CS1632 Software Quality Assurance

T/H 6:00 - 7:15

Bill Laboon

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What is Software Testing?

It's NOT finding every bug.
It's NOT pressing buttons randomly.
It's NOT something started after development.

It is...

* Providing information to stakeholders about product quality
* Allowing an independent view of the software
* Finding and reporting defects
* Ensuring a product meets requirements
* A necessary part of the software development lifecycle

It is...

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, traceability matrices, defect reporting, test planning, TDD, fuzz testing, KPIs, software profiling, resource analysis, usability analysis, regression testing, smoke testing, security analysis....

It is...

An entire field of study.

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Structure of this Course

My goal is to have you ready to be an entry-level Quality Analyst upon completion.

Projects

Solo or Teams of ~2
You will be the test team
Multiple deliverables

65% of your grade

Mid-Term and Final

Mid-term will cover first half of course
Final will be cumulative

30% of your grade

Lectures

Virtually everything I talk about, I have done in industry. There is some theory, but this is a hands-on class.

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Introductions

Bill Laboon
@BillLaboon
bill@billlaboon.com

Undergrad at Pitt, Master's at CMU

Software Engineer since 1999:
Medrad, Northrop Grumman, University of Pittsburgh, Eyeflow, General Dynamics, UPMC TDC, FP Complete, Think Through Math

Main Languages: Ruby, Haskell, Java

Introductions

Why are you taking this class?

What are you interested in doing after graduation? Any particular field of interest?

Then let's see the course info!

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Why is Software Testing important?

Some of you may have heard of the ACA roll-out a few years ago...

Software Quality should not be a surprise!

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They plan tests, find defects and provide estimates of total software quality.

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Verification, Validation, QA, QC

Verification - "Have we built the software right?"
Validation - "Have we built the right software?"
Quality Assurance - "How can we write software with fewer defects?"
Quality Control - "How can we find defects that exist in the software?"

What is a bug/ defect, really?

Customer asks for a calculator....

1. Calculator uses RPN. Bug?

2. Calculator says 2 + 2 = "poodle." Bug?

3. Calculator accepts/outputs Roman numerals. Bug?

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Testing for Bugs

Imagine a function that accepts a string, and returns a lower-case version.

What sort of inputs/outputs would you test for?

public static String lowerCase(String c)

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