TEST-DRIVEN DEVELOPMENT

PRINCIPLES & PRACTICES

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AGENDA

- ✓ Understanding Unit Tests
- ✓ What is Test-Driven Development?
- ✓ TDD by example
- ✓ Conclusion

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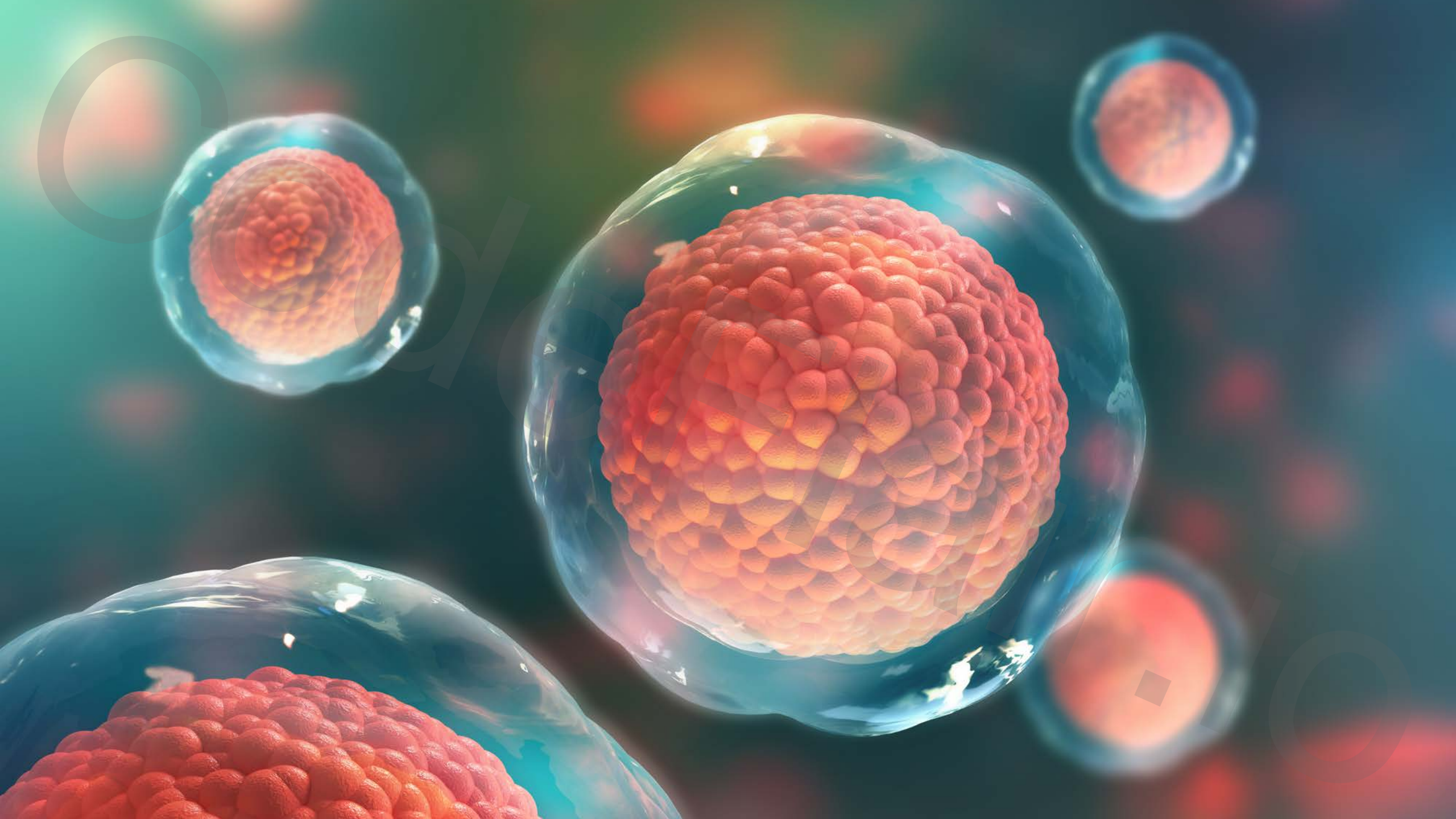
Code Review



