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Review on Uberization of Mobile Automation Testing

[1]Ms. Vinita Kawalkar (Galande), [*2]Mr. Kunal Shirkande & [3]Ms. Vina Lomte

[1,2,3]*RMD Sinhgad School of Engineering, Warje, Tal-Pune, Dist.-Pune, Maharashtra (India)*

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[*]**Corresponding Author**
Email: kunalshirkande.rmdssoe[at]sinhgad.edu

ABSTRACT

Nowadays, Mobile phones and applications have turn out to be an fundamental part of daily life. To construct Mobile applications more trustworthy and defect less, mobile application testing is essential. Presently merely a few techniques exist for creating computerize tests of mobile applications and their functionality is terrified. In this paper, we establish the fresh method of implementing a mobile test automation podium which performs mobile test automation from mobile devices itself aiming, automating the testing method is to build up a high quality and optimized applications to deliver efficient results to the customer.

1. Introduction

As, mobile applications, decision makers are focusing on creating mobile strategies and road map before implementing the application for their users these necessities are increasing. It is essential to build an application with all features and functionality essential by the client and which is advantageous to the application user, but it is even more significant to have a precise mobile testing plan prior to the mobile app is deployed.

A comprehensive plan gives customers the assurance that the application will role as proposed on different devices with unstable screen sizes, resolutions, internal hardware, operating systems and across telecommunication operator networks.

➢ **Types of Mobile Testing:**

There are typically two kinds of testing that take place on mobile devices:

• ***Hardware Testing:***

These testing can be including the internal hardware, resolution, screen sizes, camera, memory, radio, Bluetooth, WiFi,etc.

• ***Application testing:***

There are three basic types of Mobile applications:

i) Web apps for mobile: Web apps are server-side applications to access websites on smart phones using different browsers by linking to a mobile network or wireless network like Wi-Fi.

ii) Native apps: A native application is formed for use on a podium like mobile and tablets.[6]

iii) Hybrid apps: Hybrid apps are mix up of native and web applications. They run on devices or offline and are written using web technologies similar to HTML and CSS.

Tests for mobile applications, automation frameworks, tools and methodologies are used to run programmed. Though these tests are typically carried out on mobile emulators. But running the tests on emulators may negotiate the dependability of test as emulators are not real devices and may not replicate definite results if equal test is run on mobile device itself.

Recent test automation tools have been modified to execute mobile test automation during mobile emulators. The mobile device where the application is installed to be attached to a computer so that the tests can be execute, the other tools are required. The obtained results often fluctuate from those obtained on actual mobile devices. Emulators are immense, but it should not suppose that just since your application works absolutely on an emulator, it will function in the similar way on the actual device[9]. The major challenge is to check the applications to guarantee the stability. Testers usually have two options when it comes to mobile application testing, either to test using real devices or using emulated devices[1].

Though the big drawback of emulators is that they not have the peculiarities and faults that only real devices can provide.

The Mobile applications that execute on device may be a sovereign application which depends solely on the device hardware capabilities or the application may execute remotely at server and the device acts as a platform for viewing and interacting[1].

To facilitate automation testing openly on mobile devices we introduce an Automation testing podium that allows the tester to test the mobile applications from mobile itself. The mobile applications can executed either on device or from server, depending on structural design, nature of the mobile applications and device capability[1].

As, the core business application requires a more vastly urbanized surroundings to execute these apps, we are providing mobile application interface in mobile devices to access the features of the application by the mobile users. The mobile applications are developed and not often tested, because the mobile application developer focuses on his software functionality relatively than the device complexities and mainly of the applications are being tested on emulators relatively than on actual mobile devices.

The defects present in the mobile applications may imperil not just the application that is present and may influence the device in which it runs. The requirement for mobile application testing assures main value for the accomplishment of any developer and endeavor.

2. The Challenges In Mobile Testing Applications

The main points that are to be measured as testing mobile applications are to be addressed with the subsequent questions :

- ✓ Which tools to be chosen for testing the mobile applications ?
- ✓ Which mobile devices will this application support ?
- ✓ Which operating system versions will this application support?
- ✓ What are the changes must be made to accommodate the differences with platforms ?

