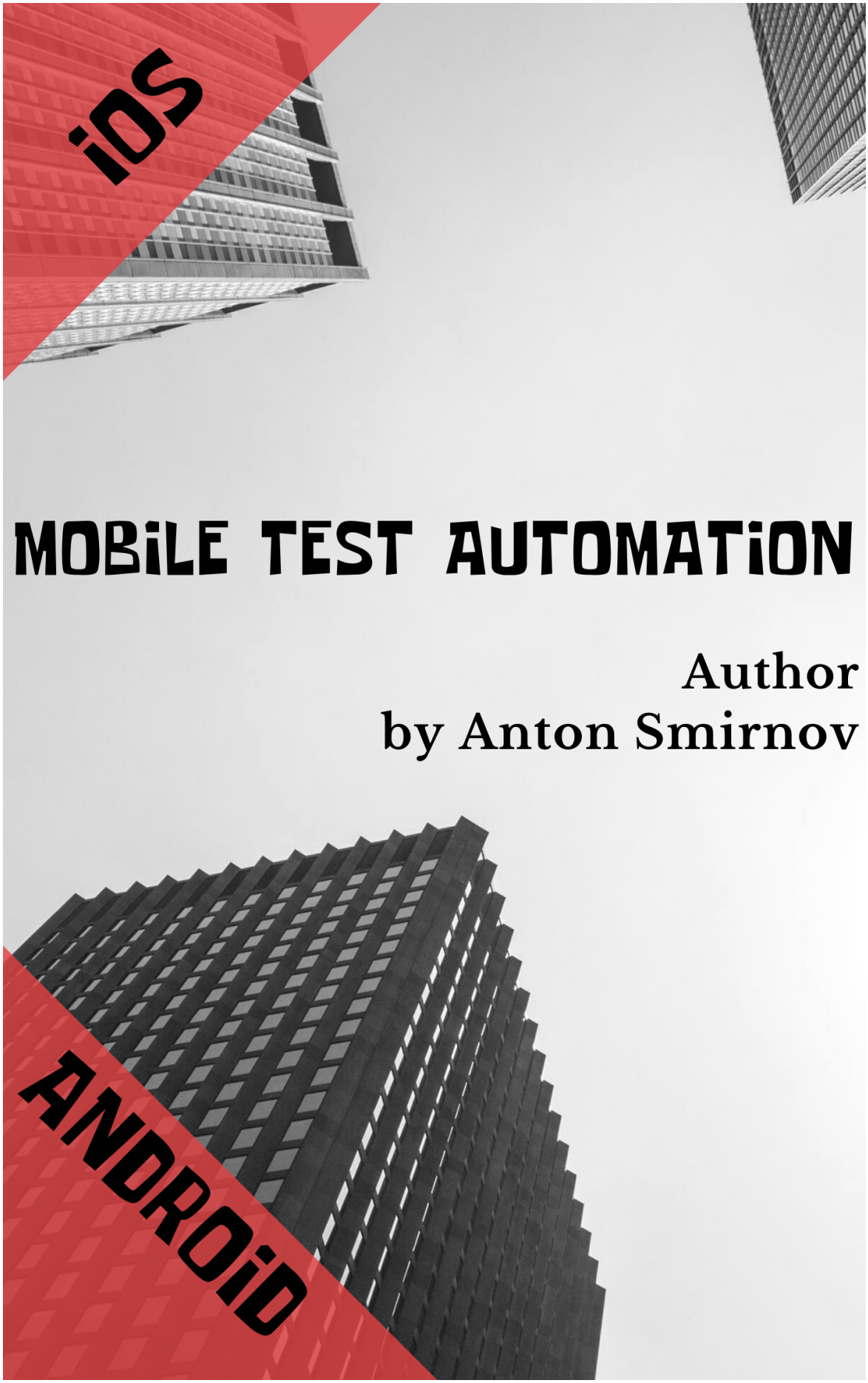
iOS
MOBILE TEST AUTOMATION
Author
by Anton Smirnov
ANDROID

Mobile Test Automation.

Learn to create a framework for mobile automation testing fundamentals fast.

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Related Websites:

Mobile test automation: https://test-engineer.site/

Author's Software Testing Blog: https://test-engineer.site/

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Introduction.

Pretty often you can see test automation framework successfully running tests and reporting results but not doing what it's supposed to do: providing a reliable way for team members to build automated tests, and get reliable results. This often happens when a test automation framework is built without planning in advance and understanding how it will be used.

At first, the team realizes that they need automated tests. One of the engineers decides to take care of it (or gets assigned) — using the tools they are familiar with; they automate the first bunch of tests.

