**DESIGN AND IMPLEMENTATION OF A WEB-BASED HERBAL DRUGS VERIFICATION AND MANAGEMENT SYSTEM**

**BY**

**OJO, VICTORIA ADEWUMI**

**14/CSH/0609**

**AND**

**ABASS, ABISOLA OMOLARA**

**14/CSH/0621**

**BEING A PROJECT SUBMITTED TO THE DEPARTMENT OF COMPUTER SCIENCE FACULTY OF INFORMATION AND COMMUNICATION TECHNOLOGY, OSUN STATE POLYTECHNIC, IREE, OSUN STATE**

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**CERTIFICATION**

This is to certify that this project work was carried out by **OJO, VICTORIA ADEWUMI** with Matriculation Number **14/CSH/0609** and **ABASS, ABISOLA OMOLARA** with Matriculation Number **14/CSH/0621** in the Department of Computer Science, Faculty of Information and Communication Technology, Osun State Polytechnic, Iree, Osun State.

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Mr. O. A. Oduwole Date

Supervisor

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Mr. S. F. Oladoye Date

Head of Department

**DEDICATION**

This project work is dedicated to God Almighty whose infinite mercy and blessings has guided us all through the years. Also, we dedicate this work to our parents, Mr. and Mrs. Ojo and Mr. and Mrs. Abass who has devoted a great percentage of their resources to our welfare. We pray you shall eat the fruit of your labour (Amen).

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God, you are the pillar that holds our life. So, we are acknowledging you for who you are in our life’s, for what you have done and for being our source of energy and wisdom right from the beginning of our studies to the completion stage, all adoration belongs to you.

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**ABSTRACT**

Drug reporting and verification establishments such as National Agency for Food and Drug Administration and Control (NAFDAC), require an efficient and brilliant technique as well as a flexible system for proper drug management. The main objective is to ensure that production and sale of fake drugs are eliminated. Presently, NAFDAC drug verification and authentication system did not provide the verification of herbal drugs. This has made it difficult for the genuineness of herbal drugs to be verified by the general public. So, this has resulted in the increase in loss of lives due to consumption of fake herbal drugs. Investigation has revealed that members of public are presently finding it difficult to easily recognize fake and unauthorized herbal drugs bought from the marketer due to non-availability of on-line system designed for such purpose. Hence, a web based Herbal Drugs Verification and Management System of herbal drugs to authenticate the originality of herbal drugs was designed, implemented and evaluated.

The developed system was designed by creating five interfaces namely; Home Page, Drug edit page, Drug registration Page, List of registered herbal drug Page and Product information Page. The system was implemented using PHP and MY SQL. The evaluation of the performance of the developed system was done by administering questionnaires on 80 users after which the completed copies were collected and used for result analysis.

The result of the evaluation of the developed system showed that 70 agreed and 10 users disagreed that the system is easily accessible. Also 75 out of 80 agreed the developed system is fast in operation. Thus, an online herbal drug verification and management system that capable of authenticate the originality of herbal drugs was designed, implemented and evaluated.

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**CHAPTER ONE**

1. **INTRODUCTION**

Drug reporting and verification establishments such as National Agency for Food and Drug Administration and Control (NAFDAC), require an efficient and brilliant technique as well as a flexible system for proper drug management. The main objective is to ensure that production and sale of fake drugs are eliminated. In recent time, there has been an increase in loss of lives due to the use of unverified herbal drugs. This predicament has created the need to build a website that enables the verification of herbal drugs when purchased.

Drugs are referred to as medicine or chemical substances that are administered to patients for curative measures. Drugs are either organized on a cellular basis, i.e. microorganisms, plants, animals or parts of these which have been dried or they are mixtures of substances which have been extracted from microorganisms, plants, animals or parts of these which do no longer have cellular structures, such as essential oils, resins, starch, fats, waxes, isolated mucous substances or animal toxins.

Herbal medicine , it is the oldest and still the most widely used system of medicine in the world today and It is medicine made exclusively from plants. Herbal medicine treats diseases and promotes health with plant material.

Drug reporting and verification Software easily automates the whole process of drug verification and reporting. Drugs Pharmaceutical Company are register on the system and verification code are generated for each drug production. System users are created by the system administrator where each staff is able to login in with the provided authorization and manage his or her account. The system which will be made available to the general public provides a window in which users could type in a drug code to verify the authenticity of that drug. The administrator has the sole authority over the system.

