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Mobile Testing: QA Strategy for Manual and Automated Testing

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VP of Automation Solutions

Overview

- Introduction
- What is mobile testing?
- What are key aspects of mobile testing?
- Factors to consider when determining if there is value to automation
- Common test automation tools
- Conclusion

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Introduction

Companies are moving into mobile technology at a rapid pace, which has significantly increased the need for manual testing in that area. Companies are turning to automation to help ease the workload, but it is not always obvious what should be automated. Mobile has its own set of complications, compounded by a huge variety of devices and OS platforms.

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Definition

- Mobile Web – Access to the world wide web from a handheld mobile device, such as a smartphone or a tablet, that is connected to a mobile or wireless network

- Mobile App – software applications developed specifically for using on wireless computing devices, such as smartphones and tablets, rather than desktop or laptop computers. For iOS, the programming language is Objective C. For Android, the programming language is Java

Definition

- Mobile Hybrid App – combines elements of both native and Web applications

- Responsive Design – approach to web page creation that makes use of flexible layouts, flexible images and cascading style sheet media queries. The goal of responsive design is to build web pages that detect the visitor's screen size and orientation and change the layout accordingly

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What is Mobile Testing?

- The process of testing software developed for use on a mobile device, such as a smartphone or tablet
- Includes installed mobile apps (i.e., from the app store), as well as mobile or responsive web apps
- Can be done with manual and automated techniques

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Discussion

- Why is mobile testing challenging?
- How to minimize mobile testing challenges?

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What is Mobile Test Automation?

- Test automation that is run on real or simulated mobile devices

- Many tools and frameworks have been developed for mobile automation, such as Appium, Calaba.sh, Robotium, Selendroid, and UiAutomator

QA/Testing Best Practices

- Unit testing
- Functional testing
- System testing
- Integration testing
- Business process testing
- Data verification
- Etc.

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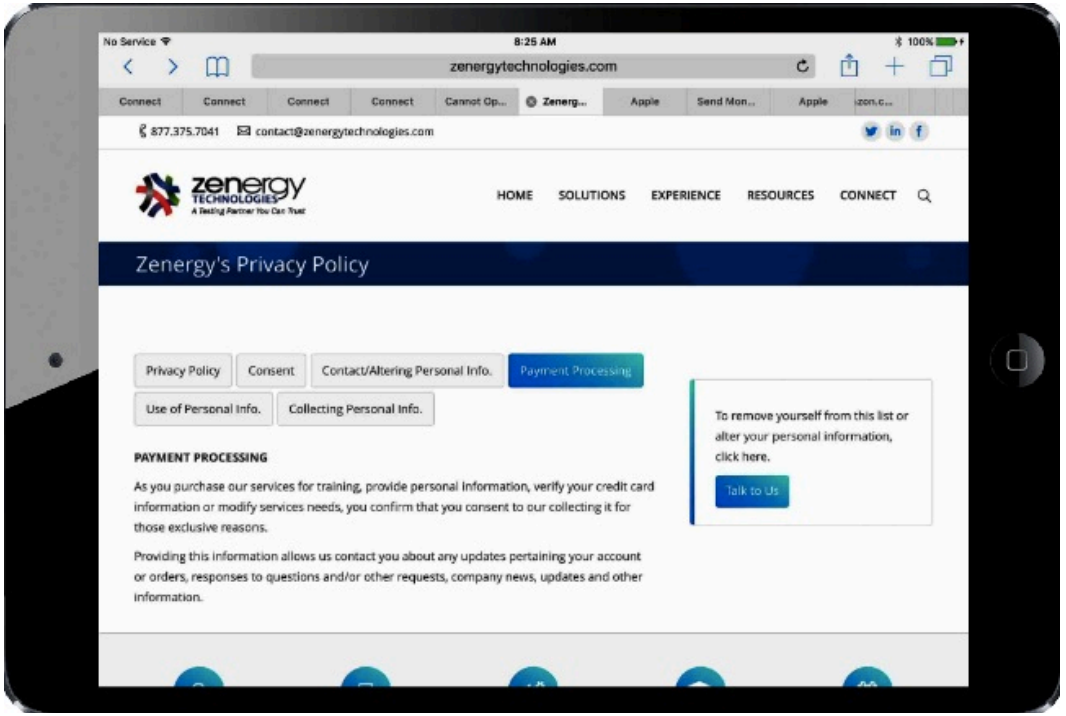
QA/Testing Best Practices



What should we test?

