

**COMSATS Institute of Information Technology**

**Department of Computer Science, Attock Campus**

**“MAD”**

**“ ASSIGNMENT 01”**

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**Explore the different frameworks/Tech Stacks available for cross platform mobile application development. Prepare a report that include following:**

1. **A comparison of Native and Cross Platform mobile app development.**

Contrarily, cross-platform mobile development enables you to create apps that are compatible with a variety of operating systems.

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| **Native Platform mobile app development** | **Cross Platform mobile app development** |
| You can create applications for a certain operating system—either Android or iOS—by using native mobile development. | Contrarily, cross-platform mobile development enables you to create apps that are compatible with a variety of operating systems. |
| 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 promoting the app through different platforms, thus targeting larger audience 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. |

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

* A popular open-source, free platform for creating hybrid mobile apps is Xamarin. Any mobile platform can employ Xamarin-based applications, which offer the same performance and user interface as native ones.

This well-known Microsoft cross-platform mobile app framework is included with Visual Studio and is available under the MIT license. It depends on the C# programming language and the.NET framework.

* Ionic is unquestionably one of the greatest hybrid app frameworks because it combines the desired qualities: it is open-source, simple to maintain, scalable, and easy to read. Ionic offers a library of HTML, CSS, and JS components that are mobile-optimized and aid in the creation of interactive apps.

Ionic includes a wide range of capabilities and tools, such as native-style mobile UI elements and layouts, out-of-the-box support for material design, and more. Additionally, it offers its clients frequent updates and tools from the developer community.

Applications built with Ionic have native features, targeted motions, and adaptable tools that improve user friendliness. To function as native apps, they depend on wrappers like Cordova or Phone Gap.

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

List of frameworks/Tech Stack for cross platform mobile Application development are as follows:

* **Ionic:**

Since it is an open-source front-end framework, changes to the code can be made, making it flexible for all developers and time-saving. This puts its rival Ionic, who is competing against React Native, up against stiff opposition.

Ionic is a favorites among developers since it gives the apps a native-like experience. It enables the creation of cross-platform programmers and ensures their flawless performance across numerous platforms.

* **React Native:**

It is advantageous because React Native, like Ionic, is an open-source cross-platform app framework. As a result, it has a sizable community that helps it by resolving issues, improvising, and adding features.

One benefit of cross-platform development is that it just calls for one-time coding (WORA) when creating apps for different platforms like Android and iOS. This overcomes one of the greatest problems with prior frameworks, which was that it required programmers to write code twice for the same project on many platforms.

* **Flutter:**

The cross-platform software framework Flutter is ideal for creating Minimum Viable Products (MVPs) because it starts a quick development process and is reasonably priced.

The programmers can understand the code modifications and effectively recreate a widget tree automatically.

* **Xamarin:**

The Xamarin framework uses C#, a cutting-edge cross-platform app development language that has an advantage over Objective-C and Java, to build apps.

The amazing native user interface and features provided by Xamarin help and enable developers to create native-like apps.

* **Native Script:**

Unlike React Native, Native Script offers programmers a comprehensive web resource that is stocked with plugins for a wide range of solutions. Third-party solutions are inevitably no longer necessary as a result of this.

For coding purposes, Angular and Typescript are used.

* **Node.js:**

Because the Node.js library is based on the Chrome V8 engine, it executes code incredibly quickly.

The cross-platform Node.js applications emit the data in chunks rather than buffering it.

* **Appcelerator Titanium:**

For the building of applications quickly, Appcelerator provides many tools. This suggests that a prototype for testing user interaction with UI can be made in a lot less time and effort.

It makes it possible to integrate current continuous delivery systems, including SCM solutions and others.

* **Phone Gap:**

As a cross-platform framework, PhoneGap enables the creation of apps for several platforms, including iOS, Android, Windows Phone, BlackBerry, etc., using a single code base.

* **Sencha Touch:**

For all of the major platforms, including Android, iOS, BlackBerry, Windows Phone, and others, it is renowned for offering built-in native-looking themes.

* **Corona SDK:**

It reacts to code changes almost immediately and provides a live preview of how the app will operate when used on a real device.