This research work is undertaken to uncover some of the problems with conventional drug reporting and verification systems. Here, agents of NAFDAC and other drug enforcement agency find it quite difficult to access register pharmaceutical companies. Using these conventional methods pose lots of constraint on team member as no team member can access files on the office database while at field work also reports has to be file at the office. Therefore, it is desirable to find a method of developing a web-based herbal drugs verification and management system in other to verify the authenticity of drugs purchased at the pharmacy.

* 1. **Background of the study**

Presently, NAFDAC drug verification and authentication system did not provide the verification of herbal drugs. This has made it difficult for the genuineness of herbal drugs to be verified by the general public. So, this has resulted in the increase in loss of lives due to consumption of fake herbal drugs.

The provision and availability of the system will help the public to be able to verify herbal drugs if it is genuine or not. Also, to improve the quality of life by the healthcare community and life in general, and awareness of unregistered or fake herbal drugs to the public. This information of registered herbal drugs needs to be integrated and made accessible to the majority of population to enable them to view for themselves.

**1.2 Statement of the Problem**

Investigation has revealed that members of public are presently finding it difficult to easily recognize fake and unauthorized herbal drugs bought from the marketer due to non-availability of on-line system designed for such purpose.

Hence, a web based Herbal Drugs Verification and Management System of herbal drugs to authenticate the originality of herbal drugs was designed, implemented and evaluated.

**1.3 Aim and Objectives of the Project**

The project is aimed at developing a web-based herbal drugs verification and management system. The specific objectives of the work include:

1. To examine and analyze drug authentication and verification systems.
2. To Design a web-based herbal drugs verification and management system.
3. To implement the system designed in (ii) above using database system (MySQL), Html (hypertext markup language), CSS3 (cascading style sheet), J-Query and PHP (hypertext preprocessor)
4. To evaluate the performance of the system by computing it with the existing system.
   1. **Significance of the Project**

The implementation of this work will

1. Reduce the rate of fake herbal drugs production and uses among individual.
2. Benefit the manufacturers of herbal drugs that is the original company and industry because they will have more sales as the citizens will go for the original herbal drugs and the fake will have no sales in the market anymore.
3. Be useful to the end users or the customers in helping them to verify the herbal drugs they buy for medication.
   1. **Scope of the Project**

This research work is restricted to herbal drugs verification by the general public and the Agencies among other things:

1. Managing of drugs.
2. Verifying the authenticity of drugs.
   1. **Research Methodology**

The methods used in carrying out this project work are as follows

1. A well designed web-based herbal drugs verification and management system using suitable design tools.
2. The implementation of the designed system in (i) above using database system (MySQL), Html (hypertext markup language), CSS3 (cascading style sheet), J-Query and PHP (hypertext preprocessor) will be used as the serve- side script language to link the interface and the database.
3. Evaluation of the performance of the newly developed system on wireless devices.

**1.7 Definitions of Terms**

**Drugs**: it is referred to as a medicine or chemical substances that are administered to Patients for curative measures. Drugs are either organized on a cellular basis, i.e. microorganisms, plants, animals or parts of these which have been dried or they are mixtures of substances which have been extracted from microorganisms, plants, animals or parts of these which do no longer have cellular structures, such as essential oils, resins, starch, fats, waxes, isolated mucous substances or animal toxins (Teuscher, 1997).

**Herbal drugs:** Are herbal matter used for pharmaceutical purposes. An “herbal drug” or a produced preparation therefore, is regarded as one active substance irrespective of the question of whether the active constituents of the herbal drug are known or not (Gaedcke & Steinhoff, 2003).

**Herbal medicinal products**: Are regarding the active substance(s), more or less enriched preparations of plants or herbal drugs which, besides that, contain other concomitant substances exerting or not exerting therapeutic activity (Vogel, 1982).

**Phytotherapy (Gaedcke & Steinhoff, 2003):** The term “phytotherapy” means the “prevention and treatment of human diseases using plants, parts of plants or preparations of plants”.

**CHAPTER TWO**

1. **LITERATURE REVIEW**

Herbal medicine has been an essential component of oriental medicine (OM), which has existed for over two thousand years, guided by principles of Yin Yang, five elements, organs and meridians (Thai, 2004). The herbal medicines include dietary supplements that contain herbs either singly or in mixtures. Also called botanicals, the same are plants or plants products used for their scents, flavor and/or therapeutic properties (Ernst and Pitter, 2002).

