Mobile Application Development

Mobile App Development

Lecture Set – 01

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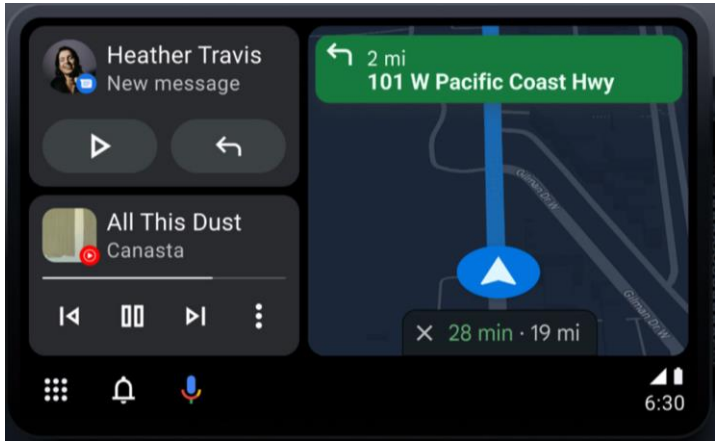
Mobile Operating System (MOS)

- A system software that controls the resources and allows the applications to be executed in:

- Smartphones
- Tablets
- Wearable devices
- Auto
- Other embedded devices.



Famous MOSs

Operating System	Developer
Android	Google
iPhone OS (iOS)	Apple
Symbian OS	Nokia
BlackBerry OS	BlackBerry
Windows Phone	Microsoft
Palm OS (Garnet OS)	Palm
Palm webOS	HP/Palm
Bada	Samsung Electronics
Maemo OS	Nokia
MeeGo OS	Nokia

Most Popular MOSs

MOS Market Shares in 2022

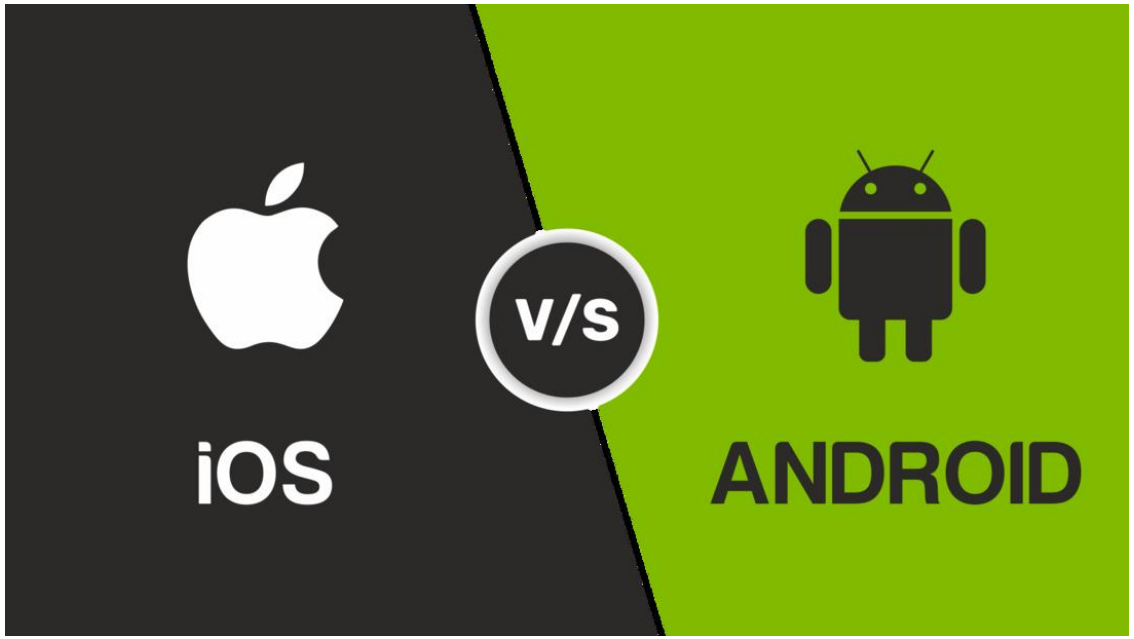
Mobile App Development (Choose Platform)