UNDERSTANDING UNIT TESTS

VALIDATING SMALL UNITS OF FUNCTIONALITY

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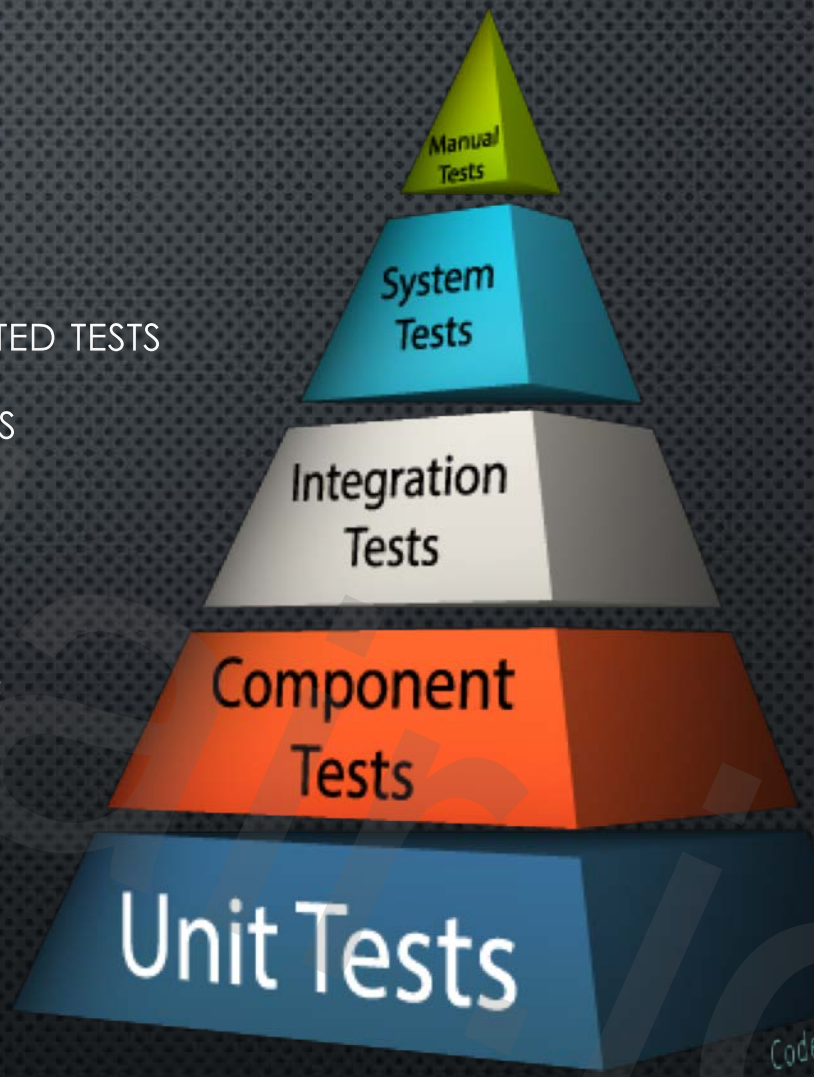
BUILDING CODE COVERAGE

- ✓ To optimize productivity, maximize the number of automated tests
- ✓ Unit tests should compose the majority of your test suites
- ✓ Not all levels have the same probability of a bug
- ✓ Testability is more important the farther down you go
- ✓ Lower tests should be decoupled from the user interface



