Testing in Xcode 5

Session 409

Mike Swingler
Xcode Engineer

Why Test?

Why Test?

- Catch crashes

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- Catch logic errors

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- Help you write your code

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- Cover more configurations

Why Test?

- Catch crashes
- Catch logic errors
- Help you write your code
- Catch regressions
- Cover more configurations
- Cover everyone, all the time

Overview

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- What is a unit test?

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- Introducing XCTest

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- What is a unit test?
- Introducing XCTest
- Writing, running and debugging tests
- Continuous integration
- Advanced setups

Unit Testing

What Is a Unit Test?

- Tests **ONE** thing
  - Single “unit” of functionality
  - Pass/Fail
  - Small, fast, isolated

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- Unit tests don’t cover
  - Performance
  - UI interaction
  - Whole system integration

Your App

Where to start testing

Your App

Where to start testing

Database

View

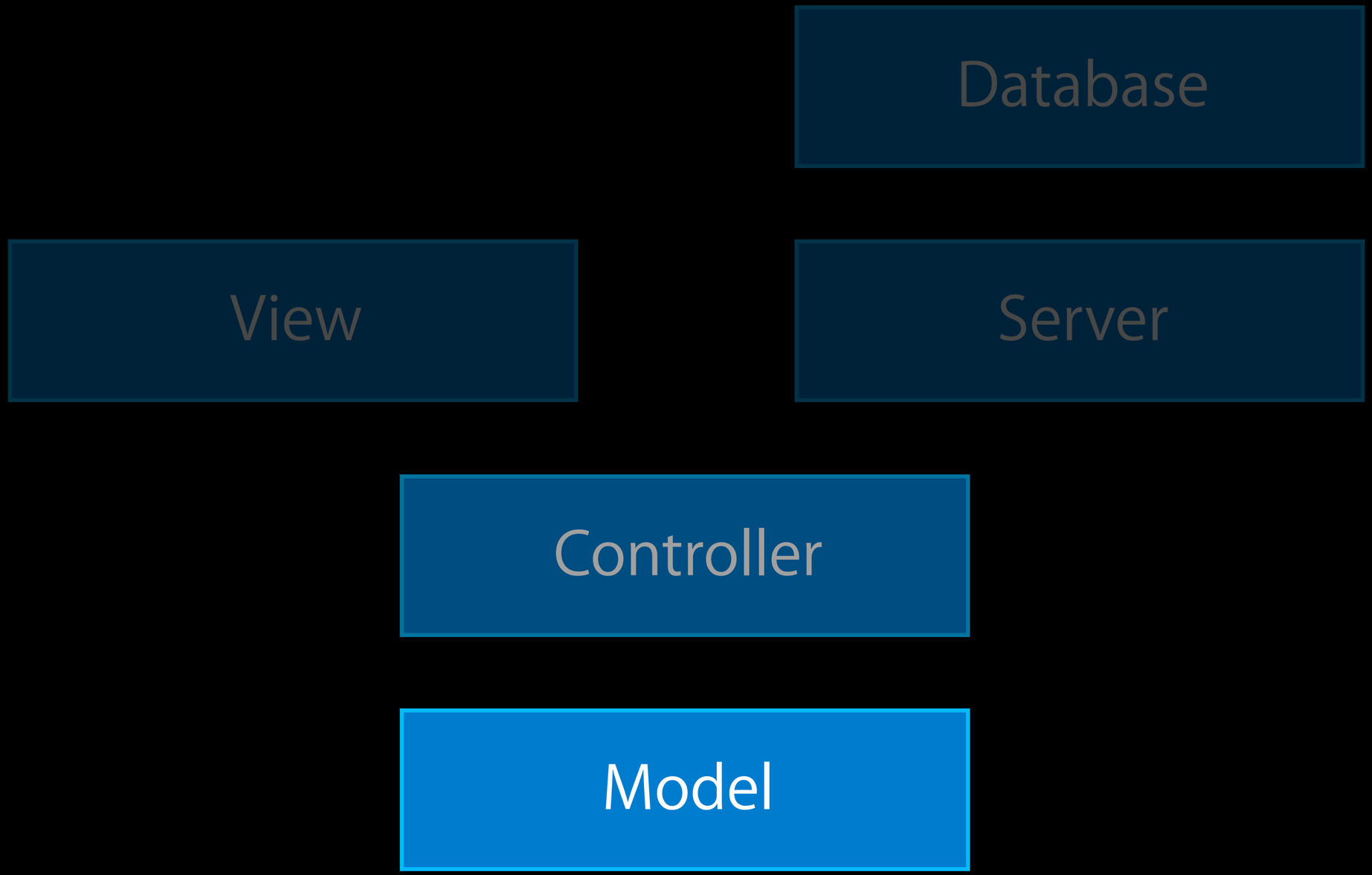
Server

Controller

Model

Your App

Where to start testing



Introducing XCTest

XCTest.framework

- iOS and OS X

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- Requires Xcode 5

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- Requires Xcode 5
- Derived from OCUnit
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- Builds .xctest bundles
- Test runner injected in your app
- Test rig loads libraries and test bundles

Test Code

Test Code

```
@interface ExampleTests : XCTestCase
@end

@implementation ExampleTests

- (void) testExample {
    XCTAssertTrue(2 + 2 == 4);
}

@end
```

Test Code

- Subclass `XCTestCase`

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Test Code

- Subclass `XCTestCase`
- test = method
- Prefixed "`test`"
- No arguments, returns void
- Makes assertions
- Built into test target

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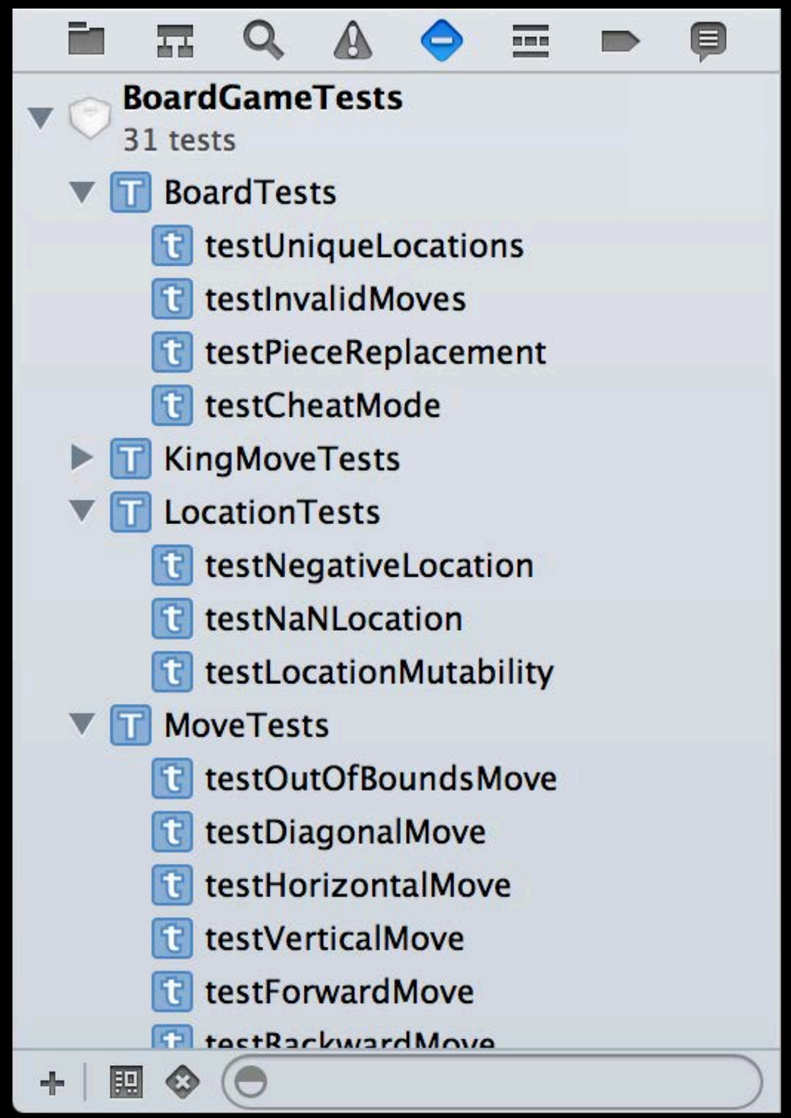
Test Navigator



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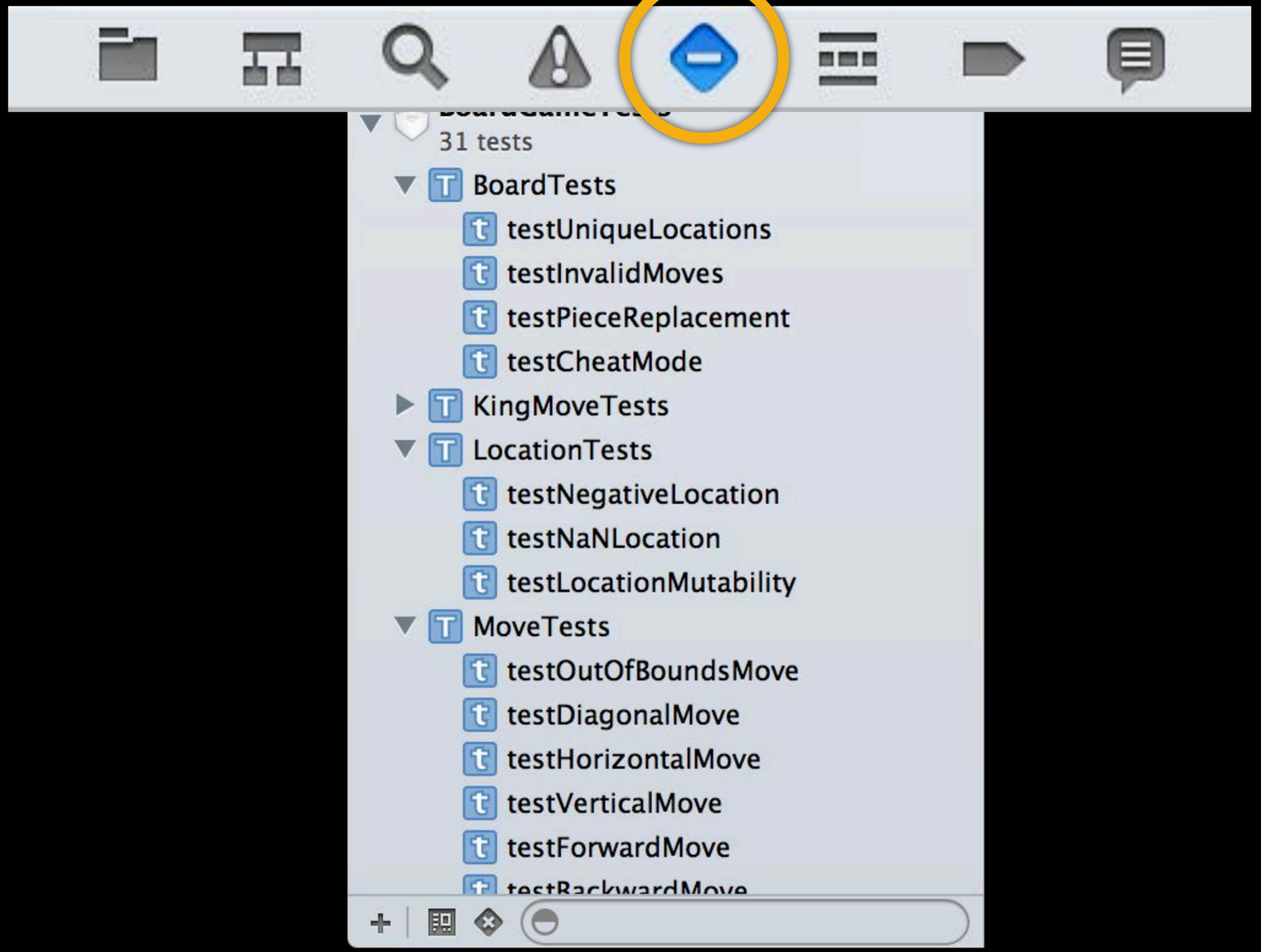
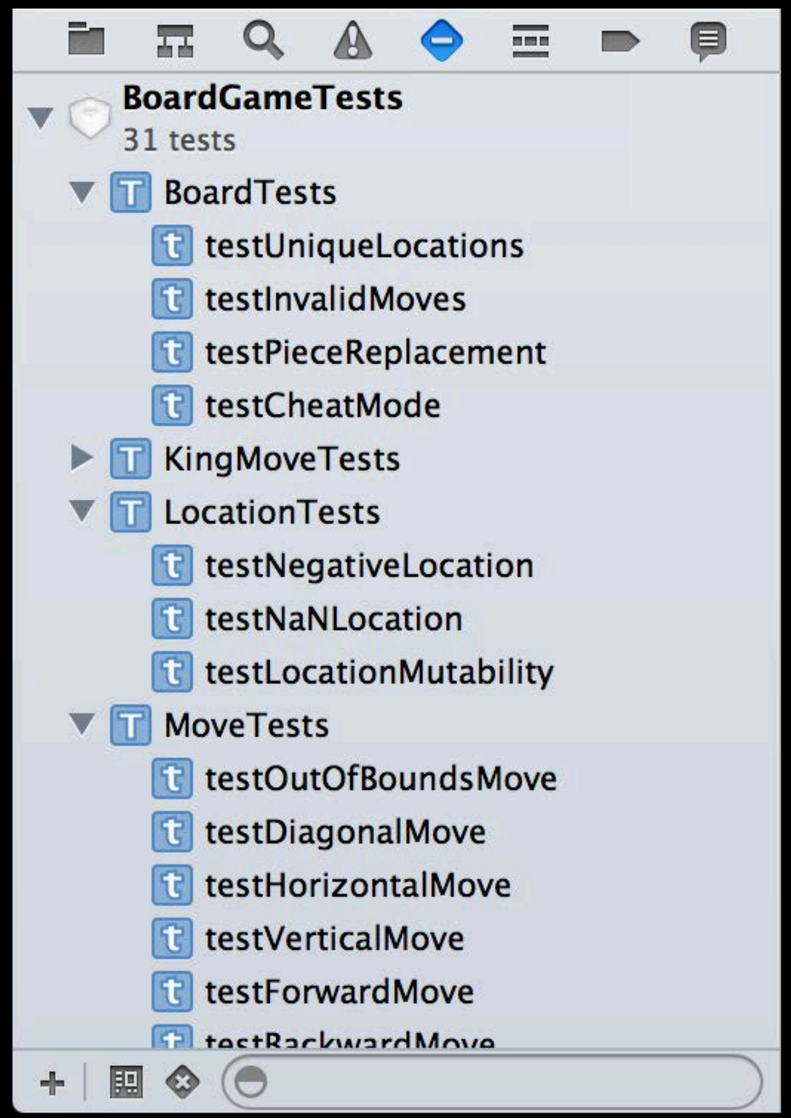


