Development of a Handyman Mobile Application

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ABSTRACT

Handyman mobile application is a mobile application that provides a quick and reliable means of contacting artisan for jobs which aids maximum satisfaction. The aim of this project is to find an effective way to create a mobile version of a handyman for use with oyo community as a case study. Research was conducted through interviewing both the people of oyo and the artisans, putting 4 major artisans into consideration. The application was developed using various software tools like Eclipse application Development Tool (ADT), Ionic Software Development Kit (ISDK), HTML was used for IONIC SDK, SQLite was used as database to store data of various artisan , this information was deployed, installed and implemented on an android mobile phone. The completed application saves time, energy, cost of maintenance of the system as well as create a conducive atmosphere

Keywords: Handyman, Application, Android, User interface, Database, Platform, Emulator.

I.   INTRODUCTION

The technological capability of the mobile phone is fast evolving and its ease of use has helped with making life a lot better for the community. The need to make life much easy in the aspect of finding a handyman has brought about the merging of technology with special skills thus the introduction of a mobile handyman application. Handyman is a person skilled at a wide range of repairs, typically home; a handyman describes a paid worker, but it also includes non-paid homeowners or do-it-yourselfers. Tasks range from minor to major, from unskilled to highly skilled, these task include trade skills, repair work, maintenance work, both interior and exterior, and are sometimes described as "odd jobs", "fix-up tasks", and include light plumbing jobs such as fixing a leaky toilet or light electric jobs such as changing a light fixture (Andy Chaplin 2013). The incorporation of a handyman as an entity into a mobile application is tasking and requires adequate knowledge on mobile application development. The difficulty of locating a well experienced and efficient handyman in a community has since grown over the years with lots of untrusted handyman who do away with the employees personal belonging, poor finishing of jobs, lack of adequate skills in performing the task. Locating the right person with assurance of safety has proved difficult; this research work is aimed at the easy and modern way to solve this problem by introducing modern technology to the existing system by implementing and developing a mobile application. The mobile application will provide a more convenient way of locating available workman with the radius of a user. Mobile Apps are used for connecting with workmen in different areas. Transport fees are saved since mobile Apps can take the roles of many function tools such as camera, pump and professional calculator and so on, mobile can be used as camera, many managers are not necessary to get site visit in order to acquaint the construction site.

II.   LITERATURE REVIEW

A. MOBILE APPLICATION

Developing a mobile phone application presents several technological challenges. Typically the application developed is restricted with the mobile Hardware and Software platform. The application to be developed has development dependencies at different levels. Development platforms are the set of Application Programming Interfaces (API's) that provide access to certain mobile device and network functionalities that are used by the applications to function on a particular mobile device. Developer must be fully aware of the consumer market available for the specific application and the platform the application is to be fully deployed. Design and development of application for mobile phones is entirely from developing applications for Personal Computer's

(PC's). The application developed for one mobile phone platform is not portable to the other platform. There are many mobile application development platforms but they differ in development models and communication options. Android is the open source mobile platform powered by Linux and supported by Google.

B.MOBILE APPLICATION MARKET

Early mobile application solutions required enterprises to choose between cradle-based synchronization through a wire line network or a pure online wireless solution (PENTA group, 2010). However, Mobile applications are a rapidly rising segments of the international mobile market, which consist of the software which runs on a mobile device and performs certain tasks for the clients. Because of the various functions including user interface for basic telephone and messaging service as well as advanced services, mobile Apps are widely used by customs. Also, mobile Apps are a large and continuously growing market and served by an increasing number of mobile App developers, publishers and providers (The Mobile Marketing Association group, 2008). New research suggests that the global market for mobile applications will explode over next two years. Research has been done for Getjar, the world's second biggest Apps store, said that the market will grow to $17.5bn (£12bn) in the next two years and downloads would rise from 7bn last year to 50bn by 2012 - a 92% increase (BBC News, as at 2010).