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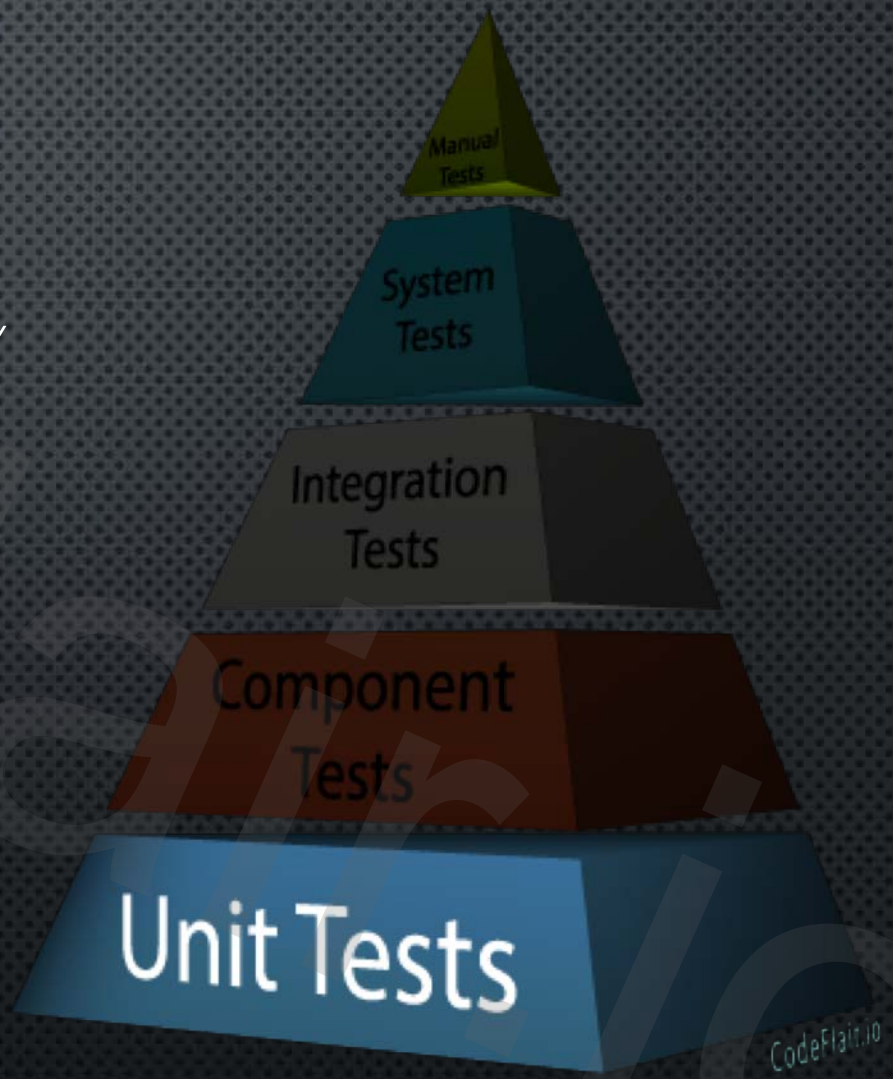
UNIT TESTS

- ✓ Validate small, low-level, isolated units of functionality
- ✓ Simple: Cyclomatic complexity = 1
- ✓ Easy to write, easy to run, easy to automate
- ✓ Can simulate all error conditions
- ✓ Easy to reproduce failures – no debugger needed
- ✓ Execute in milliseconds
- ✓ Developers can run these after each file modification
- ✓ Document the system
- ✓ Target 100% code coverage



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TEST DRIVEN DEVELOPMENT

ACCELERATING SOFTWARE DELIVERY

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TEST-DRIVEN DEVELOPMENT

- ✓ eXtreme Programming
- ✓ It's not just about testing… it's more about design
- ✓ Architecture and implementation evolve from tests that are written prior to writing the code
- ✓ Short development cycle
- ✓ Validate the tests thru failure

