International Research Journal of Engineering and Technology (IRJET) e-ISSN: 2395-0056
Volume: 06 Issue: 10 | Oct 2019 www.irjet.net p-ISSN: 2395-0072

Cross Platform User Compatible System with Specific Application

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Abstract - *Nowadays every person in this world has Smartphone in their pocket. Mobile phone has become the part of our life. Mobile phone redefined the connectivity and communication because of mobile applications. The developers want to develop application on available platforms. There are numbers of platform for user to build an application. As different types mobile phones work on different type of Operating system such as, Google's Android, Apple's iOS, Nokia's Symbian, RIM's Blackberry. These all Operating system have share at least 10% of market, according to Gartner (2011). Every Operating system has their different native application development platform. Developing different application for different Operating system required more efforts, that's why cross platform are used. The software application that runs on different Operating system is cross platform development.*

In this paper, we are focusing on the development of specific applications for user compatible system with cross platform. The cross platform helps user for compatible system with specific application. There are different types of cross platform applications such as, web, hybrid, interpreted and generated app. Cross platform mobile development tools are spread rapidly due to its ability to compile the application source code for supported different operating system. There are numbers of platform for develop an application, but most commonly used is apk, i.e. android package. Android application develop by using C# and.NET codebase.

Key Words: Cross-Platform Mobile application development, IDE, Android development, is development, Cross-Platform.

1. INTRODUCTION

This In this generation, Mobile phones are the basic need of our life that means we use smartphones in our day-to-day life. As we use Mobile phones, human required many application for various purposes. This applications are develop by users on different Operating system. Every Operating system gives platform for creating application. Consider, if we developing an application on android Operating system, then we cannot use this application on other Operating system, except android Operating system (known as native apps). So to work this application on various Operating system we develop this app in Cross platform. The combination of source code of an application with a runtime environment and then, this environment interprets the app's code at runtime and thereby executes the app is develop by only cross-platform technology. Each Mobile platform has specific runtime environment, while the applications source code is platform-independent [1].

The maximum of the apps on our smartphone device are native apps except Web Apps which are primarily written in JavaScript, whereas native apps are written in languages that the platform accepts. C# is used for Windows Phone platform apps and, Java is primary language used to write native Android apps. An application program developed specifically for use on a particular platform which is to be developed is a native application. Because native apps are written for a specific platform, they can interact with and take advantage of operating system features and other software that is typically installed on that platform [2].

While developing native apps developers use its software development kit (SDK) and frameworks for developers implement an application for one specific target platform. For example, develop an applications or Android are coded in Java, access the platform functionality through Android's frameworks. Similarly for developing application in iOS are coded into Objective-C language, access platform Apple's frameworks. Native applications supports multiple platform, they have to be develop separately for each platform. On other hand, Cross-platform can use independent platform to develop an application in mobile phones. As the combine source code of an application with a runtime environment. Runtime environment interprets the application code that execute the application in the smartphones. In Mobile Operating System market share Worldwide, Google's Android is 76.23%, Nokia's Symbian is 0.09%, Apple's iOS is 22.17%, RIM's Blackberry is 0.03%, Microsoft's Windows is 0.7%, and other Operating system is 0.26% [3].

There are four different technical configurations are available for developing native and mobile web applications are:

A. Native applications: These applications are fast, powerful, and reliable but are tied to Mobile platform. It means that developer can must duplicate them using proper programming language for targeting other mobile platform.
B. Hybrid applications: Application of Hybrid app are built by using HTML5 and CSS3. In this the source

code is still executed by browser that is part of web. They ensure Cross-platform compatibility and access Mobile device's hardware (permissions of user's).

Table -1: Various OS share Market % [8]

Date	Android	iOS	Symbian	RIM	Other
Apr 19	75.22	22.76	0.11	0.05	0.03
May 19	75.33	22.66	0.11	0.04	0.02.
Jun 19	76.03	22.04	0.1	0.03	0.02
Jul 19	76.08	22.01	0.1	0.03	0.02
Aug 19	76.23	22.17	0.09	0.03	0.02

C. Web applications: web app are based on the browser based applications in which the software is downloaded from the web. To develop this applications that it required native application such as JQuery Mobile, Sencha Touch, JQTouch, WebApp.net and many more.
D. Generated applications: A web site designed for phones or tablet. It is like a native app. A popular example of generated apps is Applause [3].

According to the survey to develop any mobile application, it takes an average of 18 weeks to build a native app rather than cross platform takes 20-25 weeks [2].