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Mobile Testing Requires Additional Considerations

- User Experience
- Interruption
- On/off network
- Devices features

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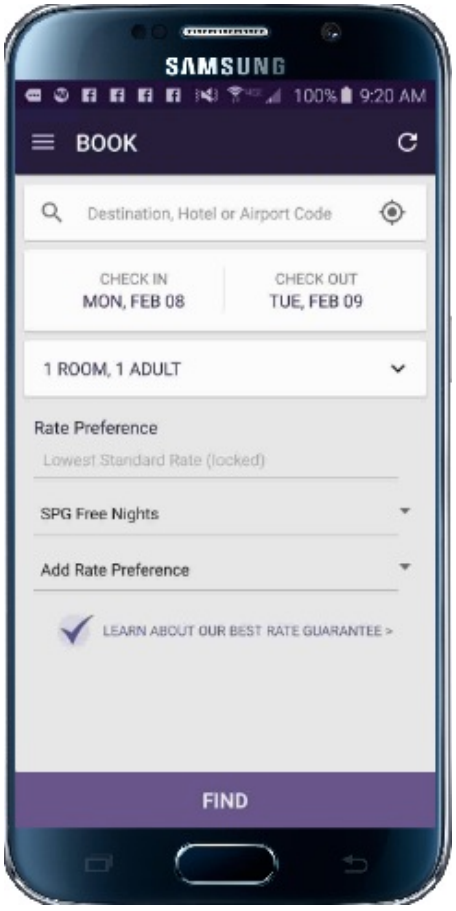
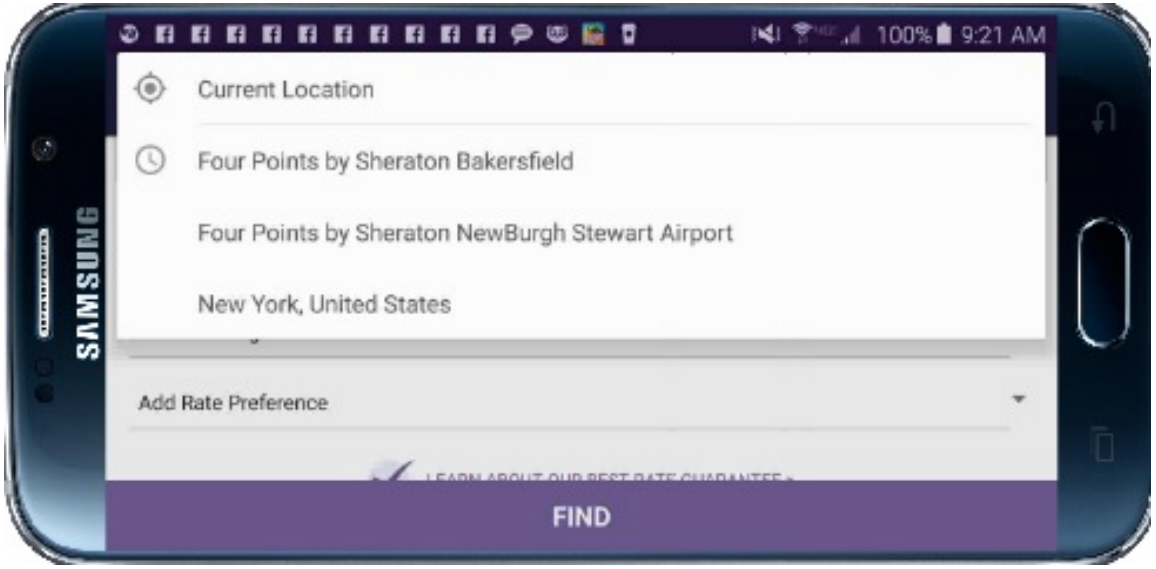
User Experience

- The goal of user experience (UX) design and testing is to maximize the quality of the user's interactions with an application:
  - Is the intended use of the app obvious?
  - Can the user easily accomplish the intended goal?
  - How obvious is the next step?
  - Is there appropriate help/support if the user gets stuck?
  - Is the app visually appealing?
  - Does the app fit the screen? Is it readable and usable?

