# Assignment 1

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# A comparison of Native and Cross Platform mobile app development:

## What Is Native App Development

The term native app development refers to building a mobile app exclusively for a single platform. The app is built with programming languages and tools that are specific to a single platform. For example, you can develop a native Android app with Java or Kotlin and choose Swift and Objective-C for iOS apps.

Native apps are known to deliver exceptional user experience as they are generally high performance. User experience is also enhanced as the visuals are tailored to the platform UX. However, startups are concerned about the high cost of native app development as they need to run concurrent development for both platforms.

## Pros of Native App Development

### *Broad Functionality*

You'll have access to every API and tool provided by the platform that you're working on. Technically, there are no limits on how the programmers could work with the new app.

### *Better Store Support*

A native app is easier to be published and usually ranked higher on the platform's app store because it delivers better performance and speed.

### *Increased Scalability*

Apps built for the native environment also tend to be more scalable, thanks to the flexibility in resources management and the array of tools available.

### *High Performance and Great UX*

The direct interaction between the code and the underlying resources results in high performance. Also, native apps generally have a better UX that is synonymous with the platform.

## Cons of Native App Development

### *Costly*

Building native apps can be costly when you need to launch for both iOS and Android. It means you'll need to deploy two teams working on different platforms.

### *Time Consuming*

Native app development is time-consuming as the work done for a platform cannot be duplicated for another. Instead, a separate team is needed to work on the other version.

## What Is Cross-Platform App Development

Cross-platform development points to the process of creating an app that works on several platforms. This is done by using tools like React Native, Xamarin, and Flutter, where the apps created can be deployed on both Android and iOS.

While cross-platform development saves time and cost, you risk sacrificing quality in the process. It is difficult to tailor an app that runs optimally on various platforms, and the app will need an additional abstraction layer when running, thus resulting in lower performance.

Startups will favor the reduction in time and cost with cross-platform development. However, you'll need to bear in mind that it might be more difficult to customize the app beyond what's allowed in the framework.

## Pros of Cross-Platform App Development

### *Less Costly*
Instead of having two teams of developers, you'll need only one to create a cross-platform app. Therefore, you'll save on the development cost.

### *Faster Development*
Only a single cycle of development is needed to create an app that runs on multiple platforms.

### *Single Code Base*
As the app is created with a single cross-platform development tool, only one code base is created.

## Cons of Cross-Platform App Development

### *Slower App*
The need for an additional abstraction layer and rendering process makes the cross-platform app slower than its native counterpart.

### *Limited Functionality*
Developers may have difficulty accessing smartphone functionalities like the microphone, camera, and geolocation in ways possible for a native app.

### *Limited UX*
Cross-platform apps are unable to take advantage of native UX components. Therefore, it can't deliver the same UX experience that is accustomed to the platform.

# Different scenarios where each native and cross platform mobile app development is preferred:

## Application Complexity
If you're building an app that's just displaying information fetched from the network, cross-platform development will be a good choice. However, if it involves heavy processing or requires access to low-level APIs like Bluetooth, you'll want to go with native development.

## Cost
Native development produces apps with high performance, but it can be costly to build. If you have a limited budget to work on, cross-platform development is the ideal choice. You'll save around 30%-40% as only a single codebase is created for an app that works on both Android and iOS.

## Development Time
In some projects, you'll want to get an MVP app up as soon as possible. This is where you'll want to consider cross-platform development. You don't have to work on two versions of the app. Instead, only a single cycle of development is needed for an app to be released for Android and iOS.

If you're looking for stunning visuals and experience, the answer lies in native development. Developers have access to UI/UX components when developing in a native environment. Opting for cross-platform will greatly limit the UI/UX element of the app.

# List of frameworks/Tech Stack for cross platform mobile Application development:

1. Xamarin
2. React Native
3. Ionic
4. Adobe PhoneGap
5. Sencha