

# Test-driven Development

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**ADAP B04**

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- 1. Tests and Testing**
- 2. Test-first Programming**
- 3. Test-driven Development**

# Test-First Programming [B02]

- Test-first programming is a practice in which developers
  - write a test before they implement the actual functionality
  - iterate over an “add new or enhance test, make test work” loop
- Functionality is a by-product of making the tests work
  - Test-first programming
    - clarifies code functionality and interfaces
    - improves code quality through second use scenario
    - builds up test suite for continuous integration (later)

**Only write new code,  
when a test fails.**

**Then, eliminate waste.**

1. **Red**
2. **Green**
3. **Refactor**

# Roman Numerals Explained

- Base Values

- 'I' = 1
- 'V' = 5
- 'X' = 10
- 'L' = 50
- 'C' = 100
- 'D' = 500
- 'M' = 1000

- Parsing Rules

- Smaller base cases to the right:
  - Added to value
- Smaller base cases to the left:
  - Subtracted from value
- Rule 2 takes precedence over rule 1
- ...

# Roman numerals “coding kata”

[1] <https://www.youtube.com/watch?v=QR0v70g1jVk&t=7s>

# Video Lessons

- Implements tests first, functions second
- Provides trivial implementations first
- Provides full implementations incrementally
- Programs with no slack at all, only progress
- Uses many IDE refactoring functions
- Views test code and function code in parallel windows
- Uses JUnitMax for unobtrusive feedback
- Deletes code after finishing coding kata

