Testing iOS Apps

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A lot to cover



High-level overview of testing options

- High-level overview of testing options
- Native iOS apps, with some browser component

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- Native iOS apps, with some browser component
- Unit tests

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- High-level overview of testing options
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- Unit tests
- Integration tests
- Penetration tests

Unit Tests

- OCUnit built into Xcode
- Reasonable GUI Integration as of v4
- Baroque and outdated syntax



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@implementation StackOverflowCommunicatorTests

```
- (void)setUp {
    communicator = [[InspectableStackOverflowCommunicator alloc] init];
}
- (void)tearDown {
    [communicator cancelAndDiscardURLConnection];
}
- (void)testSearchingForQuestionsOnTopicCallsTopicAPI {
    [communicator searchForQuestionsWithTag: @"ios"];
    STAssertEqualObjects([[communicator URLToFetch] absoluteString], @"http://
api.stackoverflow.com/1.1/search?tagged=ios&pagesize=20", @"Use the search API to find
questions with a particular tag");
}
```

@end

https://github.com/philSquared/Catch

"CATCH stands for C++ Automated Test Cases in Headers and is a multi-paradigm automated test framework for C, C++ and Objective-C. It is implemented entirely in a set of headers, but is packaged up as a single header for extra convenience."

```
TEST_CASE("parser/API", "Design the public interface for the parser")
ł
   FZASourceParser *parser = [FZASourceParser new];
   SECTION("acceptableI0", "Accept unparsed, generate parsed targets")
    {
        TestBuildTarget *target = [TestBuildTarget new];
        id <FZABuildTarget> output = nil;
        target.parsed = YES;
        CHECK_THROWS(output = [parser parse: target]);
        CHECK(output == nil);
        target.parsed = NO;
        CHECK_NOTHROW(output = [parser parse: target]);
        CHECK([output conformsToProtocol: @protocol(FZABuildTarget)]);
        CHECK([[output name] isEqualToString: [target name]]);
        CHECK([output isParsed] == YES);
        [target release];
   [parser release];
}
TEST_CASE("parser/run", "Run through the test project and see what we find")
ł
    FZASourceParser *parser = [FZASourceParser new];
    FZAXcodeProject *project = [[FZAXcodeProject alloc] initWithProjectFolder:
@"TestProject.xcodeproj"];
    id <FZABuildTarget>parsedTarget = [parser parse: [project targetAtIndex: 0]];
    REQUIRE(parsedTarget != nil);
    CHECK([parsedTarget countOfFunctions] == 1);
    [project release];
    [parser release];
}
```

It's not a "unit test" framework...

- ...it's a framework for running tests
- ...and for reporting test results
- Integration tests, whole-app tests

Calabash

- https://github.com/calabash/calabash-ios
- <u>http://calaba.sh</u>
- BDD-style spec format for tests
- Automatic runner/reporter

\$ calabashios console

> query("label")

```
[0] {
```

•••

```
"rect" => {
            "center_y" => 261.5,
               "width" => 300,
            "center_x" => 160,
              "height" => 43,
                   ''x'' => 10,
                   "v" => 240
        },
             "frame" => {
             "width" => 300,
            "height" => 43,
                 ''x'' => 10,
                 "∨" => 0
        },
        "description" => "<UILabel: 0x72f0920;</pre>
frame = (10 0; 300 43); text = 'iPhone';
clipsToBounds = YES; userInteractionEnabled =
NO; layer = <CALayer: 0x72f09b0>>",
             "UIType" => "UIView",
              "class" => "UILabel"
    },
```



\$ calabashios console

> touch(query("label
marked:'iPhone'"))



Given I am on the Welcome Screen Then I choose the section iPhone And take picture

Then "I choose the section \$section" do |section|
 touch("view label text:'#{section}'")
end





var target = UIATarget.localTarget(); var app = target.frontMostApp(); var window = app.mainWindow(); target.logElementTree();

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Script is stopped	0 16:08:48 GMT	The target application appears to have died	Fail
	1 16:09:04 GMT	♥ UIATarget: name:iPhone Simulator rect:{{0, 0}, {320, 480}}	Debug
New Script	2 16:09:04 GMT	#UIAApplication: name:BrowseOverflow rect:{{0, 20}, {320, 460}}	Debug
	3 16:09:04 GMT		Debug
Add v Remove	4 16:09:04 GMT	▶ UIANavigationBar: rect:{{0, 20}, {320, 44}}	Debug
Script Options	8 16:09:04 GMT	#UIATableView: name:Empty list value:rows 1 to 5 of 5 rect:{{0, 64}, {320, 416}}	Debug
de la compositione	9 16:09:04 GMT	wUIATableCell: name:iPhone rect:{{0, 64}, {320, 44}}	Debug
Run on Record Pause	10 16:09:04 GMT	UIAStaticText: name:iPhone value:iPhone rect:{{0, 64}, {320, 44}}	Debug
▼ Logging	11 16:09:04 GMT	▶ UIATableCell: name:Cocoa Touch rect:{{0, 108}, {320, 44}}	Debug
Continuously Log Results	13 16:09:04 GMT	UIATableCell: name:UIKit rect:{{0, 152}, {320, 44}}	Debug
Choose Location \$	15 16:09:04 GMT	UIATableCell: name:Objective-C rect:{{0, 196}, {320, 44}}	Debug
Export Traced Results	17 16:09:04 GMT	▶ UIATableCell: name:Xcode rect:{{0, 240}, {320, 44}}	Debug
Take Screenshot	19 16:09:04 GMT	▶ UIAWindow: rect:{{0, 0}, {320, 480}}	Debug
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```
var target = UIATarget.localTarget();
var app = target.frontMostApp();
var window = app.mainWindow();
var tableView = window.tableViews()[0];
var iPhoneCell = tableView.cells()
["iPhone"];
iPhoneCell.tap();
```

WWDC 2010 Session 306: Automating UI Testing with Instruments



Testing app-bundled JS

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 Navigate your way around using the searchable directory and street index

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Hardware IO Tools for Xcode - Late July 2012

This package includes tools for developing for specific hardware and external devices. These tools were formerly bundled in the Xcode installer, and include: PacketLogger, IORegistryExplorer, Bluetooth Explorer, and the Network Link Conditioner pane for System Preferences. Tools in this package support running on OS X Mountain Lion.



Nov 26, 2012

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<u>https://www.owasp.org/index.php/</u> <u>IOS_Developer_Cheat_Sheet</u>

Testing iOS Apps

Graham Lee / @secboffin



Monday, 25 March 13