User Experience - Examples





Automatically defaults to location based on destination when changing from portrait to landscape

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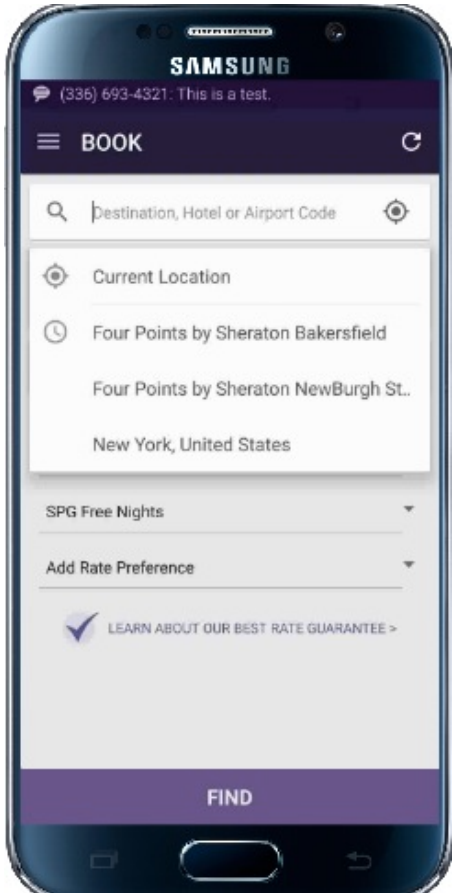
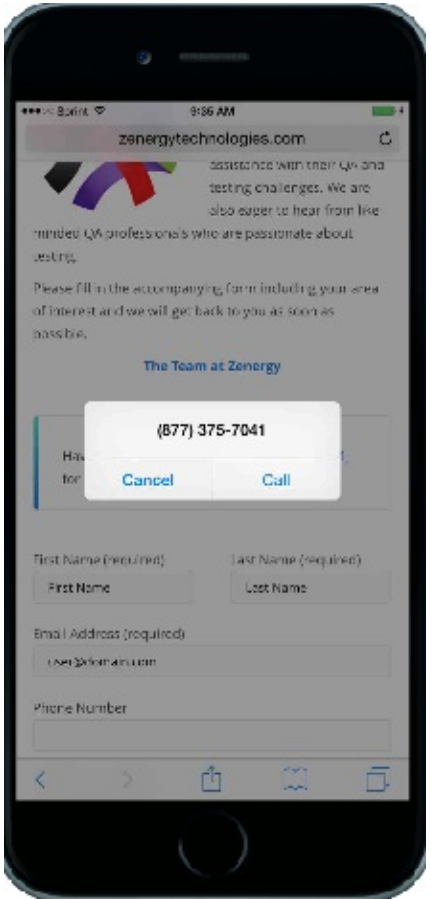
Interruption

- When an incoming call or notification interrupts the application in use, the application should not be negatively impacted:
  - Does the application crash?
  - Can a user resume the current application session?
  - Is the session state maintained?

