Best performance

Native app development

development

max compatibility

Web development

Compiled language

(C, C++, Swift)

hello.c

↓

compiler [CPU arch dependent]

↓

.obj ← asm code

↓

Linker [OS dependent]

↓

Executable

platform (OS) dependent

(Native)

mixed languages

(Java / python / JS)

(JVM / PVM)

Interpreted languages

(HTML | CSS)

hello.html

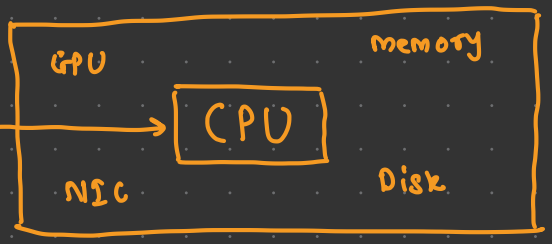
↓

Browser

JavaScript

Interpreter

Executable → Operating System ← JavaScript



→ Assembly language

Binary language

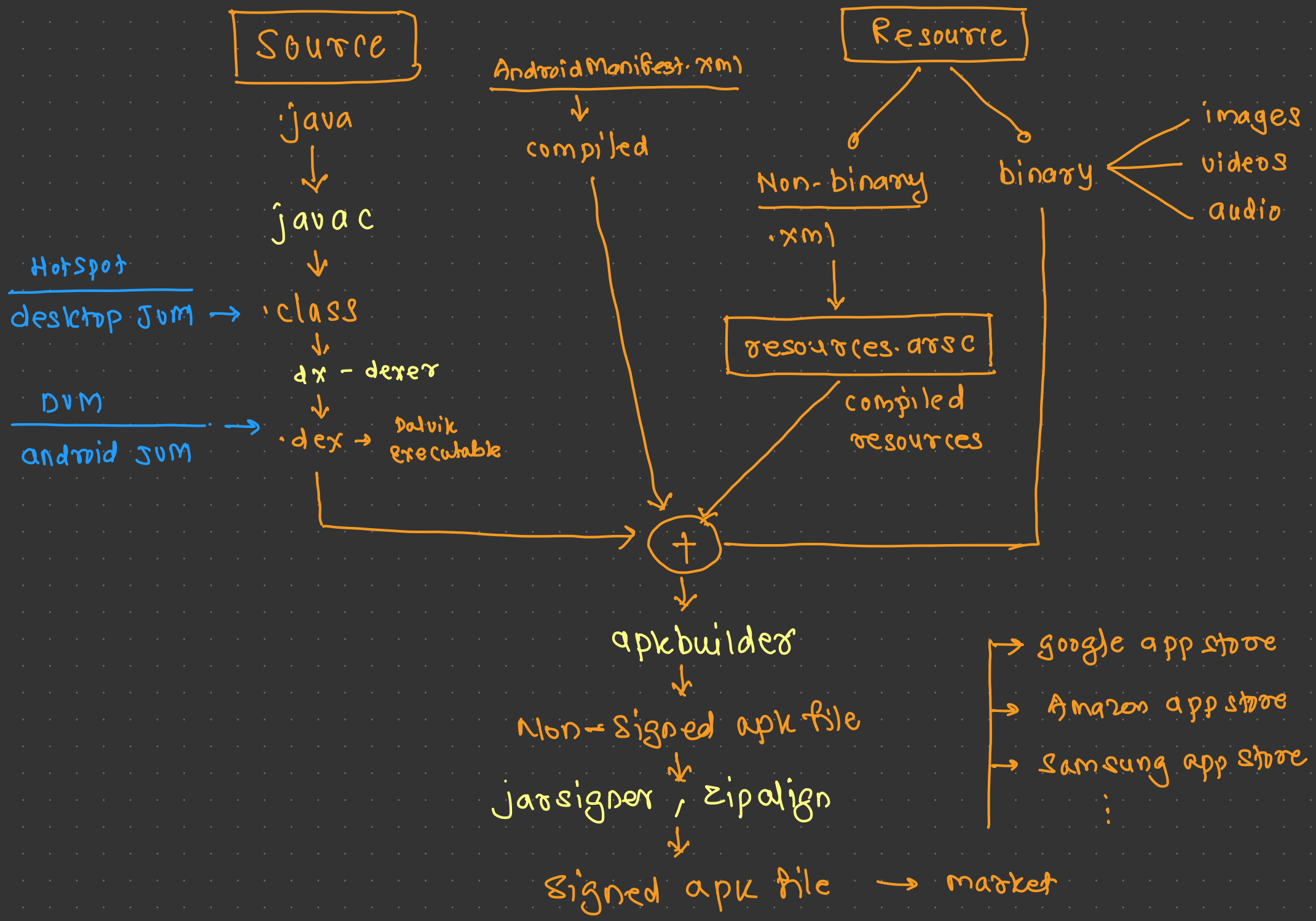
Electrical signals

assembly language

→ dependent on CPU architecture

- → CISC → x86 / x64
- → RISC → ARM
- → SPARC

Mobile development	Android	iOS
→ Native development → platform specific → Executable	Java / Kotlin .apk / .abb	Swift / objective-c .app / bundle .ipa / distributable
→ Web development	html / css / JS browser	html / css / JS browser
→ Hybrid development Native + interpreted	→ cross platform development → PhoneGap → Native → web browser / web site JS / HTML / CSS → SenchaTouch → React Native → JS + mobile SDK = Native app → Xamarin → C# + .Net = Native app	


Source
.java
javac
.class
dx - dexer
.dex
Dalvik executable
Hotspot
desktop JVM
DVM
android JVM
AndroidManifest.xml
compiled
Resource
Non-binary
.xml
resources.arsc
compiled resources
binary
images
videos
audio
apkbuilder
Non-signed apk file
jarsigner , zipalign