2. LITERATURE SURVEY

Platform can refers to the types of processor (CPU) on which a given Operating system or applications run. There are many devices such as smartphones that are also effectively computer platform but less commonly thought about in the way. Application software can be written to depend on the features of a particular platform. The Java platform is virtual machine platform, which runs on various operating systems.

A hardware platform can refer to instruction set architecture. A software platform can either be an operating system or programming environment, through more commonly it is the combination of both Operating system and programming environment. There are many different platform for different Operating system such as java, web browser, Linux, macOS and many more. A java platform is an exception to the general rule that operating system is a software platform. A java can coded or programmed to run on all Operating systems that implement a Java Virtual Machine (JVM). Java programs can be executed natively using Java processor.

There are three biggest application store are Google play for Android, App Store for iOS, and Microsoft Store for Windows. Apps are generally downloaded from application distribution platforms which are operated by users. There are many application development tools such as, Codename One, PhoneGap, NativeScript, iOS, Android and many more. To create more than two different programs that have the ability to behave similarly to each other. It is also possible that this means of developing a cross-platform application will result in more problems with bug tracking and fixing, because the two different source trees would have different

3. ARCHITECTURE

Microsoft is using Xamarin to build iOS applications and they have over 400k developers using it. Your application will be native (compiled to the platform you choose) and you are able to use all the native libraries, widgets and UI parts. A will need a cross-platform architecture to be able to reuse code among platforms and using Xamarin you may be able to reuse more than 50-60% of your C# code among platforms. The same experience on the devices as on the website, but it enables your applications to deliver much more performance and features than any HTML5 solution. Facebook went from HTML5 to native applications due to performance and user experience limitations.

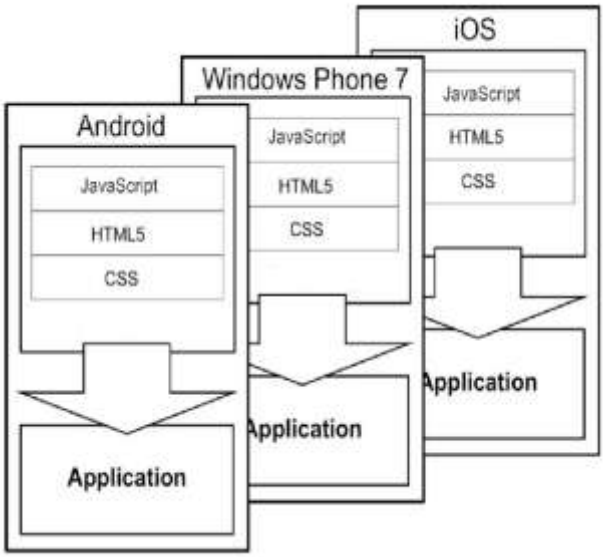

Fig -1: Building Applications: lead platform

4. ADVANTAGES

A. Reusable Code Components: With both cross-platform and hybrid app development approach, the development teams don't have to write unique code for different platforms. Instead, the program developed for one app gets leveraged many times. It is with code base used in bits for future projects.
B. Speed: It is one of the best advantages of cross-platform mobile app development. The use of single source code across multiple platforms helps reduce 50 – 80 % of development efforts across projects. It

enables development teams to abide and adhere by project deadlines.

C. Reduced Costs: Internet marketing is considered as the future for mobile applications. And, the cost of application development across different platforms discourages companies. The use of single code base across platforms results in significant cost reduction. Even the development teams don't have to invest time and money in learning multiple technologies. They have to master a few skills to get started with the development process [4].

5. DISADVANTAGES

A. Performance Challenges: Cross-platform apps have integration challenges with their target operating systems. It is because of inconsistent communication between device's native and non-native components. It affects the optimum performance of applications.

B. Slow Code Performance With Limited Tool Availability: Cross-compliance during the development phase make the code sluggish and even reduces the speed. Also, at times it becomes mandatory for the developers to make use of tools and suited limited to a particular app.

C. Limited User Experience: Cross-platform applications are not able to take total advantage of native-only features to provide excellent user experiences. It is because of different screen layouts, platforms, and functionality [4].

4. CONCLUSION

At last concluding all reviews which were related to topic of Cross Platform Mobile Application Development, the concepts related to mobile operating systems. The mobile operating system which work for different operating system is small parts are similar in it. So it is propose after all these experiments is help us to achieve our aim that we can build an integrated development environment something like Eclipse or NetBeans. The developer has its own choice to develop the application either in Java or Objective C. then it design GUI and works on the coding part and after that debugs and ensures the application is complete he would be given a choice to deploy the application to either Android or iOS. The developer to debug the program, check for memory leaks and do other stuff related to the testing part. And then the application will run on the platform.

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