Interruption - Examples





Text message and call interruptions

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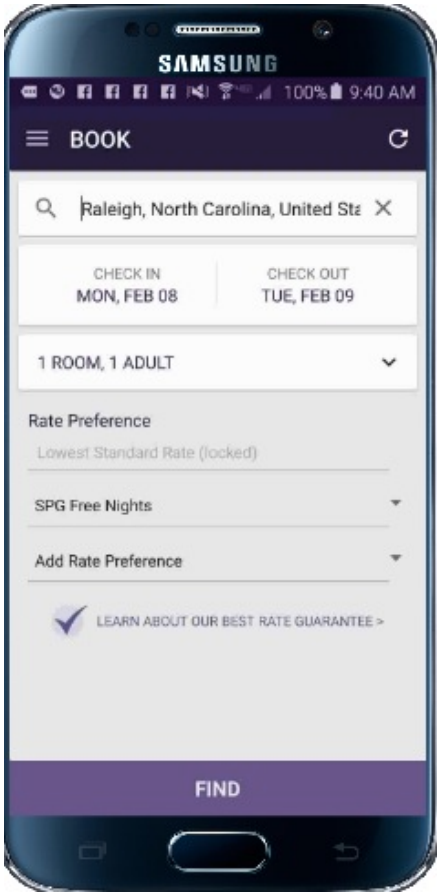
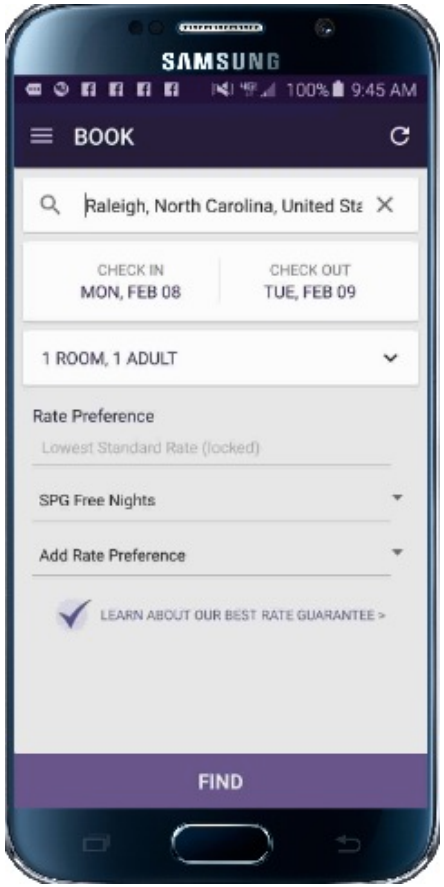
On/off Network

- Mobile devices automatically switch between WiFi and cell networks as they become available:
  - How does the application respond to this switch?
  - Do in-progress data transfers fail or get interrupted?

On/off Network - Examples





Switching from Wi-Fi to cellular network during the process of booking a reservation

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Device Features

- There are many features unique to mobile devices that must be considered from a testing standpoint:
  - Gestures such as pinching and swiping
  - Accelerometer (for device orientation, step counter, etc.)
  - Location-based features
  - Camera-based features, such as taking a photo of a check for deposit
  - Voice to text

Key Considerations for Mobile Automation

- Is there any ROI to automate the manual test case?
  - For example, automating pinch and zoom
- What is the risk for not automating the test?
- What are the test automation development efforts to automate the test?
- How much maintenance time is needed if the automated test needs to be changed?
- Does the automation tool support the necessary features?

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Discussion

- What should be automated?
- What should not be automated?

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Factors for Test Automation Consideration

- To Automate
  - Smoke testing of the mobile website or native app
  - Key application functionality
    - e.g., login, search
  - Data intensive application features
    - e.g., loan or insurance quotes or pre-approvals
  - Repeatable flows
    - e.g., branching logic or options
  - Static content
    - e.g., links and text

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Factors for Test Automation Consideration

- Not to Automate (In most cases)
  - Look and feel
    - e.g., application layout, element spacing
  - Device orientation
  - OS level features
    - e.g., camera, voice to text, Accelerometer, etc…
  - Interrupt testing
  - On/off network
  - Deviation across all devices/platforms
  - User Experience

