systems
Intermediate Representations
Symbol Tables
GCC Frontend Architecture and Interface

Part II Back End
Code Generation
GCC machine description file

Part III Optimization
Peephole Optimization
Loop Unrolling
Code motion