Herbal drugs are readily available in the market from health food stores without prescriptions and are widely used in India, China, USA and all over the world (Parmar, 2005). The aforesaid medications have gone in mainstream use and as the sales continue to rise, so do the concerns about their interactions with prescription and over-the-counter drugs (Hu, 2005; Lambrecht, 2000). Over the past decade, there has been an increased global interest in traditional systems of medicine and herbal medicinal products. In part, this surge has been due to the rare or nonexistent access to modern medicine in developing countries as well as the acceptance of herbal medicines by large populations of people in affluent nations (Barnes, 2004; Tindle, 2005; Eisenberg, 1998).

In developed countries, complementary and alternative medicine (CAM), are often used concomitantly with conventional medicine (Khan, 2006). A relevant safety concern associated with the use of herbal medicines is the risk of interactions with prescription medications (Izzo, 2005; Izzo, 2004; Brazier and Levine, 2003; Izzo and Ernst, 2001; Fugh-Berman, 2001; Markowitz and DeVane, 2001; Williamson, 2003).

This issue is especially important with respect to drugs with narrow therapeutic index, such as warfarin or digoxin or drugs used for chronic therapy such as antidepressants and in sensitive patient populations such as older adults, the chronically ill, and those with compromised immune systems (Izzo, 2004; Kaufman, 2002).

Recent examinations have indicated that as many as 16% of prescription drug users consume herbal supplements (Kaufman, 2002). Moreover, fewer than 40% of patients disclose their herbal supplement usage to health care providers and many physicians are unaware of the potential for herb–drug interactions (Klepser, 2000). This lack of information, combined with the fact that herbal medicines are usually mixtures of more than 100 active ingredients, obviously increases the likelihood of interactions. Herbal drug interactions can results in unexpected concentration of therapeutic drug and lead to the undesired effects. Thus, contrary to the popular belief that “natural are safe” (Kaufman, 2002); herbal medicines can cause significant toxic effects, drug interactions and even morbidity or mortality (Parmar, 2005).

* 1. **Nature of Herbal Drug**

Most natural products, unlike conventional drugs, are a complex mixture of chemical constituents and often a complete characterization of the bioactive compounds from an herbal is unknown (Chavez, 2006; Barnes, 2004). Additionally, the chemical makeup of natural products varies depending on the part of the plant used (bark, stems, leaves, roots, rhizomes), climate, growing conditions, harvesting, and storage conditions. Combination products composed of multiple natural products complicates matters further. Not only does the complex nature of a natural product complicate the determination of herb-drug interactions, but also the manufacturing process; for example, drying process and extraction methods contributes to the overall complexity.

As previously mentioned, because herbal products are not regulated by the food and drug administration (FDA), there are no standards for herbal products. Indeed, herbal products have been found to be misidentified and/or substituted or adulterated with other natural products or unwanted substances (Fugh-Berman, 2000; Cupp, 1999; But, 1994). Moreover, herbal products are classified and marketed as dietary supplements (Anonymous, 1994). However, the same are regulated differently in other countries.

The US FDA mandates that only medicine have to be proven to be safe before being released into market. Herbal products do not fall under the category of drugs as long as they are not marketed for the preventions of any diseases. In United Kingdom, any product that is not granted a license as a medical product by Medicine Control Agency (MCA) is treated as food, and no health claim or medical advice can be given on the label. Labeling of herbal products may not actually reflect the contents and adverse events or interactions attributed to specific herb may be related to mis identification of plant, pharmaceutical drugs or heavy metals (Fugh-Berman, 2000). The issue of herb-drug interactions looms large over the practice of herbal medicine. Since the first such reports emerged a decade ago, a concern has been raised, that we know so little about herbs and their potential for interaction with drugs that these incidents could be just the "tip of the iceberg."

**Mechanisms of herbal drug**

Herbal medicines follow modern pharmacological principles. Hence, the herbal drug are based on the same pharmacokinetic and pharmaco dynamic mechanisms as drug–drug interactions (Manzi and Shannon, 2005; Izzo, 2004; Izzo, 2002). Drug-drug or herb-drug interactions can occur in several different ways.

Pharmacodynamic occur when the object drug’s effect is altered by the interfering drug or herb. These interactions are not due to an alteration in the plasma concentration of either drug but rather because of the net effect that can be additive, synergistic (together the two drugs can achieve better results than the sum of their two actions alone) or antagonistic. These adjectives can refer to alteration in the object drug's intended therapeutic effect, or can refer to the change in the toxicity levels and adverse side-effects as well. On the other hand, pharmacokinetic interactions denote changes in the absorption, distribution, metabolism or elimination of the object drug due to the presence of the interfering drug. Unlike pharmacodynamic, these do result in changes in the plasma concentration of the object drug, and as a consequence, the toxic or sub-therapeutic levels occur more frequently.

