ASSESSMENT STUDY AUTOMATED MOBILE APP TESTING USING APPIUM

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TESTING ?

“Testing is the process of executing a program with the intent of finding errors” -Glenford J Myers

by finding errors that doesn't match with program spesification , correction can be made as soon as posible.

that reproduce program with least possible of errors and having higher level of "confident"

Manual Testing

- Done by human
- Inconsistent
- Time ineffective for big scale development
- has *Human* element (Usability Testing)

VS

Automated Testing

- Done by Tools / Machine
- Consistent
- Time effective for big scale development

appium

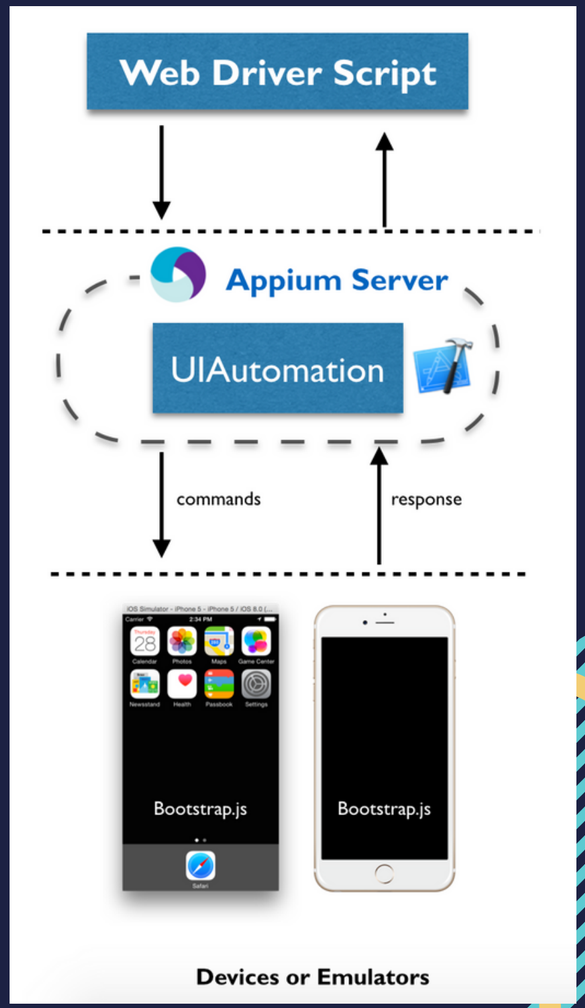
APPIUM ??

- Appium is an open-source and cross-platform tool used to automate test of **native**, **hybrid**, and **mobile web** apps.
- Appium is combination of lot of mobile app testing framework encapsulated in WebDriver API (Selenium Web Driver)
- Appium has **Client-Server** Architecture

Supported Platform:

- **Android**
  - Google's UiAutomator2,
  - Espresso
- **IOS** -> XCUITest
- **Windows** ->WinAppDriver

Architecture



Pros and Cons

Pros

- Open-source
- Cross-platform
- Easy instalation
- Not bound by any programming language
- **Greybox**

Cons

- has different preparation for different platform
- Complex preparation
- Can't use all feature on different platform

