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| A7D18627**COMSATS UNIVERSITY ISLAMABAD**  **ATTOCK CAMPUS** |

**ASSIGNMENT#01**

**MAD THEORY**

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| Date of Submission | 2nd, October 2022. |
| Program | BS-(CS) |
| Semester | VI |

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

1. A comparison of Native and Cross Platform mobile app development.
2. Different scenarios where each native and cross-platform mobile app development is preferred.
3. List of frameworks/Tech Stack for cross-platform mobile Application development.

**Native Application development** refers to the development process using platform-specific programming language, SDK, and the primary technology stack. This development process makes use of the development device memory, camera, sensors GBS contactless and more native builds applications offer higher and better performance, have robust functionality, and deliver a seamless user experience.

High speed and performance, Familiar user interface (more responsive) but take **Larger time and cost of creating an application.**

**Cross-platform App** development refers to the app development that can perform on any type of operating system. The code that is written once a cross-platform development is deployed on smartphones, tablets, computers, smartwatches, and televisions. Developers write the codebase and run it across the various platform without worrying about code compatibility. This developer saves a lot of time and money. These applications are easy to maintain and update.

Easier and faster deployment, Reduced development time and cost other things being equal, cross-platform solutions will never run as fast, reliable, secure, and smoothly as native apps.

We can consider a Cross-platform app development approach to win the desire to have one engineer ship to two platforms the desire for iOS and Android apps to work the same and unify the look and feel of iOS and android applications while cross-platform feature development helps with unifying much of the business logic between iOS and android apps.

Cross-platform app development goes a step further by unifying the UI layer between the two platforms. There are similar technologies that could choose to build your app cross-platform such as Flutter, React Native, or Ionic.

But there are different trade-offs that you need to carefully evaluate before introducing cross-app frameworks with large apps or teams such as Development experience, Tooling, Device support, Release speed and quality, Platform limitations, Binary Size and Build performance, and more. Lots of work and the library did give a Strong Community.

(b) Native is ideal for apps with a high level of customization and great for gaming apps, apps that develop with extensive graphics. But one code won’t work on both platforms with native development. Native apps are built for a particular operating system. There are pros and cons to this method, along with the others. each programming language has its pros and cons. You can’t definitively say that one is better than another. It all depends on the app type, budget, timeline, and technical knowledge.

Native development is typically the most expensive and most challenging to learn. But it’s necessary for certain types of apps, like gaming apps. Hybrid languages are easier to learn for users who have some technical knowledge and web development experience. You can get your app to market quickly with this method since you won’t have to use two deployments.

(c) **Mobile Angular UI** is a framework that is used for mobile app development it makes use of Angular and Bootstrap to build HTML5 hybrid mobile applications. It gives features like excellent documentation, is embedded with Bootstrap, and provides mobile components. Mobile Angular UI provides very informative documentation that you can easily use to create an application. Notice that documents also consist of demos for your reference.

**Appcelerator Titanium** is also a Bootstrap to build HMTL5 mobile applications. Using this framework code can be reusable, features include; seamless integration, drag-and-drop palette, bi-directional updates, and combination and normalized data.

**jQuery Mobile** is a touch-optimized framework that can create cross-browser-compatible applications. This means it is compatible with all mode browsers, it is also a theming framework that allows the user to create a customized theme. It has a limited dependency and is lightweight to optimize.

**Corona** is a free and open-source cross-platform framework that is also known as a 2D game engine. It is used to create both mobile and desktop applications. Developers can create a single app and publish it on multiple platforms such as the play store, windows, and Mac.

**PhoneGap** allows you to build mobile applications using HTML, CSS, and JavaScript. Its features are; Free and open source, robust backend, wonderful documentation, easy to use, and taps to the device’s hardware.

**Xamarin** is built using .NET and C# and can be used to create applications for iOS, android, and windows. Xamarin has several remarkable features; Underlying SDKs are completely bound, Allow invoking libraries from various languages, Modern IDE as well as modern language constructs, and supports mobile cross-platform.