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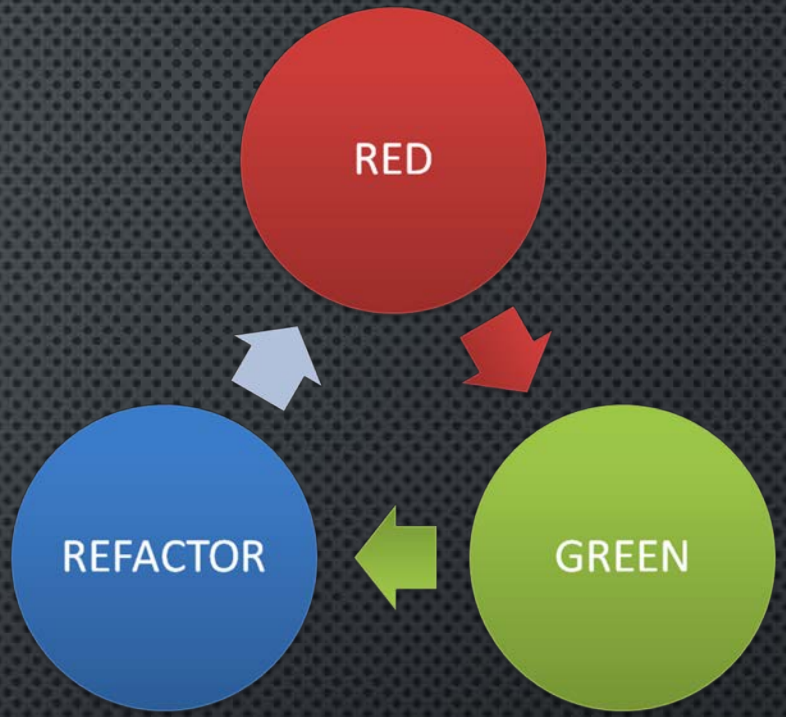
RED → GREEN → REFACTOR



1. Make it Fail – Write a failing test
2. Make it Work – Write the simplest code to pass the test
3. Make it Better – Clean, improve, and optimize the code just written

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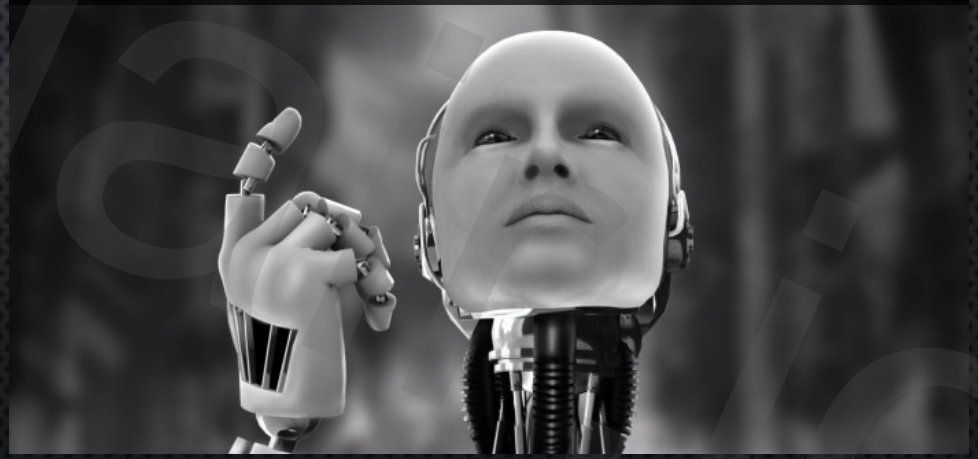
THE THREE LAWS OF TDD

1. WRITE NO PRODUCTION CODE EXCEPT TO PASS A FAILING TEST
2. WRITE ONLY ENOUGH OF A TEST TO DEMONSTRATE A FAILURE
3. WRITE ONLY ENOUGH PRODUCTION CODE TO PASS THE TEST

Disciplines of Test-Driven Development

The three laws of Test-Driven Development define the discipline of TDD.