C. EXISTING MOBILE APPLICATIONS

For a technical aspect, mobile Apps can be divided by the runtime environment they are executed:

o   *Native platforms and operating systems, such as Symbian, Windows Mobile and Linux.*

Mobile Web/browser runtimes, such as Webkit, Mozilla/Firefox, Opera Mini and RIM.

Other managed platforms and virtual machines, such as Java/J2ME, BREW, FlashLite and Silverlight. (Mobile Marketing Association group, 2008)

D.Why Android ?

o   *Application*

Android includes most of the time many Google applications like Gmail, YouTube or Maps. These applications are delivered with the machine most of the time, except in certain cases, such as some phones running android on which the provider has replaced Google applications by its own applications.

o   *Widgets*

With android, it is possible to use widgets which are small tools that can most often get information. These widgets are directly visible on the main window.

o   *Android Market*

This is an online software store to buy applications. Developers who created applications can add them into the store, and these applications can be downloaded by users, they can be both free and paid.

o   *Multitasking*

Android allows multitasking in the sense that multiple applications can run simultaneously. With Task Manager it is possible view all running tasks and to switch from one to another easily.

E. INFRASTRUCTURE

Cellular technology have largely expanded the frequency use of mobile phones, the first generation cellular mobile telephones developed by using incompatible analogue technologies while the second generation cellular mobile telephone and GMS was developed by using digital technology in 1980 (Gans G.S. et al, 2003). Over thirty years of mobile cellular networks advancements, data transmission over cellular systems has been major breakthrough in recent years. Third generation systems (3G) have been developed as new mobile cellular networks, which is known as IMT-2000 (International Mobile Telephony-2000) by ITU(Wiley J. & Sons, 2005). 3G have met the single-user data rates requirement of the IMT-2000 on a technical level. However, it is limited 3G services in some areas such as video telephony (Agilent Technologies, 2008). ITU has received six candidate technology submissions for the global 4G mobile wireless broadband technology known as IMT-Advanced. And it is expected in October 2010, the selected technologies to be accorded the official designation of IMT-Advanced - to qualify as true 4G technologies (ITU, 2009). The south Korean government is already developing 5G access which may be ready soon after 4G service put into market, although 4G cellular wireless still waiting (MNM Media, 2009).

Cloud computing is described as both a platform and type of application. As a platform, cloud computing can be physical machines or virtual machines dynamically servers as needed. Advanced cloud computing include other computing resources such as storage area networks (SANs), network equipment, firewall and other security devices. As a type of applications, cloud computing use large data centers and powerful servers host Web application and Web services since it can be extended accessible through the internet. It is said that anyone can access a cloud application with a suitable internet connection and a standard browser (IBM, 2007). Typically,

cloud computing can be divided into three levels of service, which support virtualization and management of differing levels of the solution stack, offerings: Software as a Service (SaaS), Platform as a Service (PaaS), and Infrastructure as a service (IaaS) (Oracle Corporation, 2009).

F. OPPORTUNITIES FOR MOBILE APPS IN CONSTRUCTION AS RELATED TO HANDYMAN

The PENTA team (2010) insists that the construction industry is a mobile workforce, which comprised of a range of companies with self-performing Electrical and Mechanical contractors to Engineering and Construction firms to specialty concrete and plumbing? Mobile phone is the most convenient device to deliver mobile Apps, particularly for emerging because of it is a daily used device. The most use mobile Apps in construction industry are calculation, drawing, management, measurement and video records which are based on variety of software.

III. METHODOLOGY.

AndroidManifest.xml file is necessary for all android applications and must have this name in its Root directory. In the manifest one can find essential information about the application for the Android system, information that the system must have before it can run any of the application's code. Here is what is found in the Android manifest:

- The name of the Java package for the application. The package name serves as a unique identifier for the application.

- The description of the components of the application: the activities, services, broadcast receivers, and content providers that the application is composed of and under what conditions they can be launched.

- The processes that will host application components.

- The permissions the application must have in order to access protected parts of the API and Interact with other applications.

- The permissions that others are required to have in order to interact with the applications

- The list of the Instrumentation classes that provide profiling and other information as the application is running. These declarations are present in the manifest only while the application is being developed and tested; they are removed before the application is published.