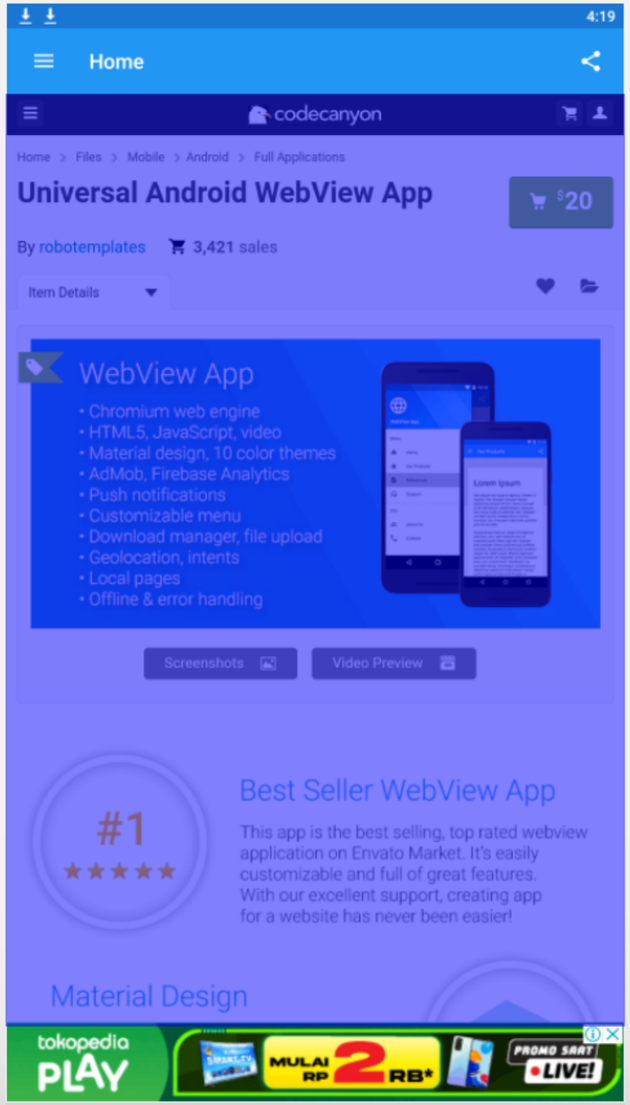
Appium Inspector

Appium Inspector is GUI inspector for mobile apps. It works the same as "**Inspect Element**" on web to find the selector of element of mobile phone such as ID, name , class, and etc to do the automation.

It is basicly a Appium Client with user interface and can send interaction to the application under test.

Appium

File View Help



Source Actions

App Source

```
templates.webviewapp:id/main_drawer_layout">
l.view.ViewGroup resource-
.robotemplates.webviewapp:id/main_coordinator_layout">
droid.widget.LinearLayout resource-
com.robotemplates.webviewapp:id/main_non_video_layout">
<android.view.ViewGroup resource-
id="com.robotemplates.webviewapp:id/toolbar">
<android.widget.FrameLayout resource-
id="com.robotemplates.webviewapp:id/container_drawer_content">
  <android.widget.FrameLayout resource-
  id="com.robotemplates.webviewapp:id/main_stateful_layout">
    <android.widget.LinearLayout resource-
    id="com.robotemplates.webviewapp:id/container_content">
      <android.view.ViewGroup resource-
      id="com.robotemplates.webviewapp:id/container_conte
        <android.webkit.WebView resource-
        id="com.robotemplates.webviewapp:id/main_webv
      <android.view.ViewGroup resource-
      id="com.robotemplates.webviewapp:id/adview">
```

Selected Element

Find By	Selector
id	com.robotemplates.webviewapp:id/main_webview
xpath	/hierarchy/android.widget.FrameLayout/android.widget.LinearLayout/android.widget.FrameLayout/android.widget.FrameLayout/android.widget.FrameLayout/androidx.drawerlayout.widget.DrawerLayout/android.view.ViewGroup/android.widget.LinearLayout/android.widget.FrameLayout/android.widget.FrameLayout/android.widget.LinearLayout/android.view.ViewGroup[1]/android.webkit.WebView

Attribute	Value
elementId	00000000-0000-0001-7fff-ffff00000002
index	0
package	com.robotemplates.webviewapp
class	android.webkit.WebView

Methodology

- Analize Appium Feature and Preparation.
- Find Android Native App , Android Hibrid App , and iOS Native App to Test
- Learn Structure and Fungtionalities of each application.
    - Page object design pattern
- Planning Test Case that fit with appium feature.
- Scripting
- Execution
- Reporting

Project Architecture

Appium Instalation

Appium Server

- install and run via NPM (nodeJS) 

or

- download the aplication and run via GUI

Appium Client

Depends on IDE and Dependency Manager.
Supported Client :

- Ruby.
- Python.
- Java.
- JavaScript.
- PHP.
- C#
- RobotFramework.

