



# Learning Test-Driven Development

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*You can find “starter” test code at:*  
<http://langrsoft.com/agile2007.shtml>





# Hands-On?

- How fast do I code?



Try 'n' keep up!



# Hands-On?



Uncomment test  
code



# Hands-On?



Watch & enjoy!



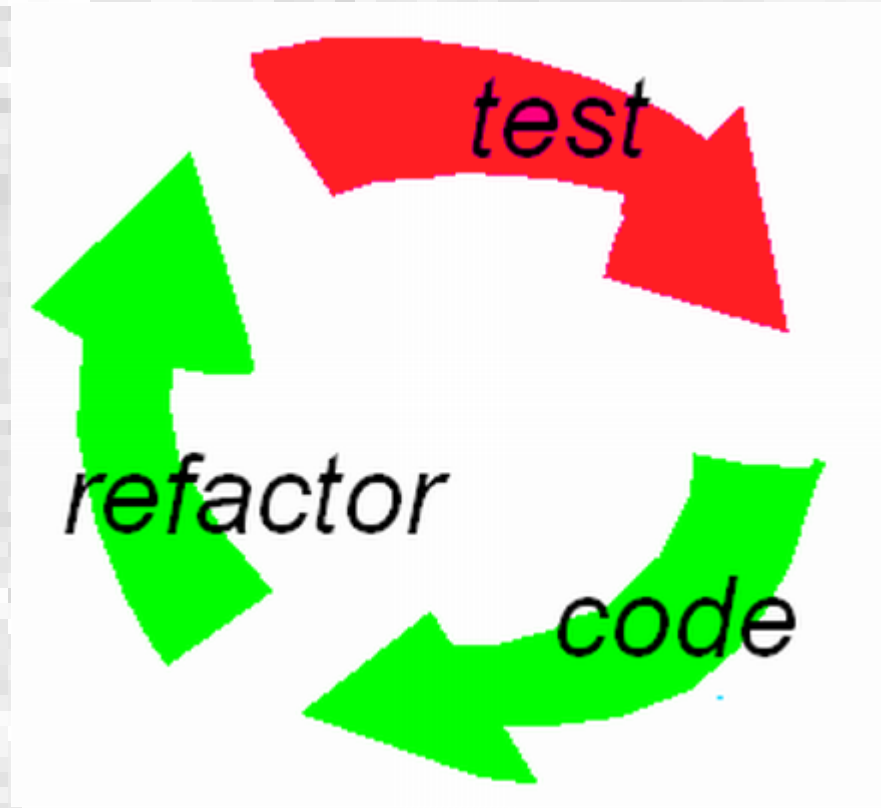
# Agile

*Continually delivering quality software  
that responds to changing business needs*

**How the \$#@! do we do that?!??**



# Test-Driven Development



*A design technique*



# TDD Basics – Stock Portfolio

- Records purchases (symbol, # shares, timestamp)
- Answers whether or not it's empty
- Answers # of symbols
- Answers # of shares for a given symbol
- Throws exception on insert of null symbol
- (Returns purchases between a date range)



# Demo—Key Concepts

- Test behavior
- Fail first
- Hardcoding
- Small, small steps
- Incrementalism
- Continual refactoring



# Unit Testing

## Test-after (TAD) vs. Test-first (TDD)

- Allows some refactoring
- Coverage levels up to ~75%
- No direct design impact
- Can reduce defects
- Can be treated as separate task

*Unit testing is:*

- *expensive*
- *never the whole picture*

- Enables continual refactoring
- Coverage approaching 100%
- Drives the design
- Significantly reduced defects
- Part of the coding process
- Clarifies, documents understanding of requirements
- Continual progress, consistent pacing
- Continual feedback and learning
- Sustainable



# Doing TDD Well

- Practice
- Pair
- Paraphrase





# Think About



- Spec by example
- Testability and design
- Incrementalism

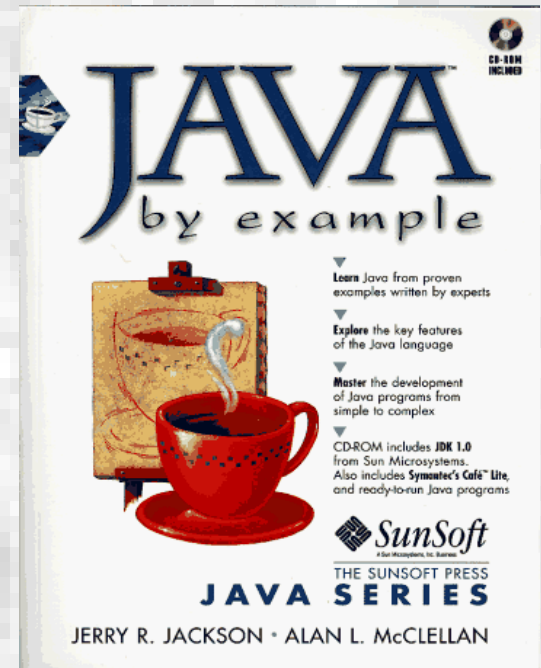
*It's just code!*



“We switched our development style practically overnight.

That's not to say that we had it all figured out right away, but that we could tell there was no going back.”

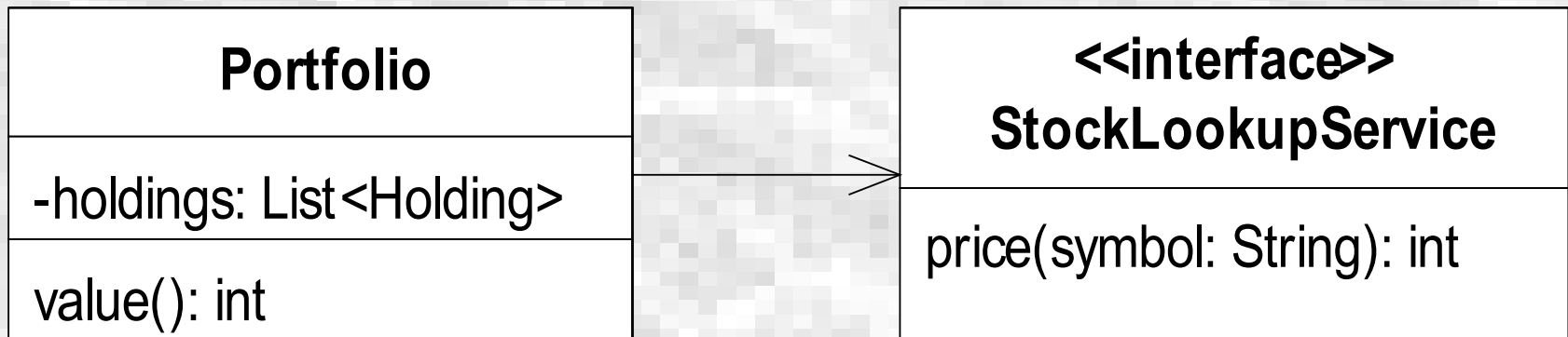
—*Jerry Jackson*





# Testing Challenge

- Return the value of a portfolio's holdings
  - Testing goal: prove Portfolio `value` method logic
- External lookup provides stock values
  - Unfortunately this is volatile





# Faking For Test Purposes

- Use an interface to break the dependency
- The fake emulates behavior that's already tested