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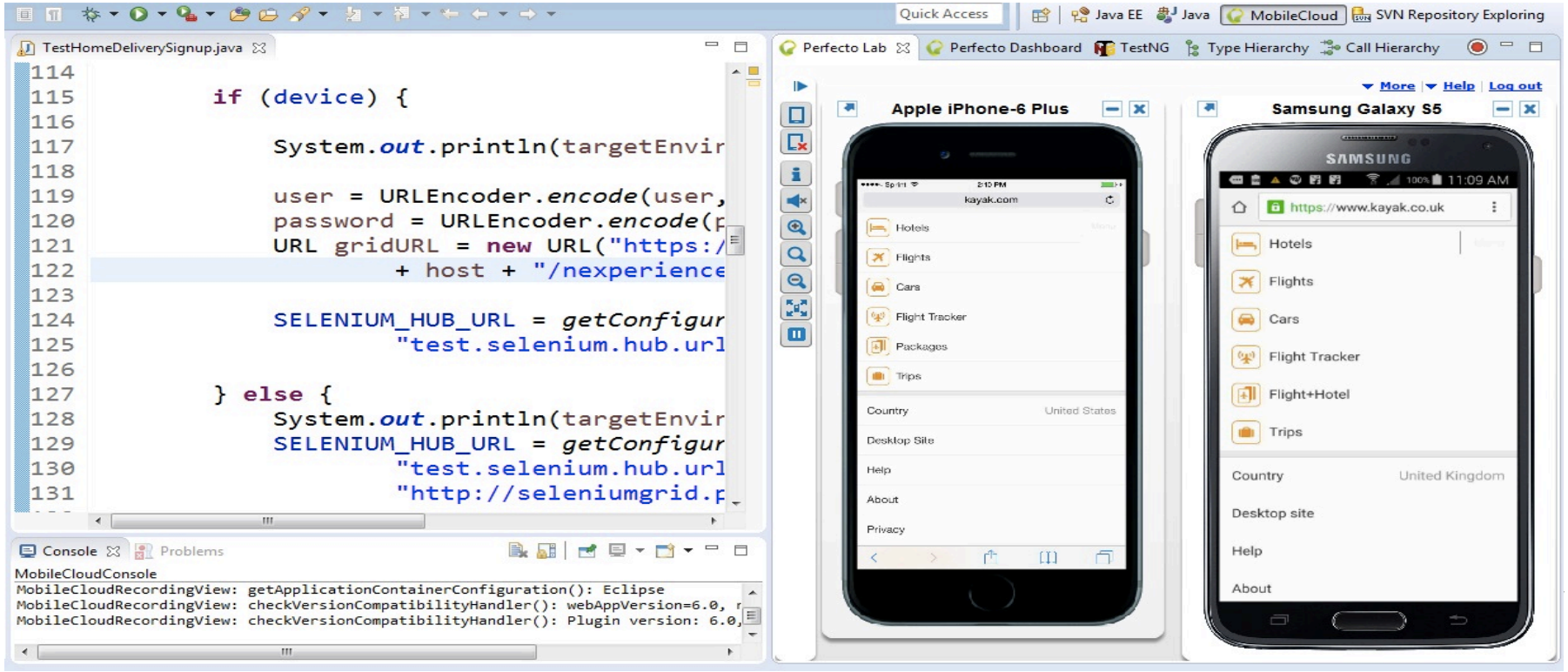
Test Automation Tools

- Common Test Automation Tools
  - There are multiple mobile test automation tools. We will highlight the three most widely used:
    - Perfecto Mobile - A web-based tool that allows users to create and execute automated scripts
