A short introduction about myself

- Martin Schneider

- from Austria != Austr**al**ia → sorry, no kangaroos

- born in Salzburg aka the "The Sound of Music" city and Mozart's birthplace

A short introduction contd.

- currently living in Singapore and part of Carousell

MARTIN

Multi-platform applications

- Multi-platform = Web + Mobile
- Mobile = iOS + Android

- Different "evolution" paths
  - Web application → mobile app (Amazon, eBay, Facebook, Wikipedia, PayPal, Twitter…)
  - Mobile app → web application (WhatsApp, Instagram, Carousell…)

  For example:
  - eBay: Web 1995, iOS 2008, Android 2010
  - Carousell: iOS 2012, Android 2013, Web 2015

Electronics

LOCATION
Singapore

CATEGORY
Electronics

SORT/FILTER
Popular

Audio

Computers

Computer Parts & Accessories

Others

zhapkua
Spotlight

dericam.com.sg
Spotlight

Buy in MacBook Air ,macbook pr...
S$9,900
Buy in all used new spoilt faulty ...
Used

Brand New - Local Seller - Brook...
S$70
Brook Pocket Auto Catch is IMDA...
New

10

192

pet3r_rabbit
4d ago

...cmsell
...w ago

SELL

Electronics

COUNTRYWIDE
Singapore

CATEGORY
Electronics

SORT/FILTER
Recent

Audio

Computers

Computer Parts & Acces-

Others

Showing filtered/sorted results   Reset

emjayqwerty
moments ago

substall
1 minute ago

Gaming Desktop - Acer Pr...
S$2,300
Acer Predator G3-710 -5 m...
Used

VIBOTON
Brand New Viboton Dual U...
S$18
Brand New Viboton Dual US...

4

0

spartan951
2 minutes ago

smart_tech
2 minutes ago

Xiaomi Air Purifier
Gen 2S / Gen Pro
- Triple layered Filter

SAMSUNG

Browse   Groups   Sell   Activity   Me

Electronics

LOCATION
Singapore

CATEGORY
Electronics

SORT/FILTER
Popular

Audio

Computers

Computer Parts & Accessories

Others

canberroar
1y ago

tehkhengkoon
3d ago

Karaoke Compact Mixer for Port...
S$75
(Note: mics not included) Take y...
New

Kenwood speakers kbs400++++
S$80
Subwoofer pioneer + kenwood su...
Used

61

4

colincck
10h ago

...vlim
...d ago

SELL

Cars & Property   Fashion   Home & Living   Mobiles & Electronics   Hobbies & Games   Jobs & Services

Audio   **Computers**   **Computer Parts & Accessories**   **Others**

SORT

Popular ●

Recent ○

Price - High to Low ○

Price - Low to High ○

ITEM CONDITION

Condition   Choose ›

PRICE

Minimum
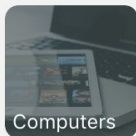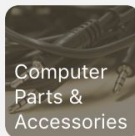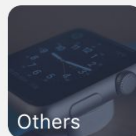
diakoh 4 days ago

BN TOKIDOKI EZ-LI...
S$55
ITEM DESCRIPTION Bran...
New
♡ 13

flowerbt 18 minutes ago

Creative SxFI AMP
S$150
Used but in excellent con...
Used
♡ 1

sgprimeauction 16 hours ago

677. FlySky 2 Chan...
S$40
Atomik RC is proud to intr...
New
♡ 2

hslimsg 28 days ago

Philips HTS7140 So...
S$168
Fully functioning Soundba...
Used
♡ 14

Multi-platform applications contd.

- Creator's motivation = maximise market coverage (and revenue)

- Development setup
  - develop for all platforms in the same functional team *or*
  - different teams for iOS, Android and Web
  - outsource development for certain platforms
  - different maturity level on different platforms
  - different feature sets on different platforms
  - …

- **BUT user expectation = same UI/UX across all platforms**

Log in

nonexistinguser

•••••

Log in

Forgot Password?

Whoops!
Username/email and password do not match

OK

N ⬆ LTE 🔋 9:13

← **Log In**

email or username

nonexistinguser

Invalid username or password

password

•••••

Invalid username or password

Log In

Forgot your password?

🅕 Log in with Facebook

Wrong username or password. Try again!

Username

nonexistinguser ⋯

Password

•••••

Forgot your password?

✓ I'm not a robot
reCAPTCHA
Privacy - Terms

Log in

Don't have an account? Sign up here

Testing each platform separately?

aka "the naive way to multi-platform testing"

- different (but optimised) frameworks
- different test-cases (while actually testing the same)
- different integrations into the build pipeline
- different QA teams
- different stakeholders
- …

Parts of UI automation testing

- Test definitions (test cases, features, scenarios…)
- Test data
- UI model (page objects, locators)
- Test framework
- Test code
- Test devices
- Test reports
- Test infrastructure
- Test engineers

How much can we re-use across platforms?