Since initially, it's a proof of concept, some things are being implemented via the fastest and most obvious solution, which is not always utilizing the industry's best practices. Such solutions introduce technical debt. If not addressed early, the impact of technical debt grows once the framework is expanded.

As a result, few iterations later, the team gets a test automation framework that can pretty well-run tests that were in the mind of the author building it. But making a step aside, expanding coverage to additional features, or trying to get other engineers owning tests creation via such framework becomes a challenging task.

Have you ever wondered how to set up a mobile test automation framework? Well, in this book you will learn about everything you'll need to successfully create such a framework. We're going to look at the pros and cons of preconfigured testing environments and those that are created dynamically.

This book is based on more than 5+ years of experience in the field of mobile testing automation. During this time, a huge collection of solved questions has accumulated, and the problems and difficulties characteristic of many beginners have become clearly visible. In the course of working in different places, I have repeatedly had to create a framework for mobile testing automation from scratch. It was obvious and reasonable for me to summarize this material in the form of a book that will help novice testers quickly build an automation testing framework on a project and avoid many annoying mistakes.

This book does not aim to fully disclose the entire subject area with all its nuances, so do not take it as a textbook or Handbook — for decades of development testing has accumulated such a volume of data that its formal presentation is not enough, and a dozen books.

Also, reading just this one book is not enough to become a "senior automated testing engineer". Then why do we need this book?

First, this book is worth reading if you are determined to engage in automated testing – it will be useful as a "very beginner" and have some experience in automation.

Secondly, this book can and should be used as reference material.

Thirdly, this book — a kind of "map", which has links to many external sources of information (which can be useful even experienced automation engineer), as well as many examples with explanations.

This book is not intended for people with high experience in test automation. From time to time, I use a learning approach and try to “chew” all the approaches and build the stages step by step.

Some people more experienced in software test automation also having may find it slow, boring, and monotonous.

This book is intended for people who first approach the creation of an automation testing framework, especially if their goal is to add automation to their test approach.

First of all, I wrote this book for a tester with experience in the field of “manual” software testing, the purpose of which is to move to a higher level in the tester career.

Summary:

We can safely say that this book is a kind of guide for beginners in the field of automation software testing.

I have a huge knowledge of the field of test automation. I also have quite a lot of experience building automation on a project from scratch.

I have repeatedly had to develop and implement the framework of testing automation on projects.

The learning approach focuses on a huge chunk of theory on building the automation testing framework. The book also discusses the theory of test automation in detail.

However, the direction of automation to support testing is no longer limited to testing, so this book is suitable for anyone who wants to improve the use of automation: managers, business analysts, users, and, of course, testers.

Testers use different approaches for testing on projects. I remember when I first started doing testing, I was drawing information from traditional books and was unnecessarily confused by some concepts that I rarely had to use. And most of the books, to my great regret, did not address the aspects and approaches to test automation. Most books on testing begin by showing how you can test a software product with basic approaches. But I do not consider the approaches and implementations of test automation at the testing stage.

My main goal is to help you start building a mobile automation testing framework and have the basic knowledge you need to do so.

This book focuses on theory rather than a lot of additional libraries because once you have the basics, building a library and learning how to use it becomes a matter of reading the documentation.

This book is not an "exhaustive" introduction. This is a guide to getting started in building a mobile automation testing framework. I focused on the examples.

I argue that in order to start implementing an automation testing framework, you need a basic set of knowledge in testing and management to start adding value to automation projects.

In fact, when I started creating the automation testing framework first, I used only the initial level of knowledge in the field of testing and development.

I also want the book to be small and accessible so that people actually read it and apply the approaches described in it in practice.

Acknowledgments.

This book was created as a “work in progress” on **leanpub.com**. My thanks go to everyone who bought the book in its early stages, this provided the continued motivation to create something that added value, and then spends the extra time needed to add polish and readability.

I am also grateful to every QA engineer that I have worked with who took the time to explain their approach. You helped me observe what a good QA engineer does and how they work. The fact that you were good, forced me to ‘up my game’ and improve both my coding and testing skills. All mistakes in this book are my fault.

Chapter 1. About Mobile automated testing.

Android & iOS are the most popular mobile operating systems. There are millions of apps designed for these platforms that need testing.

Mobile technology and smart devices are the trend now and will change the future of the world as we know it. We all can vouch for it, can't we? Now, it will be amateurish if I list what we use these mobile devices for.

Gone are the days when the telephone used to be an appliance that sat in a corner and had to ring to get our attention or a computer was a machine only a few people used – they are now an extension of our being- a window to the world and virtual servants that do as they are told.

