

Testing

Admin stuff

- Projects are selected!
 - A legislative voting app (iOS app)
 - Browser-Base Game Level Editor
 - Itinerary Generator
 - Project Vida
- How is the team forming going?
- Design proposal due Oct. 30th (next Tuesday)

Testing

- Who conduct testing?
 - Developers, Q&A, clients
- What are the different stages of testing?
- Why do we need testing?
- *How much resources are spent in testing?*

Testing

- Who conduct testing?
 - Developers, Q&A, clients
- What are the different stages of testing?
 - unit testing, integration testing, system testing, acceptance testing
- Why do we need testing?
 - Catch bugs (defect testing)
 - Check if I follow all the requirements (Validation testing)
 - Providing “documentation” in XP

Outline

- How to judge the quality of a test suite
- How to design test suite
 - Manually
 - Automatically

How to judge the quality of a test suite

Comprehensive

As small as possible

When can we stop testing?
When is sufficient?

- Exhaustive testing

Coverage

- Testing property
- Testing space
- Coverage (%)
- Coverage criteria (coverage $> K$ %)

Classical coverage criteria

- Statement coverage
- Branch coverage
- Path coverage
- Condition coverage
- Data-flow coverage
- Others ...

https://en.wikipedia.org/wiki/Code_coverage

Background: control flow graph; data flow graph

Coverage

- Statement coverage: lines of code ($\# \text{ lines executed} / \text{total } \# \text{ of lines}$)
- Branch coverage: ($\# \text{ of branch decisions} / \# \text{ of branches} \times 2$)
 - 100% stmt coverage does not mean 100% branch coverage
- Path coverage
 - Unrealistic