

**COMSATS University Islamabad ATTOCK**

Department of Computer Science

**Mobile Application Development**

**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.**
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 App development vs Cross Platform App development:**
* **Native Mobile App Development:**

In this type of Application development the application is build by keeping the particular **Operating System** in mind. These types of apps is developed in the specific type of Programming languages or Tools that are purely used for the development of that Operating System. **i.e.** If we want to make the app for **Android** we use the **Java & Kotlin** Programming language or if we want to make the same App for **IOS** we use **Swift & Objective-C** for that platform.

These apps are delivering high quality User Experience and Provides the better Performance. While providing the high quality design these types of apps may effect cost because of their higher performance.

* **Pros and Cons :**
  + **Pros:**
* **Broad Functionality:**

We access to every API and tool in the Particular Operating System we are working for. There are no limitations for using these tools.

* **Better Store Support:**

These types of apps are easy to publish on App store and ranked.

* **High Performance & Better UX Design:**

These types of apps Provides high performance and have Perfect Design. These apps provides better Functionality.

* + **Cons:**
* **Costly:**

These apps can be costly when publishing on both Operating Systems separately. We require two teams for building one for IOS and another for the Android.

* **Time Consuming:**

The same type of work done for the different platforms hasn’t be duplicated. The separate developer is needed to work for another Platform.

* **Cross-Platform Mobile App Development:**

In this type of Application development the application is build for different platforms at a time. The same code is written for all the platforms and this code runs on all the platforms having same functionality. These types of apps are developed in the one Programming languages or Tool that runs for all platforms. **i.e.**  The **flutter , React Native** are used for these type of development.

These apps saves time and cost but will reduce the quality of the Product. These apps will provide lower performance running on different platforms.

* **Pros and Cons :**
  + **Pros:**
* **Less Costly:**

These apps are less costly because only one development team is need for all the platforms.

* **Faster Development**:

The development is done only for once at a time for all the platforms that is why the app is delivered in less time.

* **Single Code Base:**

The app is created in a single tool so one code based is generated.

* + **Cons:**
* **Limited UX:**

These apps are unable to take the Advantages of the Native apps Components. Therefore it can’t deliver the high quality Design.

* **Limited Functionality:**

These apps are doesn’t have access to all the API’s and the tools for the All Operating Systems.

* **Slower Application:**

These apps are slower because additional abstraction layer for the platform specific and rendering process make it the slower.

* **Scenarios where Native App development or Cross Platform App development is preferred:**
* **Native Mobile App is Preferred where**
* You should choose native development if your app needs full access to all the resources and services of the particular device.
* Where you have to create the more quality design a responsive product.
* You want to get the most usage of device hardware.
* Where you want Easy to publish and updated in Future.
* **Cross Platform Mobile App is Preferred where:**
* When you have low budget.
* When you want to lesser quality design and responsiveness.
* The app provides not more functionality.
* When you didn’t want faster performance.
* **List of Frameworks for Cross-Platform App Development:**
* **Flutter:**

This is the most popular framework for building web, mobile and desktop apps using single code base. It is officially released by google in 2017. This Framework is using **Dart** programming language for building applications. The popular apps using this framework are **ebay, Alibaba** etc.

* **React Native:** This framework is developed by Meta Platforms in 2015. This is used for building mobile and web apps using single code base. This framework is using JavaScript programming language and React library for Front End development. The popular apps using this framework are **Instagram, skype** etc.
* **Native Script:**

This framework was initially released in 2014. This is using

**JavaScript, Type Script** and front end frameworks of JavaScript **vue.js Angular**.   
 The popular apps created using this platform are **Breethe ,Strudal** etc**.**