A good example of pharmacokinetic which are more extensively studied includes the cytochrome P450 system and/or drug transporters such as p-glycoprotein (Zhou, 2003; Zhou and Lim, 2004). The interfering drug may act as an inducer, inhibitor and/or substrate of the same P450 enzyme that is responsible for the metabolism of the object drugs. A variety of herbal medicines were known to have an influence on drug-metabolizing enzymes (Wanwimolruk, 2009). For instance, in people taking both St. John's wort and the indinavir, St. John’s wort induced the production of the P450 enzyme CYP3A4 which metabolizes indinavir, and lowered its plasma levels (Xie and Kim, 2005). On the other hand, the addition of herbal products to a drug regimen has the potential to diminish or amplify the effect of a drug through pharmacodynamic means. Significant pharmacokinetic and pharmacodynamic interactions between various herbal products and drugs being substrates of cytochrome P450 have recently been reported (Panossian, 2009; Rodeiro, 2009). Some of the basic mechanisms for herb-drug interaction were described as follows (Kuhn, 2002).

* 1. **Web Design**

Web design is the “skill of creating presentations of [content](http://en.wikipedia.org/wiki/Web_content) (usually [hypertext](http://en.wikipedia.org/wiki/Hypertext) or [hypermedia](http://en.wikipedia.org/wiki/Hypermedia)) that is delivered to an [end-user](http://en.wikipedia.org/wiki/End_user_(computer_science)) through the [World Wide Web](http://en.wikipedia.org/wiki/World_Wide_Web), by way of a [Web browser](http://en.wikipedia.org/wiki/Web_browser) or other Web-enabled software like [Internet television](http://en.wikipedia.org/wiki/Internet_television) clients, [micro blogging](http://en.wikipedia.org/wiki/Microblogging) clients and [RSS readers](http://en.wikipedia.org/wiki/RSS_reader)”. M. Thorn, (2003). The intent of web design is to create a web site—a collection of electronic [documents](http://en.wikipedia.org/wiki/Document) and [applications](http://en.wikipedia.org/wiki/Web_application) that reside on a web [server](http://en.wikipedia.org/wiki/Server)/[servers](http://en.wikipedia.org/wiki/Servers) and present content and interactive features/interfaces to the end user in form of Web pages once requested. Such elements as text, [bit-mapped images](http://en.wikipedia.org/wiki/Bitmap) ([GIFs](http://en.wikipedia.org/wiki/Graphics_Interchange_Format), [JPEGs](http://en.wikipedia.org/wiki/JPEG)) and forms can be placed on the page using [HTML](http://en.wikipedia.org/wiki/HTML)/[XHTML](http://en.wikipedia.org/wiki/XHTML)/[XML](http://en.wikipedia.org/wiki/XML) tags. Displaying more complex media (vector graphics, animations, videos, sounds) requires plug-ins such as [Adobe Flash](http://en.wikipedia.org/wiki/Adobe_Flash), [QuickTime](http://en.wikipedia.org/wiki/QuickTime), [Java](http://en.wikipedia.org/wiki/Java_(software_platform)) run-time environment, etc. [Plug-ins](http://en.wikipedia.org/wiki/Plug-ins) are also embedded into web page by using [HTML](http://en.wikipedia.org/wiki/HTML)/[XHTML](http://en.wikipedia.org/wiki/XHTML) tags.- M. Thorn, (2003) Improvements in browsers' compliance with [W3C](http://en.wikipedia.org/wiki/W3C) standards prompted a widespread acceptance and usage of [XHTML](http://en.wikipedia.org/wiki/XHTML)/[XML](http://en.wikipedia.org/wiki/XML) in conjunction with Cascading Style Sheets ([CSS](http://en.wikipedia.org/wiki/CSS)) to position and manipulate web page elements and objects. Latest standards, and proposals, aim at leading to [browsers](http://en.wikipedia.org/wiki/Web_browser)' ability to deliver a wide variety of [content](http://en.wikipedia.org/wiki/Content_(media)) and accessibility options to the client possibly without employing [plug-ins](http://en.wikipedia.org/wiki/Plug-ins). Typically web pages are classified as static or dynamic: Static pages don’t change content and layout with every request unless a human ([web](http://en.wikipedia.org/wiki/Web) master/[programmer](http://en.wikipedia.org/wiki/Programmer)) manually updates the page. A simple HTML page is an example of static content.