Test Navigator

- Test bundle targets
  - Test classes
    - Test methods



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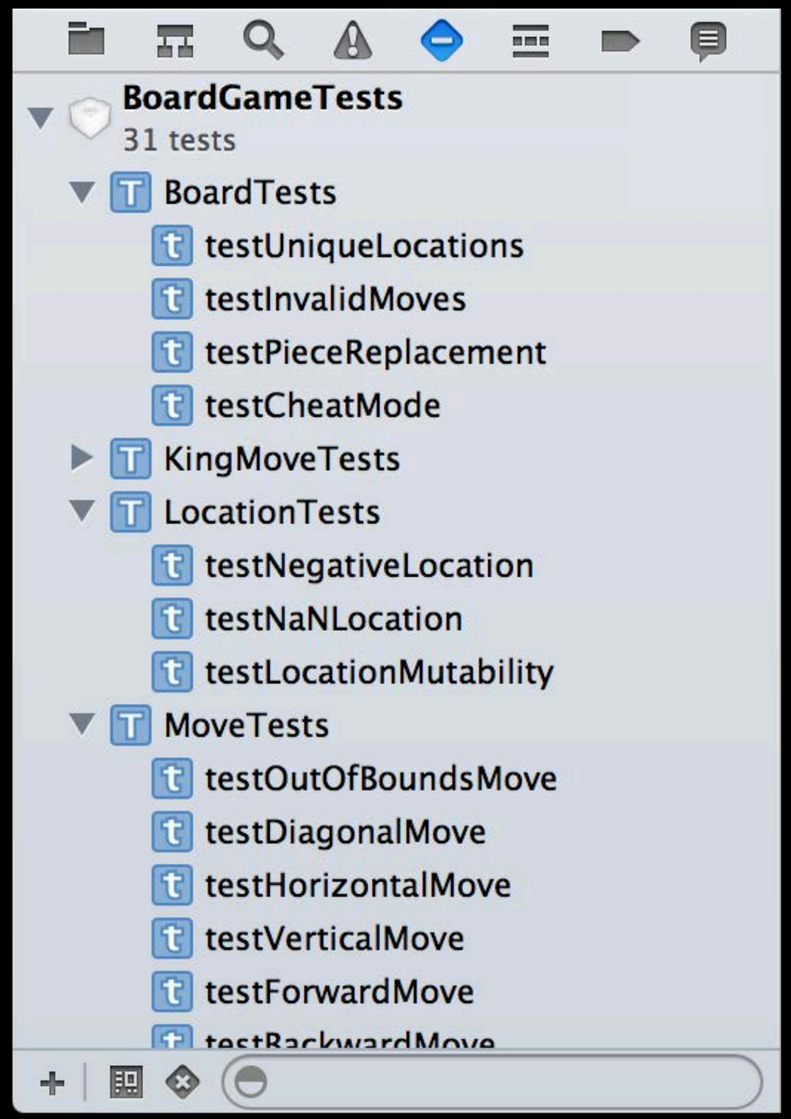

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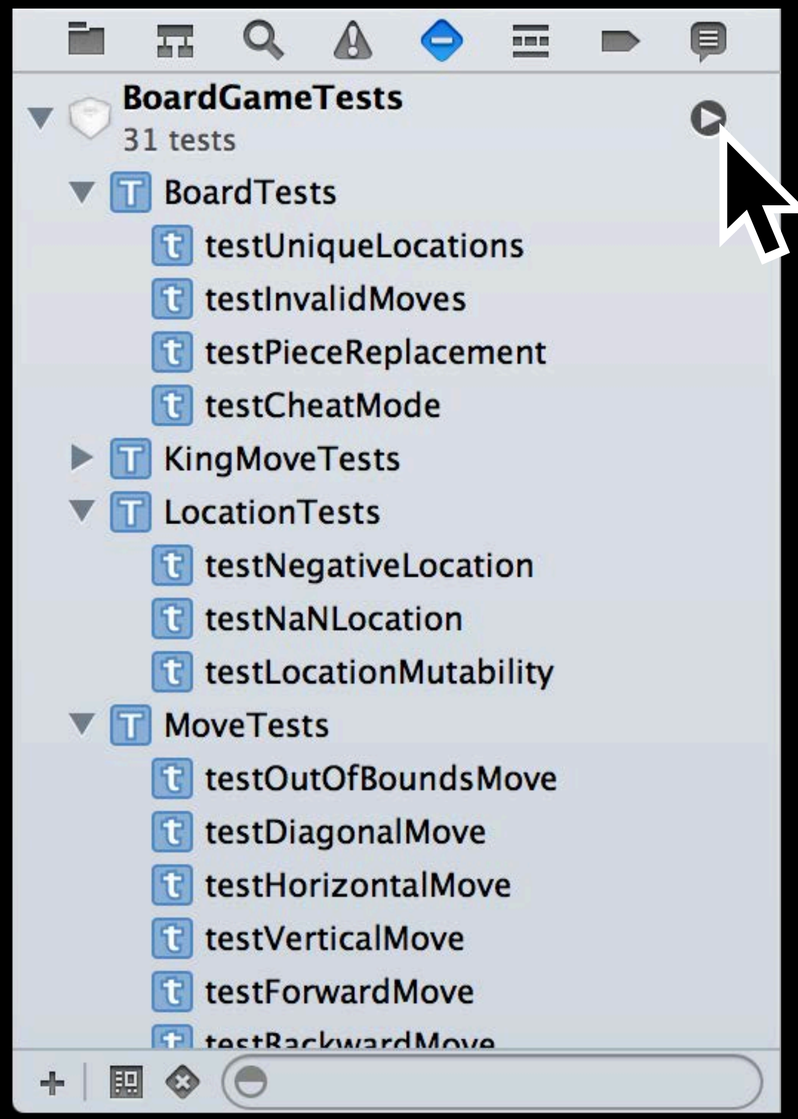

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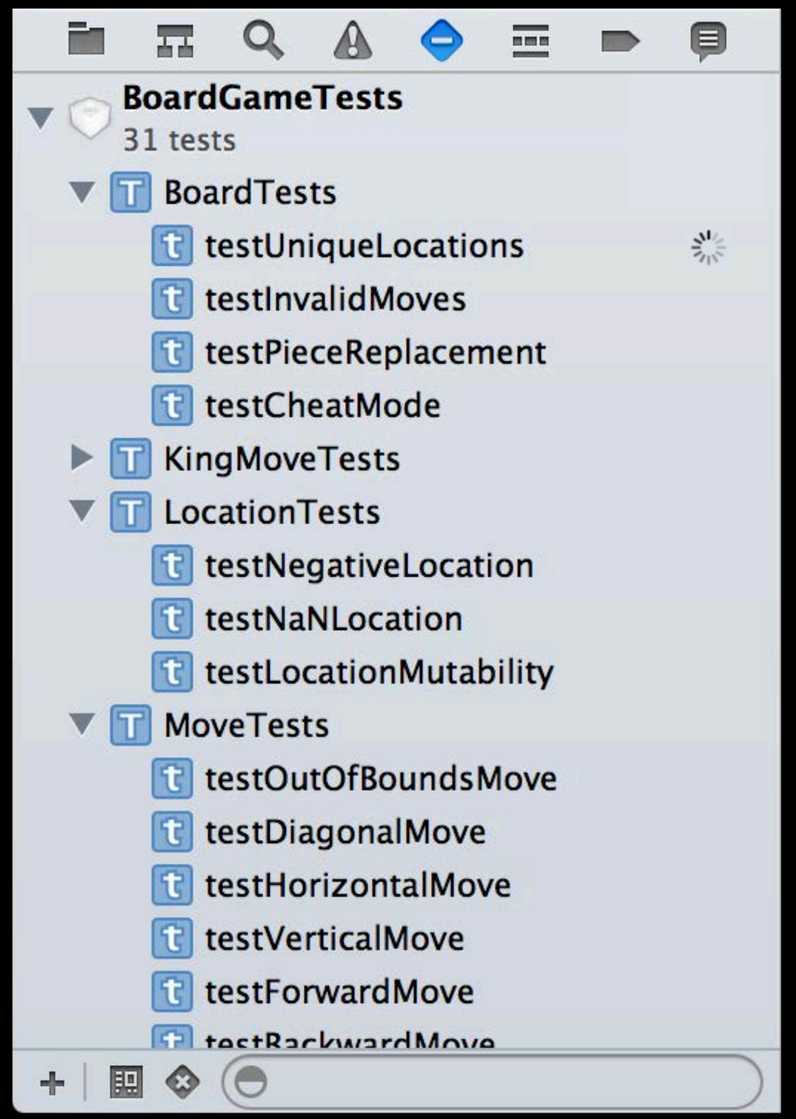

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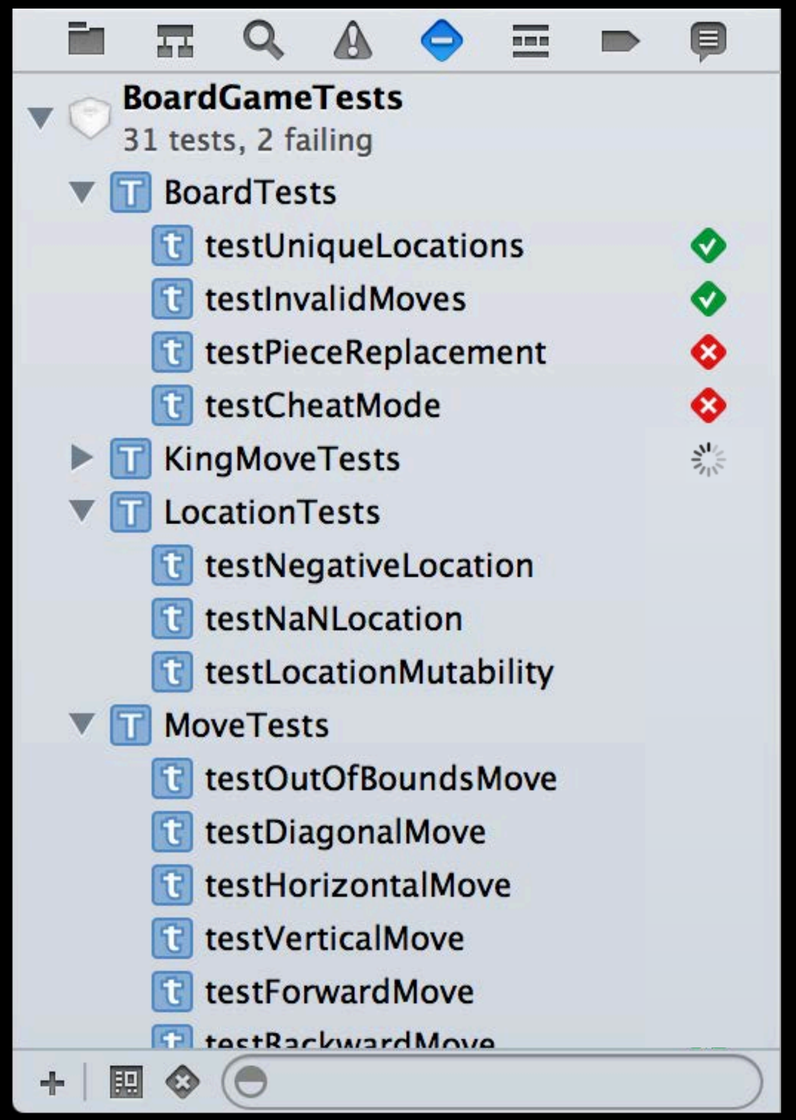

