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## **Assignment#1**

## Question#1

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

Answer:

#### What is a native mobile application?

Native mobile apps are applications developed to target either Android or iOS. Depending on which operating system you are developing for, your applications are usually coded in a specific programming languages.

#### What is a cross-platform mobile application?

You create cross-platform mobile applications from a single codebase. The goal of cross-platform app development is to target different operating systems with one project. You create these apps using cross-platform frameworks, which use platform-specific SDKs (Android SDKs and iOS SDKs) from a unified API. This enables you to easily access the different platform SDKs and libraries.

Native platforms	Cross platforms
Necessity to adopt the app architecture in order to deploy this app to multiple platforms.	With cross-platform development you can save up to 80% of project budget. Deployment to other platforms requires little additional investments
It presupposes the writing of app source code from scratch for each platform.	It reduces time-to-market, the code is highly reusable!
Developing an app for one platform you can lose up to 50% of potential app users	It allows to promote the app through different plaforms, thus targeting larger audinece of users
in native development design is simplified by the services and support provided by the OS.	In a cross-platform environment developers have to add some features explicitly.

Native developer's skills usually cost more and are difficult to obtain	Most cross-platform framework are web-based, this is it easier to find the required expertise among great pool of web developers.
Native app development is the process of building an application exclusive to a particular platform.	Cross-platform development is the process of building an application, typically a mobile app, that can be deployed across several platforms based on a single source code.
Stability in maintenance and updates	Faster development process and time-to market
Maximizing the use of hardware functionalities	Value for money and reduced development cost
Highly specialized talent who have mastered their respective platforms	Prospects for talent and the future

## Question#2

**Different scenarios where each native and cross platform mobile app development is preferred.**

### **Preference of Native Mobile App Development:**

#### **1. Better Performance**

First and foremost, native apps have better performance than cross-platform or hybrid solutions. Primarily, because the application interacts directly with native APIs and doesn't depend on middleware.

Thus, by getting full hardware and operating system support, native apps end up being more responsive and highly efficient. Plus, the devices they're loaded on actually store all the key data and help content load faster.

## 2. Advanced Customization

Since native applications make the most of the features within the operating system, they can be highly customized. With this approach, developers can access the GPS, camera, microphone, and other hardware to build a final product that is truly unique.

In short, thanks to developers not needing to combine the features of two operating systems, they have fewer limitations and can focus on creating a one-of-a-kind solution.

## 3. Enhanced User Experience

Every platform has its own UI/UX guidelines that developers ought to stick to. Hence, when creating a native mobile app, these standards are well adhered to, resulting in a look and feel that is consistent with the operating system.

Find out how Velvetech Redeveloped a Medical App To Enhance the UI/UX

The consistency of native mobile apps also brings a much more intuitive and interactive user experience because people are familiar with the layouts typical for their operating system. So, whenever they use your application, they feel like it's something they are used to.

## 4. Greater Security

Another reason to opt for native app development is the higher security level that it offers. With data protection concerns rising, software solutions across all industries should make users feel safe when sharing digital information.

You see, cross-platform and hybrid solutions may carry with them the vulnerabilities of each platform, the browser they work on, and the universal languages they employ. Of course, this isn't always the case, just a possibility. However, definitely one to consider before starting your project.

As we've already mentioned, native apps are built for a specific platform. That way, the data is encrypted within a single infrastructure, which significantly reduces security-associated risks.

## 5. Fewer Bugs

Since building native apps incorporates using specific and different for each platform tools, it has fewer tech dependencies and decreases the possibility for bugs to arise. In the end, keeping two apps in two independent codebases is less difficult and error-prone than implementing two apps in the same codebase.

## 6. Improved Scalability

The architecture of native applications allows for acquiring more user traffic and supporting a higher load. Thus, there are more opportunities for scalability and your product's future growth.

It's easier for native apps to scale as you need since they effectively use existing hardware, provide a better performance, and reduce the risk of the app crashing during the increased traffic.

## 7. Easier Launch to the Market

Another advantage of native applications is the relatively easy process of launching the app to the app stores. Both App Store and Google Play have rules and standards to follow when you publish your solution to the market.