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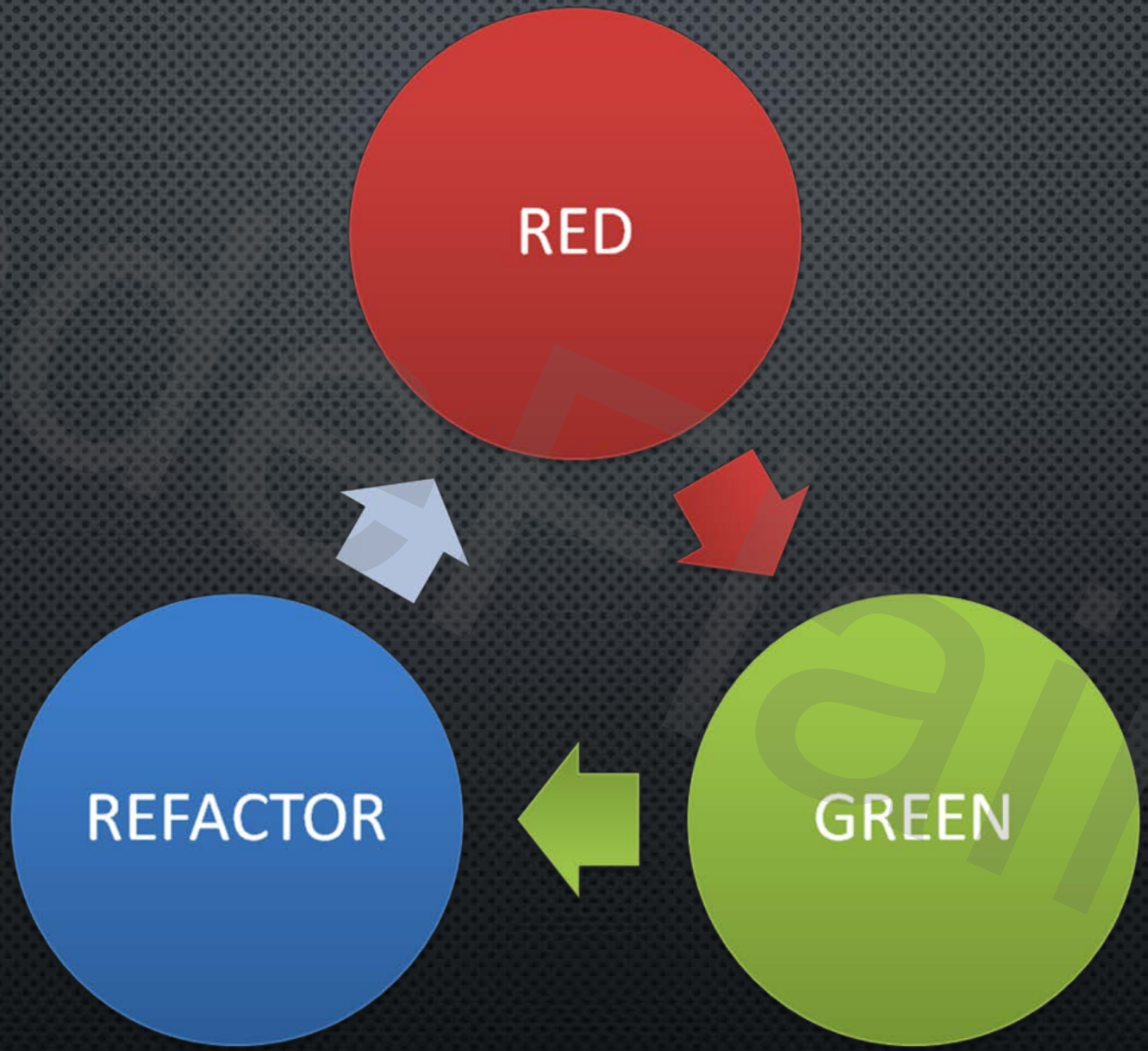
A JERRY BRUCKHEIMER PRODUCTION