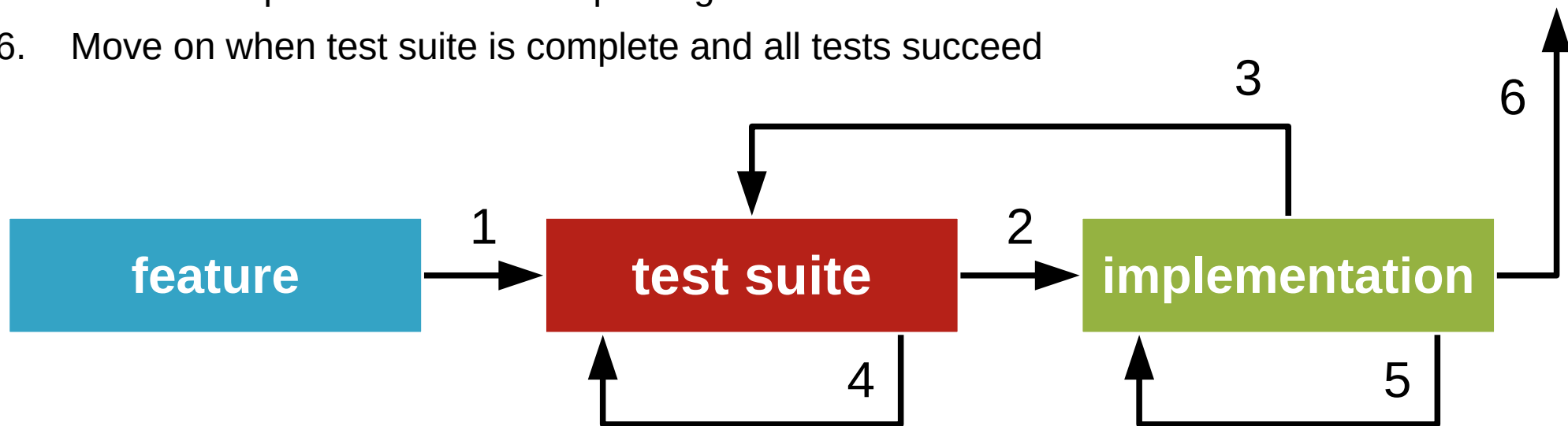


# Test-driven Development (TDD) 1 / 3

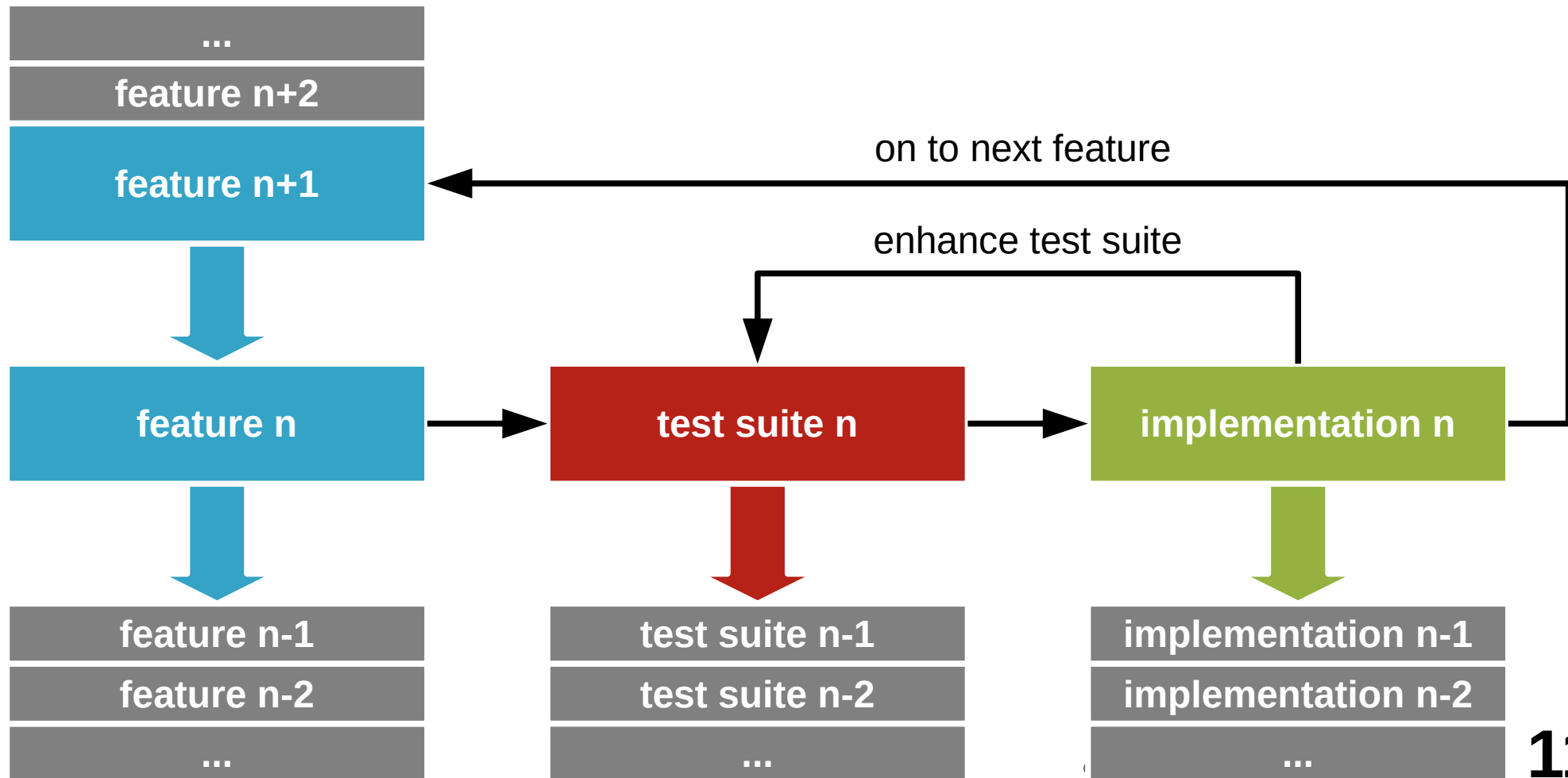
- Test-driven development
  - Is a minimal development process based on test-first programming
  - Turns feature requests into implementations
- Purpose of test-driven development
  - To grow the product incrementally and steadily
  - To be able to release after every feature implementation

# Test-driven Development 2 / 3

1. Translate partial or full feature description into test suite
2. Implement feature to fulfill (“green-bar”) test suite
3. Revise test suite from new insights
4. Refactor test suite to keep design and code clean
5. Refactor implementation to keep design and code clean
6. Move on when test suite is complete and all tests succeed



# Test-driven Development 3 / 3



# Coding Humor: Life without Tests

**YOU ARE IN A LEGACY CODEBASE**

**> RUN TESTS**

**YOU HAVE NO TESTS.**

**> READ SPEC**

**YOU HAVE NO SPEC.**

**> WRITE FIX**

**YOU ARE EATEN BY AN OLDER CODE HACK.**

# Review / Summary of Session

- Test-first programming
  - What it is, the rhythm of it
- Test-driven development
  - How this simplest of all process works

# Thank you! Questions?

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