Hybrid apps are essentially small websites running in a browser shell in an app that have access to the native platform layer

# Reactive Native

Install android SDK

(<http://facebook.github.io/react-native/docs/android-setup.html#content>

Android SDK Build-tools version 23.0.1

Android 6.0 (API 23)

Android Support Repository)

Install npm > 4.0

>npm install –g react-native-cli

>react-native init AwesomeProject

(note: fails to connect to git://github.com

>git config –global url.<https://github.com/>.insteadOf [git@github.com](mailto:git@github.com)

>git config –global url.https://.insteadOf git://

Current progress requires several minutes)

# Ionic

Ionic comes with very native-styled mobile UI elements and layouts that you’d get with a native SDK on iOS or Android but didn’t really exist before on the web

Since Ionic is an HTML5 framework, it needs a native wrapper like Cordova or PhoneGap in order to run as a native app

Ionic apps aren’t meant to be run in a mobile browser app like Chrome or Safari, but rather the low-level browser shell like iOS’s UIWebView or Android’s WebView, which are wrapped by tools like Cordova/PhoneGap.

Eager developers might also dig down into the native layer with custom Cordova plugins or native code

//installation

>npm install –g cordova ionic

//project template

Project Parent> ionic start myApp tabs

(or ionic start myApp blank, ionic start myApp sidemenu)

//build via android or ios

myApp> ionic platform add android

myApp> ionic build android

//test

myApp> ionic emulate android // testing in simulator

(or substitute android with ios to build for ios)

Note: 若emulate失败，可以将myApp\platforms\android\build\outputs\apk\android-debug.apk拷到mobile device安装测试

myApp> ionic serve //testing in a browser

//publish

myApp> cordova plugin rm cordova-plugin-console // disenable the debug console plugin

//generate our private key

>keytool -genkey -v -keystore **my-release-key.keystore** -alias alias\_name -keyalg RSA -keysize 2048 -validity 10000

//sign the unsigned APK

>jarsigner -verbose -sigalg SHA1withRSA -digestalg SHA1 -keystore **my-release-key.keystore** **HelloWorld-release-unsigned.apk** alias\_name

//optimize the APK

>zipalign -v 4 HelloWorld-release-unsigned.apk HelloWorld.apk

# PhoneGap

Apache Cordova is the engine that powers Adobe PhoneGap™, similar to how WebKit powers Chrome or Safari. However, Adobe PhoneGap™ provides additional tools that tie into other Adobe services, including tools like the PhoneGap Developer App, the PhoneGap Desktop App, PhoneGap Build and PhoneGap Enterprise.

Install PhoneGap desktop app ->computer

Install PhoneGap Developer App ->mobile device

是在移动设备上调试 PhoneGap 应用的工具，不需要每次打包、安装就可以直接在手机上调试 PhoneGap 应用

PhoneGap Desktop starts a small web server to host your project and returns a server address you can then enter into the PhoneGap Developer app running on your mobile device.