CS361: Software Engineering I

Introduction

Today’s goals

- Meet the personnel
- What is software engineering?
- Is CS361 for me? How can I be successful?

Personnel

Danny Dig, prof
Caius Brindescu, TA

CS361 is different

- Deep learning in an active learning environment
  - clickers: check knowledge and practice critical thinking
  - group activities
  - interviews with industry leaders
  - extensive reviews of others design, code, etc.

Class webpage

http://web.engr.oregonstate.edu/~digd/courses/cs361_W15/

Welcome message from Prof Dig

CS361

What is S.E.?

- Not a process!
- The establishment and use of sound engineering principles in order to obtain economically software that is reliable and works efficiently on real machines.
- The application of a systematic, disciplined, quantifiable approach to the development, operation, and maintenance of software.
Things we study in S.E.

- Process
- Tools
- Techniques
- Models (of software development)
- Modeling (of systems we develop)

Activities in the process

- CS361
  - requirements, architecture, design, management, planning
- CS362
  - metrics, configuration management, testing, debugging, reverse engineering, refactoring

Defined processes

- Agile
  - eXtreme Programming (XP), Scrum
- Formal
  - Rational Unified Process, Cleanroom
- Distributed, open-source
  - Bazaar
- Solo
- Crowdsourcing

Process

- Roles
  - XP: Customer, Developer, Coach
- Activities
  - XP: Write stories, planning game, test-first, pair programming, continuous integration, refactoring
- Work products
  - XP: Stories, tests, code

Purpose of course

- Be able to understand and follow your project’s process
- Be able to improve your process
- Be able to design the right process for your project
- Practice steps that are common to most processes (requirements solicitation, design, testing, documentation)
- Apply typical tools (IDE, SCM, UML)

Project

Team project – 4 people
Logic for the Battleship game
Opportunity to practice
Process should start with XP
Must document process you use
Must convince us you follow process you documented
Project lifecycle

- Propose project features (Phase 1 – due Fri, Jan 9th)
- Form team (Phase 2: until Sun, Jan 11th)
- Design & Implement
- Deliver code, documentation, tests (TDD)
- Graded on process during development + quality of what you deliver

Project facts

- Test first
- Must use UML to document, thus we use an OO language
- Must practice proper configuration management
- Must manage requirements

Project features proposal

- Proposal: do we want to follow this plan?
  - What is it?
  - Is it worth doing? What is the cost? The benefit?
  - Can we do it? Is the plan reasonable?

Project Proposal

- Looks like final documentation
  - Analysis of problem
  - Architecture, technology (fixed: Eclipse/Java/JUnit)/
- Plan, not reality
  - Schedule
  - Risks, and how to deal with them

Project proposal

- Meeting times
- Number of hours per week of work
  - at least 2 hours, but some teams get excited and work harder
- Award for best project, given at the end of the term

First homework (due Jan 9th @ 5pm)

- In pairs, write feature proposals
  - We already asked you for your partner preference
  - You can still make changes today. Pair is locked after midnight today.
  - If you drop the class, do it now, so that we can still fix the partners for HW1
  - Warm up for Eclipse/Java
Afterwards

- Join 2 pairs together based on your meeting time compatibility (let the TA know if you have a team of 4 already)
- You can form teams on your own until Sun (Jan 11th)
- On Mon, Jan 12, we will join all remaining pairs

Textbooks

- UML Distilled - Fowler

Writing intensive Course (WIC)

- Advanced Composition requirement
- Requires multiple revision of documents
- We will use: Style: Toward Clarity and Grace by Joseph Williams

Advanced Comp: What we will do

- Start with 5 pages of your own writing
- Each session, mark up the paper following the rules of the chapter.
- Hand in old version with markup in colored ink (blue, green)
- After you get the paper back, enter changes, print it off, and start next session

Advanced Comp: Grading

- Pass / fail
- You can keep trying until you pass
- If you fail, meet with TA
- If you don’t pass the Advanced Comp, you will fail the entire course

Advanced Comp: What we will do

- Zero’th version (no reading required) due next Tue, January 13.
- 5 pages from any document you wrote
- Non-fiction, full paragraphs
- See Webpage: Writing Assignments
- First revision due Jan 27
How we assess progress

- 40% individual, 60% team-based
- Class activity: clicker 10%
- Homeworks: 20%
- Final Exam: 30%
- Project: 40%
- Extra Credit

How we assess progress

- Homeworks
  - Build up your muscle for the project
  - Work in pairs
  - Extensive reviews of others design, code, documentation, etc.
- Project
  - Work in teams of 4
  - One final exam

Campus policies

- Academic integrity - Code of ethics
- Special accommodations

Class testimonials

“Looking back, the SE class was definitely one of the useful classes I took in college and keep using the basic principles (...) almost daily at my job.”

Alum, now at Citadel Investment Group

“The biggest thing that the SE class did for me was to give me a sense of the Real World (tm). Much of the work was thought-provoking and exciting. Software Engineering and the Senior Projects both gave a sense of how to work in teams, how to engineer solutions to specific technical challenges. I think having a balance of deep technical issues (most of the coursework) and real-life challenges and approaches is critical to being successful in the field (software development) MOST of us ended up.”

Mike Duff – software architect Chicago Mercantile Exchange

Class testimonials

“I've been working as Quality Engineer for the past 6 months now, and I must say: the lessons learned in SoftEng I and II have been invaluable to say the least. No other class has prepared me for the real world as well as those two classes have. The knowledge I gained on development methodologies in particular have made the transition into the working world extremely easy.”

Alum 2013, now at Salesforce