Dynamic pages adapt their content and/or appearance depending on [end-user](http://en.wikipedia.org/wiki/End-user)’s input/interaction or changes in the computing environment (user, time, database modifications, etc.) Content can be changed on the client side (end-user's computer) by using client-side scripting languages ([JavaScript](http://en.wikipedia.org/wiki/JavaScript), [JScript](http://en.wikipedia.org/wiki/JScript), [Action script](http://en.wikipedia.org/wiki/Actionscript), etc.) to alter [DOM](http://en.wikipedia.org/wiki/DOM) elements ([DHTML](http://en.wikipedia.org/wiki/DHTML)). Dynamic content is often compiled on the [server](http://en.wikipedia.org/wiki/Server) utilizing server-side scripting languages ([Perl](http://en.wikipedia.org/wiki/Perl), [PHP](http://en.wikipedia.org/wiki/PHP), [ASP](http://en.wikipedia.org/wiki/Active_Server_Pages), [JSP](http://en.wikipedia.org/wiki/JSP), [ColdFusion](http://en.wikipedia.org/wiki/ColdFusion), etc.). Both approaches are usually used in complex applications. With growing specialization in the information technology field there is a strong tendency to draw a clear line between web design and web development. Web design is a kind of graphic design intended for development and styling of objects of the Internet's information environment to provide them with high-end consumer features and aesthetic qualities. The offered definition separates web design from web programming, emphasizing the functional features of a web site, as well as positioning web design as a kind of graphic design.

The process of designing [web pages](http://en.wikipedia.org/wiki/Web_pages), [web sites](http://en.wikipedia.org/wiki/Web_sites), [web applications](http://en.wikipedia.org/wiki/Web_applications) or [multimedia](http://en.wikipedia.org/wiki/Multimedia) for the Web may utilize multiple disciplines, such as [animation](http://en.wikipedia.org/wiki/Animation), [authoring](http://en.wikipedia.org/wiki/Author), [communication design](http://en.wikipedia.org/wiki/Communication_design), [corporate identity](http://en.wikipedia.org/wiki/Corporate_identity), [graphic design](http://en.wikipedia.org/wiki/Graphic_design), [human-computer interaction](http://en.wikipedia.org/wiki/Human-computer_interaction), [information architecture](http://en.wikipedia.org/wiki/Information_architecture), [interaction design](http://en.wikipedia.org/wiki/Interaction_design), [marketing](http://en.wikipedia.org/wiki/Marketing), [photography](http://en.wikipedia.org/wiki/Photography), [search engine optimization](http://en.wikipedia.org/wiki/Search_engine_optimization) and [typography](http://en.wikipedia.org/wiki/Typography). [Markup languages](http://en.wikipedia.org/wiki/Markup_language) (such as [HTML](http://en.wikipedia.org/wiki/HTML), [XHTML](http://en.wikipedia.org/wiki/XHTML) and [XML](http://en.wikipedia.org/wiki/XML)) [Style sheet languages](http://en.wikipedia.org/wiki/Style_sheet_language) (such as [CSS](http://en.wikipedia.org/wiki/CSS) and [XSL](http://en.wikipedia.org/wiki/Extensible_Stylesheet_Language)) [Client-side scripting](http://en.wikipedia.org/wiki/Client-side_scripting) (such as [JavaScript](http://en.wikipedia.org/wiki/JavaScript)) [Server-side scripting](http://en.wikipedia.org/wiki/Server-side_scripting) (such as [PHP](http://en.wikipedia.org/wiki/PHP) and [ASP](http://en.wikipedia.org/wiki/Active_Server_Pages)) [Database](http://en.wikipedia.org/wiki/Database) technologies (such as [MySQL](http://en.wikipedia.org/wiki/MySQL) and [PostgreSQL](http://en.wikipedia.org/wiki/PostgreSQL)) [Multimedia](http://en.wikipedia.org/wiki/Multimedia) technologies (such as [Flash](http://en.wikipedia.org/wiki/Adobe_Flash) and [Silverlight](http://en.wikipedia.org/wiki/Silverlight)) [Web pages](http://en.wikipedia.org/wiki/Web_pages) and [web sites](http://en.wikipedia.org/wiki/Web_sites) can be [static pages](http://en.wikipedia.org/wiki/Static_web_page), or can be programmed to be [dynamic pages](http://en.wikipedia.org/wiki/Dynamic_web_page) that automatically adapt content or [visual appearance](http://en.wikipedia.org/wiki/Visual_appearance) depending on a variety of factors, such as input from the end-user, input from the [Webmaster](http://en.wikipedia.org/wiki/Webmaster) or changes in the computing environment (such as the site's associated [database](http://en.wikipedia.org/wiki/Database) having been modified). With growing specialization within [communication design](http://en.wikipedia.org/wiki/Communication_design) and [information technology](http://en.wikipedia.org/wiki/Information_technology) fields, there is a strong tendency to draw a clear line between *web design* specifically for web pages and [*web development*](http://en.wikipedia.org/wiki/Web_development) for the overall logistics of all web-based services.