GONE IN 60 SECONDS

NICOLAS CAGE

ANGELINA JOLIE GIOVANNI RIBISI ROBERT DUVALL



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BENEFITS OF TDD

- ✓ Greater code coverage
- ✓ Fewer defects
- ✓ Shorter debug times – Faster TTM
- ✓ Better and more reliable low-level documentation
- ✓ Code that is easy to test (i.e. testable)
- ✓ A suite of tests you can trust

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THE BOWLING GAME

BUILDING AN APPLICATION USING TDD

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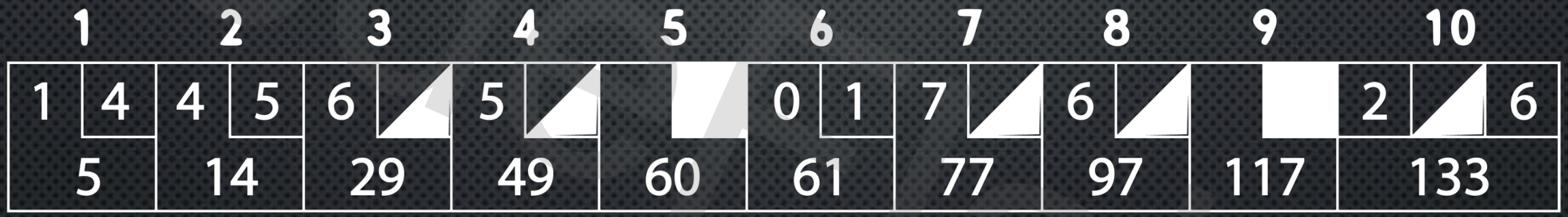
SCORING



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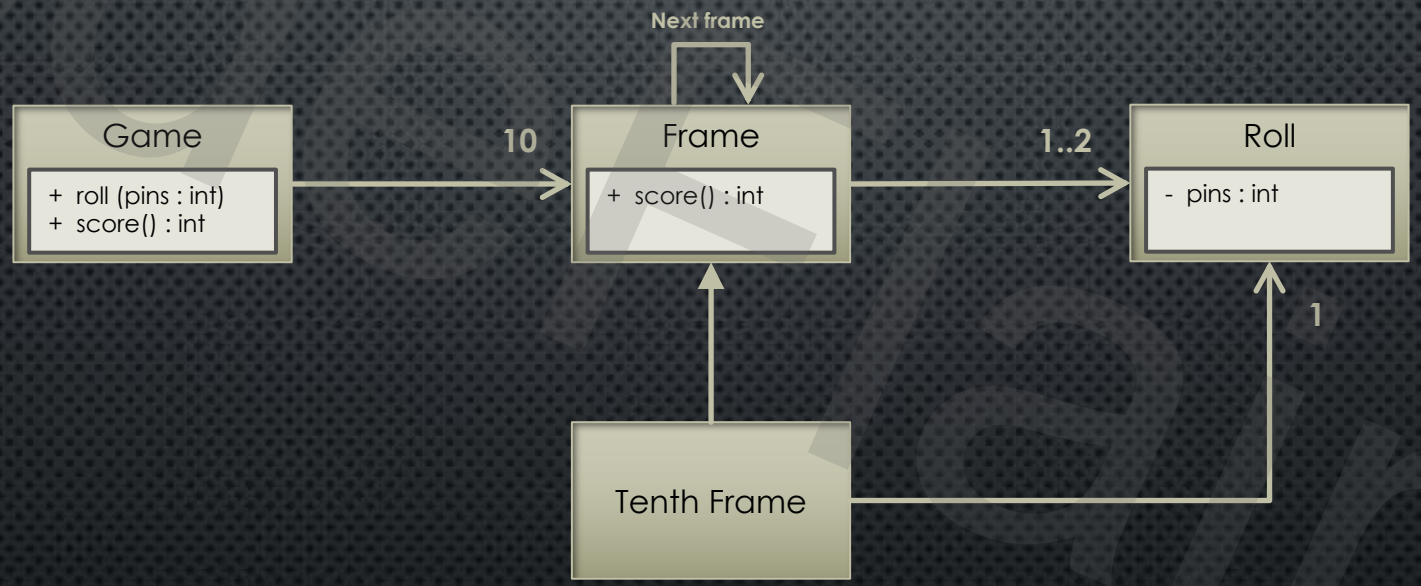
DESIGNING THE BOWLING GAME