    - Mobile Labs - Mobile Labs offers a private onsite mobile device cloud to automated mobile website and app testing
    - Appium - Open source framework for writing automated test scripts that run on real mobile devices or simulators

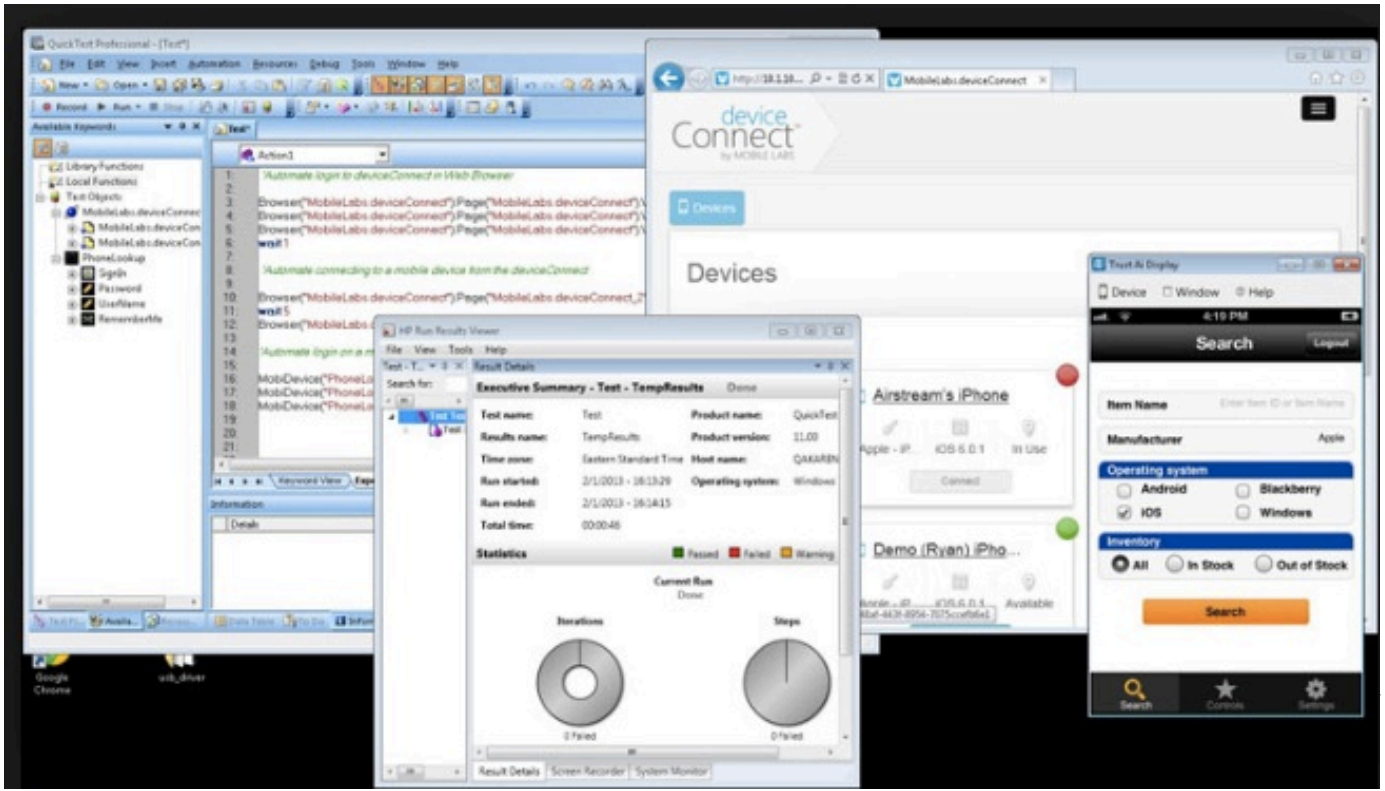
Establishing an Automated Testing Strategy