* 1. **Choosing the Web Design Software**

The best [web design](http://www.wisegeek.com/what-is-web-design.htm) software may depend on many factors. How advanced needs to be determined, as well as how easy to use. For a [professional web designer](http://www.wisegeek.com/what-does-a-professional-web-designer-do.htm), a software with all the latest features will be needed. On the other hand, for an inexperienced designer with computers and wish only to create a site featuring pictures of family or a blog, a simpler program would be better suited to your needs. There are many web design [software programs](http://www.wisegeek.com/what-are-software-programs.htm) in the market, and new ones are released all the time, as technology advances. For professional designer, you will need to find design software that supports complex [computer](http://www.wisegeek.com/what-is-a-computer.htm) programming language. Some may even allow you to code the language you are using directly into the software.

These complex web design programs are necessary for larger sites which require sophisticated common gateway interface (CGI) scripts and other backend commands. More complicated scripts are important in order for the site to read and send forms, online payments, display graphics and videos, and provide other technologically advanced features. When picking out software for professional use, be sure it says on the site or packaging that it is suitable for professional designers. For novice designer who needs web design software more for personal use than professional, a simple program is probably more suitable. There are many commercial software applications available that allow everyday consumers to create very attractive sites with little or no technical knowledge. Generally, these programs provide a simple layout that can be altered with text, graphics, and colored backgrounds.

* 1. **WYSIWYG Web Builder / Web Design Software?**

WYSIWYG is acronym of What You See Is What You Get. It simply means that the software provides an editing interface which resembles how the page will be displayed in a web browser. And it does not require any HTML knowledge or experience for creating a web page or site. This makes the program simple and easy to use, especially for average computer users. And the program makes web design process faster and easier than using text editor or HTML editor. All of the WYSIWYG web design provides easy to use drag and drop feature which allows user to add image, text, link and other web elements by using mouse clicks. The good program supports many web languages including HTML, XHTML, CSS, JavaScript, PHP, ASP.NET, ASP.NET and AJAX. You can also find many useful tools within the program such as build-in FTP, templates, photo editors, HTML cleaner, HTML validate, spell check and more. This type of program offers complete web design solution for all types of web designer and web developer whether you are a novice or a seasoned designer, a hobbyist or professional designer. We have different WYSIWYG. Below are some of the WYSIWYG.

* + 1. **Adobe Dreamweaver**

Adobe Dreamweaver is the most powerful web design software program on the market today. It is a product of Adobe Systems Inc. you may hear many people saying that it is also a popular WYSIWYG website creator and editor or it is the top choice for professional web designers and web developers. It provides endless features ranging from standard to advanced functions.

* + 1. **Microsoft Expression Web**

Microsoft Expression Web is a WYSIWYG website creator and editor by Microsoft Corporation. It is one of the most popular web design software solution on the market today. It provides all the tools you need including HTLM, XHTML, CSS, JavaScript, PHP, ASP.NET, AJAX, Visual diagnostics and CSS design capability to produce high-quality and standards-based websites. The package includes Expression Web + SuperPreview, Expression Design and Expression Encoder + IIS Smooth Streaming. Expression Design is a professional design tool creating graphics content that can be used within Expression Web.

* + 1. **CoffeeCup Visual Site Designer**

CoffeeCup Visual Site Designer is one of the popular WYSIWYG website creator and editor on the market today. It is a product of CoffeeCup Software, Inc. the program is designed to help you to make web pages with ease and speed, and you can make a web page even if you have experience or HTML knowledge. The program provides drag and drop interface which you can simply drag and drop images or text on the page. It makes designing process quick and simple, you can adjust image or text until you got what you like. The software comes with 10 web page themes to start you off.

* + 1. **Serif Web Plus**

Serif Web Plus is one of the popular web design software packages by Serif Ltd. The program is designed for all types of users whether you are a novice or a seasoned designer, a hobbyist or commercial designer. You can design and experience required. With drag and drop features, you can create a website with no need to learn HTML. You can add buttons, fonts, colors, table and other web element by using drag and drop mouse. The keyboard shortcuts and the on-screen tools are customizable.