Signed apk file
market
google app store
Amazon app store
Samsung app store

ios requirements

1] os → macOS [apple machine / Hackintosh / VM]
   ↳ macintosh

2] languages → swift / objective-c

3] ios sdk

SDK	Android	iOS
① collection of headers / namespaces	packages → android.app	framework → CoreLocation
② collection of libraries	〃	〃
③ toolchain → collection of required utilities	compiler → javac, dx debugger → jdb others → adb, monkey runner.	compiler → swiftc debugger → LLDB utilities → profilers ↳ LLVM – Low Level virtual machine
④ documentation	developer.android.com	developer.apple.com
⑤ IDE	Android studio	Xcode
⑥ Emulator / VM / Simulator / runtime	Emulator → qemu, Bluestack	simulator - ios simulator

Emulator

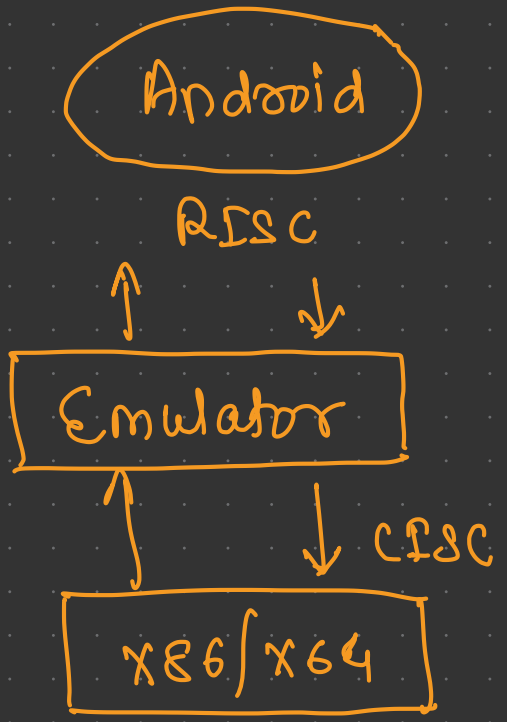
→ converting cpu instructions → RISC → CISC

→ runs real OS and Not a simulated platform

Simulator

→ does not run real OS

→ simulates behavior of app



Apple

- → macOS → OS for desktop
- → iOS → OS for iPhone & iPod
- → iPadOS → OS for iPad
- → tvOS → OS for apple tv
- → watchOS → OS for apple watch

language - swift

IDE - Xcode

iOS

- → OS for mobile devices → iPhone / iPad
- → smaller footprint of macOS
- → is derived from macOS

macOS

- → OS for desktop
- → uses hybrid kernel
  - ↷ University of California, Berkley
  - ① Darwin → developed by BSD [Berkley Software Distribution]
  - ② Mach kernel - developed by Carnigie Melon University