Types of Mobile App Testing (MAT):

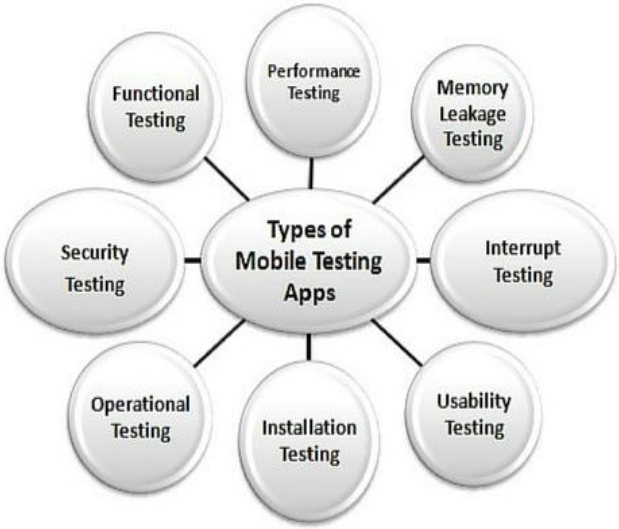

Fig1.: Types of MAT

Some of types Mobile app testing are explained as follows :

- Functional testing: To ensure the mobile application is functioning as per the requirements.
- Usability testing: To ensure the mobile app is simple to use and provides a adequate user experience to the customers.
- Performance testing: Performance of the mobile application is examined under all probable conditions. A variety of real-life scenarios are replicated like to no network, low battery, memory down, server not accessible, etc.
- Compatibility testing: Testing of the application in dissimilar mobiles devices, browsers, screen sizes and OS versions according to the requirements.
- Installation testing: To ensure the procedure of installation, un-installation and update are functioning effortlessly lacking of generating any errors across devices.

Testing mobile applications is more difficult and time consuming compared to conventional desktop and web apps. Mainly the desktop applications require to be tested on a single platform. Mobile applications results in many applications being urbanized for and experienced on Android, iOS and even more platforms due to lack of similar platform.

”Automated Testing” is automating the manual testing process at present in use. This requires that a dignified”manual testing method”, currently exists in the company or organization [15]. The furthermost challenge when it comes to mobile application testing is the ample of devices widen across different platforms. It is not realistic to test application on each and every accessible device which means you have to sensibly choose a few physical devices. Testing on one device never guarantees the tester that it would work on any other device, despite of whether it is of equal build, equal operating system version or using related platform. Not trying on a physical device always has a risk of plausible breakdown on that device, mainly when the intentional devices for the application are pervasive. Testing demands diverse substantial devices to cover the following:

- Screen size variations.
- Different Form factors.
- Different pixel density and resolution.
- Different input methods like QWERTY, touch etc.
- Incoming calls and SMS
- Warning for Low battery
- Power cable plugged in
- No network availability
- Device gets switched off
- GPS signal lost
- Different platform testing: In case of native application, it can be implicit that it will require elite testing effort on all platforms for which it is urbanized.

3. Literature Survey

❖ *Existing Technology*

The initial approach is to utilize an emulator, which is a software application that allows you to sensibly replicate the performance of a mobile application on a certain mobile device configured in a certain way. When it comes to testing mobile devices, there are two primary ways to approach the testing procedure. While emulators are quite helpful, they are not to be relied upon solely due to boundaries in the emulation software. The next way is to use the actual devices you are targeting in the mobile marketplace [4]. Many frameworks are available for testing mobile application for a variety of purposes.[10]

❖ *Test Automation Tools*

There are various types of paraphernalia that are fit for different applications. The test automation tool automates the common steps that are concerned in a test. These tools compose the testing procedure more speedy and proficient [3].