- The minimum level of the Android API that the application requires.

- The list of the libraries that the application must be linked against.

With all these elements, an application can be created (Android Essentials 2014).

A. CREATING AND CONFIGURING A NEW ANDROID PROJECT

A new Android application can be created in a simple way by just following steps in the Android IDE workspace.

The first thing needed to create a new project in an Android IDE workspace.

The Android Application Project creation wizard creates all the required files for an Android application. Follow these steps within the Android IDE to create a new

Project:

- Choose File, New, and Android Application Project on the Android IDE toolbar.

- . Choose an application name. The application name is the "Handyman" name of the application and the name shown with the icon on the application launcher. Name the application My First Android App. This will automatically create a project name of MyFirstAndroidApp, but the name can be changed to a name of your choosing.

- . The package name should be changed, using reverse domain name notation. The Minimum Required SDK version should be the first SDK API level planned to be target. Because the application will be compatible with just about any Android device, the number can be set low (such as to 4 to represent Android 1.6) or at the target API level to avoid any warnings in the Android IDE. Making sure the minimum SDK version is set to encompass any test devices available to aid successfully installation.

The default options are just fine for our example. Click Next.

- . Keep the rest of the New Android Application settings at their defaults, unless there is to change the directory of where the source files will be stored. Click Next (Android Essentials 2014).

B.CREATING AN AVD FOR THE PROJECT

To create an AVD that describes what type of device to be emulated when running the application. This AVD profile describes what type of device the emulator will simulate, including which Android platform to support, do not need to create new AVDs for each application, only for each device to be emulate. Specify different screen

sizes and orientations, and specify whether the emulator has an SD card and, if it does, what capacity the card has. Here are the steps to create a basic AVD:

- Launch the Android Virtual Device Manager from within the Android IDE by clicking the little Android device icon on the toolbar . If the icon is not found, launch the manager through the Window menu of the Android IDE. Click the New button.

- Choose a name for the AVD. Because all will be taken as defaults, give this AVD a name

- Choose a device. This option controls the different resolutions of the emulator.

- Choose a typical device size, for example, select Nexus 4 (4.7", 768 _ 1280: xhdpi). This option most directly correlates to the popular Nexus 4 Google-branded device.

- Choose a build target. A typical Android 4.3 device, so choose Google APIs (Google Inc.) – API Level 18 from the drop-down menu. In addition to including the Android APIs, this option will also include the Google APIs and applications, such as the Maps application, as part of the platform image. Although choose the standard Android 4.3 – APIs Level 18 for this project, it is important to be aware of the additional options the Google APIs provides.

- For the Memory Options setting, try different values for optimal performance depending on the memory configuration of your development machine. The default RAM value for this virtual device is 1907 and the VM Heap is 64. If the machine is older and does not have a lot of memory, a lower this value significantly to something like 512. The development machine used for this book has 8GB of RAM with a fairly powerful quad-core processor, and the RAM value we decided to use is 768 with the VM Heap set to 64.

- Choose an SD card capacity, in either kibibytes or mibibytes. This SD card image will take up space on the hard drive and may also take a long time to allocate, so choose something reasonable, such as 1024MiB.

- Seriously consider enabling the Snapshot feature listed under Emulation Options. This greatly improves emulator startup performance. "Quick- Start Guide: The Android Emulator," for details.

- Click the OK button to create the AVD, and then wait for the operation to complete.

- The AVD just created listed within the Android Virtual Device Manager

IV RESULT AND DISCUSSION

Mobile applications development is guided by the careful attention to a number of non-functional requirements, where a good user experience is the ultimate goal. As part of this effort, the developer needs to efficiently use the physical resources of the mobile device, such as CPU time and battery. However, up until now, there is no structured method for performance evaluation in this domain that provides actionable information to the software developer. Case studies regarding the performance evaluation process for mobile applications and its impact on development.

A. ANALYSIS OF RESULT

1) Response time: the response time was maximum from the beginning of its execution to the end of loading the entire web page content.

