Becoming a Pro

IN Mobile Applications Testing

Overview: *Mobile APPS*

> Categories

> Types

> Distribution/Installation/Logs

> Mobile Test Industry Standards

> Remote Device Access (RDA)

> Emulators

> Simulators

> Troubleshooting Guide

> App Risk Analysis

Mobile Test Industry Standards :
Testing Strategies for Mobile Apps

Challenges

Device fragmentation

In-house vs. outsourced testing

Availability of mobile testing tools

Application Lifecycle Testing

- **Like any desktop or web application testing, mobile application testing is also focused on the quality and performance of the final product.**

- **However, mobile app testing becomes far more challenging because of the following key factors**

Mobile Test Industry Standards :
Testing Strategies for Mobile Apps

Device Model

OS Version

Screen Resolution

Form Factor

Emulators vs. Physical Devices

Device Selection

Mobile Test Industry Standards :
Testing Strategies for Mobile Apps

Network density

How the app behaves on specific devices

How real-world users interact with the app

Different battery states on the devices

Multiple networks (Wi-Fi, 4G, 3G, etc.)

Beta Testing of your Mobile App

Mobile Test Industry Standards :
Testing Strategies for Mobile Apps

applications can be deployed, tested, and managed

saves businesses from setting up on-premise test environments

capability to support complex apps

provides real-time testing results

Mobile App Testing on Cloud

Mobile Test Industry Standards :
Testing Strategies for Mobile Apps

testing mobile apps in real network environments

network simulation tools are available

test mobile apps in various network speeds, bandwidths variations

testing the app in a full internet connectivity scenario and other factors

Network Connectivity

Mobile Test Industry Standards :
Testing Strategies for Mobile Apps

Automated testing is highly effective in consistently repeating a test procedure in regression testing as well as testing during the development stages.
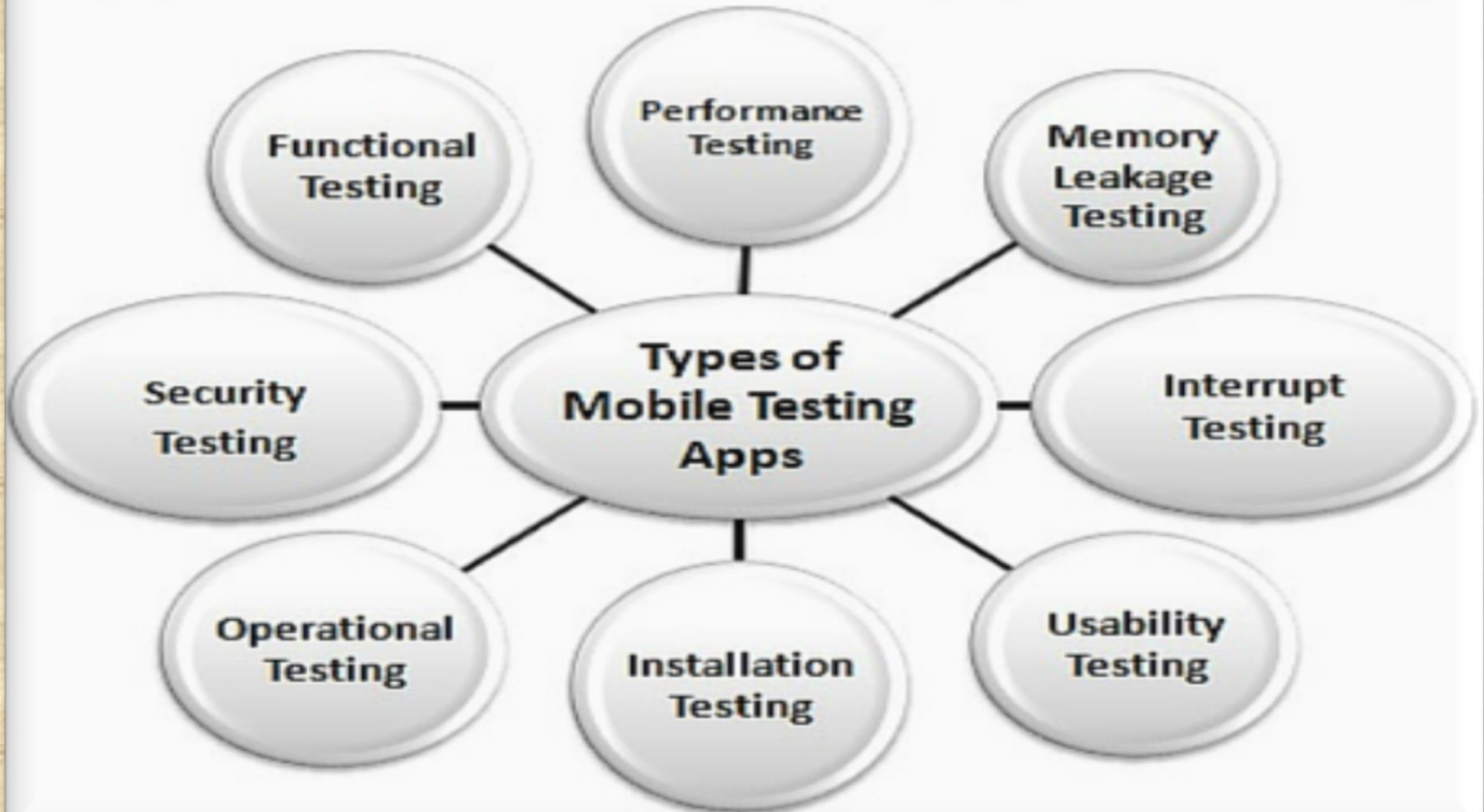
However, test automation requires significant amount of initial investment.