* + 1. **Web Easy Professional**

Web Easy Professional is a web design software solution from Avanquest Software. It provides complete solution for web creation. There are two editions of Web Easy Professional, Standard and Platinum Edition. The Platinum edition has high price and more advanced features such as Advanced E-Commerce Solutions for product, inventory and customer management. The program is included 1 year hosting plan or you can use your own if you prefer.

* + 1. **Net Objects Fusion**

Net Objects Fusion is a professional WYSIWYG web design software program developed by Net Objects Inc. it is a paid version which has more advanced features than free edition, Net Objects Fusion Essentials. With new AJAX Integration, the program utilizes the powerful Ajax framework to combine XHTML, CSS, JavaScript, and XML into a seamless drag-and-drop interface. The program allows you to design your website with drag and drop layouts, site management tools, e-commerce tool, rollover images, custom HTML and scripts, upload files with built-in FTP.

* + 1. **Namo Web Editor**

Namo Web Editor is a WYSIWYG editor, web design software solution from SJ NAMO, Inc. this web authoring application allows you to create, edit, publish and manage your websites, with its easy to use and Microsoft Office interface alike, make you familiar with the program. You can create site quickly using built-in templates and themes to suite your needs. There are various templates including personal, company, education, community, restaurant, hotel and presentation site. It provides you all standard web design features.

* + 1. **Evrsoft First Page**

Evrsoft First Page is a web design software program developed Evrsoft. The program is designed for professional web development. This WYSIWYG editor provides various useful web design features and support for HTML, XHTML, PHP, ASP, Cold Fusion, JavaScript, CSS, SSI, and Perl. But the program has not updated since 2006.

* + 1. **HTLM-Kit Tools**

HTLM-Kit Tools is a web design software program for web designer and developer. It is the new version of HTLM-Kit (HTLM-Kit is a free HTLM editor which you can download and use free). There are many new major features in HTLM-Kit Tools such as intuitive user interface; projects with virtual and remote FTP folders; ability to make HTLM-Kit Tools settings, templates and plug-ins in portable USB devices; new HTML Tidy interface that can highlight suggested code improvements; document structure and functions view for HTML, XHTML, XML, CSS, PHP and more.

* + 1. **WYSIWYG Web Builder**

WYSIWYG Web Builder is a web design software program developed by Pablo Software Solutions. This Website Builder is designed to make it easy in creating website. There is no HTML knowledge or experience required, you can make a web page using drags and drop user interface. You may found interface similar, if you have ever experienced using word processing program like Microsoft Word.

* 1. **Online Database Management System**

A Database Management System (DBMS) is a software package with computer programs that control the creation, maintenance, and the use of a database, Codd, E.F. (1970). It allows organizations to conveniently develop databases for various applications by database administrators (DBAs) and other specialists. A database is an integrated collection of data records, files, and other database objects needed by an application. A DBMS allows different user application programs to concurrently access the same database. DBMSs may use a variety of database models, such as the relational model or object model, to conveniently describe and support applications. It typically supports query languages, which are in fact high level programming languages, dedicated database languages that considerably simplify writing database application programs. Database languages also simplify the database organization as well as retrieving and presenting information from it. A DBMS provides facilities for controlling data access, enforcing data integrity, managing concurrency control, recovering the database after failures and restoring it from backup files, as well as maintaining database security Codd, E.F. (1970). A DBMS is a set of software programs that controls the organization, storage, management, and retrieval of data in a database. DBMSs are categorized according to their data structures or types. The DBMS accepts requests for data from an application program and instructs the operating system to transfer the appropriate data, Seltzer, M. (2008). The queries and responses must be submitted and received according to a format that conforms to one or more applicable protocols. When a DBMS is used, information systems can be changed more easily as the organization's information requirements change. New categories of data can be added to the database without disruption to the existing system.

Database servers are dedicated computers that hold the actual databases and run only the DBMS and related software. Database servers are usually multiprocessor computers, with generous memory and RAID disk arrays used for stable storage. Hardware database accelerators, connected to one or more servers via a high-speed channel, are also used in large volume transaction processing environments. DBMSs are found at the heart of most database applications. DBMSs may be built around a custom multitasking kernel with built-in networking support, but modern DBMSs typically rely on a standard operating system to provide these functions In 1998, database management was in need of a new style of databases to solve current database management problems. Researchers realized that the old trends of database management were becoming too complex and there was a need for automated configuration and management. Surajit Chaudhuri, Gerhard Weikum and Michael Stone braker were the pioneers that dramatically affected the thought of database management systems. They believed that database management needed a more modular approach and there were too many specifications needed for users. Since this new development process of database management there are more possibilities. Database management is no longer limited to monolithic entities‖. Many solutions have been developed to satisfy the individual needs of users. The development of numerous database options has created flexibility in database management.