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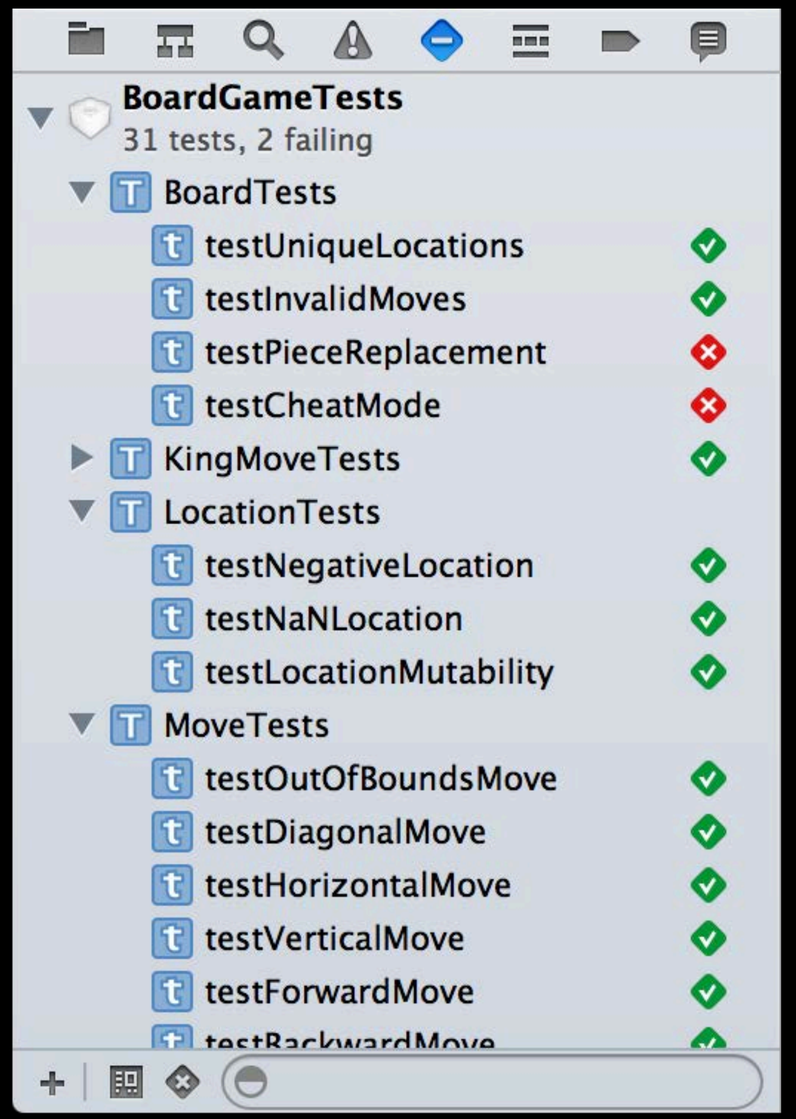

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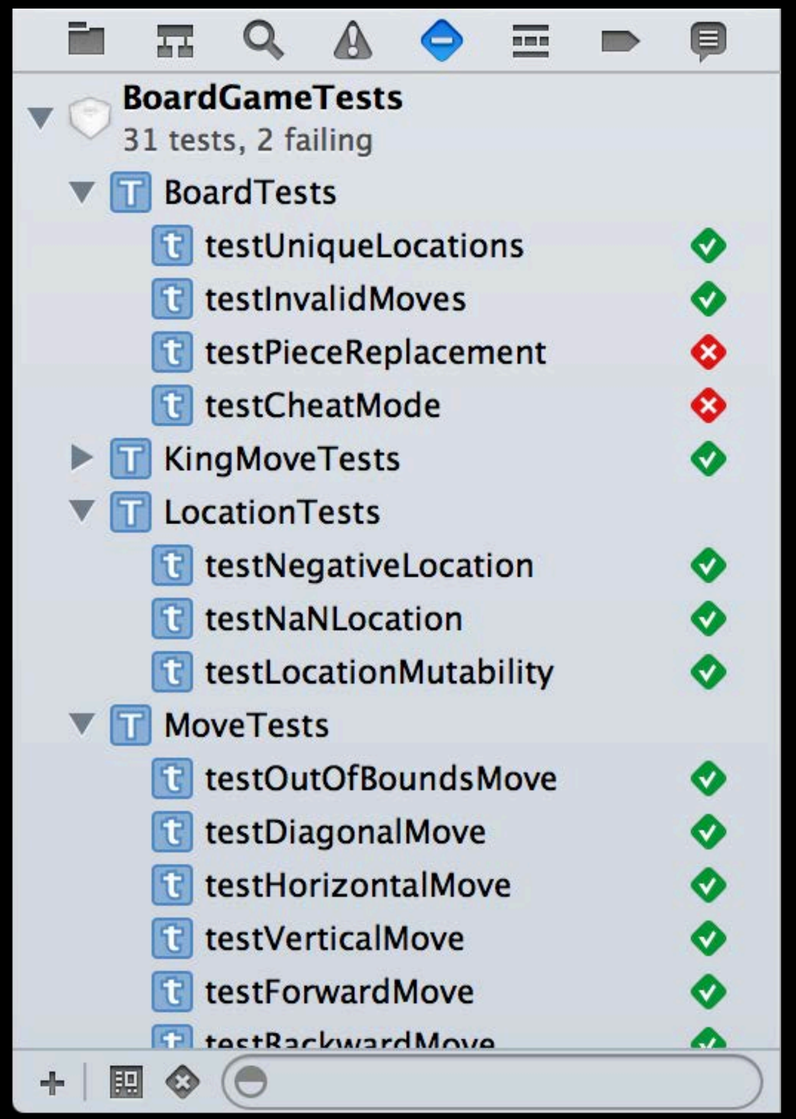

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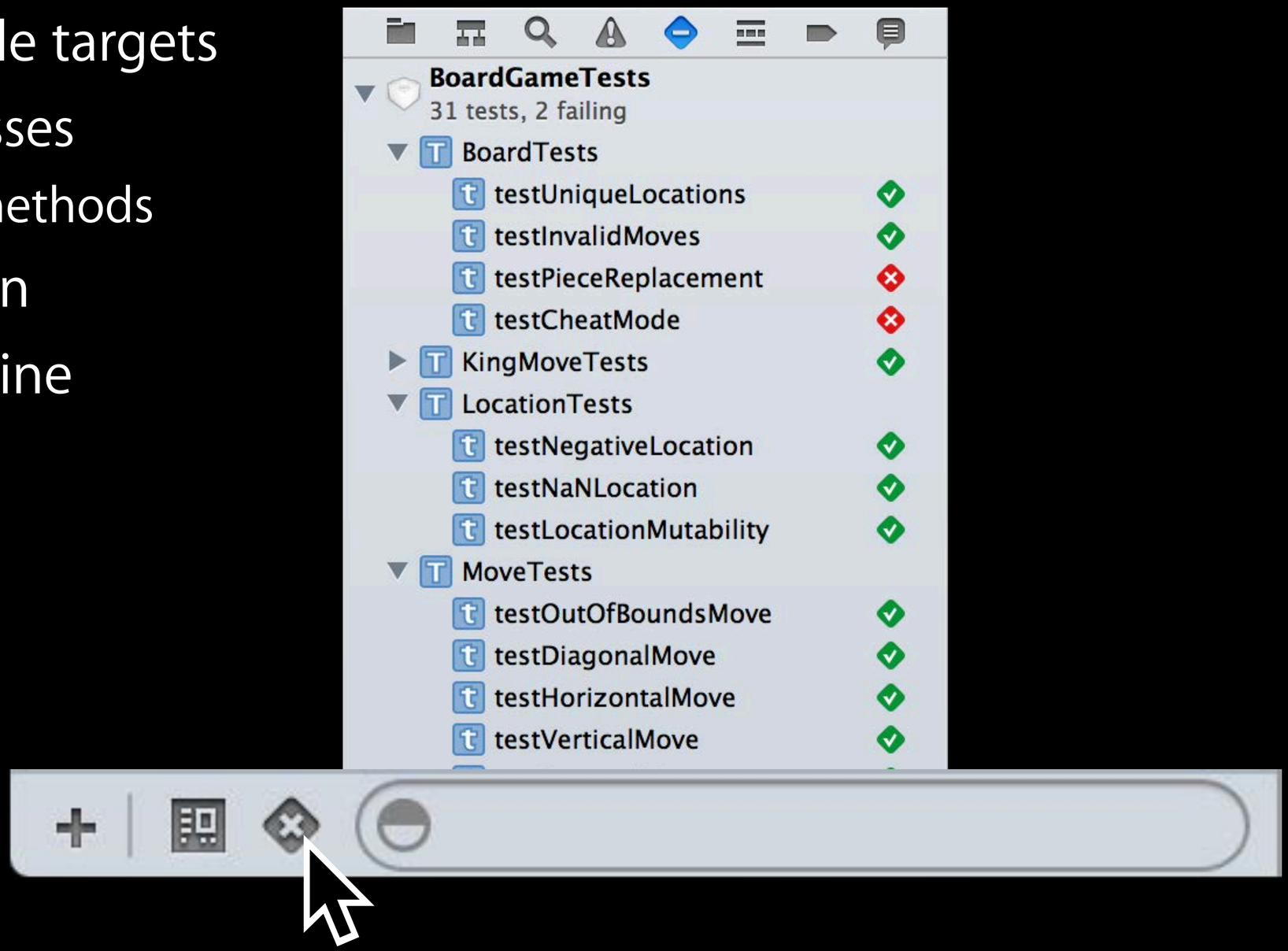