2) CPU time: the time in seconds that the process of viewing the webpage occupied the CPU resource was at maximum high. Since the CPU may perform other tasks while loading a webpage.

3) Memory usage: the volume in megabytes (MB) that the process of displaying the page used in the RAM of the execution environment was minimal.

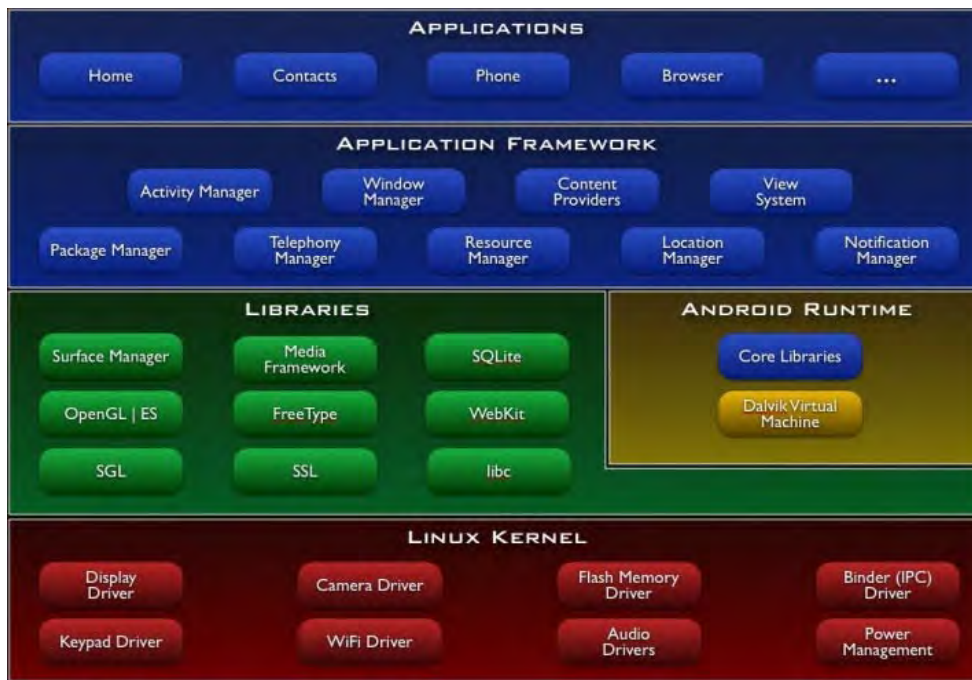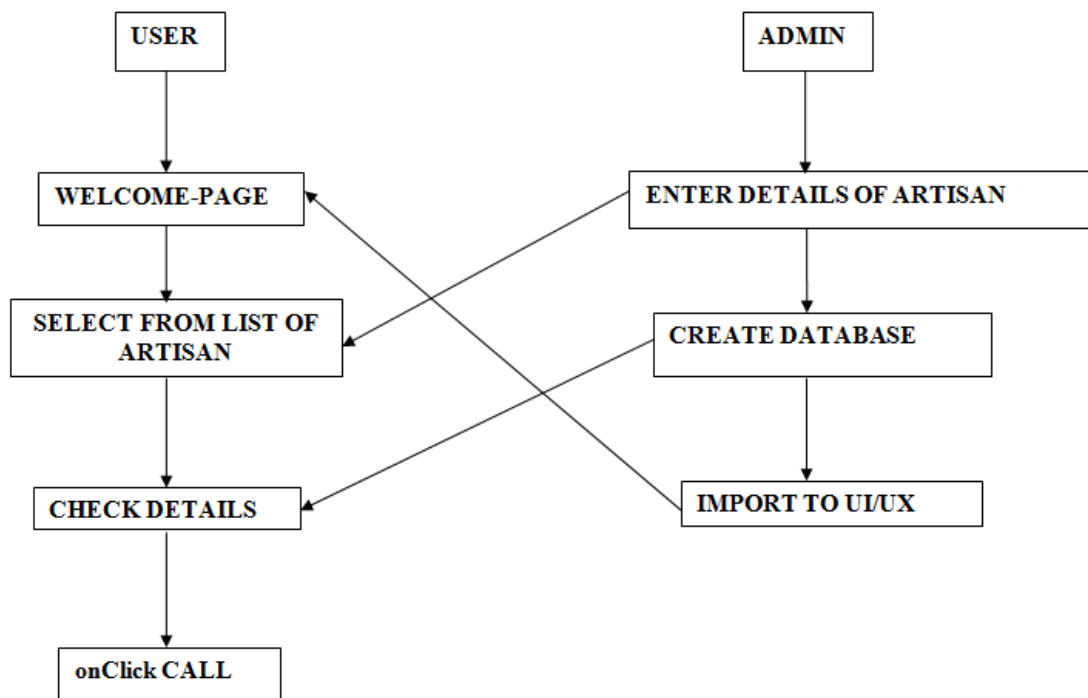Figure 1 Android Architecture (PADIADPU, 2008)
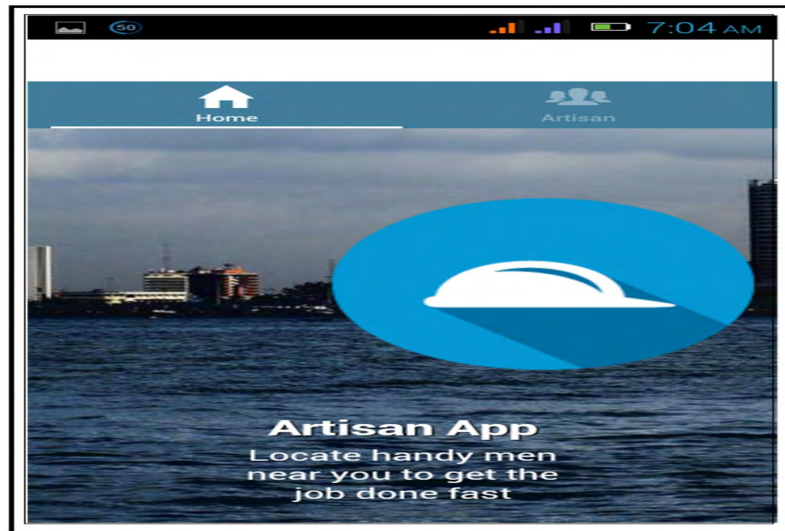