Parts of UI automation testing

Is it platform independent?

- Test definitions **YES**
- Test data **YES**
- Page objects **MOSTLY**
- Test framework **ABSOLUTELY**
- Test code **YES**
- Test devices
- Test reports **YES**
- Test infrastructure **MOSTLY**
- Test engineers **YES** 😬

Tech-stack

- Cucumber
- Java
- Selenium
- Appium
- Spring
- Maven
- ...

This is one implementation of an idea. The concept equally applies to other technologies!

Toolbox

Selenium was first released in 2004 by Jason Huggins at ThoughtWorks
WebDriver was created in 2007 by Simon Stewart (ThoughtWorks) → merged into Selenium 2.0 in 2009

Appium was first released in 2011 by Dan Cuellar, since 2013 funded by SauceLabs

Cucumber was first released in 2008 by Aslak Hellesøy (guess where ;-)

There are Java versions for all of them!

Selenium

```java
WebDriver driver = new FirefoxDriver();

driver.get("http://www.google.com");


WebElement element =

driver.findElement(By.name("q"));

element.sendKeys("Taiwan is wonderful");

element.submit();

...
```
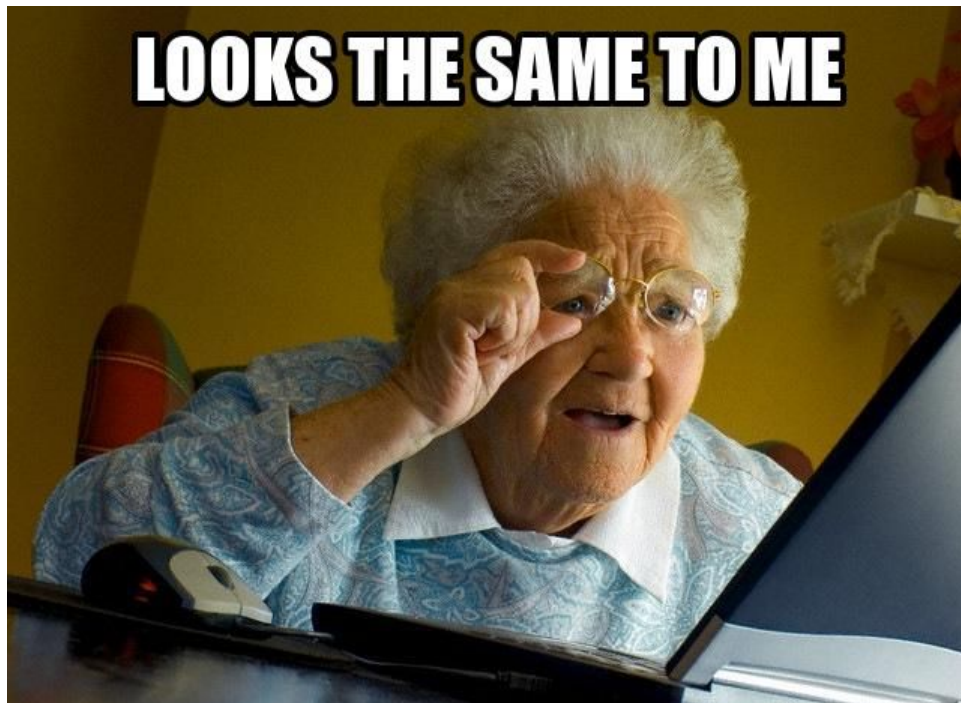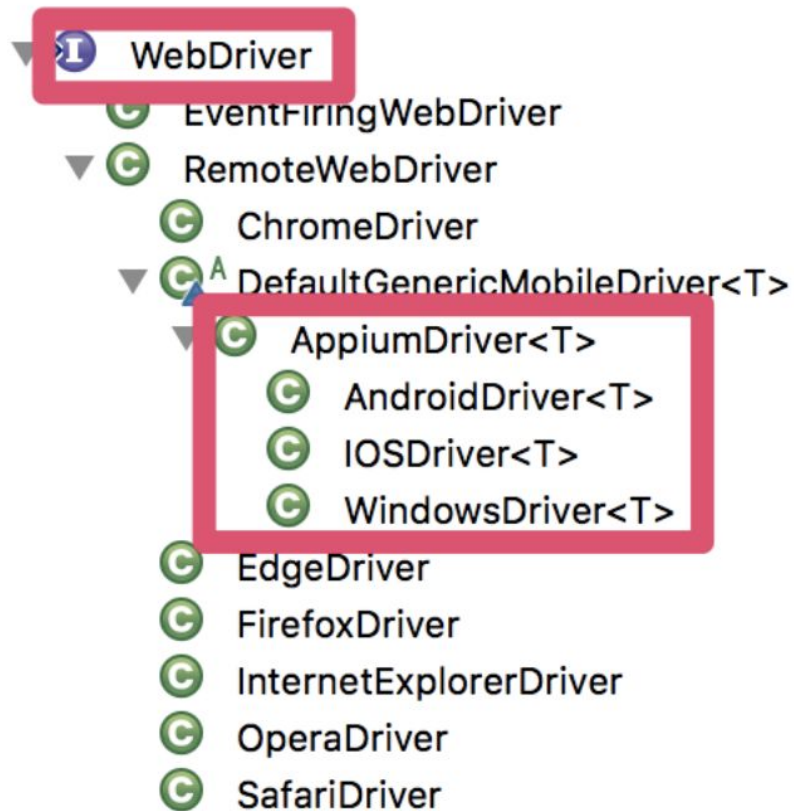
Appium

```java
AppiumDriver driver = new AppiumDriver(new
URL("http://127.0.0.1:4723/wd/hub"), capabilities);


IOSElement element =
driver.findElement(By.name("search"));
element.sendKeys("Taiwan is wonderful");
element.submit();
...
```

