CS1632: Software Quality Assurance Fall 2016

Professor Laboon
Sennott Square 5129
T/H 9:30 – 10:50

What is Software Quality Assurance? Let's start with what it's not…

- It's not just testing
- It's not finding every bug
- It's not something you do after you created something
- It's not a "lesser" version of software development
- It's not optional
- It's not something you've never done

Well, then, what is it?

- It is how we ensure quality during software development.
- It is involved in the entire software development lifecycle: developing requirements, designing the software, writing code, integrating and testing it, etc.
- It is providing an independent view of the software product.
- It is identifying weaknesses and problems in the software product, and creating processes which help correct those weaknesses and problems.

Quality Assurance (QA) vs Quality Control (QC)

- Technically, QA is the process of ensuring quality. QC is the implementation of those activities for specific products.
- QA focuses on the process; QC is using that process to identify defects in specific software projects
- QA focuses on prevention of defects; QC focuses on detecting those defects
- QC is a part of QA!
- This course focuses on QC, but we need to understand the QA processes in order to implement them
- In industry, the term QA tends to be used for everything, including QC

QA/QC includes….

Unit testing, automated testing, acceptance testing, requirements analysis, equivalence classes, white/grey/black box testing, verification, validation, combinatorial testing, performance testing, usability testing, formal analysis, static analysis, linting, traceability matrices, defect reporting, test planning, TDD, fuzz testing, KPIs, software profiling, resource analysis, usability analysis, regression testing, smoke testing, security analysis, penetration testing….

It's an entire field of study!

Structure of the Course

- This course has been restructured for this semester, based on feedback from students (OMETS) and industry leaders on the skills they want
  - YES I READ OMETS! PLEASE FILL THEM OUT!
- (30% of grade) Two mid-terms
- (60% of grade) Six deliverables (projects)
  - Manual Test Plan and Traceability Matrix
  - Unit Testing and TDD
  - Systems Testing a Web Application
  - Performance Testing
  - Static Analysis
  - Test Management
- (10% of grade) In-class Exercises and Guest Lectures

Who Am I?

- Bill Laboon (note: no doctorate, thus not Dr.)
- BS in Computer Science and Political Science, Related Area: Mathematics
  - Pitt
- MS in Information Technology, Software Design and Management
  - Carnegie Mellon
- Industry Experience
  - I've been a software engineer, field engineer, technical lead, manager, test engineer, and testing manager
  - I've been paid to program in C, C++, Visual Basic, PHP, perl, Ruby, Java, Haskell, JavaScript, CoffeeScript, and probably a few I'm forgetting
- I tweet at @BillLaboon, mostly about functional programming, software quality, and walking

Let's review the syllabus and course information…

- Available at…
- https://www.github.com/laboon/CS1632_Fall2016
- All code will be submitted via GitHub (or GitLab, if you prefer).

What About You?

- Why are you taking this class?
- What do you want to do?
- Is there anything you are hoping to get out of this class?