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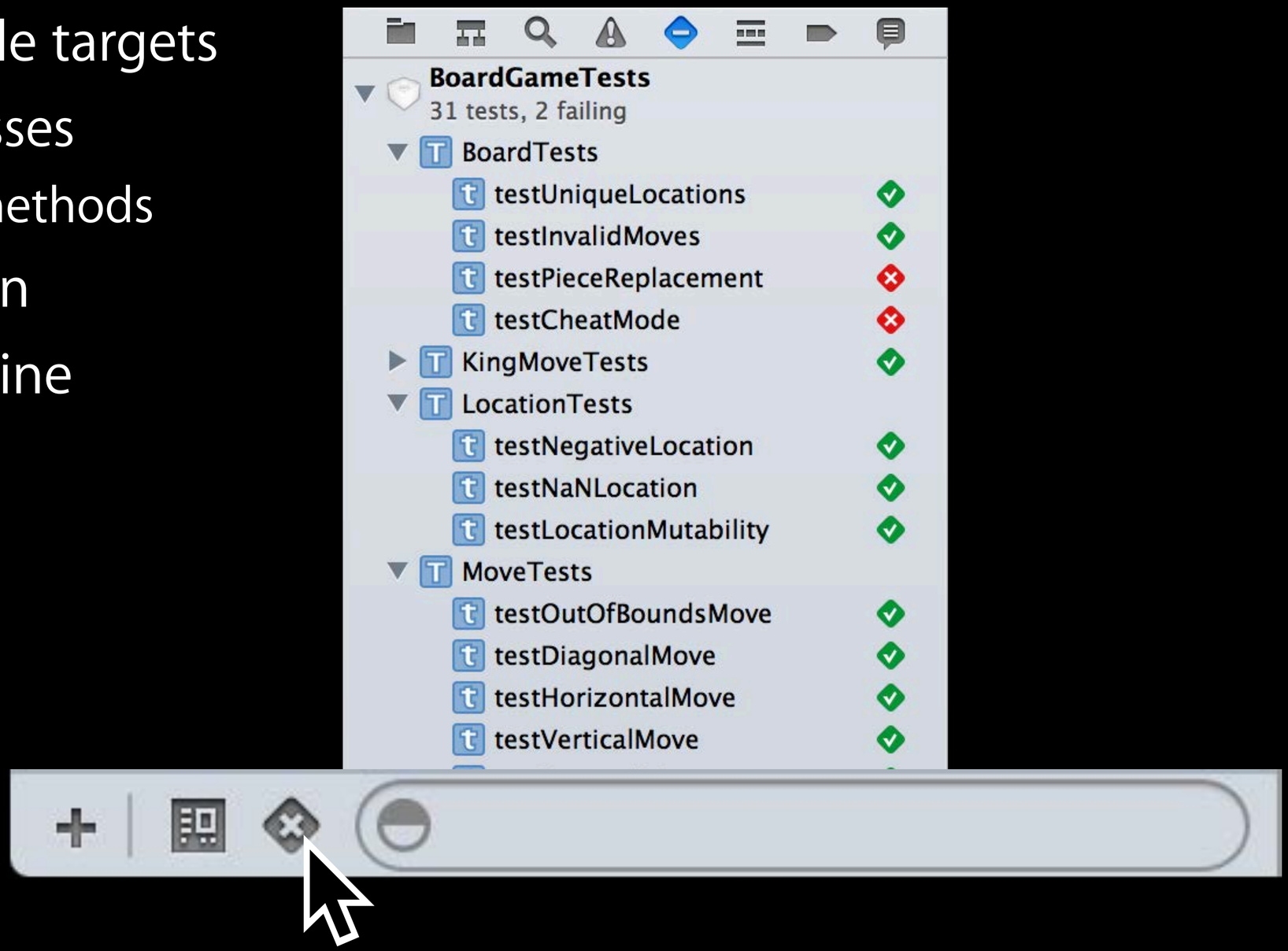

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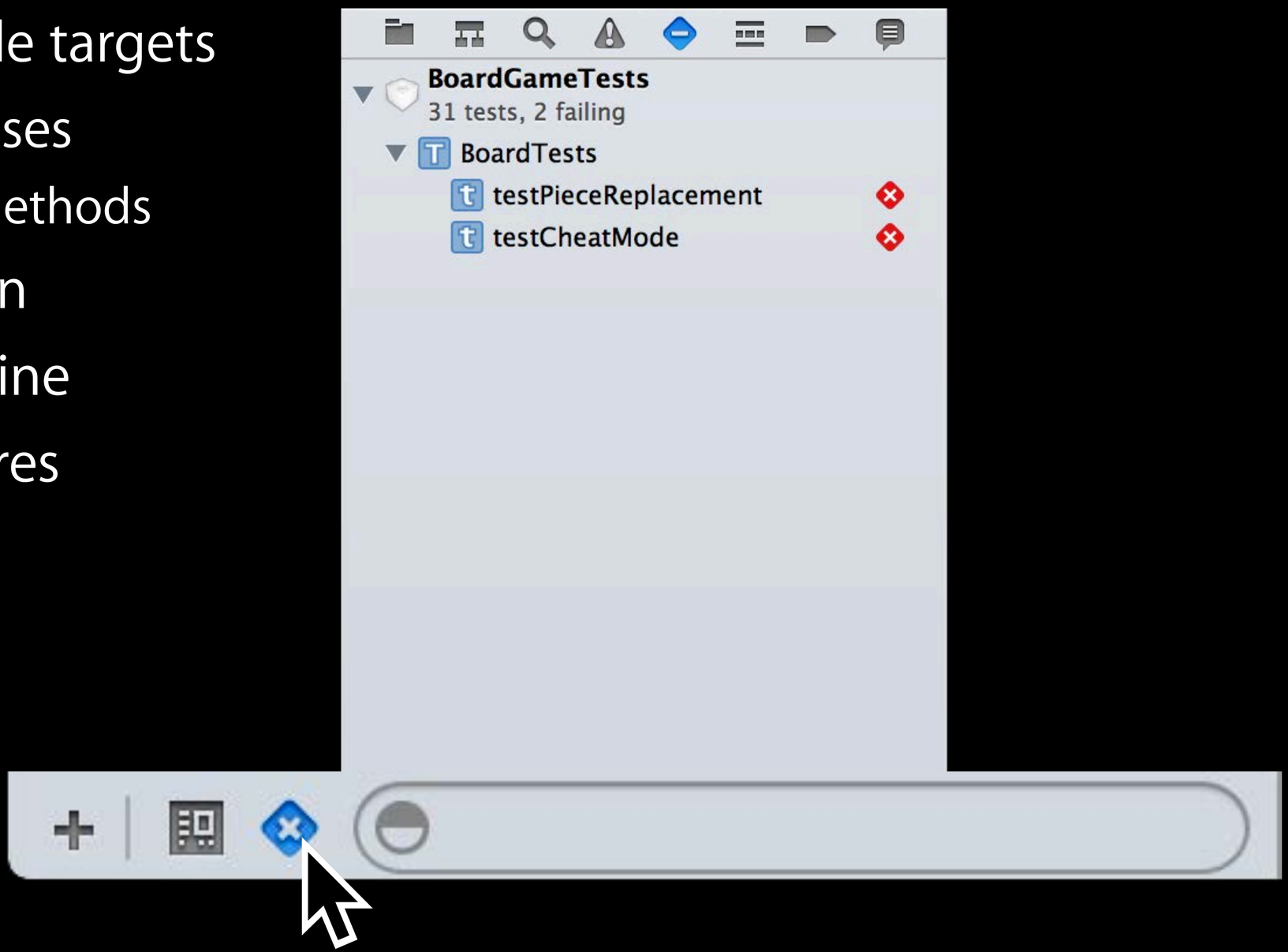

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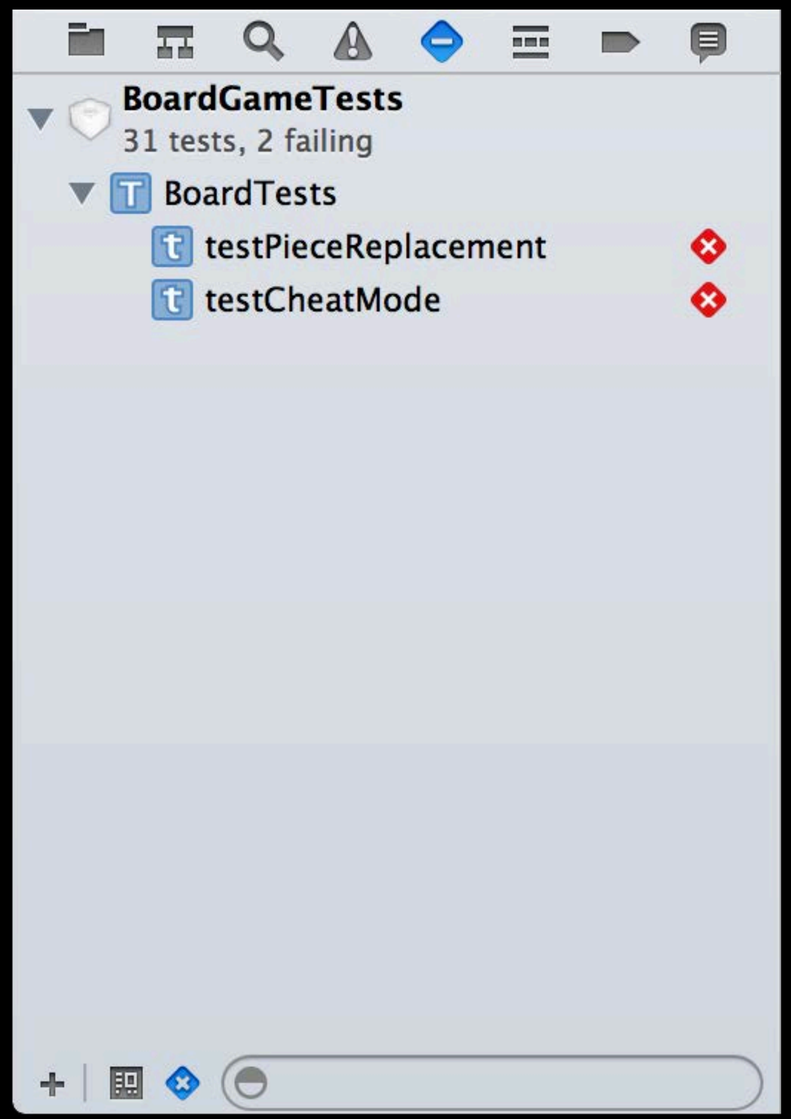