Native

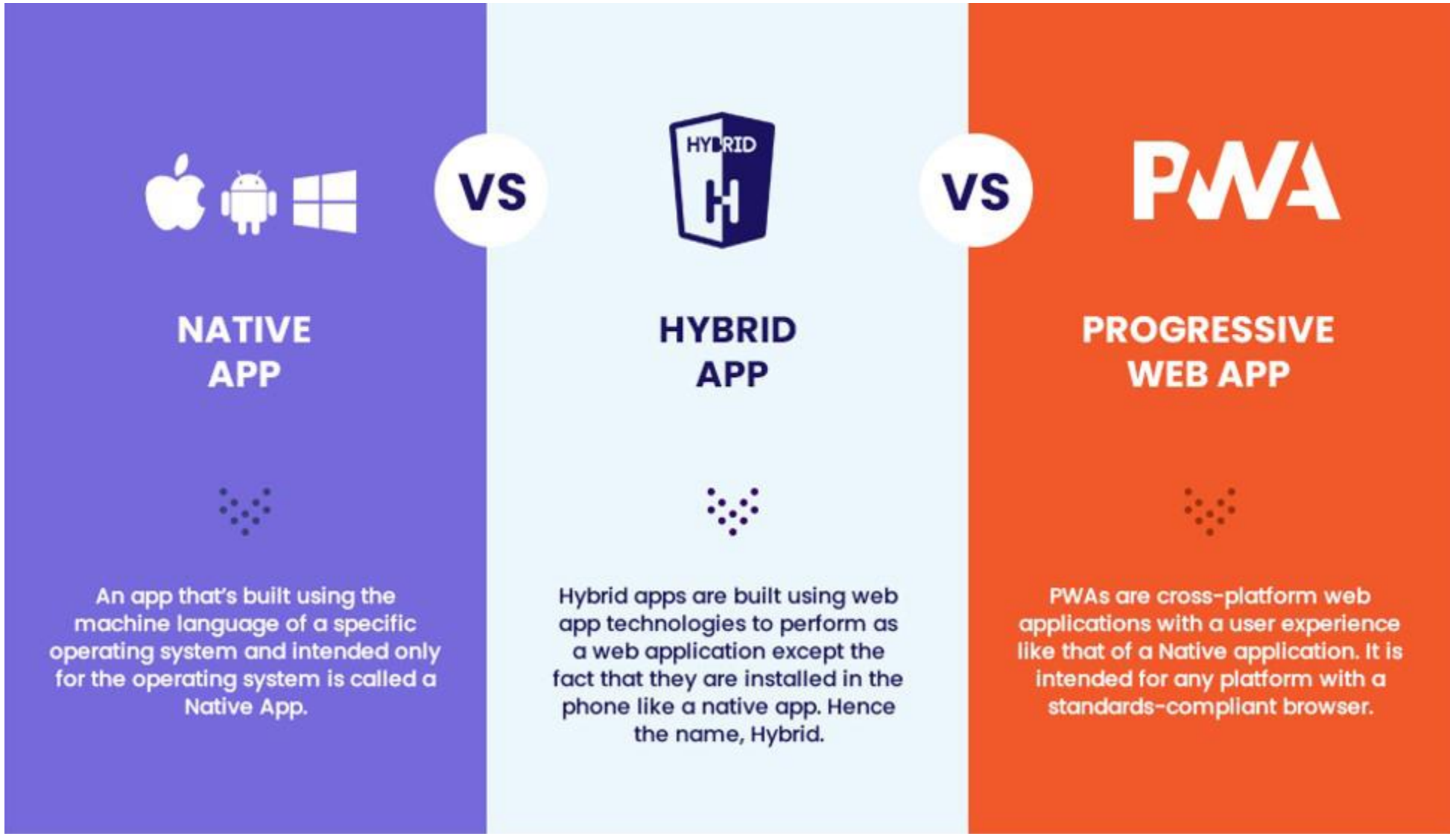
Separate codebase for Android and iOS

Cross-Platform

Single codebase for Android and iOS



Choose Development Option



Choosing Native Apps

NATIVE APP

An app that's built using the machine language of a specific operating system and intended only for the operating system is called a Native App.