Detail Instalation

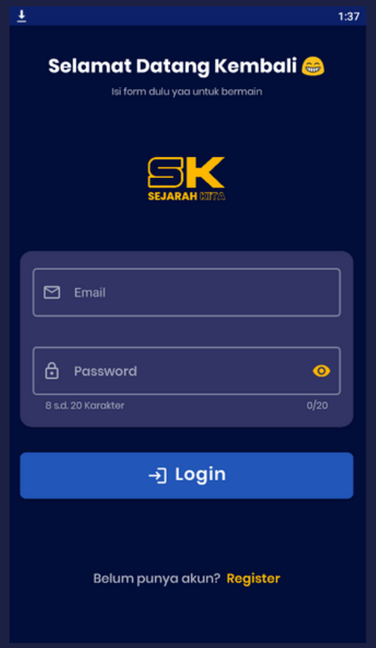
Android :

- Android Studio
- Java
- Android Debug Bridge

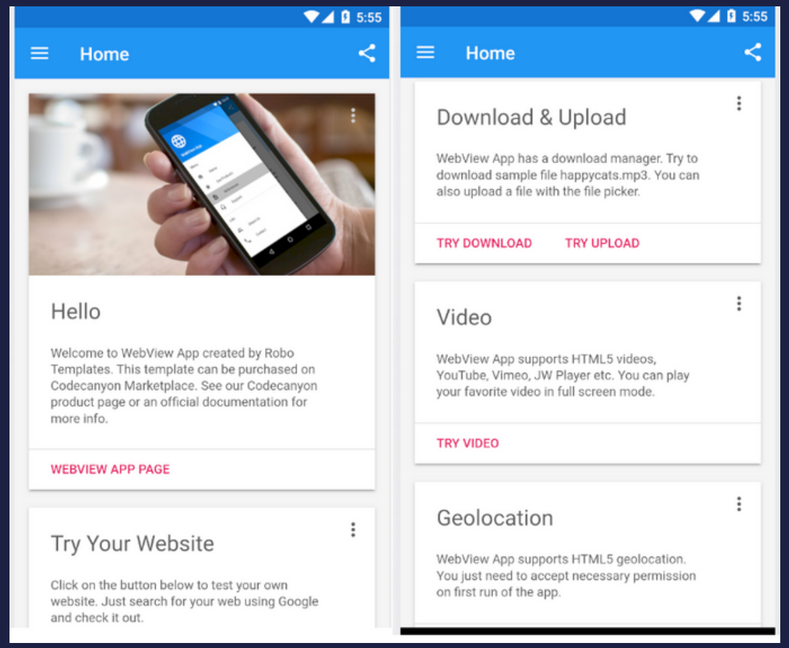
iOS :

- macOS 12.0 (Monterey)
- Xcode
- Enable 'Devtoolsecurity'
- Homebrew
  - Carthage
  - ios-deploy
  - ideviceinstaller
- make Apple Developer Account
- install Appium WebDriverAgent to device using Xcode

