

CS3500: Object-Oriented Design

Spring 2014

Class 16
3.14.2014

Assignment 8

- Due: Tonight at 11:59pm
- Visitor pattern

Visitor Pattern Review

Visitor Pattern

[Gamma et al.]

Erich Gamma, Richard Helm, Ralph Johnson, and John Vlissides. Design Patterns: Elements of Reusable Object-Oriented Software. Addison-Wesley, Reading, MA, 1995.

- Intent:
 - “Represent an operation to be performed on the elements of an object structure. Visitor lets you define a new operation without changing the classes of the elements on which it operates.”
- When to Use:
 - Many classes of objects
 - Distinct and unrelated operations to perform on object
 - Object structures rarely change but add new operations often
- Benefits:
 - Adding new operations is easy
 - Gathers related operations and separate unrelated ones
 - Accumulating state

Visitor in Java

- Visitor implementation
 - visit method
- ADT implementation
 - accept method

Visitor with StackInt

Assignment 9

Two parts:

- Part 1 - Benchmarking: due Friday, March 21, 2014 at 9:50am paper copy in class
- Part 2 - Timing Testing: due Friday, March 21, 2014 at 11:59pm via Web-CAT

Code Review

Code Inspections

Software Reviews

Process where software artifacts are reviewed by developers, managers, and/or customers for comment or approval [IEEE 1990]

- Detect errors/inconsistencies
- Clear intention
- Design/software meets requirements
- Developed in uniform manner using standards

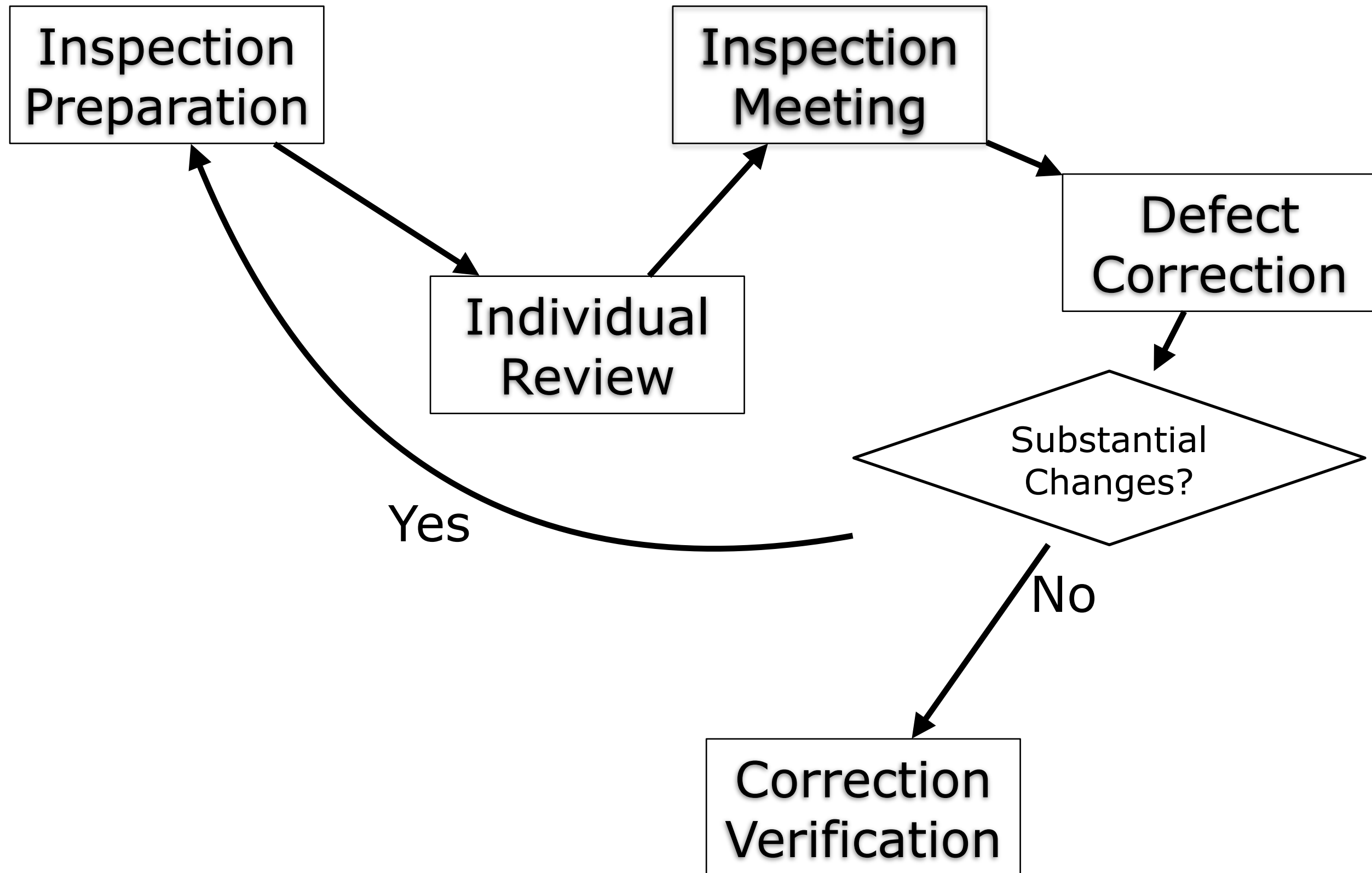
Review Benefits

- Learn about system and teammates programming techniques
- Reduce “truck-factor”
- More likely to produce high quality, clear work

Inspection Roles

- **Author:** Person who developed artifact
- **Inspectors:** Inspect artifact. Everyone except the author.
- **Moderator:** Member of the quality assurance team
- **Scribe:** Takes notes during inspection of issues of interest
- **Reader:** Person who interprets artifact for inspectors

Inspection (Fagan-style)



Inspection Preparation

- Author prepares artifact and gives to moderator
- Moderator obtains inspection checklists
- Moderator distributes materials to inspectors

Individual Review

- Each inspector looks over artifact before inspection meeting
- Review from check list and own knowledge of the system and requirements
- Record faults found
- Record time invested (no more than 2 hours)
- Reader should prepare to explain their interpretation of the artifact

Inspection Meeting

- Moderator calls meeting to order
- Reader interprets artifact in sections
- Inspectors note problems or ask questions
- Author answers questions
- Scribes record issues

Inspection Guidelines

- Do NOT correct defects, instead give a course of action
- Author answers questions and does NOT justify decisions
- No personal attacks on authors
- Focus on important issues, less on style issues
- Inspection is no longer than 2 hours in one session

Common Defects

- Infinite loops
- Missing or incorrect conditions
- Variable names
- Forgot a case
- Uninitialized variables

References

- IEEE Standard 610.12-1990, IEEE Standard Glossary of Software Engineering Terminology
- Based on Laurie Williams slides and discussion found at: <http://www.realsearchgroup.org/ShortLectures/Inspections/Inspections.html>

Code Quality

Good

- shorter
- easier to read
- elegant
- clean
- modular

Bad

- longer
- harder to read
- less elegant
- tangled
- less modular (different levels of abstraction mixed up in code)

Student Code Review