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Survey on Tools and Technologies Applicable For Mobile Application Development

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Abstract - *In the today's fast and studious world of smart phones, everyone wants to become smart by saving their time and money. With regards to this, the developers are always passionate about providing the smart ways and approaches through the Mobile App for the common users so that they can have smart lifestyle. To provide the smart apps which works on smart devices, the diversity is there in the usages of tools and technologies. Some of the tools and technologies are specifically designed and developed to work for Android Phones, since most of the users are using Android phones. Hence it is a currently uprising technology which is growing fast in today's market. In this survey paper, we have provided the details about the Mobile Application development Environment and its usages along with Android Technology and their tools, and also use of MySQL open source database technology.*

***Key Words*: Tools, Technologies, Android, Plug-in, Android Libraries.**

1. INTRODUCTION

In today's technological world everybody is looking for the on-hand smart and perfect technological solution to satisfy their day to day requirements. So most of the experts have right now looking forward to provide such types of the smart apps which will be used through their smart phones.

Different types of apps are designed and developed to satisfy the day to day life requirements such as paying online payment of the light bills, online purchasing through the Flipkart app, to listen music using Saregama App , or to perform banking transactions, the different Banking Apps are available. The apps are available for entertainment, education, shopping, etc.

To design and develop the Mobile Apps, there is necessity to make a survey of the tools and technologies used and which are popular in the world of mobile apps developers. This survey paper is giving the concentration on the different tools and technologies used for designing and developing mobile apps. The sequence of survey is distributed throughout the paper to provide the survey of the tools and technologies used for Mobile Application development. The section 1, gives the introduction of the survey made in the context of the Mobile Application Development. The section 2 specifies the specific tools used to develop the smart apps and detail comparison with regards to their uses. The section 3 gives the survey of the Android Technologies and MySQL used to develop the mobile app.

2. Tools Used To Develop Mobile App

2.1 Introduction of Mobile App

Application software designed and developed to run on mobile device such as Smart phones or Tablets are called as an app. This process is also called as Mobile Application Development which is similar to the Web Application Development process whose roots are in the process of traditional software development. Mobile applications provides all required services as like of the application software's developed for PC's such as online shopping, performing online banking applications, etc. There is slight difference between the application software's and the apps are the small software programs which are developed to meet the intended specific requirement of the users. These apps are also called as smart phone apps or Android apps or iphone apps since these are developed to take advantages of unique features of particular mobile such as Android Mobiles, iphone mobiles or Microsoft Mobiles. Michael Facemire, an app developer for Forrester Research have a statement on app as "Mobile app dev tools are like paint brushes for an artist – they all come down to personal preference. Personally, I use some of the most well-known, like Android Studio, because they help me develop apps quickly."

While developing the app, there is need to concentrate on the one of the factor which is best performance. To get it is necessary to develop the app which are native to the underlying device and for this purpose it is required to use proper mobile application development platform which is called as (MADP).

A mobile application development platform (MADP) is a type of software that allows building, testing and perhaps deploying mobile apps rapidly for smart phones or tablets. The MADPs are the third-party vendors which sell typically the features such as mobile back end as a service (BaaS),

front-end development tools and management tools for application programming interfaces (APIs). The native, web and hybrid app development capabilities and mobile application management (MAM) tools for deploying and securing apps are also provided by the MADP. The user has to consider the following factors while selection the platform for mobile application development:

1) Create a list of tools that enables the building of native app, cross-platform apps or apps for the popular mobiles such as Android, ios, and Windows.
2) Choose proper Integrated Development Environment (IDE): The app development platforms are differentiated based on the features provided by them. Some of the platforms provide the modern IDE that can be easily installed on machines. While others MADP provide web – based tools or plug-in that can be connected to third party IDE if required. Even many of the platforms offer both the modern IDE as well as web based IDE.

2.1 Tools Information

The different tools are used to first of design the Mobile App which are:

Android Studio – This is IDE created by community named " IntelliJIDEA " used as plat form for developing Mobile Apps based on Android Technology. The IntelliJIDEA , Android based studio provides massive amount of plugins created by different communities.

Eclipse – This IDE is used to develop the programs in Java and it also enables the developer to expand with other languages via plugins.

DroidEdit – This is a text and code editor used on Android platforms for writing the programs.

Android-IDE – A complete web and Android development environment that allows writing and editing Java and PhoneGap apps.

Cordova – This is free and open source tool used to create to develop hybrid apps with HTML, CSS and JS.

Corona – This is also free tool available which is used develop game apps having 2D development platform. It is also used to develop cross platform apps.

Android Language Resources
The variety of languages is used to develop Android applications but the heart of Android development is the Java programming language. The C and C++ programming languages can also be used but it can be resulted into increase in complexity. These languages can be used with the Android Native Development Kit to create Android apps.

Android Libraries

In the scenario of software development, a library is a collection of the data which can do different things such as: 1) set rules for app behaviour, providing graphics effects, templates, communication protocol, and code which is already pre-written, etc. The large numbers of libraries are available which are organized as per their activity that the developers use for translating the objects from one language to other language. Through library, the development community keeps open their code which is common for other developers through such types of libraries, so that other developers can use it. The different libraries are listed below with their use:

1. **Universal Image Loader** – This is used to load and catch the images and it is highly customizable.
2. **GSon** – This is used for serializing and desterilizing Java objects in JSON.
3. **Retrofit** – This is used as a "elegant solution for organizing API calls".
4. **Awesome Java** – It contains some of the best Java frameworks and libraries.
5. **AndroidView Animations** – This is a library which provides way to get regular View Animations.

