



SNS COLLEGE OF TECHNOLOGY, COIMBATORE –35  
(An Autonomous Institution)  
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING  
(UG&PG)  
19CSB303 Composing Mobile Apps

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### Introduction

#### Introduction of Mobile Applications

Talking about the mobile applications, the first thing that comes to mind are the apps like Whatsapp, Instagram, swiggy, etc that we use in our everyday life. Ever thought about how these apps are made? Which technology is used? Let's discuss what technologies or frameworks can be used to develop a mobile application. Mobile apps are majorly developed for 3 Operating System. :

Android

IOS

Windows

There are 3 different ways to develop Mobile apps: –

1st Party Native App development

Progressive web Application

Cross-Platform Application

1. 1st Party Native App development: –

These types of apps normally run in the native devices, that is, it runs only in the OS that it is specifically designed for it. These apps cannot be used on different devices using a different OS. The apps that are developed for android are normally coded using Java or Kotlin languages. The IDE normally used for android app development is Android Studio which provides all features and the apps that are developed for IOS are generally coded in Swift language or Objective-C. The IDE suggested for IOS App Development is XCode.

Advantages of 1st Party Native App development:

The performances of these apps are very high these apps very fast compared to any other apps.



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We have easy access to all the features and APIs.

The community is widespread so all your doubts and errors can be discussed and solved easily.

Updates are available on the same day.

Disadvantages of 1st Party Native App development:

The development speed is too slow as we have to code it again for different OS.

And this category doesn't support open source.

2. Progressive web Application: –

Progressive web apps are essentially a website which runs locally on your device. The technologies used are Microsoft Blazor, React, Angular JS, Native Script, Ionic. These technologies normally used for web development propose. The apps' UI is developed the same way as they are developed while developing the website. This category has many ups and downs let's start with the advantages of Progressive web apps.

Advantages of Progressive web Application:

The main advantage of this process is that its development speed is fast the same code base is used for IOS, Android, web applications.

The web development team can be repurposed to develop the mobile application.

No installation required.

Disadvantages of Progressive web Application:

The major disadvantage is that PWA don't have access to all the feature and so the user experience is not that good IOS does not support all the features of PWA



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The UI for development is bespoke i.e. the buttons, edit texts need to be programmed which was not necessary for the 1st party native Apps.

The community is not that wide spread.

No extra room for business model i.e. it is still a challenge to develop a revenue model or advertising opportunities for PWAs. At the moment, there are fewer options than among native apps to subscribe to.

### 3. Cross-Platform Application: –

These are frameworks that allow developing total native applications which have access to all the native features of IOS and Android but with the same code base. These apps run on both Android and IOS. So normally the development speeds of these apps are very fast and the maintenance cost is low. The performance speed is comparatively low to 1st party native apps but faster than PWA.

Xamarin is Microsoft cross-platform solution that uses the programming languages like .NET, C#, F#. The IDE preferred is Visual Studio. The UI/UX is totally native giving access to all features. This technology is having a wide community. And whenever an update is released by Android and IOS the same updates are released by Microsoft through Visual Studio.

React Native is Facebook's cross-platform solution which uses the language JavaScript And the preferred IDE is WebStrome & Visual Studio Code. Same like Xamarin React Native has totally native UI/UX and gives access to all features. And the updates are released the same day by Facebook as Android and IOS.

Flutter is Google's cross-platform solution which uses the language, Dart. The IDE preferred is Android Studio, IntelliJ IDE, and Visual Studio Code. The UI/UX is bespoke and Flutters has to come up with their new libraries whenever Android and IOS comes up with an update to mimic those update. The community is fast growing.

Example,



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Here's an example of a cross-platform application:

A project management company wants to create a project management tool that can be used by teams on different platforms. They develop a cross-platform application that:

Can be used on Windows, Mac, iOS, and Android devices

Allows users to create and assign tasks, set deadlines, and track progress

Integrates with popular tools such as Google Calendar and Trello

Has a user-friendly interface that works seamlessly across all platforms

The application can be downloaded from the company's website or from different app stores such as App Store, Google Play Store, Microsoft Store, and Mac App Store, depending on the platform.

This example illustrates how the company developed a project management tool that can be used by teams on different platforms, Windows, Mac, iOS and Android, which is a cross-platform application. It allows teams to collaborate and manage their projects seamlessly, regardless of the platform they use.

Advantages of Cross-Platform Application:

The apps' development speed is very high as they use the same code base for both Android and IOS.

The apps' maintenance cost is low as the errors and updates as to be countered only once.

Disadvantages of Cross-Platform Application:

Slow Code Performance With Limited Tool Availability.

Limited User Experience i.e. these apps does not have access to Native only features