Selenium is a transferable software testing framework for web applications. The Selenium-IDE (Integrated Development Environment) is the tool to build up Selenium test cases. Selenium does not presently bear mobile application testing exclude through the use of web drivers for mobile browsers[3]. Test automation can automate some recurring

but essential tasks in a dignified testing process previously in place, or execute supplementary testing that would be difficult to do physically [2].

The essential criteria is to prefer the tool should be following:

Ease of use,No/Limited programming knowledge required, Robust and scalable,Should be able to support Android and iOS apps,Should be working with multiple languages[11].

❖ ***Appium***

Appium is an open-source tool[8],it is an automation tool for executing scripts and testing native applications and mobile web applications on android or iOS using a webdriver.[7]

Appium has enhanced appreciably since its origin and is regularly being added up with latest features. Appium can be termed as a innovatory tool that can entirely amend the testing process in a much efficient and fast way. Even though the version for MacOS and Windows differs in several manners but is overall very parallel for both the operating systems.

Appium is an HTTP server written in node.js which creates and handles numerous WebDriver sessions for various platforms like iOS and Android for native, web as well as hybrid applications. Appium starts a test case using a script on the device that listens for alternative commands from the chief Appium server. Each vendor like iOS and Android have a different way and method to run a test case on the device. So, Appium type of hacks in to it and executes this test case after listening commands from Appium server[5].

4. Concept

A. Testing

The testing can be done from the server side as well as from the mobile by devices which are connected to the server. When triggered script and the functions written in the scripts are executed on the actual mobile device.

B. Generation of Test Report using Test Report Generator

In automation testing significance of representing and reporting is so high. The graphical representation can be done by using pie charts, table and graphs, to make the appearance of report superior and easy to understand[1]. After execution of test, the Test Report Generator is invoked to produce a test report based on the implementation details received by the Test Executor. A test execution steps and the details of the test cases executed such as (Passed, Failed and differed) can be displayed by Test Report. A graphical representation of the report can be in form of additional report which uses the extentReport API.

5. Architecture

The following Fig. 2. Shows the Block Diagram

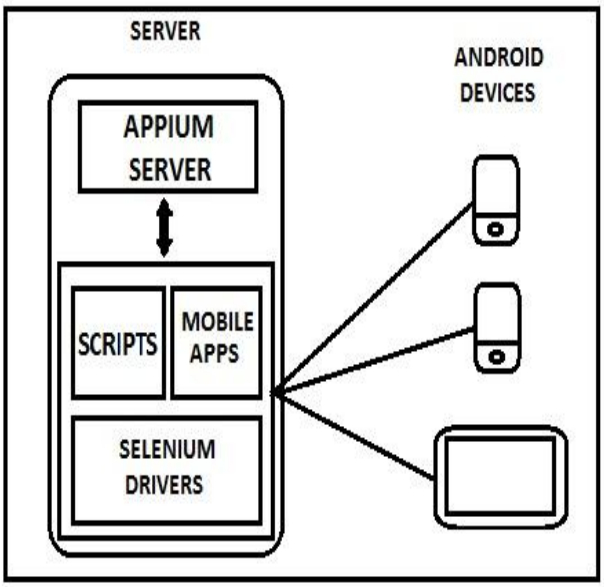

Fig. 2. Block Diagram

The Existing System architecture is shown in Fig. 3.