Create highly reliable and fast working app.

Why to choose native app?

- Reliability (Mature and a lot of support)
- Feature Availability
- Performance (Fast and Smooth experience)

Why NOT to choose native app?

- Massive development time
- Maintenance Cost (Two separate code bases for iOS and android)
- Development Cost (Two separate dev team for iOS and android)

Choosing Progressive Web Apps

Creating an app alongside the website with less dev team and constrained financial resources.

Why to choose PWA?

- Reduced Development Time
- Reduced Maintenance Cost (Single codebase)
- Higher Code Reusability

Why NOT to choose PWA?

- Performance and Bad User Experience (UX)
- Feature Availability
- Reliability

Choosing Hybrid Apps

HYBRID APP

Hybrid apps are built using web app technologies to perform as a web application except the fact that they are installed in the phone like a native app. Hence the name, Hybrid.

Creating a good app with constrained financial resources and single development team for different app ecosystem.

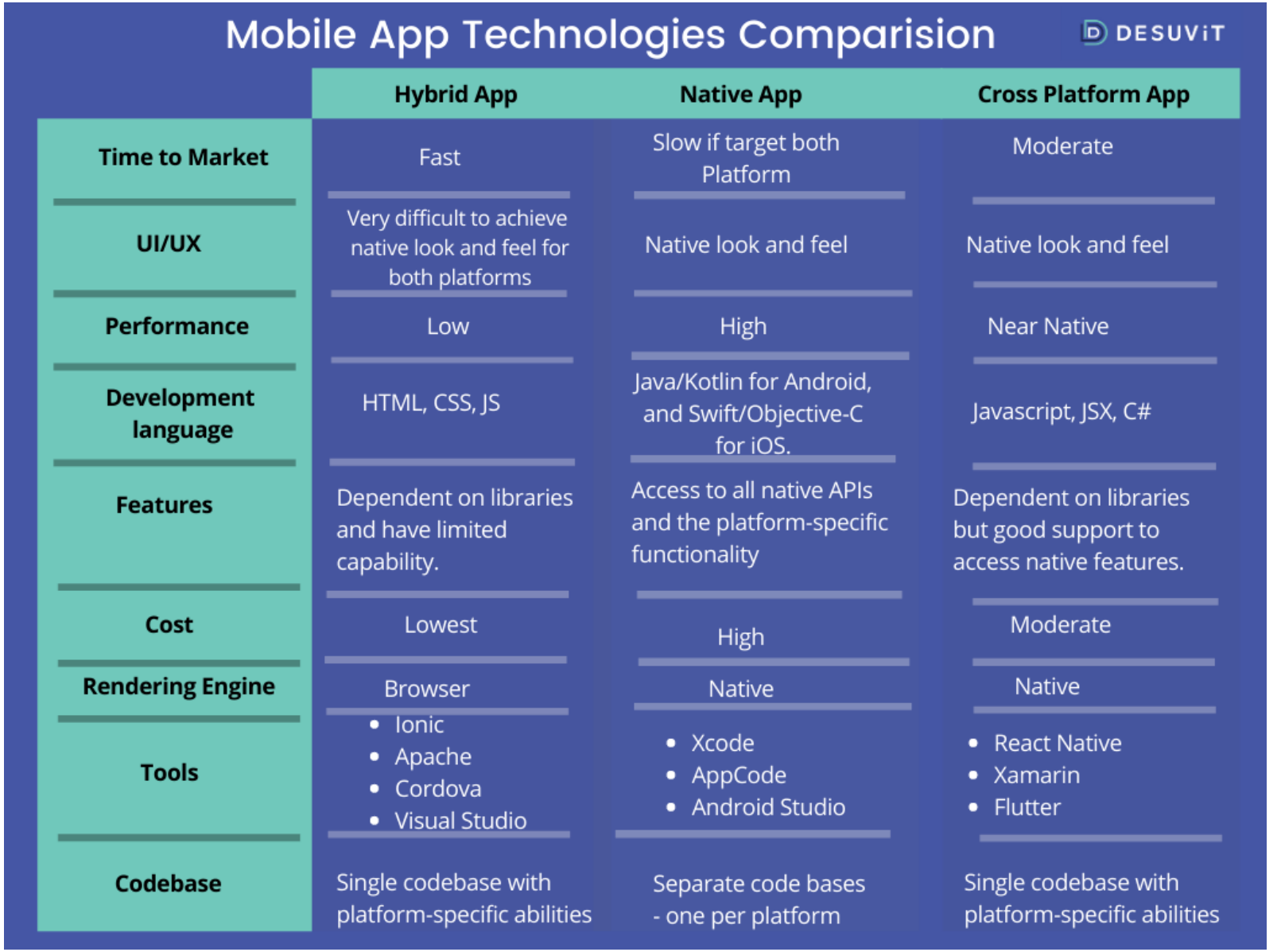
Why to choose hybrid app?