For cross-platform apps, it can entail more bottlenecks to cope with. On the other hand, when delivering native products, mobile developers use native tech stack and align the code from the first lines to the regulations and guidelines provided by each store.

## 8. Instant Updating

The last benefit of native mobile app development that's worth mentioning is the ability to receive instant updates.

The truth is, with cross-platform applications, developers aren't immediately able to implement new features. Given the frequency with which iOS and Android release updates, this can sometimes be a problem as the delays degrade the user experience.

With native apps, everything is much simpler. When Android and iOS roll out software upgrades, IT teams can immediately implement the latest features since they've got quick and easy access to new SDKs that help modify the application.

## **Preference of Cross Platform Mobile App Development:**

### **1. The joy of using the same application**

There are high chances that most of us have multiple devices. We might be using an Android phone and have a tablet based on iOS, a desktop, etc.

Now how would you feel to have different experiences and unfamiliarity of the same application when run on a different device? It would kill the vibe, wouldn't it?

As the user, we want to get similar characteristics and feel familiar with the UI and UX of the application. And this is what cross-platform mobile app development does. It allows you the joy of using the same application on any and every device.

### **2. Faster time to market**

Since there is no need to make different applications for different platforms, developers can build and publish the applications on multiple app stores simultaneously. This means you can reach your audience present on Android, or iOS, or windows, at the same time and faster.

### **3. One source code**

Having one source code is the best practice for any application development. And it is a real bonus for developers as they can reuse this code.

### **. Easy Implementation**

There are numerous technologies that offer cross-platform solutions and help developers to make the changes like it is a cakewalk. For example, one can write code in HTML and then convert it for different platforms. This means the developers can use the platforms they already know about and then convert them as per their convenience.

### **5. Easy product maintenance**

The development cycle is not a straight road. There are inevitable bug fixes and a lot of other improvements. Imagine doing all this for multiple applications of one business. Neither it sounds feasible, nor it is.

But with cross-platform app development, we have one single code to focus on. Which means fewer tests and an easier way to deploy fixes.

### **Question#3**

**List of frameworks/Tech Stack for cross platform mobile Application development.**

#### **Answer:**

##### **1. Ionic**

Ionic is one of the most remarkable and popular cross-platform app frameworks, based on AngularJS. It allows developers to use a combination of top programming languages.

##### **2. Flutter**

Google introduced an impressive cross-platform app framework named Flutter back in 2017. It is a software development kit designed to assist in the expeditious Android and iOS app development. It is also a fundamental and primary method for developing Google Fuschia apps

##### **3. Xamarin**

Xamarin cross-platform app development frameworks are significantly different from the frameworks we have discussed so far. It is a streamlined framework used for developing apps for Android, Windows, and iOS with the help of C# and .Net, instead of JS libraries and HTML. It allows the developers to use 90% of the code for building an app for three distinct platforms.

##### **5. Node.js**

Node.js is an incredible framework for developing cross-platform apps. Essentially, Node.js is a JavaScript runtime framework built on the Chrome V8 JavaScript engine. It is an open-source environment that supports the development of server-side and scalable networking apps. Node.js cross-platform apps are inherently highly efficient and responsive.

##### **6. Appcelerator Titanium**

Appcelerator is one of the many cross-platform app development tools designed to assist in smoother and easier mobile app development. It is a great way to create cross-platform apps with just a single code base. Its primary focus is on streamlining the app development process with the help of native components present in JavaScript code.

#### 7. Sencha Touch

Introduced nearly a decade ago, Sencha Touch helps in developing web-based cross-platform apps and is typically used to create efficient applications that use the hardware acceleration techniques. By using Sencha Touch, developers are able to create well-tested, securely integrated UI components and libraries.

#### 8. Corona SDK

Corona SDK enables programmers to develop 2D mobile applications for all the major platforms, including Kindle and Windows.

It offers 10X faster mobile and game app development. The framework delivers remarkable results at the back of its backend framework's reliability on Lua which is a lightweight and multi-paradigm programming language. The language focuses on the main elements of the development which are the speed, portability, extensibility, scalability, and last but not least, the ease of use.