CSE 403: Software Engineering, Spring 2015

courses.cs.washington.edu/courses/cse403/15sp/

The Joel Test: 12 Steps to Better Code

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Outline

1. Do you use source control?
2. Can you make a build in one step?
3. Do you make daily builds?
4. Do you have a bug database?
5. Do you fix bugs before writing new code?
6. Do you have an up-to-date schedule?
7. Do you have a spec?
8. Do you have quiet working conditions?
9. Do you use the best tools money can buy?
10. Do you have testers as part of the team?
11. Do you have interview candidates write code?
12. Do you do hallway usability testing?

www.joelonsoftware.com/articles/fog0000000043.html

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- Source control …
  - allows multiple developers to collaborate
  - keeps project in consistent state
  - tracks changes and enable roll-back
  - manages multiple versions
  - saves data in case of a disaster
  - is the authoritative source for “daily build”

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The ZFR should indicate the state of your repository.

Can you make a build in one step?

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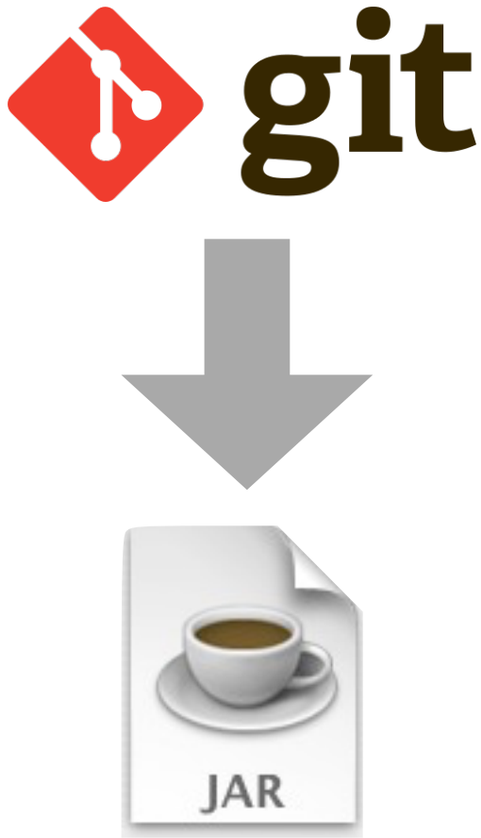
- A single script that
  - [does a full checkout from scratch]
  - rebuilds every line of code
  - makes the binary executable files in all versions, languages and #ifdef combinations
  - [creates the installation package]
  - [creates the final media, web site, …]



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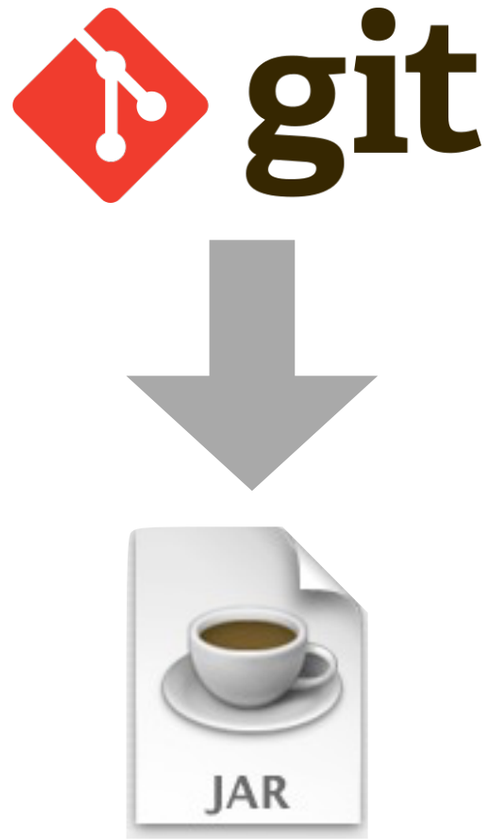

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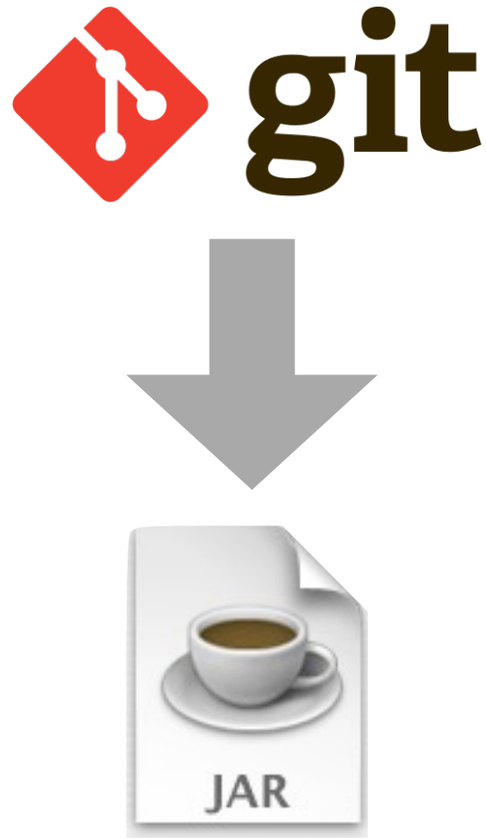
- So, why is this valuable?



