CSE 6329 - Special Topics in Advanced Software Engineering

Spring 2011, Section 001, Class Number 23307

1 Class Meetings

- Time: Monday and Wednesday, 2:30 pm - 3:50 pm
- Location: ERB 129 (in the Engineering Research Building)

2 Instructor

- Christoph Csallner
- Office: ERB 554 (in the Engineering Research Building)
- Phone: 817-272-3334
- Email: csallner@uta.edu

- Monday and Wednesday, 4 pm - 5 pm

3 Description of Course Content

This course is a hands-on introduction to automatic program analysis. I.e., we will discuss how a software tool can automatically analyze user programs.

4 Student Learning Outcomes

Students will be able to create, explain, and critique program analysis tools. In order to reach these outcomes, students will

- review the literature and explain existing program analyses
- specify, design, implement, and test a program analysis tool that is closely related to previous work
- present deliverables
- review deliverables of other teams

5 Prerequisites

- Undergraduate algorithms and data structures.
- Undergraduate discrete mathematics (set, relation, function, graph) and first-order logic.
- Fluency in an object-oriented programming language (e.g., Java, C#, or C++).

6 Requirements

Student team meetings in addition to regular class meetings, as scheduled by the team members.

7 Required Textbooks and Other Course Materials

No textbook is required. We use selected papers from the literature. All papers are freely available to registered UTA students.

8 Descriptions of major assignments and examinations with due dates

Following is the tentative outline. I will announce concrete dates in class.

- Homework: Throughout the course.
- Quizzes: Throughout the course.
- Paper presentations: Throughout the course.
- Project: Throughout the course.

9 Grading Policy

- 10% homework
- 20% quizzes
- 20% research paper presentation
- 10% class participation
- 10% project reviews (written)
- 15% project report (written)
- 15% project presentation

9.1 Grade Distribution

A from 85%, B from 70%, C from 60%, D from 50%, else F.

9.2 Late Policy

Late submissions will be accepted until we discuss results. For being late up to one day the penalty is 10%, for up to two days it is 20%, etc.

9.3 Homework

Goal: Individually practice using a program analysis tool. Some of these tools you will later apply in your project.

We will have two or three homework assignments. Each will focus on applying a software engineering tool discussed in class. I will provide instructions on how to use the tools.

9.4 Quizzes

Goal: Learn program analysis techniques and principles. This will provide the basis for your project.

Quizzes will be announced in class one week in advance. Each quiz will take place in the first 20 minutes of class. Quizzes are closed-book, but you can use a cheat sheet that you have written yourself.

9.5 Research Paper Presentation

Goal: Learn a specific program analysis technique that is similar to or otherwise related to the program analysis you will implement in your project.

Each student will pick one or two papers and present these papers in class. Including questions and answers, a paper presentation should cover one class (a class is 80 minutes). Your fellow students are encouraged to ask questions during your presentation, so the presentation itself should take about one hour. The remaining 20 minutes should be reserved for questions and answers.

You may pick papers from the reading list, consult the instructor, or propose papers on your own.

9.6 Project

Goal: Create, explain, and critique program analysis tools.

This is a team project. A team consists of one to three students. To make collaboration as easy as possible, I encourage (but not require) you to to use a free open-source project hosting service such as Google Code.

The project consists of, most likely, three iterations. After each iteration, each team will present some aspects of their project, both in writing and by oral presentation. After some iterations, you will formally review the deliverables of another team. Your reviews and feedback should be probing but always constructive and helpful.

You should distribute project work fairly among yourselves, but I leave the detailed project management to you. The oral presentations are an exception. Here I expect that each team member presents a similar amount of material.

For each project-related deliverable, written or oral, each team will receive a team score. The sum of these team scores will determine the majority of your project-related grade. In addition, for the entire project, each team member will receive an overall individual score. The individual score is derived from peer evaluations, your feedback to other teams during presentations, and your handling of questions.

For the deliverables, I will use the following general grading guidelines, which I copied from Professor Kung.

100–90 points. Proposed solution is adequate and valid and significantly exceeds expectation, the solution is well-organized and clearly described, assumptions are clearly stated.

89–80 points. Proposed solution is definitely adequate and valid, the solution is organized and described, assumptions are stated.

79–70 points. Proposed solution is somewhat adequate and valid, the solution is somewhat organized and partially described, some but not all assumptions are stated.

69–60 points. Proposed solution is only marginally adequate or valid, the solution is poorly organized or difficult to understand, important assumptions are not stated.