- Perfecto Mobile

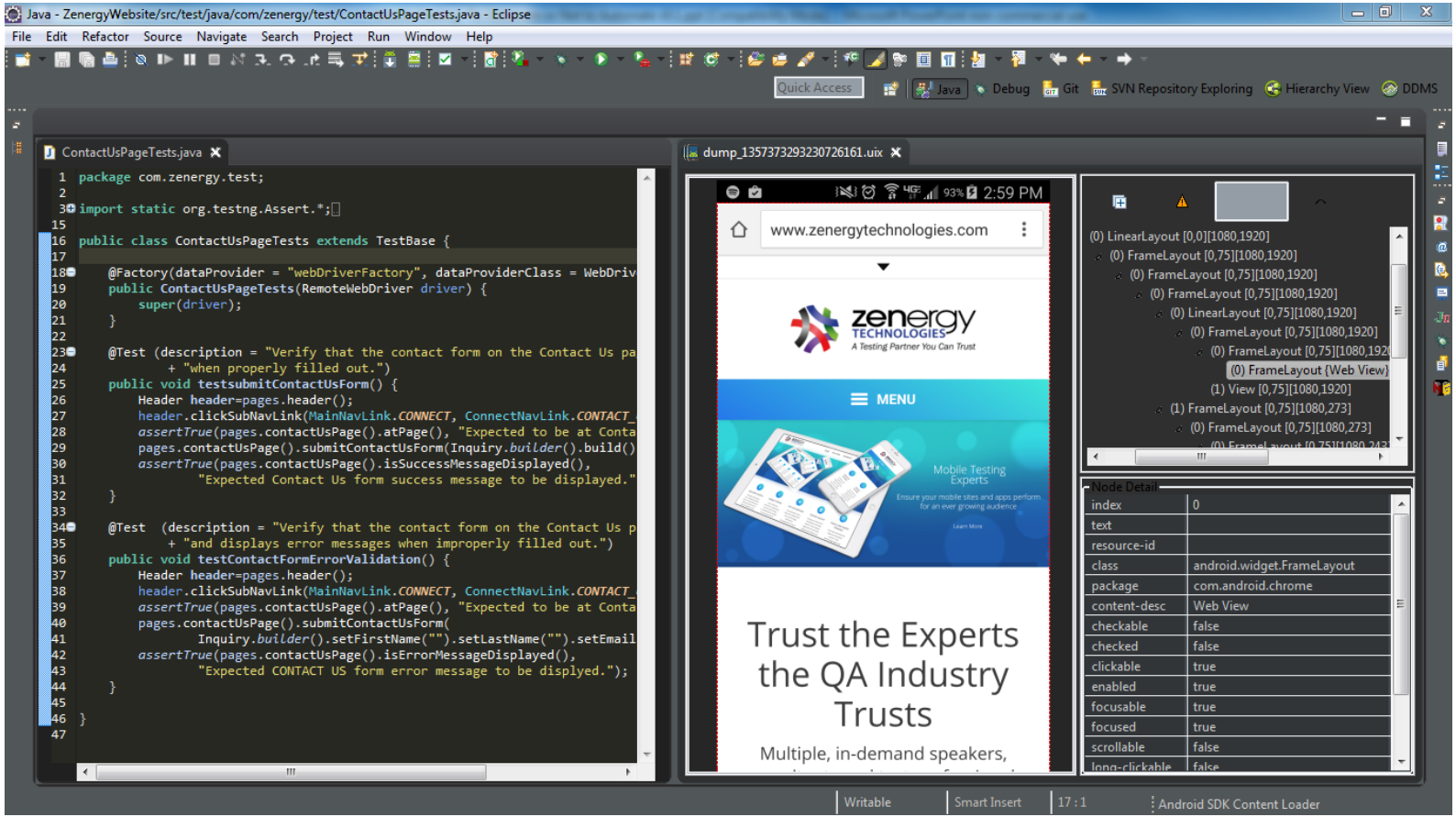


Establishing an Automated Testing Strategy

- Mobile Labs



Appium


Java - ZenergyWebsite/src/test/java/com/zenergy/test/ContactUsPageTests.java - Eclipse
File Edit Refactor Source Navigate Search Project Run Window Help
Quick Access
Java
Debug
Git
SVN Repository Exploring
Hierarchy View
DDMS
ContactUsPageTests.java
1 package com.zenergy.test;
2
3 import static org.testng.Assert.*;
15
16 public class ContactUsPageTests extends TestBase {
17
18 @Factory(dataProvider = "webDriverFactory", dataProviderClass = WebDriv
19 public ContactUsPageTests(RemoteWebDriver driver) {
20 super(driver);
21 }
22
23 @Test (description = "Verify that the contact form on the Contact Us pa
24 + "when properly filled out.")
25 public void testsubmitContactUsForm() {
26 Header header=pages.header();
27 header.clickSubNavLink(MainNavLink.CONNECT, ConnectNavLink.CONTACT_
28 assertTrue(pages.contactUsPage().atPage(), "Expected to be at Conta
29 pages.contactUsPage().submitContactUsForm(Inquiry.builder().build()
30 assertTrue(pages.contactUsPage().isSuccessMessageDisplayed(),
31 "Expected Contact Us form success message to be displayed."
32 }
33
34 @Test (description = "Verify that the contact form on the Contact Us p
35 + "and displays error messages when improperly filled out.")
36 public void testContactFormErrorValidation() {
37 Header header=pages.header();
38 header.clickSubNavLink(MainNavLink.CONNECT, ConnectNavLink.CONTACT_
39 assertTrue(pages.contactUsPage().atPage(), "Expected to be at Conta
40 pages.contactUsPage().submitContactUsForm(
41 Inquiry.builder().setFirstName("").setLastName("").setEmail
42 assertTrue(pages.contactUsPage().isErrorMessageDisplayed(),
43 "Expected CONTACT US form error message to be displyed.");
44 }
45
46 }
47
dump_1357373293230726161.uix
2:59 PM
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Mobile Testing Experts
Trust the Experts the QA Industry Trusts
Multiple, in-demand speakers,
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package com.android.chrome
content-desc Web View
checkable false
checked false
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enabled true
focusable true
focused true
scrollable false
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Android SDK Content Loader

Appium


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tisqa.org
TISQA
Triangle Information Systems Quality Association
Accessibility Fundamentals, Testing, and Good Karma
Accessibility Fundamentals, Testing, and Good Karma
January 28
Location:
Matrix Resources

Conclusion

It is necessary and critical to test mobile websites and mobile apps to reduce the risk of defects and failures:

- Understand the challenges of testing on mobile devices
- Determine what to automate
- Understand the Pros and Cons of test automation frameworks/tools

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Questions?

- Final questions or discussion?

Thank you!

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