Editor Test Indicators


```
32
33  - (void)testVerticalMove {
34      Location *invalidLocation = [[Location alloc] initWithX:0 andY:0];
35      XCTAssertFalse([self.ruleChecker validateLocation:invalidLocation forPiece:self.piece]);
36
37      Location *location = [[Location alloc] initWithX:0 andY:1];
38      BOOL verticalMoveWasValid = [_ruleChecker validateLocation:location forPiece:_piece];
39      XCTAssertFalse(verticalMoveWasValid, @"Vertical move succeeded!");
40  }
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42  - (void)testOutOfBoundsMove {
43      // negative location
44      Location *location = [[Location alloc] initWithX:-1 andY:-1];
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48      // too big x
49      location = [[Location alloc] initWithX:9 andY:0];
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                "negativeMoveWasValid" should be false. Negative bounds move succeeded
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Demo

Making your first unit test in Xcode 5

Mike Swingler
Xcode Engineer

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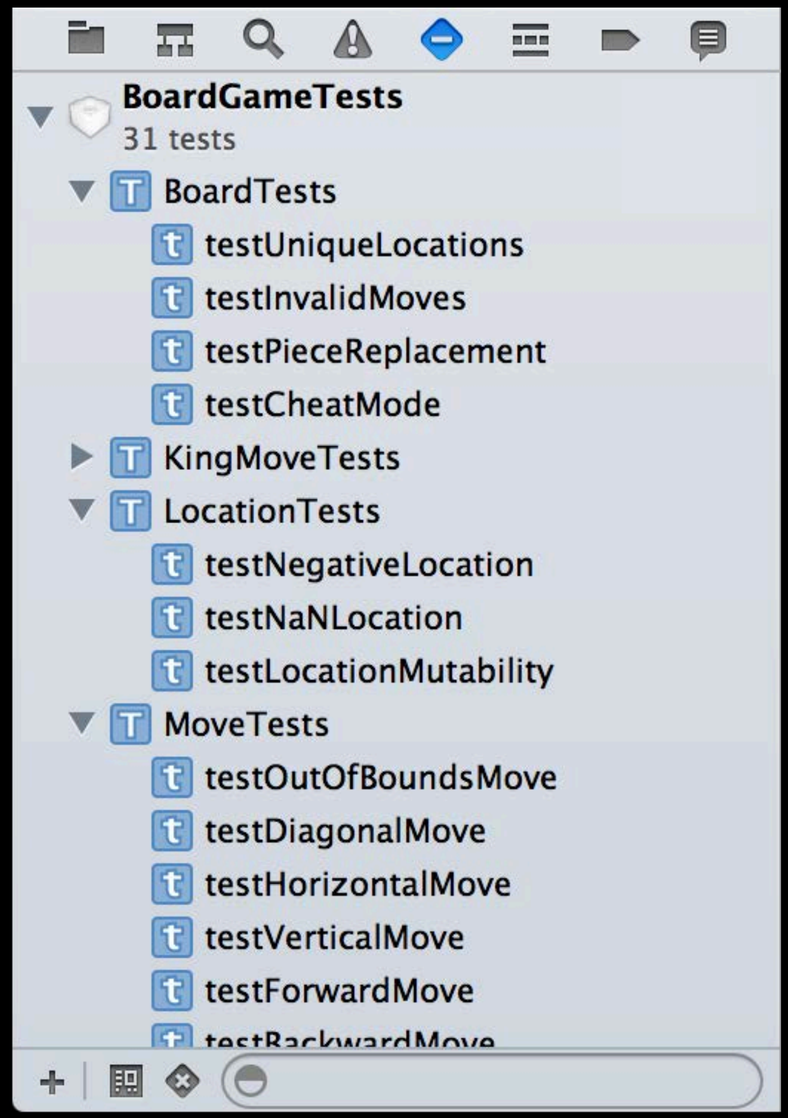

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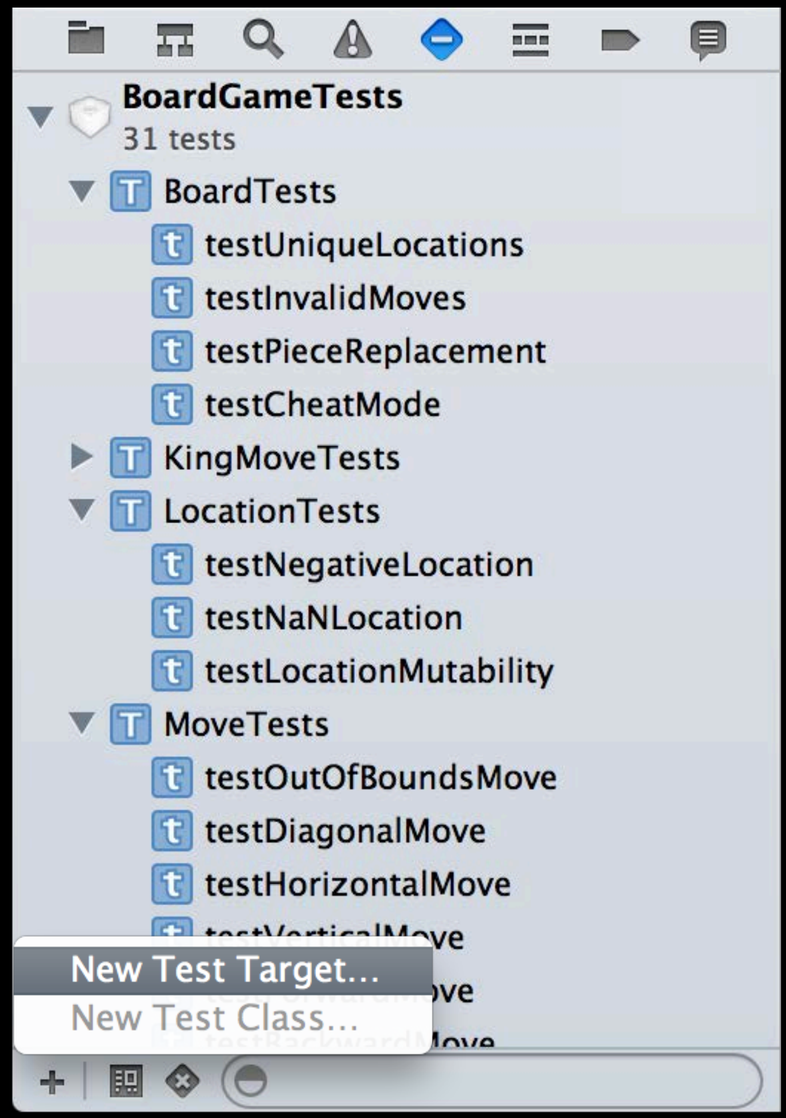