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TDD BY EXAMPLE

LET'S START CODING

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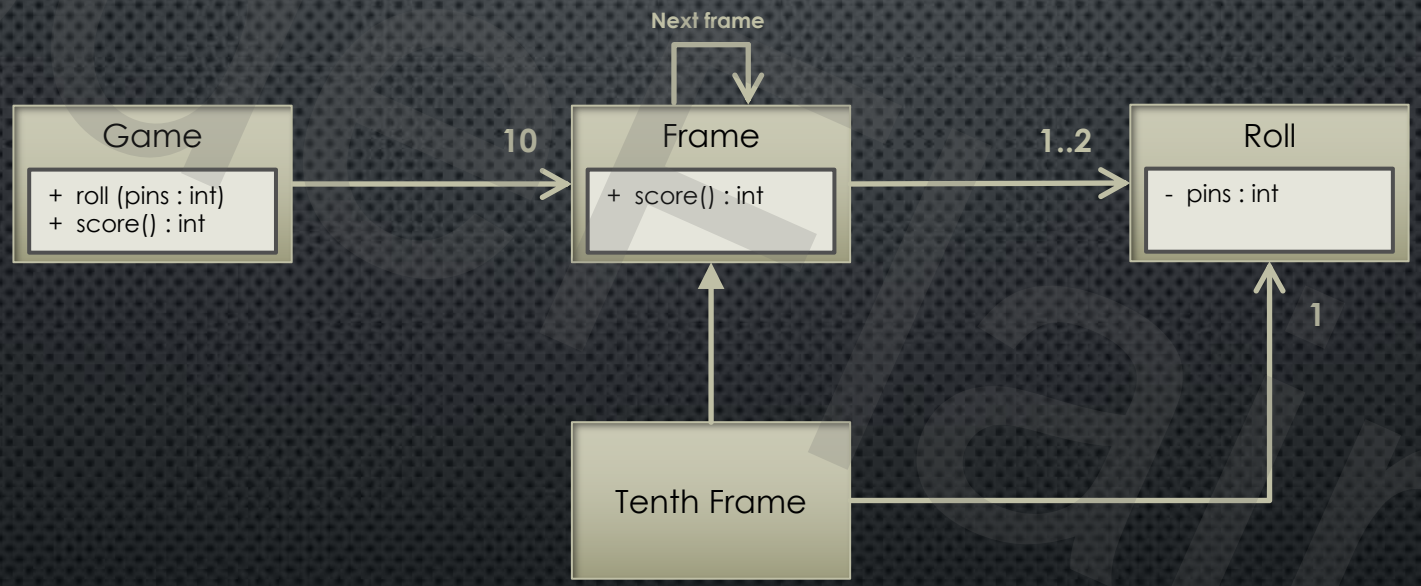
DESIGNING THE BOWLING GAME



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CONCLUSION

REALIZING VALUE FROM TEST-DRIVEN DEVELOPMENT

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TEST-DRIVEN DEVELOPMENT

- ✓ Constantly working in a clean code-base
- ✓ Less time debugging
- ✓ Evolution of simple design
- ✓ Evolution of testable software
- ✓ Basing decisions on Swiss Cheese
- ✓ Eliminating the fear of refactoring

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THANK YOU

www.CodeFlair.io/why-bother-with-tdd/

www.github.com/Klugh/Course-TestDrivenDevelopment

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