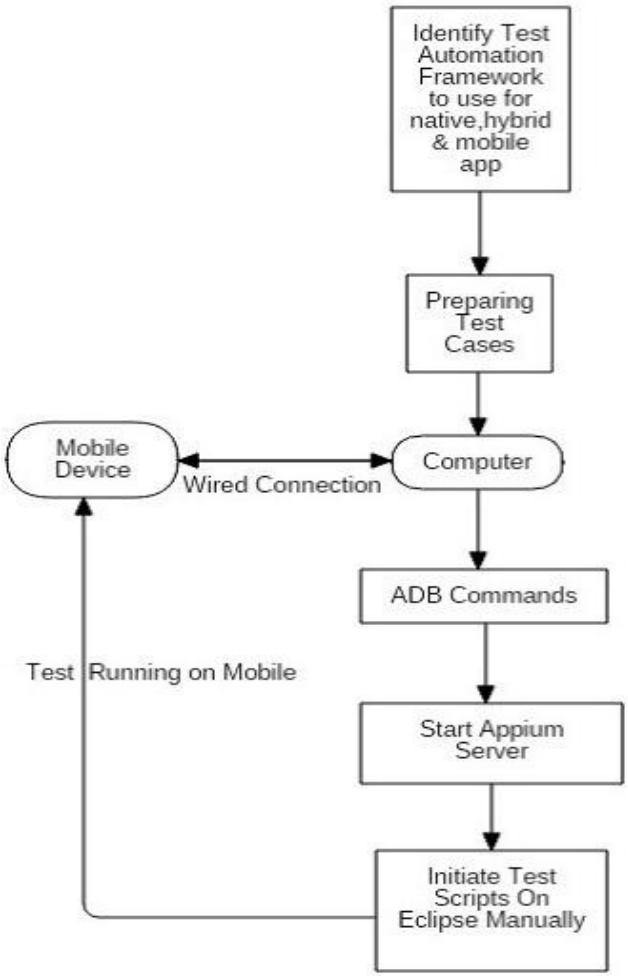

Fig. 3. Existing System

And the upcoming System can be represented in Fig. 4.

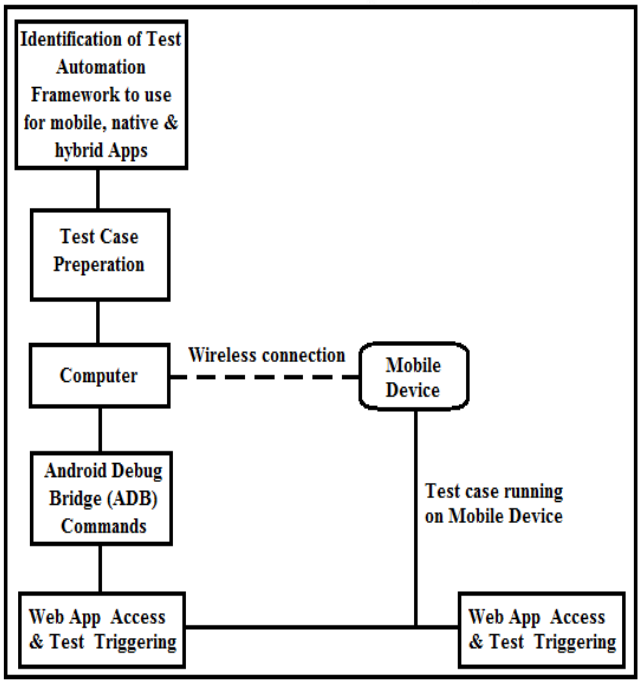

Fig. 4. Upcoming System

6. Results

The planned testing method aims to test mobile application from mobile itself in wireless system, as well as the tester can choose mobile device on which he or she wish to test the mobile application. Actual remote device testing surroundings is desired in the case of mobile application to test the interoperability between various networks and devices. We have Planned the Automation Testing of application in a wireless way.

7. Importance

- The mobile device can be selected on which test is to be implemented.
- The mobile application test from mobile device can trigger itself .
- Wireless automation testing of mobile application.
- The mobile device can generate test report itself.

8. Conclusion

In this paper, a method for Automation testing of android mobile application have been Planned. The system is based on wireless automation testing and is used to test the test cases that create a report. Event sequences consists in test cases, that can be launched on the application user interface.

Benefits of this automation platform are :

- The Platform is capable to handle various devices
- Script will be run on all android platform versions
- Testing scripts can be triggered from the mobile devices
- Based on Appium Tool.
- Selecting devices on which testing to be done can control by Admin.

9. Future Scope

In the future, study will be focused on recording the complete test case executing on the mobile device. This it will help to backpedal the accurate events that the tester performed to the point where the trouble were established. It will also help the troubled authority to trace and playback the test cases when needed; it is extremely helpful for detecting bugs. The study will be focused on mounting a Real-Time WebRTC console for real-time testing.

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