**Mobile Testing**

Mobile apps are of two types:

1. Stand alone apps: The apps that are installed on the phone and that can be used with out any connectivity or servers. Eg. Calculator, some games.
2. Client/Server apps or Connected Apps: Apps that need connectivity with other users/servers. These are typically client server apps. Eg. Messaging app, Banking Apps, Shopping Apps, lot of games.

Mobile apps are of 3 types:

1. Native apps – Apps that need to be installed on the devices to use them
2. Web Apps – Like any web application, you use browser to access the app hosted on some remote web server
3. Hybrid Apps – Some of the new native apps support browser inside them.

Mobile Platforms: We have 2 popular mobile platforms. i.e. Android, iOS. Windows Mobile is another considerable platform.

**Android:**

Android OS is used for mobile and tablet devices. It is an open source platform. Platform is built with multiple languages but all the platform APIs are accessible through Java.

So application development on Android is done using Java.

Popular OS Versions:

2.2 – Froyo

2.3 – Ginger Bread

3.2 – Honey Comb

4.0 – Ice Cream Sandwich

4.1 , 4.2, 4.3 – Jelly Bean

4.4 – KitKat

5 - Lollypop

Android Apps are developed using Java and Android SDK.

Eclipse is used generally to build the apps.

Help 🡪 Eclipse Market Place 🡪 Search for Android 🡪 Install ADT for eclipse

Development and Testing:

Android applications are developed and built as “.apk” files.

Android is an open source operating system. Android apps can be distributed using Google Play, Amazon Store and Samsung Store or developer can distribute using his own channels.

To test or develop the apps, you need to install Android SDK. <https://developer.android.com/sdk/index.html>

During SDK setup, you need to choose which version of OS(s) need to be installed i.e. API levels also.

Tools:

Android SDK provides important tools like:

1. ADB (android debug bridge) devices list, installation, uninstall, update
2. DDMS – old monitoring tool
3. Monitor (A tool to replace ddms in future versions)
4. Logcat – It shows the device logs. i.e. all the activity/erros happening in the device and some of these will be related to your app.

Adb:

//Android-SDK/platform-tools/adb.exe

DDMS/Monitor:

//Android-SDK/tools/ddms.exe or monitor.exe

Q. How to install android apps?

You can install android apps to a real device or an emulator. Emulator can be created using “Android Virtual Device Manager”.

1. Download apk file
2. Open command line and navigate to platform-tools of sdk
3. Run command as “adb install <apkfile including location>

ADB command can also be used with options like devices, uninstall, push, pull

Device Logs:

While using the apps on the phone, apps create logs in local device, which can be used to debug any issues.

You can see the logs using “adb logcat” or from DDMS.

DDMS is a tool, which allows you to monitor the devices, view the logs and take screenshot of the device, file explorer

You can manage applications from Settings 🡪 Application Manager:

1. Uninstall app
2. View the memory usage
3. Clear the memory
4. Force stop the app if it is running in background

More about Android OS:

1. Android is a multi tasking OS

Test Automation on Android:

You can use Robotium for Native application testing, Selenium WebDriver for web application testing. Appium is a new tool helping to automate both Native and Web Apps. Appium tests can also be executed on iOS.

**iOS:**

iOS is used for mobile and tablet devices. It is developed by Apple and the iOS provides API to be accessible using Objective C.

Popular OS Versions:

8, 7,6

iOS Apps are developed using Objective-C and XCode as the IDE

XCode can be downloaded from App Store on Mac machines.

Development and Testing:

iOS applications are developed and built as “.ipa/ .app” files.

iOS is an Apple developed operating system. iOS apps can be distributed using Apple AppStore only

To develop or test the apps, you need to install Xcode. <https://developer.apple.com/xcode/>

You can also use iTunes, iPhone Configuration Utility for testing with out XCode. These two tools work on Windows too.

Tools:

XCode provides important tools like:

1. Emulator (To create iPhone or iPad emulators)
2. iTunes (To install ipa files to devices and sync them)
3. iPhone Configuration Utility (To monitor the logs)

Q. How to install iOS apps?

You can install android apps to a real device or an emulator. Emulator can be created using “XCode”.

1. Download ipa file
2. Open iTunes and drag and drop the ipa file to iTunes
3. Sync the device so that app will be installed to the device.

Note: Application should have the provisioning profile with device UDID

Device Logs:

While using the apps on the phone, apps create logs in local device, which can be used to debug any issues.

You can see the logs using iPhone Config Utility or XCode

XCode can be used for detailed debugging, deploying builds from code to device directly with out creating an .ipa separately.

Test Automation on iOS:

You can use Apple Instrumentation framework for Native application testing, Selenium WebDriver for web application testing. Appium is a new tool helps to automate both Native and Web Apps.

Q> How do you install the build on to your test device?

1. If you have access to code, from XCode/Eclipse, you can build the app and deploy it to the device (physical/virtual)
2. Get the builds (.ipa/.app or .apk ) from developers and install it to the device using tools like:

iOS: iTunes

Andorid: adb tool from android SDK.

1. Using tools like TestFlight, HockeyApp, developers can distribute the builds to selective teams and testers can install the apps from hockey/TF.

Q. Common bugs in Mobile Testing?

a. Application crashes because of memory issues or bad error handling or time outs etc.

b. App not responding (memory issues, code issues like deadlocks)

c. Changes in App not syncing to server.