Nowadays, Mobility solutions have taken over the market. People don't want to switch ON their laptops/PC for everything, rather they want their handheld devices to perform everything quickly.

Mobile testing continues to increase in importance. And it's important to have the right strategy and tools for each type of mobile testing. In this chapter, you'll learn what mobile testing is — and get the basics you need to conquer it.

What Is Mobile Testing?

Mobile testing is the process by which mobile apps are tested for functionality, usability, and consistency. Mobile testing can be done manually or with automation.

Mobile testing is important for many reasons. Mobile apps are important for conducting business. And to make sure that mobile apps work properly, it's critical to test them.

Basically, mobile app testing is done using a variety of mobile automation testing tools to ensure the apps are flawless and perform well under varying load conditions. This type of mobile app testing using mobile automation testing tools is named mobile automation testing. Leveraging mobile app automation testing, businesses can be assured that the mobile app is bug-free and can be released into the marketplace (i.e., app store or play store).

Today, with millions of mobile apps available, app ratings and reviews also play an important role for a new user to download mobile apps. Hence, it is primarily important that the mobile app automation testing should be taken up during the mobile app development phase to ensure the app is fully tested using effective mobile automation testing tools.

Businesses should leverage mobile testing automation to achieve below characteristics:

- App Functionality. This sort of mobile app functionality testing ensures the mobile app functions as specified in the design document for various specifications.

- App Performance. This sort of mobile performance test automation assesses app responsiveness, operating capacity, scalability, and readiness of the app, and how it performs with varying loads of users.
- App Security. The security testing verifies data integrity, storage security issues, the significance of any tainted inputs and also checks the security of activity logs.

- App Usability. App usability automation testing is very important today as mobile apps that deliver great usability are preferred more by users. Hence, this accessibility test automation ensures that users are able to perform the intended tasks on the app satisfactorily.

- App Accessibility. Today, it is a mandate that the apps should be accessible to the differently-abled populations to ensure their easy access and usage. There are certain accessibility norms and regulations that should be adhered to to ensure standardized accessibility to all users. Hence accessibility test automation should be taken up for mobile apps.

Mobile testing is different from web testing in complexity.
Mobile apps usually have more users and need to work on a broader range of devices — with more communication.
This increases testing complexity. While web apps are increasingly used on mobile devices, testing them is not quite as complex.

Specifics of mobile testing:

- One of the main features of mobile testing is the need to test on a large number of device configurations, since the application may behave differently on each individual phone model. Defects that appear on specific devices are device-dependent. Their reason may be in the OS version, interaction with the manufacturer's firmware, non-standard screen resolution or pixel density, Bluetooth versions, etc.
- Since mobile applications often do not have very cumbersome functionality, it is better to write a test model in the form of many simple tests. Thus, you will get a more visual and simpler picture of testing than if you have large tests that include a lot of checks. It will also be easier to edit it when the requirements change.
- Often, mobile applications require interaction with the phone via Bluetooth (wearable electronics, fitness devices), NFC (scanning, payment), geolocation (maps). It is necessary to pay special attention to the testing of such interactions.
- It is important not to forget to test the app for interruptions (incoming SMS, calls, connecting to a charger, low battery charge, changing the screen orientation), as well as at the limits of Bluetooth, in conditions of a weak network signal, etc.
- Mobile testing can be really "mobile": not only can you not be tied to your workplace, but you may also have to run, jump with this device, or walk around the city with it and test the application in the field.

One of the first things you need to decide when starting a new mobile testing project is the list of devices that will be tested. As mentioned above, mobile app testing needs to be performed on several different devices. The more devices involved – the higher the percentage of coverage and, accordingly, the higher the probability of finding defects. The fleet of devices should be selected depending on the market for which your product is produced, its system requirements and the project budget.

It is impossible to cover 100% of the market and even approaching this figure is irrational – it is hundreds of devices. It is also important to consider the minimum requirements of your application, for example, whether the application needs to support Android versions starting from 4.4.4. and iOS from the 9th. Additionally, is it necessary that the device has Bluetooth of a certain standard for example not lower than 4.0 etc.

Below is an example of a checklist of key points to focus on when starting a new mobile automated testing project:

- It is necessary to clearly determine the list of devices and coverage.

- Coordinate all procedures on the project.

- Test for compliance with Apple and Google guidelines before the initial release.

- Check how the application works in different environments.

- Check the interaction of devices and applications.
- Monitor not only the external behavior of the application, but also its traffic (request/response).

- Select tests for subsequent automation.