WebDriver
- EventFiringWebDriver
- RemoteWebDriver
  - ChromeDriver
  - DefaultGenericMobileDriver\<T>
    - **AppiumDriver\<T>**
      - **AndroidDriver\<T>**
      - **IOSDriver\<T>**
      - **WindowsDriver\<T>**
  - EdgeDriver
  - FirefoxDriver
  - InternetExplorerDriver
  - OperaDriver
  - SafariDriver

WebElement
- EventFiringWebElement
- RemoteWebElement
  - DefaultGenericMobileElement\<T>
    - **MobileElement**
      - **AndroidElement**
      - **IOSElement**
      - **WindowsElement**
- SelenideElement

Demo

www.justtestlah.qa

Advantages

- All test definitions are kept in one place
  - discrepancies between platforms become visible and taken care of
  - features (= test definitions) act as an umbrella across different development teams

- A majority of the features are written only once
  - and re-used for all platforms

- The same holds for the glue code (step definitions)

Advantages contd.

- Page objects can share code for common functionality
  - only platform-specific nuances need to be added on top

- Spring & co. take care of the heavy-lifting
  - flat learning curve for writing new test cases

- Tech-stack is well established and maintained
  - Cucumber, Selenium, Appium, Java, Spring

Points to consider contd.

- Custom framework = re-inventing the wheel?

- A custom test framework requires engineers building and maintaining it
  - tester vs. test (automation) **engineer**

- Platform-specific testing solutions might be (slightly) more performant
  - "pure" Espresso, XCUITest etc.
  - weigh the pros and cons!

- What about PWAs, React Native, Flutter?

Where we are at Carousell? - Scope

- We have 150+ automated UI tests for iOS and Android, Web is coming up
- We defined three sets of tests: **FFT, Sanity and Regression**
  - FFT stands for Fast Feedback Test and those are the UI tests we run for every code change
  - Sanity tests ensure the core functionality. We run those against every release (once a week) and all nightly builds
  - Regression tests are all our automated UI tests

FFT tests

Sanity tests

Regression tests
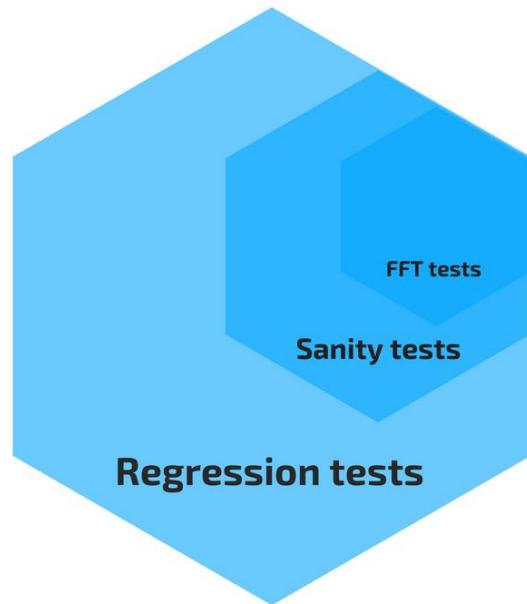
Where we are at Carousell? - Scale

- We use 20 (and growing) physical devices from a cloud provider (currently 10 Android and 10 iOS)
- We are building an in-house farm of iOS simulators (currently ~25 devices and growing)

- FFT tests run for every PR (10-20 a day). We distribute them across up to 20 devices for faster execution
- Sanity tests run once a day (and on demand). We aim to run 100 tests in less than an hour
- Regression tests also run daily

References

JustTestLah! test framework
- http://justtestlah.qa
- https://github.com/martinschneider/justtestlah

The making of Selenium/Cucumber/Appium
- https://www.infoq.com/news/2018/04/cucumber-bdd-ten-years
- https://www.seleniumhq.org/about/history.jsp
- http://appium.io/history.html