Android Plug-ins- Android plugins are used to provide the extra features, which are not included in used application development platform. The following plugins are used and are described as follows:

Plugin collection for IntelliJ – It provides plugins through the repository for IntelliJ plugins, which is an absolute handy tool for the IntelliJ IDE. This repository is absolutely huge, from which the developer can get started for developing the apps.

2.2 Detail Comparison of tools used for developing Mobile App

Table No. 1 Usages of Tools

Sr. No.	Tool	% of Usages
1	Android Studio	100
2	Android IDE	85
3	Android Plugins	85
4	Android Libraries	80
5	Android Language Resources	75
6	DroidEdit	60
7	Eclipse	40
8	Cordora	30
9	Corona	30

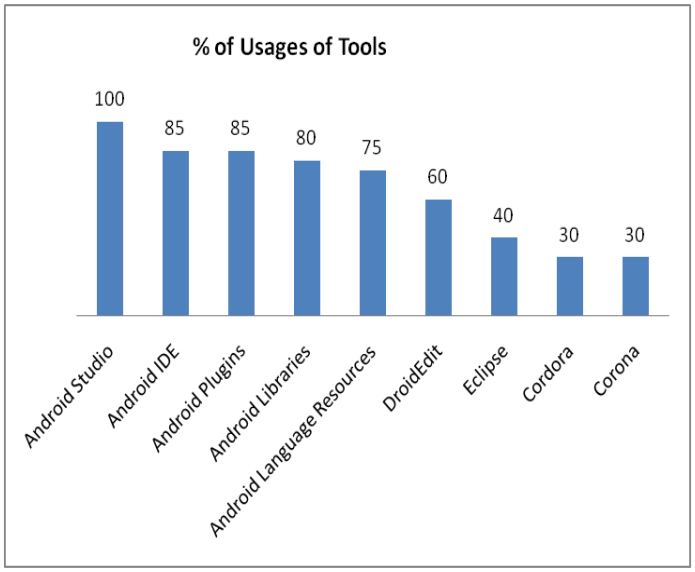

Chart -1: Usages of Tools

3. Technologies Used To Design and Develop Smart App

3.1 Android

Android is based on the Linux kernel and the source code is available under the Apache license (so it's free to use and modify) for anyone to download. Android Is More Customizable Can change almost anything.

In Android, any new publication can be done easily and without any review process Use a Different Messaging App for SMS

Android Offers an Open Platform Easy access to the Android App Market Cost Effective

3.2 Advantages and Limitations of Android Technology

Advantages of Android

1. Android Google Developer

The biggest advantage of the Android is Google. Android operating system is owned by Google. Google is one of the most trusted and reputed product on the internet. The name Google provides lots of trust for the users to buy Android device.

2. Android Users – Billion of USERS

Android is the most used mobile operating system. It is used by over billion people. Android is also the fastest growing operating system on the earth. Android has billions of users. A number of users increase the number of applications and software under the name of Android.

3. Android Multitasking

Most of us love this feature of the android. Users can do lots of tasks at once. Users can open several applications at once and manage them all too. Android has great UI which makes easy for users to do multitasking.

4. Google Play Store App free Download for Android – Millions of Apps

The best part of the Android is the availability of millions of applications. Google Play store is reported as world's largest mobile store. It has almost everything from movies to games and much more. These things can be easily downloaded and accessed through Android phone.

5. Android Notification – Easy Access

One can easily get access to their notification of any kind of SMS, emails or calls on their home screen or the notification panel of the android phone. Its UI makes easy for the user to view more than 5 Android notifications at once. The user can view all the notification on the top bar.

6. Android Widget – Several Widgets

Android operating system has plenty of widgets. This widget makes the user experience much better and helps in doing multitasking. You can add any widget depending upon the feature you want on your home screen. You can see notifications, messages, and much more use without even opening applications.

Limitations of Android

1. Little Memory for Storage: The Android technology does not provide large amount of memory so the developer need to provide the approach for storing the data of the intended user of the app.

2. Force Close on Large App/Games: Due to the small amount of RAM available on Android phones, some applications put up huge loads on processor and because of this smart phone gets hanged. To avoid the hanging of the phone, the application needs to be forcefully stopped at any condition.

3. Data Connection: Android has large number of background process which runs in the background, which eats so much mobile data. And thus cost lots of money if you are not into unlimited data plan.

4. Battery Problem: While android has many process running in the background this increase the usage of RAM and decreasing Battery Performance. While many top notch device has good battery backup (Lithium Batteries) but still that doesn't mean it solved the problem.

5. Security: Android technology does not provide in built security, it is all up to the developer to take care of providing the security while developing the App.

3.3 MySQL

For developing the web applications as well as business applications, there is need to store the data and for this purpose most of the experts prefer the open source database applications which are also applicable while developing the mobile app. Therefore, this facility of the open source database has been provided by MySQL. MySQL is a fast, easy-to-use RDBMS which is used for storing data generated through the small applications and big business applications. MySQL is developed, and supported by MySQL AB, and it is popular because of following reasons:

1. MySQL is an open-source license so user has nothing to pay to use it. It handles large databases, so it will possible to organize 50 million rows or more in a table with default file size limit for a table is 4GB.

2. MySQL handles a large subset of the functionality of the most expensive and powerful database packages.

3. MySQL uses a standard form SQL data language.

4. MySQL works on many operating systems and with many languages including PHP, PERL, C, C++, JAVA, etc.

4. CONCLUSIONS

The conventional software development scenario is changing with the usages of the smart devices such as Mobile phone or tablets. This results in opening of a door for development of applications which will work on Smart Devices in the smarter way, called as the “Mobile Apps”. With respect to development of the mobile app, the above survey is made. This concludes that, the developer can make the use freely available, open source tools and technologies which are user friendly.

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