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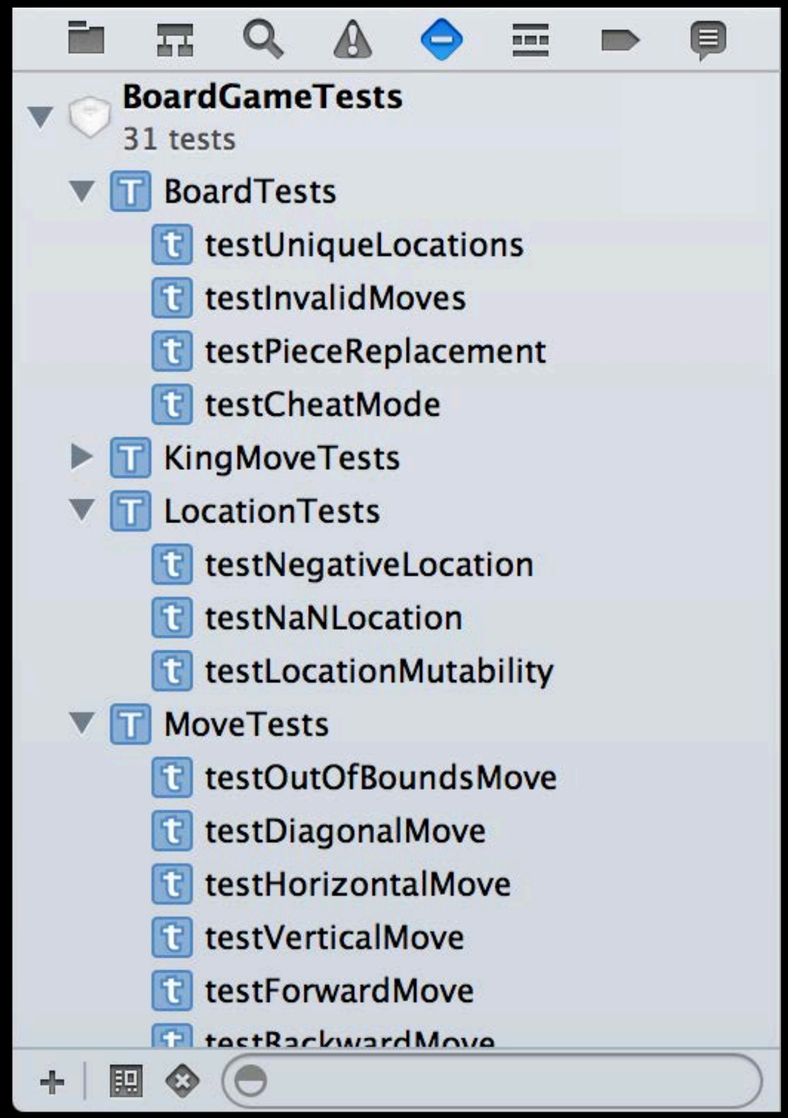

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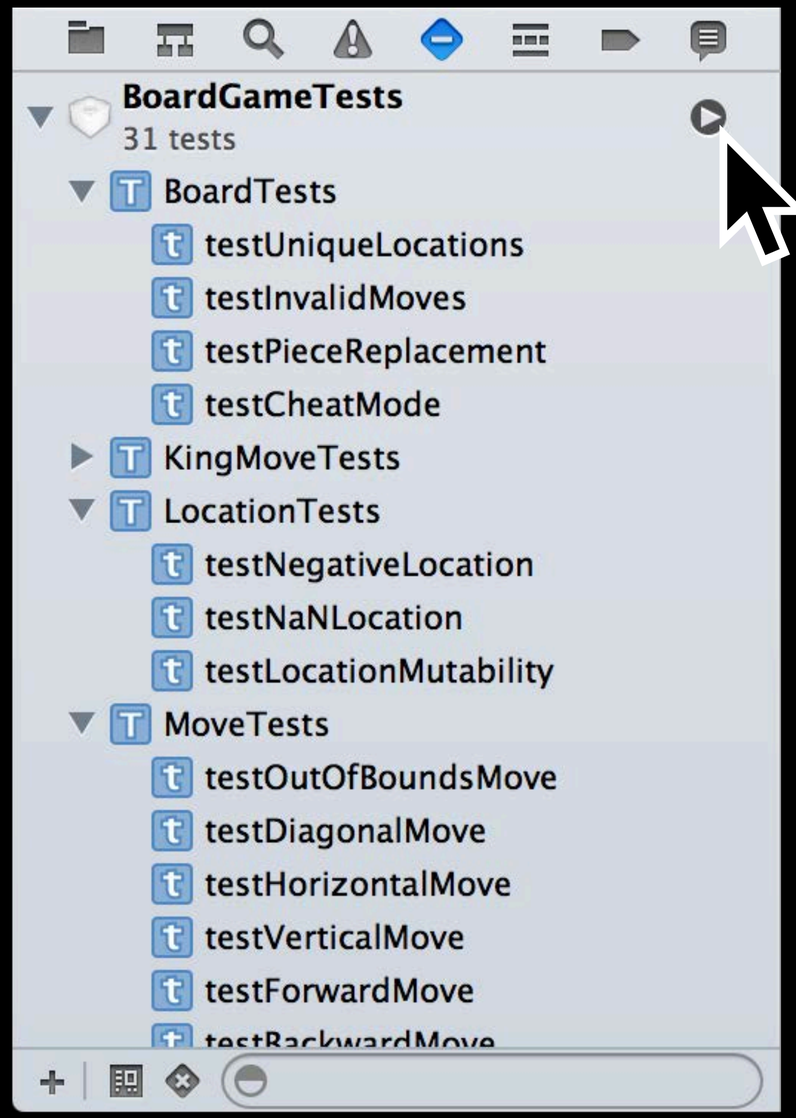

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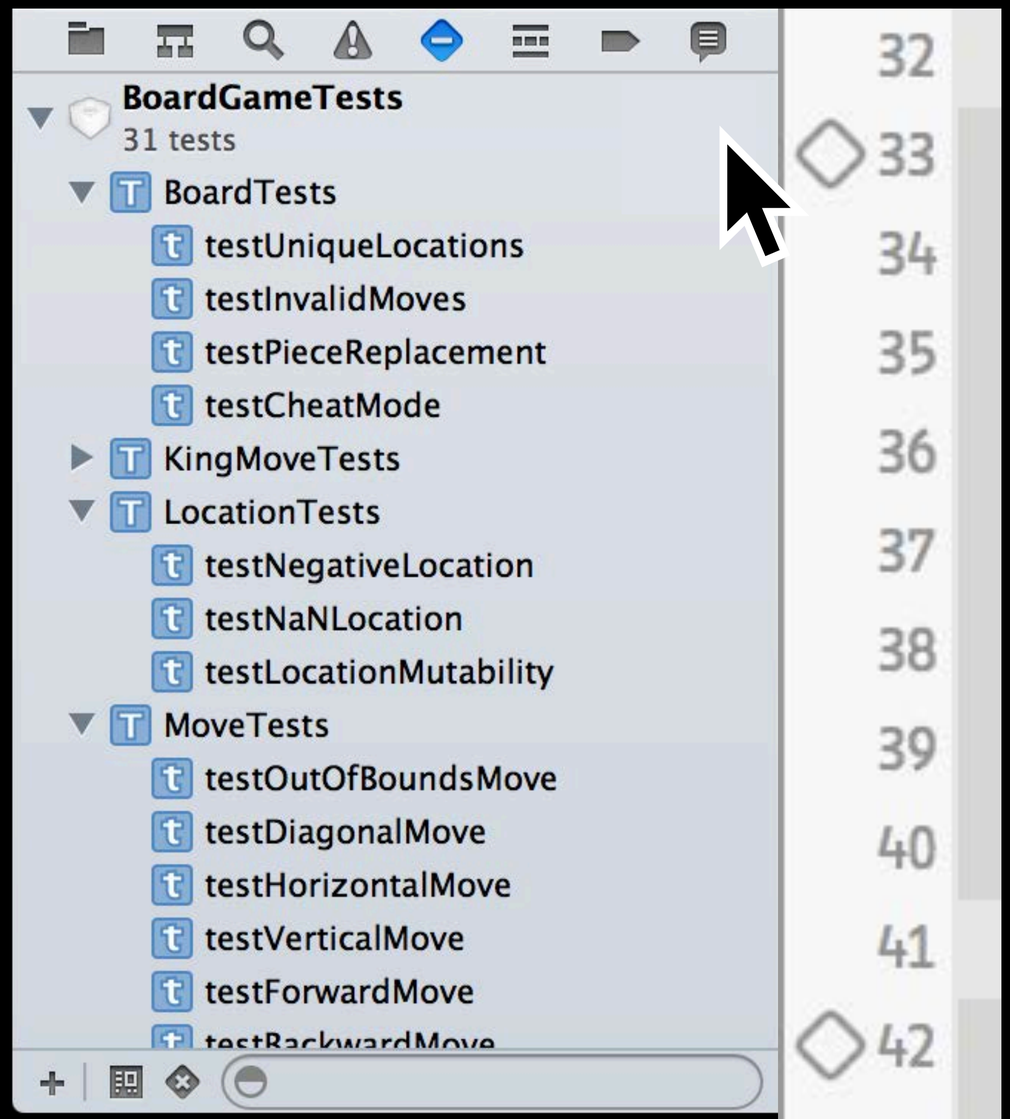

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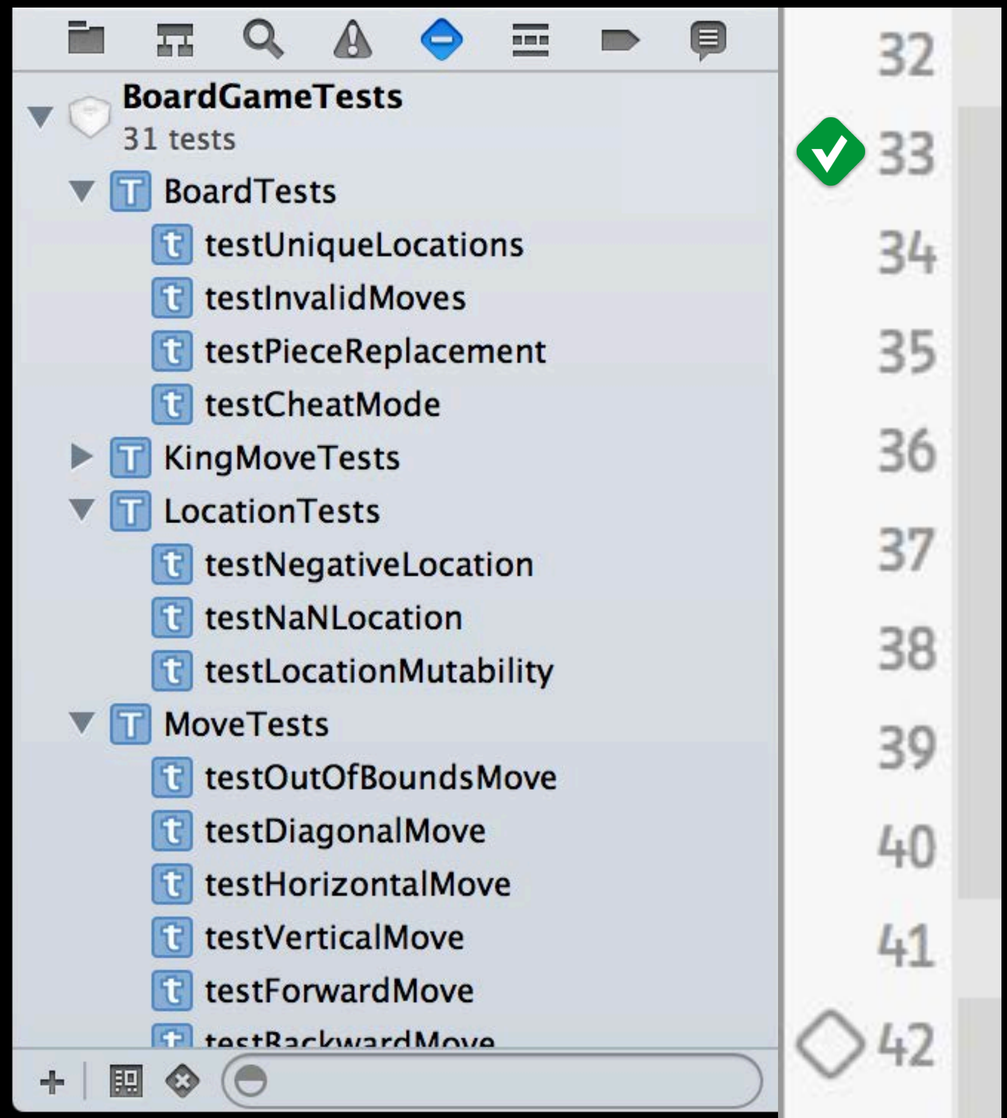

Assert the Expected

XCTestAssertions.h

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XCTAssertThrowsSpecific

XCTAssertTrueNoThrow

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XCTAssertNotNil

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`-setUp`

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- Use `-tearDown` to perform any cleanup

How XCTest Works

Test class and methods

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@interface ExampleTests : XCTestCase
@implementation ExampleTests

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+ (void) tearDown { /* Class tear-down. */ }

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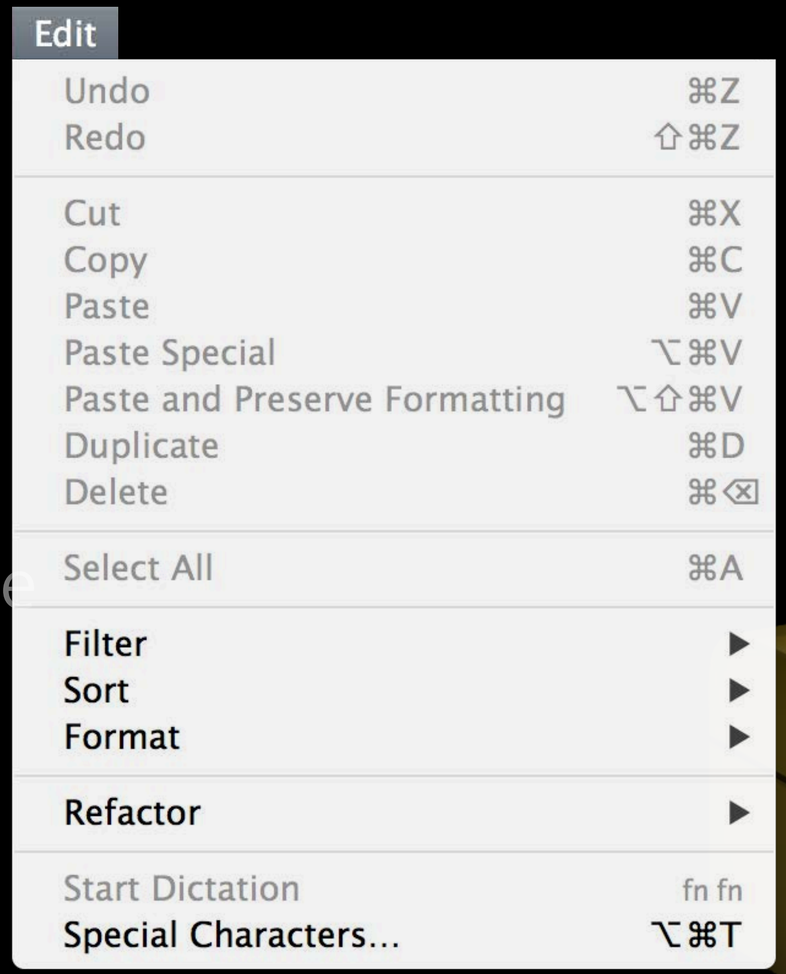

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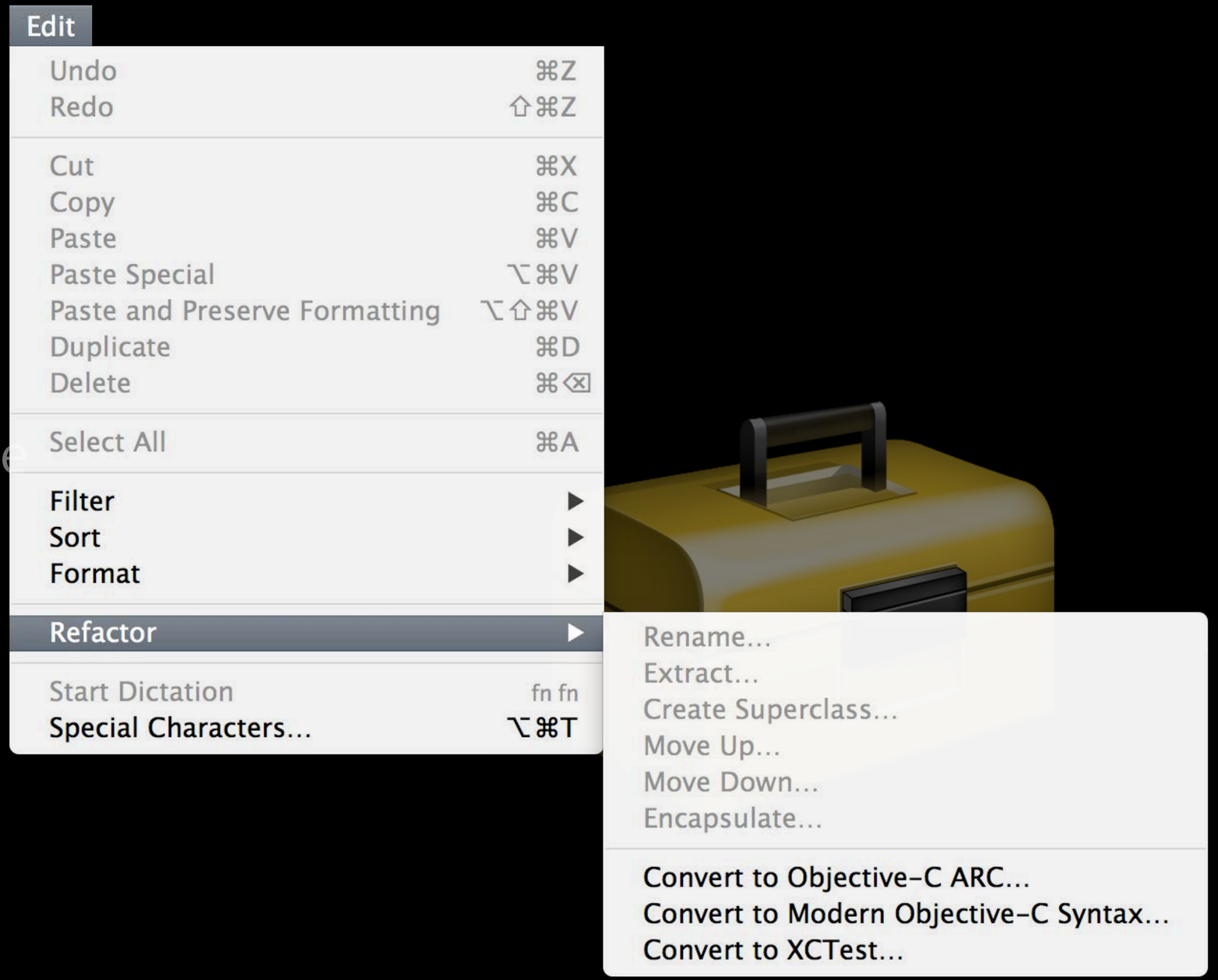

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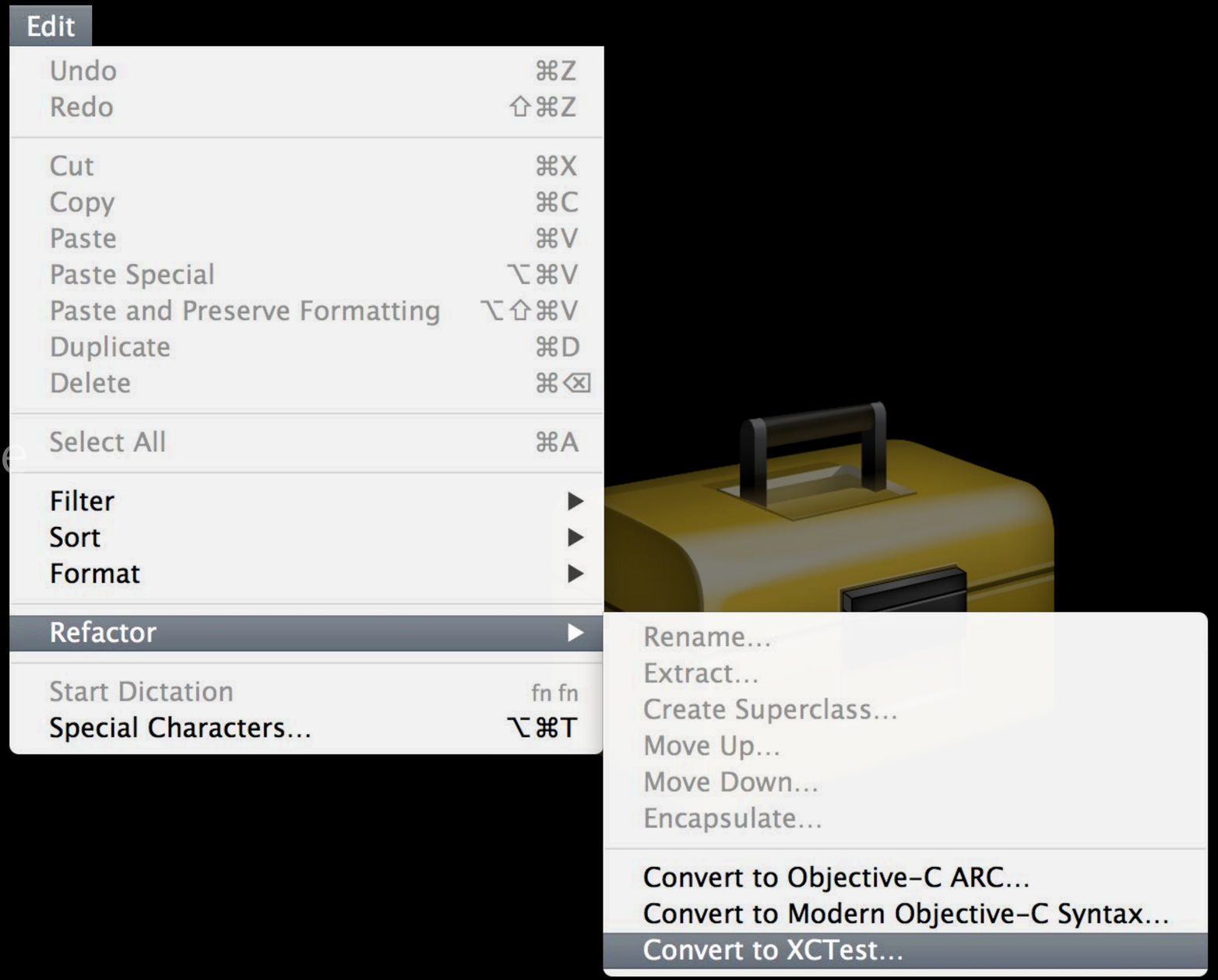

