

UI Automation : A Primer

Cocoaheads, Ann Arbor
October, 2013

About Myself...

Principal Software Developer
Freelance App Developer, Lunaria Software, LLC

www.priyaontech.com
www.lunariasoftware.com

priya@priyaontech.com
Twitter:@rajagp

Test Categories

- Unit Testing
 - Testing from developer's perspective.
 - Testing that a particular function is right
 - Rest of system mocked up
- Functional Testing
 - Testing from user's perspective.
 - Testing that system behaves right

Today we talk about Functional Testing

Functional Testing - Manual

- Pros
 - Non programmer can do it
 - No special hardware/software required
 - Some aspects have to be manually tested – eg. the actual rendering, user experience
- Cons
 - Time consuming (regression, large data sets and use cases)
 - Lack of Reproducibility/ traceability (“Not sure what I did exactly to cause the app to crash..”)

Functional Testing - Automated

- **Pros**

- Saves time , effort
 - Will offset the initial cost of writing the test scripts
- Consistency / Repeatable / Traceable
- Regression
- Large numbers of test data sets
- Continuous Integration

- **Cons**

- Need some programming skills

Options

| Tool | Platform | Scripting Language | Technical Details |
|----------|--|--|--|
| Calabash | iOS/Andoird (Device & Simulator) | BDD. Feature descriptions written in Gherkin. Test steps in Ruby. | Uses Cucumber for driving tests. A HTTP bounjour server runs in your app and accepts commands from test driver (HTTP/JSON). Open Source. Uses Private APIs |
| Frank | iOS (Device & Simulator) | BDD. Feature descriptions written in Gherkin. Test steps in Ruby. | Uses Cucumber for driving tests. A HTTP Frank server runs in your app and accepts commands from test driver over “Franky” protocol (HTTP/ JSON). Open Source Uses Private APIs |
| KIF | iOS (Simulator/ device) | Objective-C | Framework integrated into app. No HTTP server or external driver. Open Source. |

Options

| Tool | Platform | Scripting Language | Technical Details |
|----------------------------|--|----------------------------------|--|
| Fone Monkey/ MonkeyTalk | iOS/Andoird (Device & Simulator) & Web Apps | JS, Obj-C, monkeyTalk scripts | Record actions using MonkeyTalk console, save/edit script & playback. Open Source . Premium Support will cost \$\$\$ |

We'll discuss UIAutomations today

UI Automation

- Automated functional test framework from [Apple](#)
- UI interactions with app driven using test scripts
- Test scripts written in [Javascript](#)
- Test scripts executed using “[Automation](#)” instrument
- Actively developed & maintained (well....maybe)

UI Automation

- Good user interaction coverage
- Can work with no/minimal app changes (recommend UIAccessibility)
- Works on simulators and devices
- Only on apps that are signed with development profile
- **Simplicity**