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The ZFR must include your build script or sequence.

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For the beta release assignment, we'll be asking to see a log of your bugs.

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  - Leaving all bugs to the end will make it harder to understand and keep the schedule

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For the SDS, we asked for a schedule. For later releases, we ask you to highlight any changes, and keep all documents up to date.

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- Conceptual integrity for your project
- Undocumented code has low value
    - Hard to maintain and to extend
    - Hard to bring new developers on board

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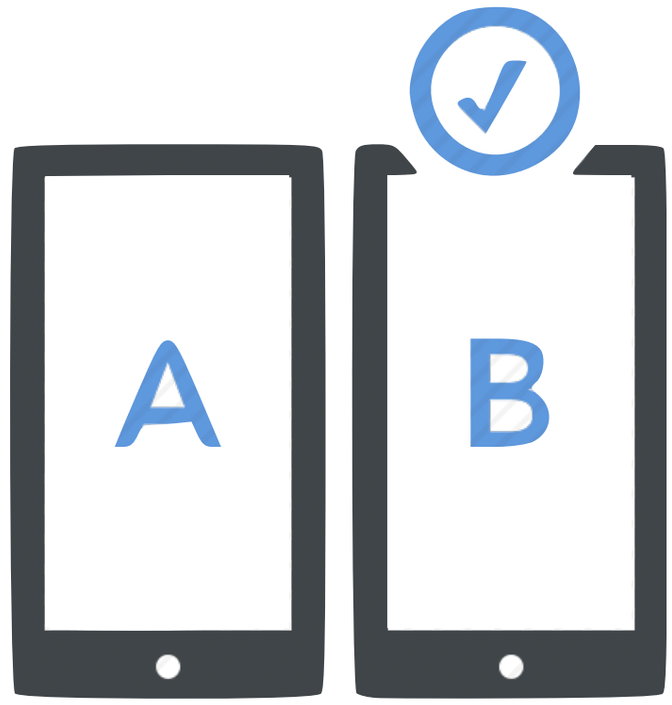

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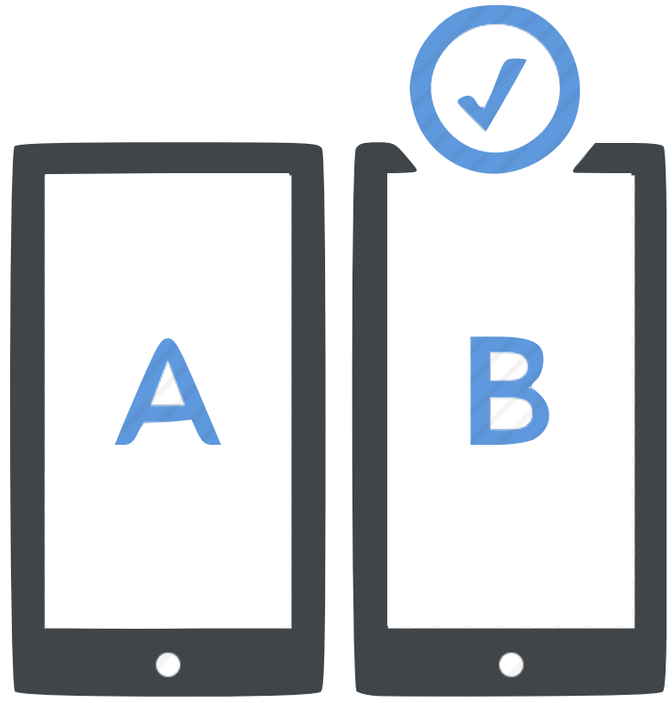

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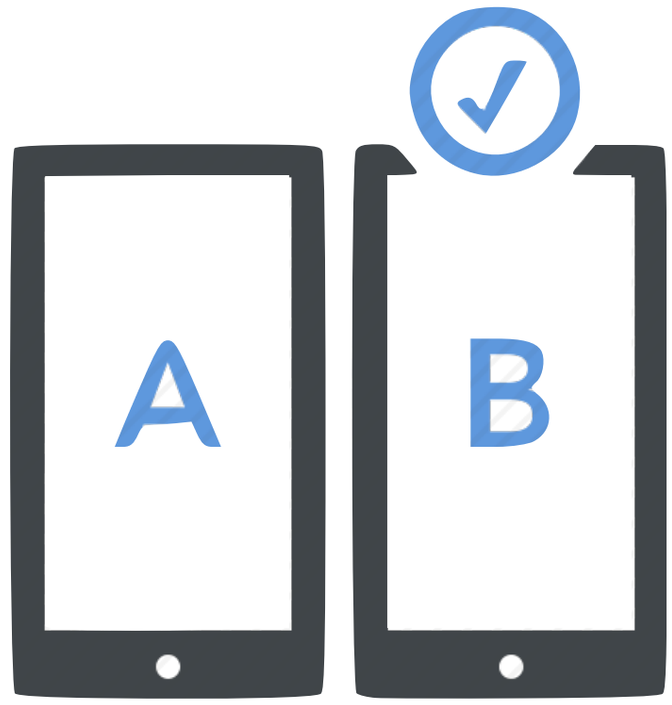