Manual Testing   **VS**   Automated Testing

Types of Mobile App Testing

Mobile Test Industry Standards :
Testing Strategies for Mobile Apps

FUNCTIONAL TEST

Verifying that all documented requirements are implemented.

Verifying that all features work as expected.

Validating texts, logos, images, text captions and other UI elements.

Validating localization and globalization.

Evaluating ease of navigation and screen transitions.

Examining response speed.

Evaluating the intuitiveness of the touch interface.

Mobile Test Industry Standards :
Testing Strategies for Mobile Apps

PERFORMANCE TEST

Performance with low battery power

Performance while network out of coverage area

Performance during poor bandwidth

Performance while changing internet connection mode

Performance while transferring heavy file

Testing from Application's server and client side

Mobile Test Industry Standards :
Testing Strategies for Mobile Apps

Memory Leakage TEST

Verifying if program runs for an extended time and consumes additional memory

Verifying if memory is allocated frequently for one-time tasks

Verifying where the program can request memory — such as shared memory that is not released

Verifying where memory is very limited, such as in an embedded system or portable device

Verifying where the leak occurs within the operating system or memory manager

Verifying when a system device driver causes the leak

Mobile Test Industry Standards :
Testing Strategies for Mobile Apps

INTERRUPT TEST

- Battery low
- Battery full- when charging
- Incoming phone call
- Incoming SMS
- Incoming Alert from another mobile application
- Plugged in for charging
- Plugged out from charging
- Device shut off
- Application Update reminders
- Alarm
- Network connection loss
- Network connection restoration

Mobile Test Industry Standards :
Testing Strategies for Mobile Apps

USABILITY TEST

To ensure that the buttons should have the required size and be suitable to big fingers.

To ensure that the buttons are placed in the same section of the screen to avoid confusion to the end users.

To ensure that the icons are natural and consistent with the application.

To ensure that the buttons, which have the same function should also have the same color.

To ensure that the validation for the tapping zoom-in and zoom-out facilities should be enabled.

To ensure that the keyboard input can be minimized in an appropriate manner.

To ensure that the application provides a method for going back or undoing an action, on touching the wrong item, within an acceptable duration.

To ensure that the contextual menus are not overloaded because it has to be used quickly.

Mobile Test Industry Standards :
Testing Strategies for Mobile Apps

INSTALLATION TEST

Verify application gets installed properly

Verify user can uninstall application successfully

Verify app updates are properly installed

Verify aborting installation does not affect other features

Check app behavior on trying to install it on non-supported version/device.

Verify app is installed properly from app store and from side loading

Mobile Test Industry Standards :
Testing Strategies for Mobile Apps

SECURITY TEST

Data flow -- Can you establish an audit trail for data, what goes where, is data in transit protected, and who has access to it?

Data storage -- Where is data stored, and is it encrypted? Cloud solutions can be a weak link for data security.

Data leakage -- Is data leaking to log files, or out through notifications?

Authentication -- When and where are users challenged to authenticate, how are they authorized, and can you track password and IDs in the system?

Server-side controls -- Don't focus on the client side and assume that the back end is secure.

Points of entry -- Are all potential client-side routes into the application being validated?

Mobile Test Industry Standards :
Testing Strategies for Mobile Apps EXTRA

FUNCTIONAL VS Non-FUNCTIONAL TEST

FUNCTIONAL	NON-FUNCTIONAL
Unit Testing Smoke testing / Sanity testing	Load and Performance Testing
Integration Testing (Top Down, Bottom up Testing)	Ergonomics Testing
Interface & Usability Testing	Stress & Volume Testing
System Testing	Compatibility & Migration Testing
Regression Testing	Data Conversion Testing
Pre User Acceptance Testing (Alpha & Beta)	Penetration Testing
User Acceptance Testing	Operational Readiness Testing
White Box & Black Box Testing	Installation Testing
	Security Testing

Mobile Test Industry Standards :
Testing Strategies for Mobile Apps

Platform/OS TEST

Different OS ->Android, IOS, Windows

Different browsers -> Firefox, Google Chrome, IE, Safari

Different Screen Size and resolution

OS versions and memory size

Hardware capable of interrupt handling without getting hanged

Multilingual Support

Different Time Zones Support

ACCESSIBILITY TEST (What is SCREEN READER ?)

Mobile Accessibility is critical to reaching all audiences. A product is accessible when a person with a disability can have an experience equivalent to that of a person without a disability

Users who are blind will use a screen reader to navigate and access information on mobile devices.

The screen readers are included in the device operating system and can be turned on in the device settings.

When Screen Reader is turned on, the gestures and keyboard shortcuts change.

In the 2014 Webaim survey shows that 82% of Screen Reader users will use a mobile device

ACCESSIBILITY TEST (SCREEN READER)

Web Content Accessibility Guidelines (WCAG)

- A person who is blind using a screen reader or a talking browser can navigate your information and interact with it.

- A person with low-vision can magnify the screen and understand the content.

- A person who is deaf or hard-of-hearing can read captions in multimedia presentations.

- A person with a dexterity limitation can use the alternative input devices for all interaction, or can use speech recognition software.

- A person with ADHD or dyslexia can use and understand the content and complete tasks

- Please refer to this link to learn more https://www.w3.org/TR/WCAG20/

Screen reader testing on mobile

Zooming site/application

Color ratios

Readability of the site

Navigation