UI Accessibility

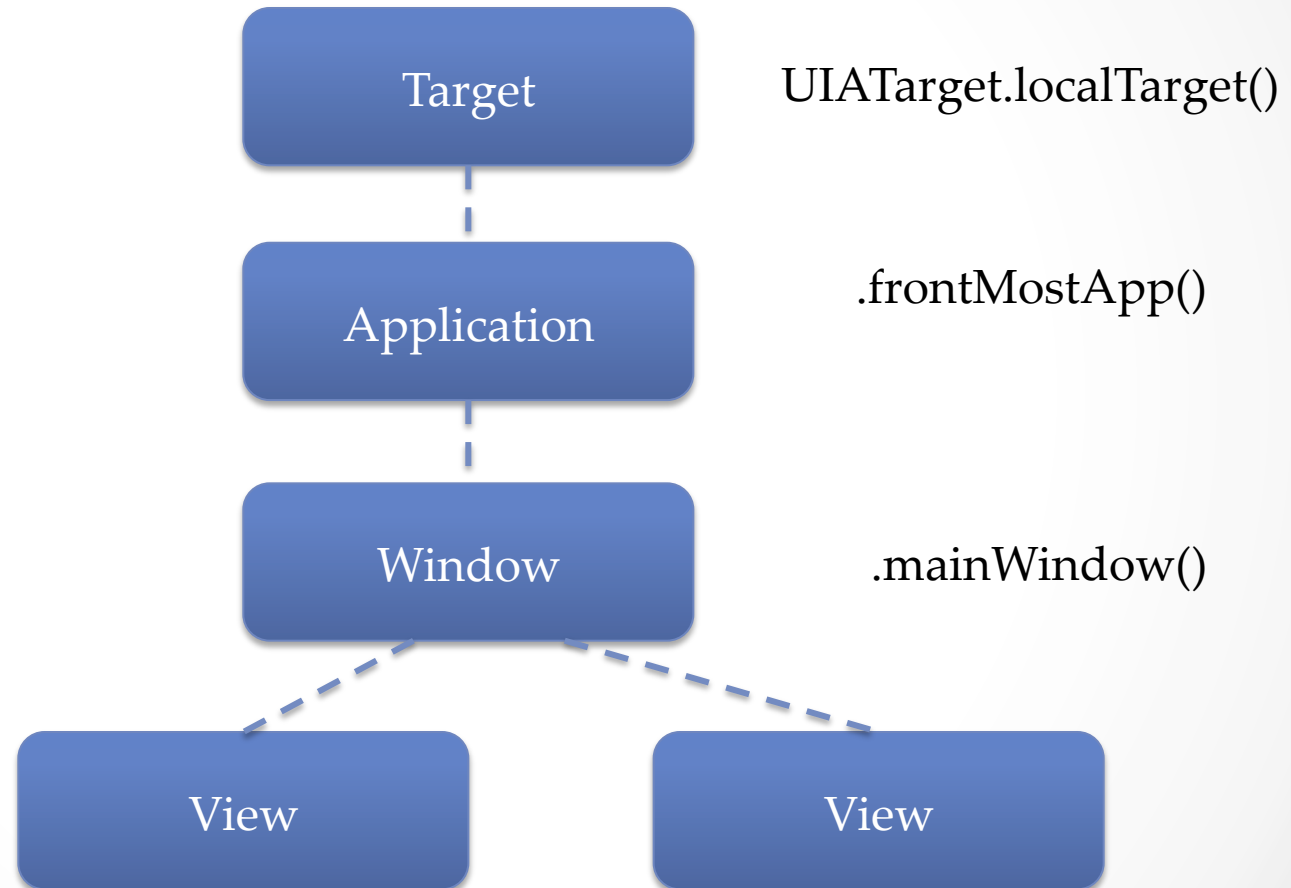
- Informal Protocol
- Interface to assist people with disabilities
- Uniquely identify every element in the view hierarchy
- Every UIKit element can be specified to be accessible, using "label" attribute
- Recommended to use w/ UI Automations
 - In order to interact with an element, you need to identify it
- Identifying element by position makes script fragile

UI Accessibility Rules

- Individual View
 - Enable Accessibility
 - Set Accessibility Label on the view
- Container View
 - Disable Accessibility on container view
 - Enable Accessibility on every contained view that you want accessible
 - Specify Labels for container and contained views

UI Element Hierarchy

`[UIAElement].logElementTree()`



Tuneup.js

- A set of Javascript utilities to facilitate writing of UIAutomation scripts
- Lot of convenience Wrapper functions to handle repetitive tasks(isDeviceiPad, isDeviceiPhone ,assertLeftButtonNamed ...)
- Enforce a structure to your test scripts – Invoke “test” function
- Alex Vollmer, <http://www.tuneupjs.org>

Demo

Get it at : <http://priyaontech.com/ndownloads>

Thank you!

Further Reading : **Test iOS Apps with UI Automation**
Bug Hunting Made Easy

By Jonathan Penn

• • •

www.priyaontech.com

@rajagp