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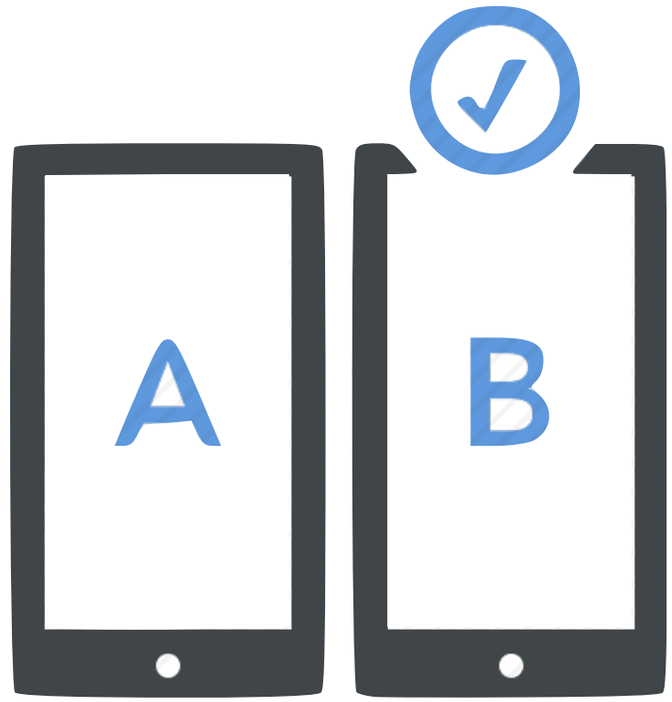

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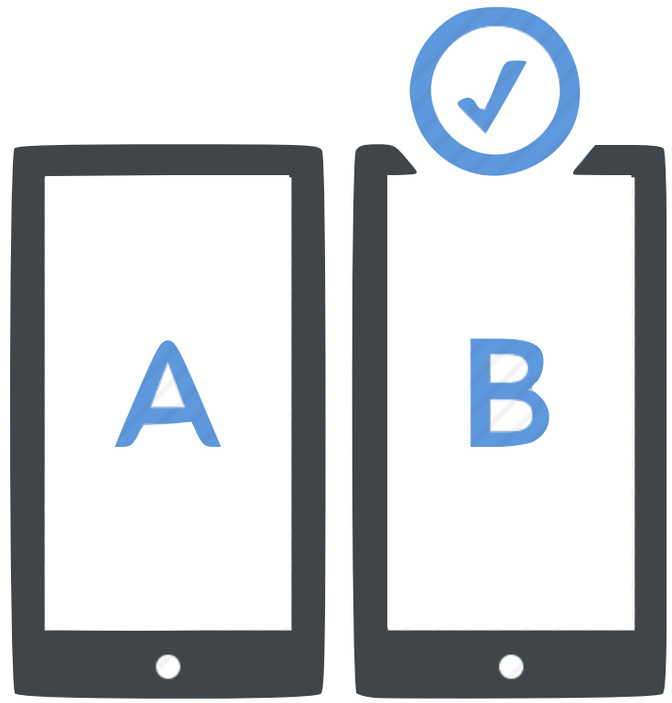
- You will get most of the valuable feedback from the first few users



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> "The bummer about The Joel Test is that you really shouldn't use it to make sure that your nuclear power plant software is safe."

Making mission-critical software safe ...

Gerard J. Holzmann.
Mars code, 2014.

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Making mission-critical software safe …

- First, standard precautions for reducing risk in complex software systems:
    - A good software architecture with a clean separation of concerns, data hiding, modularity, well-defined interfaces, and strong fault-protection mechanisms.
    - A good development process, with clearly stated requirements, requirements tracking, daily integration builds, rigorous unit and integration testing, and extensive simulation.

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- Risk-based coding rules
  - Six compliance levels.
  - Level 3: "We require that the flight software as a whole, and each module within it, had to reach a minimal assertion density of 2%."

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  - Peer review great at discovering design flaws.
  - But tools are better at discover coding flaws.
- Formal methods
  - Used for critical software and hardware components.
  - Provides high assurance but requires expertise, time.

Summary

The Joel Test for 403:

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