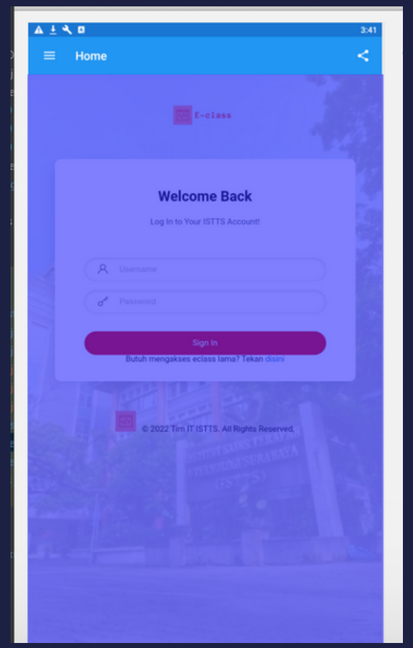
APPLICATIONS



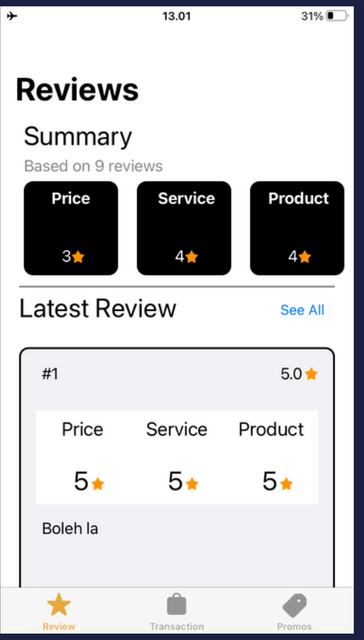
Sejarah Kita
(Android)



Webview App
(Hybrid Android)



WebviewTest
(Hybrid Android)



Reviewistic
(iOS)

TestCase

Sejarah Kita (Android)

- Feature Test
- Instalation Test
- Performance Test
- Interuption Test
- Compatibility Test

Webview App (Hybrid Android)

- Feature Test

WebviewTest (Hybrid Android)

- Login
  - iSTTS
  - Website
- Logout
  - e-class

Reviewistic (iOS)

- Feature Test
- Interuption Testing

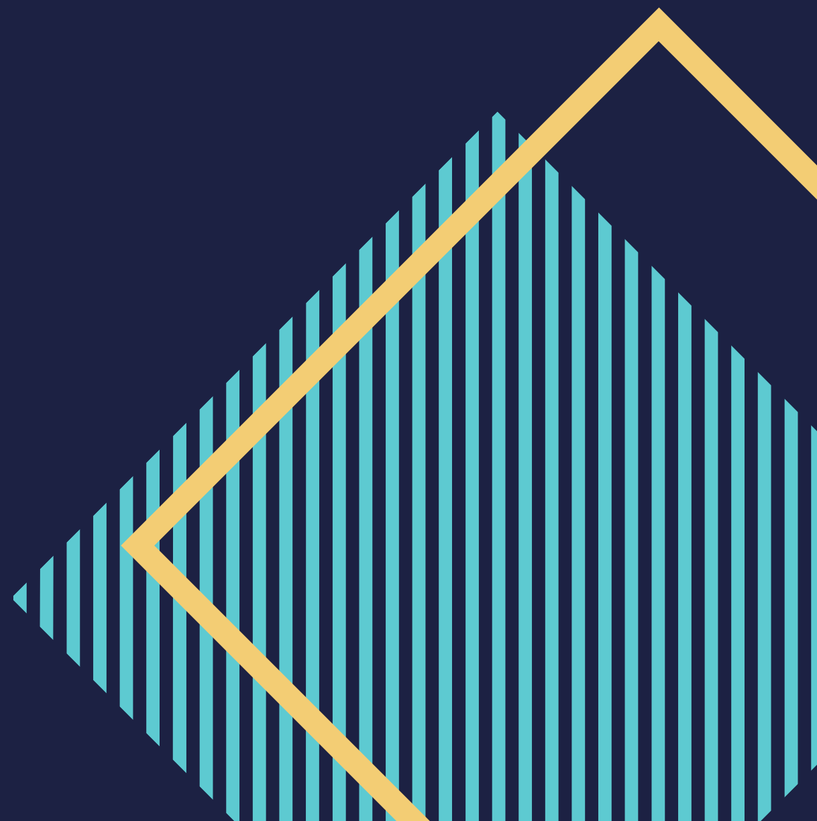
Used Feature

There are **76** appium client v7.1.1 features written in the proposal.
After eliminating duplicate features and features to "findElement" replaced in the "page object" design pattern then becomes total of **71** features

Total Feature : 71
Unused Feature : 10 -

Used Feature : 61

Feature Usage Percentage : **85%**



THANK YOU