- Reduced Development Time
- Reduced Maintenance Cost (Single codebase)
- Higher Code Reusability (less than PWA)

Why NOT to choose hybrid app?

- Lower Performance (Greater than PWS)
- Feature Availability
- Reliability (Greater than PWS)

Mobile App Development Technologies



	Hybrid App	Native App	Cross Platform App
Time to Market	Fast	Slow if target both Platform	Moderate
UI/UX	Very difficult to achieve native look and feel for both platforms	Native look and feel	Native look and feel
Performance	Low	High	Near Native
Development language	HTML, CSS, JS	Java/Kotlin for Android, and Swift/Objective-C for iOS.	Javascript, JSX, C#
Features	Dependent on libraries and have limited capability.	Access to all native APIs and the platform-specific functionality	Dependent on libraries but good support to access native features.
Cost	Lowest	High	Moderate
Rendering Engine	Browser	Native	Native
Tools	• Ionic • Apache • Cordova • Visual Studio	• Xcode • AppCode • Android Studio	• React Native • Xamarin • Flutter
Codebase	Single codebase with platform-specific abilities	Separate code bases - one per platform	Single codebase with platform-specific abilities

Native App Development Technologies

Dev Environment	Languages	Target Platform
Android Studio	Java, Kotlin	Android
XCode	Swift, Objective-C	iOS, Mac OS
AppCode	Swift	iOS, Mac OS

PWA Development Technologies

Technology	Developer	Languages	Frameworks	Target Platform
Ionic	Ionic	HTML, CSS, JS	React, Vue, Angular	Android, iOS, Web
Blazor	Microsoft	C#, HTML, CSS	ASP.Net	Android, iOS, Web
NativeScript	OpenJS Foundation	HTML, CSS, JS	TypeScript, Angular, React, Svelte, Vue	Android, iOS, Web

Cross-Platform Development Technologies

Technology	Developer	Languages	Frameworks	Target Platform
Flutter	Google	Dart		Android, iOS, Web
Xamarin	Microsoft	C#, F#	.Net	Android, iOS, Web
React Native	Facebook	JS		Android, iOS, Web
UNO Platform	Nventive	C#, XAML	WinUI	Android, iOS, Web
Cordova	Apache Software Foundation	HTML, CSS, JS		Android, iOS, Web