59–0 points. Proposed solution is incorrect or far from adequate and valid, the solution is impossible to comprehend.

9.7 Format

All written deliverables (homework, project reports, etc.) should be in plain text, HTML, or PDF, unless I announce otherwise.

10 Attendance Policy

See the Graduate Catalog at http://www.uta.edu/gradcatalog/2011/general/regulations/.

11 Drop Policy

See the Graduate Catalog at http://www.uta.edu/gradcatalog/2011/general/regulations/.

12 Americans With Disabilities Act

The University of Texas at Arlington is on record as being committed to both the spirit and letter of all federal equal opportunity legislation, including the Americans with Disabilities Act (ADA). All instructors at UT Arlington are required by law to provide "reasonable accommodations" to students with disabilities, so as not to discriminate on the basis of that disability. Any student requiring an accommodation for this course must provide the instructor with official documentation in the form of a letter certified by the staff in the Office for Students with Disabilities, University Hall 102. Only those students who have officially documented a need for an accommodation will have their request honored. Information regarding diagnostic criteria and policies for obtaining disability-based academic accommodations can be found at http://www.uta.edu/disability or by calling the Office for Students with Disabilities at (817) 272-3364.

13 Academic Integrity

It is the philosophy of The University of Texas at Arlington that academic dishonesty is a completely unacceptable mode of conduct and will not be tolerated in any form. All persons involved in academic dishonesty will be disciplined in accordance with University regulations and procedures. Discipline may include suspension or expulsion from the University.

"Scholastic dishonesty includes but is not limited to cheating, plagiarism, collusion, the submission for credit of any work or materials that are attributable in whole or in part to another person, taking an examination for another person, any act designed to give unfair advantage to a student or the attempt to commit such acts." (Regents' Rules and Regulations, Series 50101, Section 2.2, available at http://www.utsystem.edu/BOR/rules/50000Series/50101.pdf)

14 Student Support Services Available

The University of Texas at Arlington provides a variety of resources and programs designed to help students develop academic skills, deal with personal situations, and better understand concepts and information related to their courses. These resources include tutoring, major-based learning centers, developmental education, advising and mentoring, personal counseling, and federally funded programs. For individualized referrals to resources for any reason, students may contact the Maverick Resource Hotline at 817-272-6107 or visit http://www.uta.edu/resources for more information.

15 Electronic Communication Policy

The University of Texas at Arlington has adopted the University "MavMail" address as the sole official means of communication with students. MavMail is used to remind students of important deadlines, advertise events and activities, and permit the University to conduct official transactions exclusively by electronic means.

For example, important information concerning registration, financial aid, payment of bills, and graduation are now sent to students through the MavMail system.

All students are assigned a MavMail account. **Students are responsible for checking their MavMail regularly**. Information about activating and using MavMail is available at http://www.uta.edu/oit/email/.

There is no additional charge to students for using this account, and it remains active even after they graduate from UT Arlington.

16 Mailing List

For this course we are using the mailing list CSE6329-CSALLNER@listserv.uta.edu. I expect you to subscribe to this mailing list and read the emails that are distributed over the mailing list. You can find the mailing list in the Public List Archives at http://listserv.uta.edu/. The mailing list will be our main communication channel for homework assignments, clarification questions, etc.

17 Make-up Exam Policy

See the Graduate Catalog at http://www.uta.edu/gradcatalog/2011/general/regulations/#absences:

"Students will be allowed an excused absence under circumstances described below. The student must notify the instructor in writing at least one week in advance of the start of the excused absence and arrange with the instructor to make up missed work or missed examinations. Instructors will allow students an opportunity to make up the work and examinations within a reasonable time period following the absence or otherwise adjust the grading to ensure that the student is not penalized for the absence, provided that the student has properly notified the instructor.

Instructors are under no obligation to accommodate students who are absent or miss work without prior notification and make-up arrangements. Students who have properly notified the instructor, will not be penalized for the absence. However, the instructor may respond appropriately if the student fails to complete the assignment or examination satisfactorily within the time limit following the absence set by prior arrangement."

18 Grade Grievance Policy

See the Graduate Catalog at http://www.uta.edu/gradcatalog/2011/general/regulations/#grievances.

19 About this syllabus

This syllabus is based on the syllabus template provided by the provost (https://mavspace.uta.edu/departments/provost/public/syllabus-template.doc) and the "Tips for developing Student Learning Outcomes", which is also provided by the provost (https://mavspace.uta.edu/departments/provost/public/outcomes-tips.pdf).