Figure 2: Data Flow Diagram

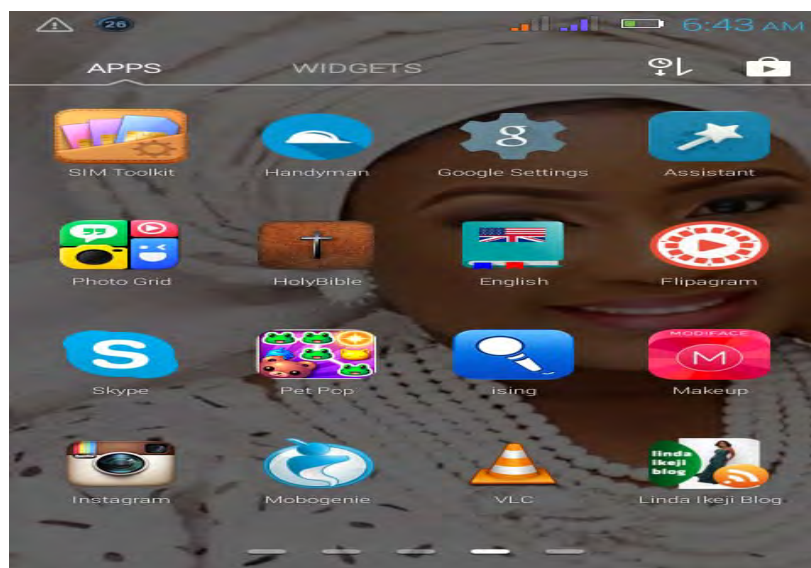Figure 3:First page of an Handy-man application

Figure 4: An Emulator

Figure 5: Handyman application installed on an android phone

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