Debugging Tests

Demo

Debugging tests

Bino George
Xcode Engineer

Overview

New test debugging UI

- Test breakpoint

Overview

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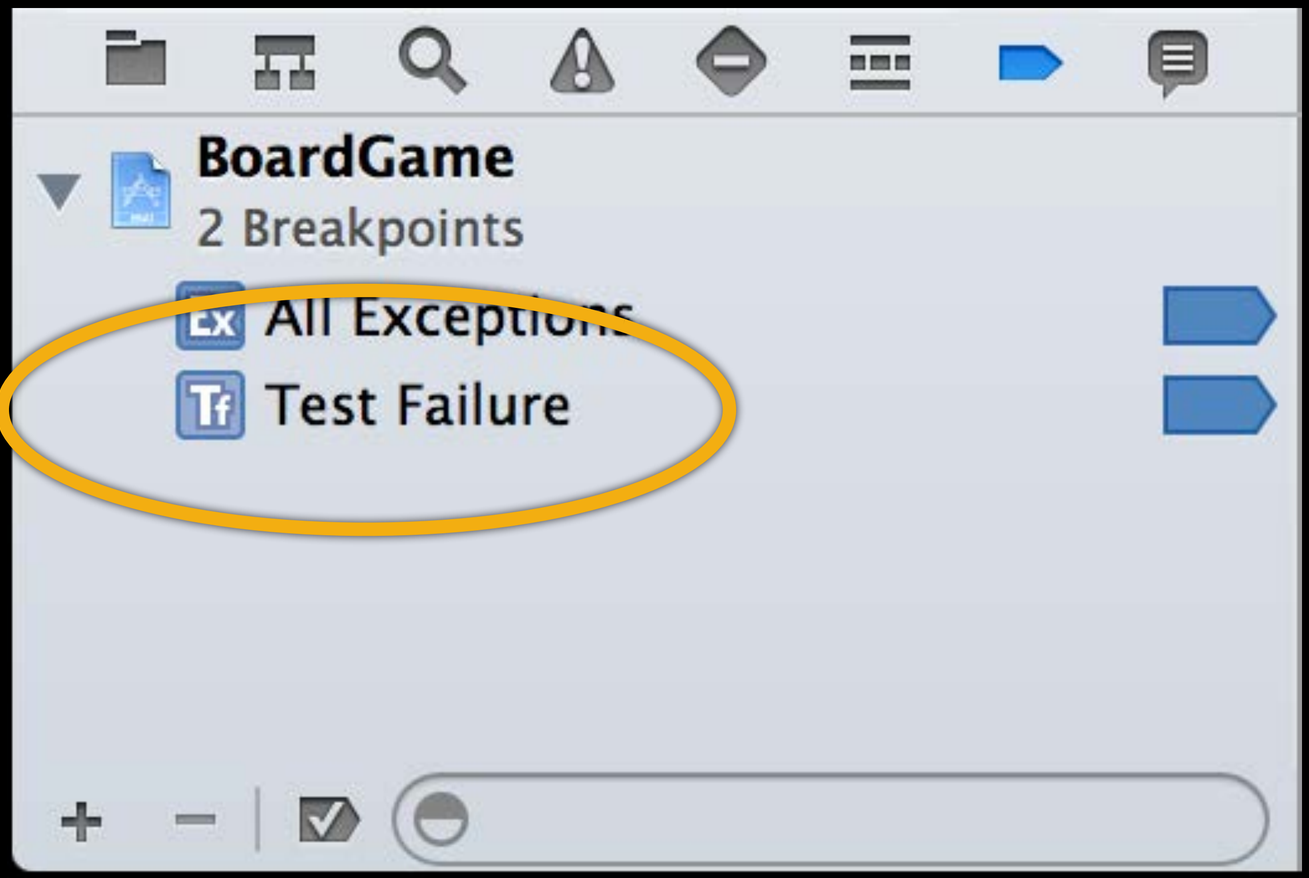

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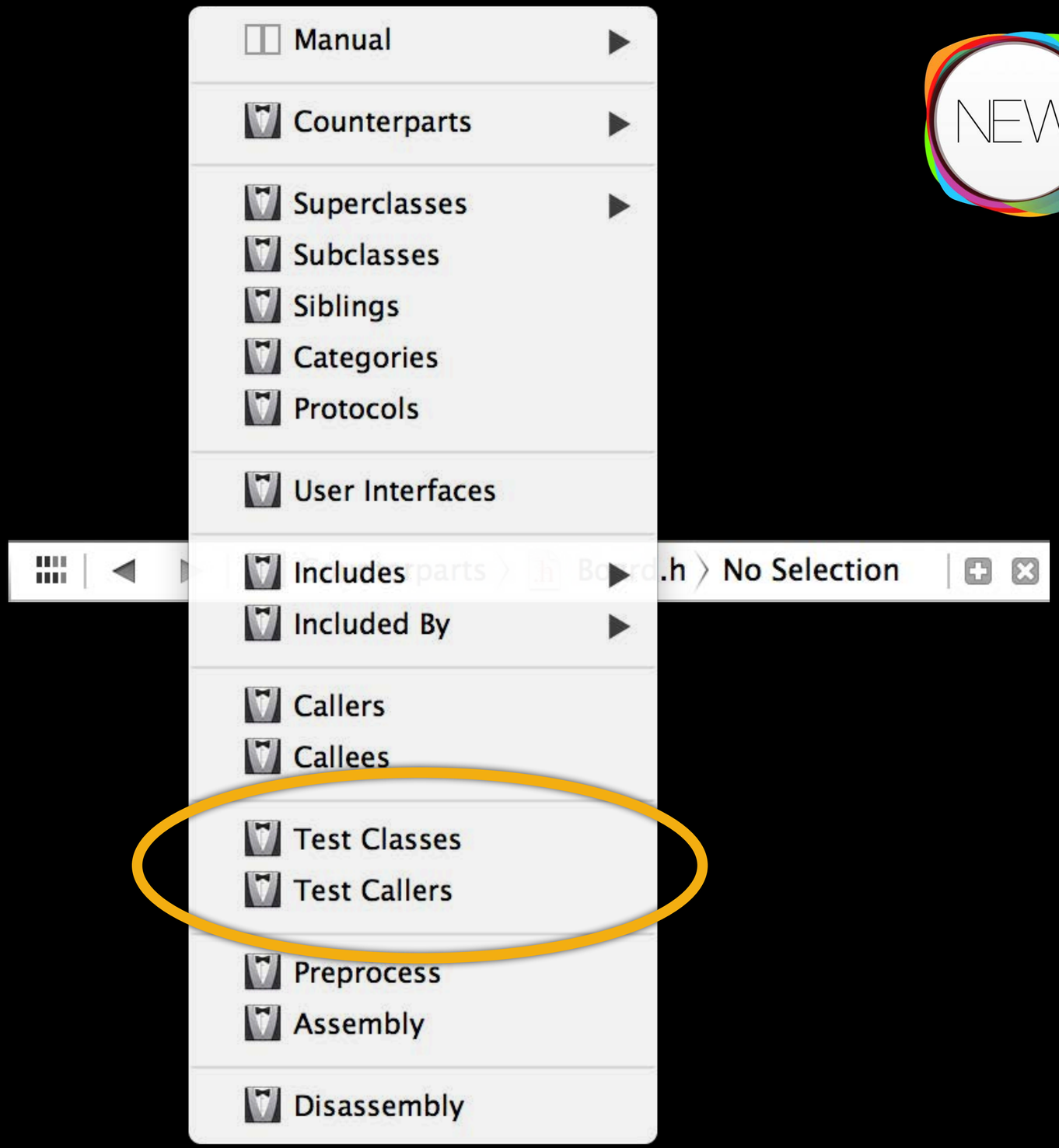

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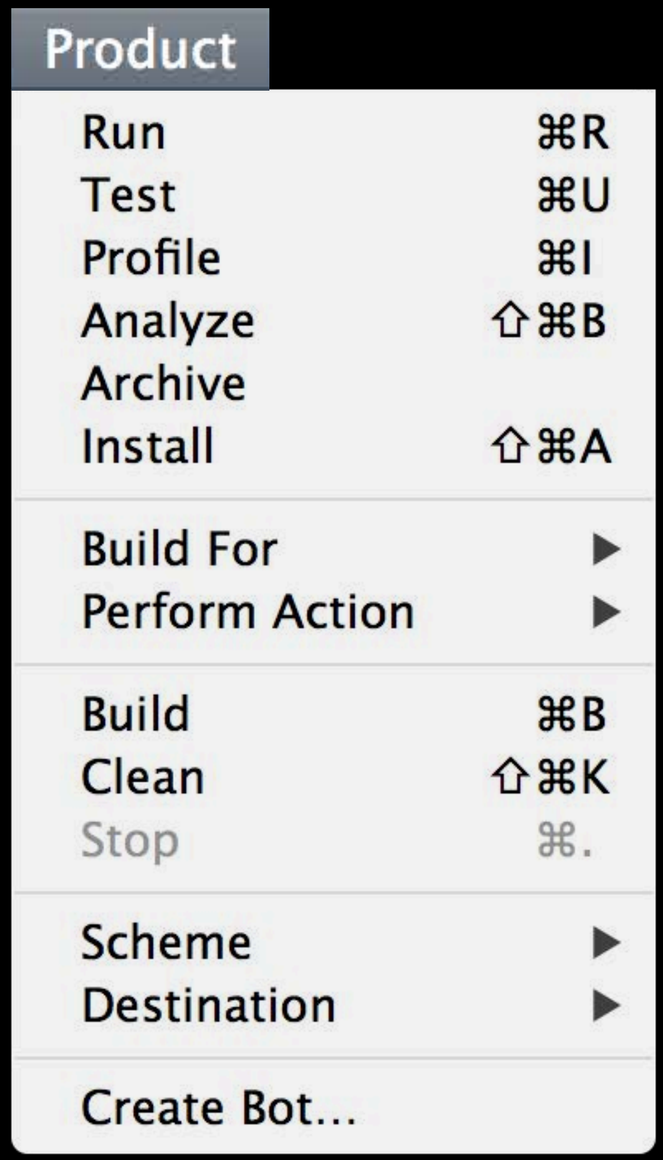

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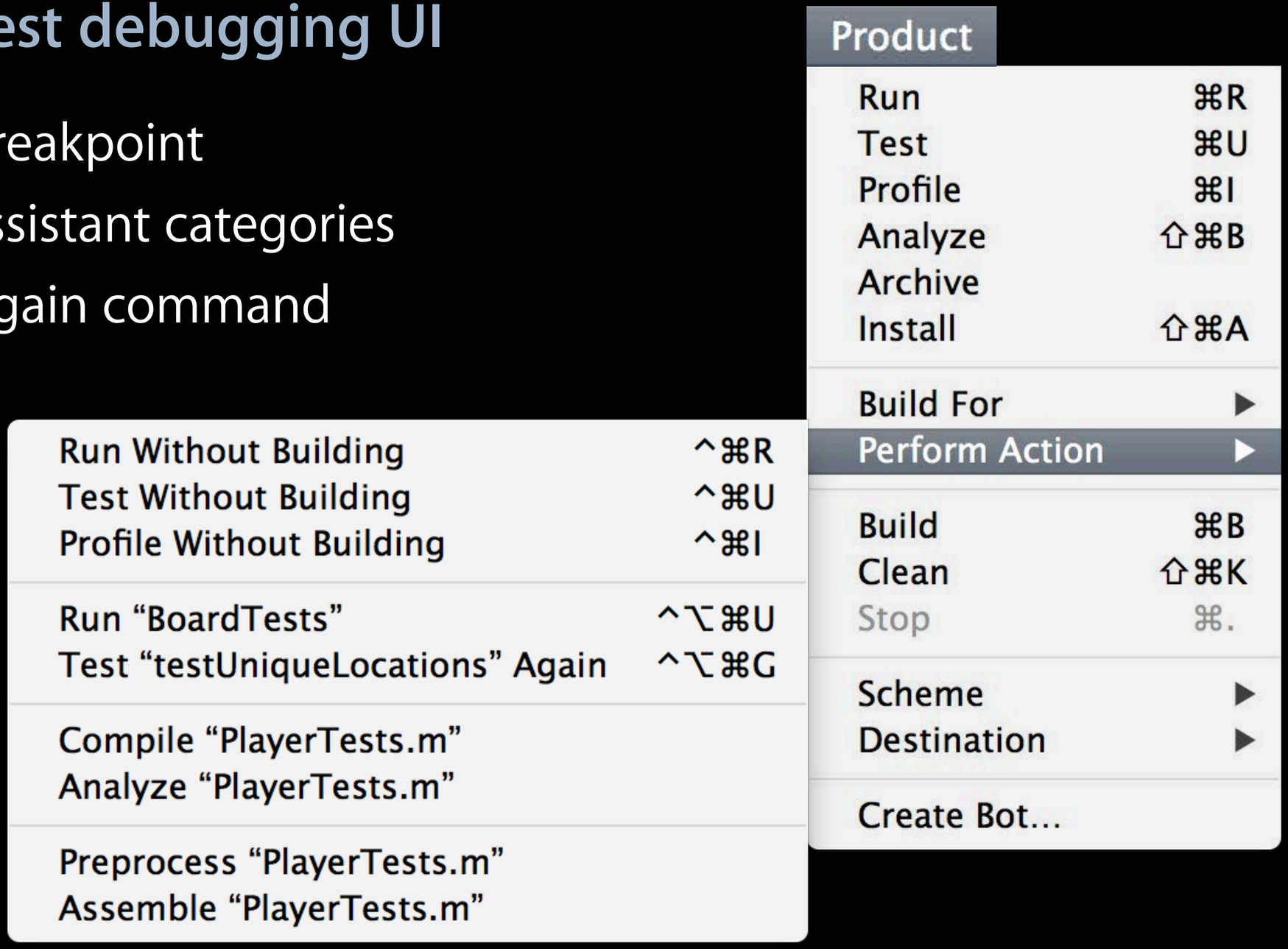

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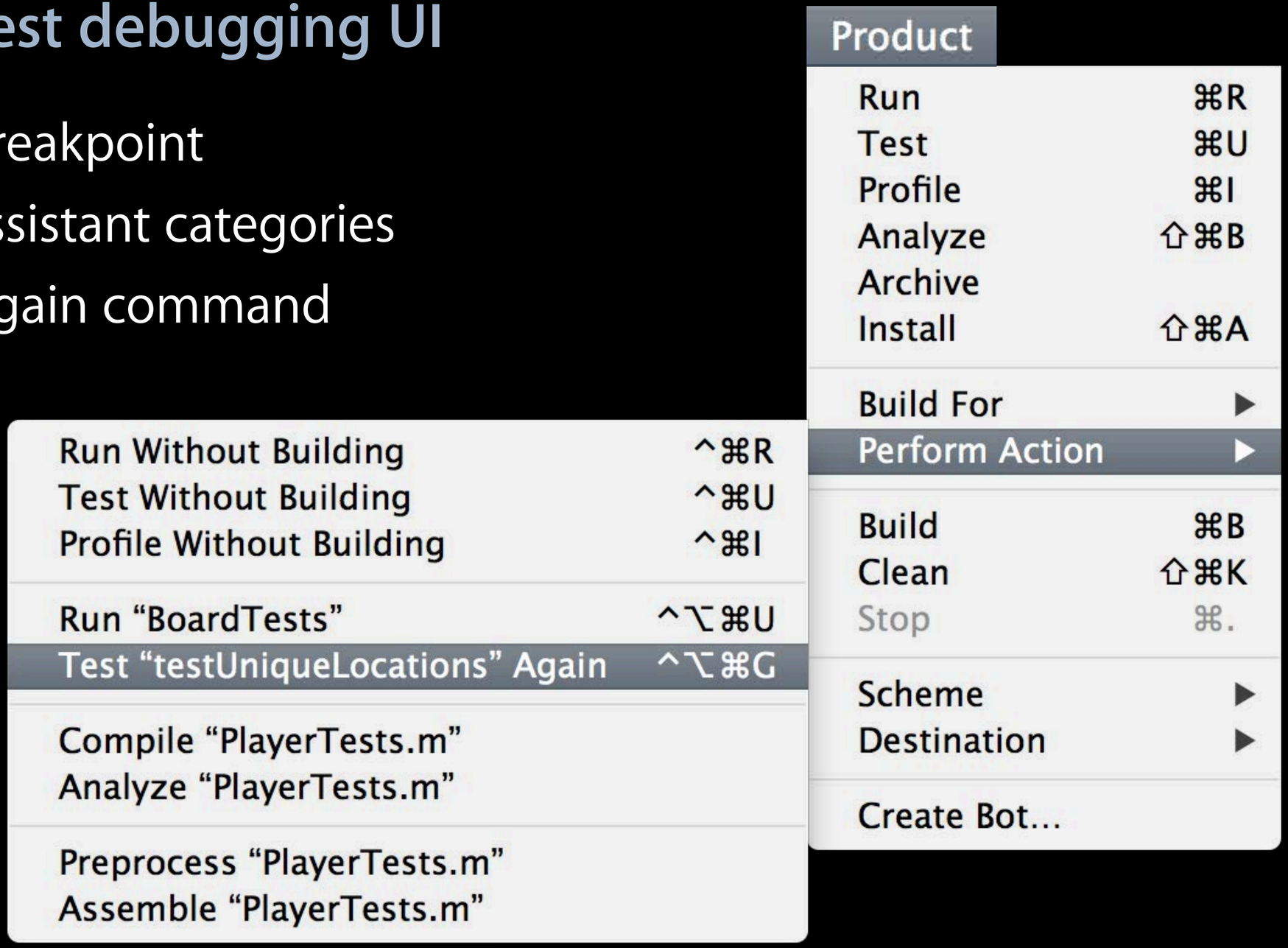


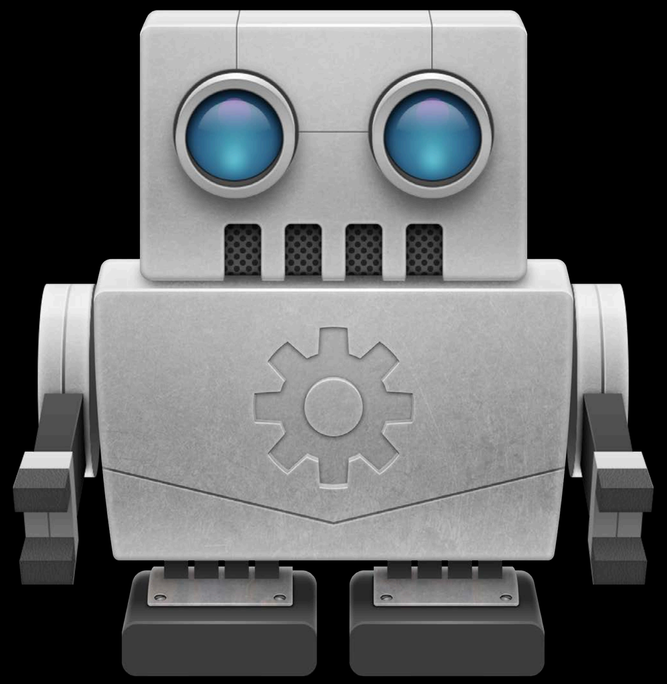
Continuous Integration and Testing

Testing Using OS X Server

NEW

Testing Using OS X Server

- Xcode service Bots perform integrations
  - Every time your commit code
  - On the hour



Testing Using OS X Server

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- Create a Scheme
  - Bots run shared schemes

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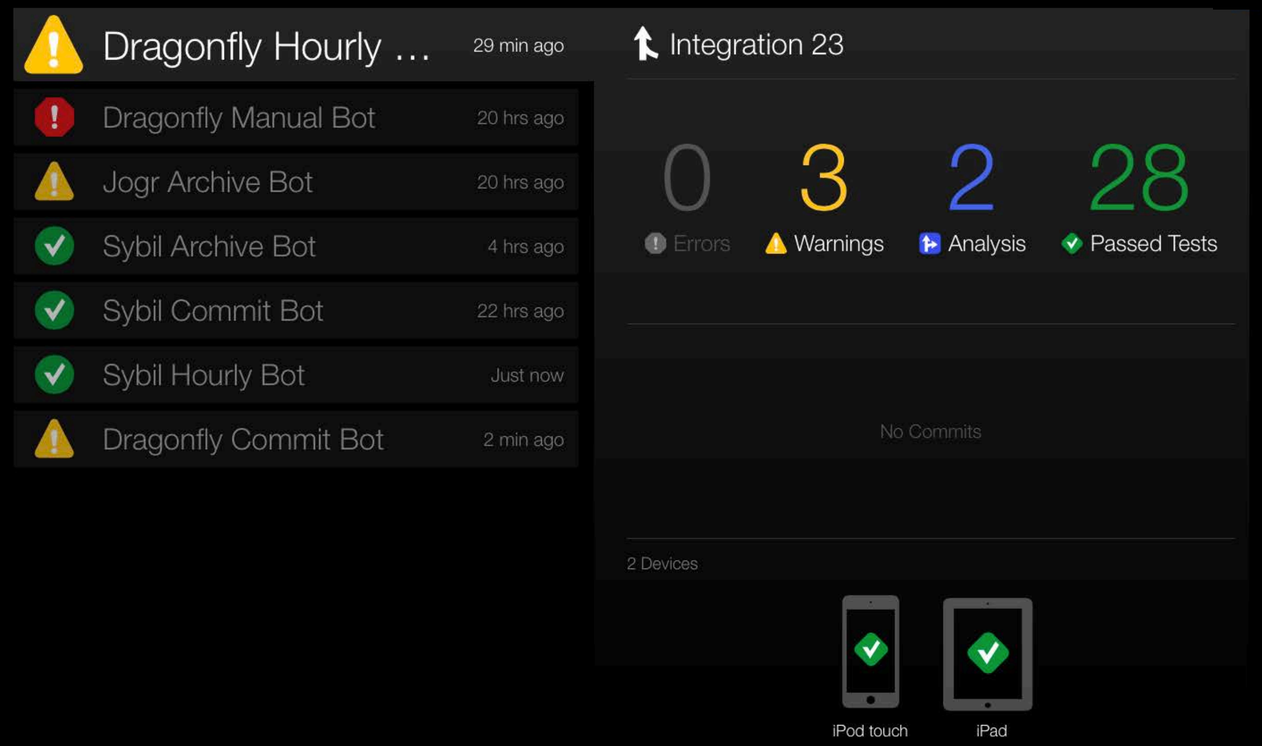
- Create a Scheme
  - Bots run shared schemes
- Brings results to you



Many Configurations

Many Configurations

NEW

- iOS devices

Many Configurations

NEW

- iOS devices
- iOS simulator

Many Configurations

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- Different OS versions

Many Configurations

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Demo

Continuous integration with OS X Server

Overview

Continuous integration with OS X Server

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Continuous integration with OS X Server

- Setup shared schemes for bot

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Continuous integration with OS X Server

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- Bot and test results summary

Command-line Testing

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```

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-scheme MyLibrary
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Wrap Up

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- Testing helps you write better, high quality apps

More Information

Dave DeLong
Developer Tools Evangelist
delong@apple.com

Xcode Documentation
http://developer.apple.com/

Apple Developer Forums
http://devforums.apple.com

Related Sessions

Continuous Integration with Xcode 5	Presidio Tuesday 3:15PM

Related Labs

Xcode and Continuous Integration Lab	Tools Lab A Thursday 9:00AM
Tools Lab	Tools Lab Ongoing

WWDC2013