There are several ways database management has affected the field of technology Seltzer, M. (2008). Because organizations' demand for directory services has grown as they expand in size, businesses use directory services that provide prompted searches for company information.

Mobile devices are able to store more than just the contact information of users, and can cache and display a large amount of information on smaller displays. Search engine queries are able to locate data within the World Wide Web. Retailers have also benefited from the developments with data warehousing, recording customer transactions. Online transactions have become tremendously popular for e-business. Consumers and businesses are able to make payments securely through some company websites.

**CHAPTER THREE**

**3.0 RESEARCH METHODOLOGY**

**3.1 Research Approach**

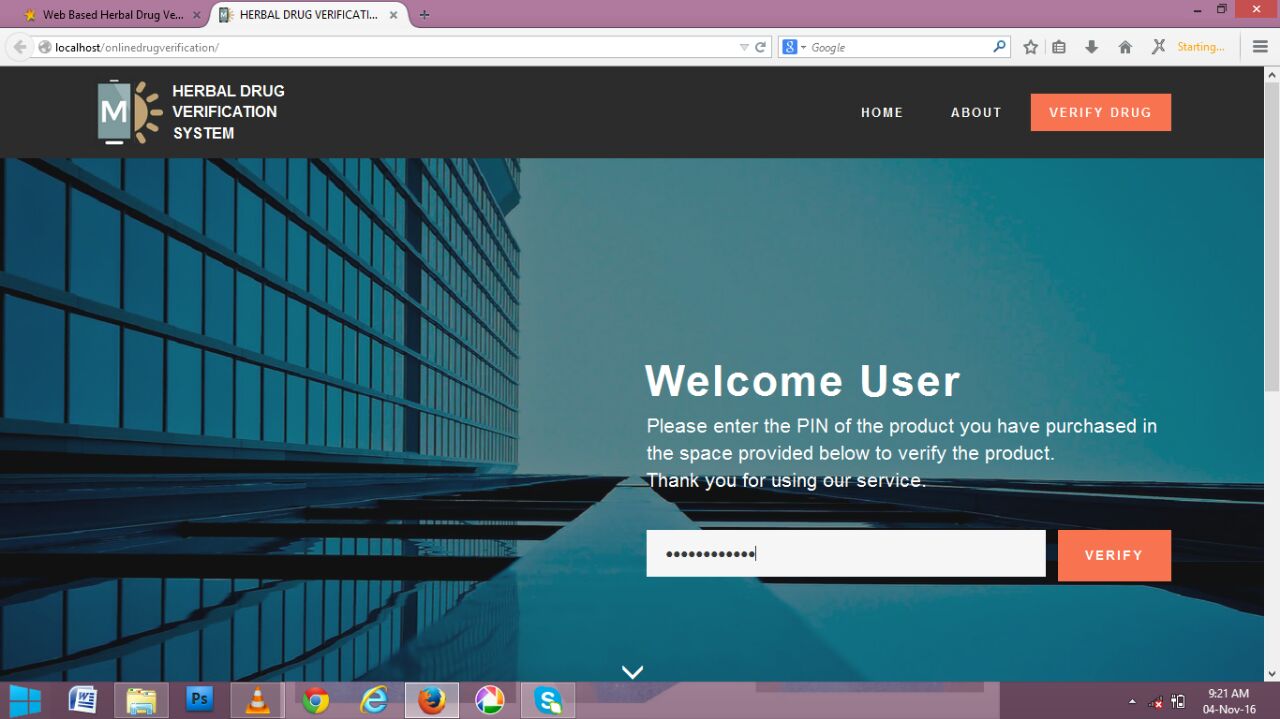
The project was carried out using the following methods:

1. The design of an online Herbal Drug Verification System which is made of modules and a database for searching regarding herbal drugs.
2. To implementation of the designed system in (i) above using database system (MySQL), Html (hypertext markup language), CSS3 (cascading style sheet), J-Query and PHP (hypertext preprocessor)
3. To evaluate the performance of the developed system based on the following criteria
4. Accessibility
5. Speed

**3.2 Description of the Developed System**

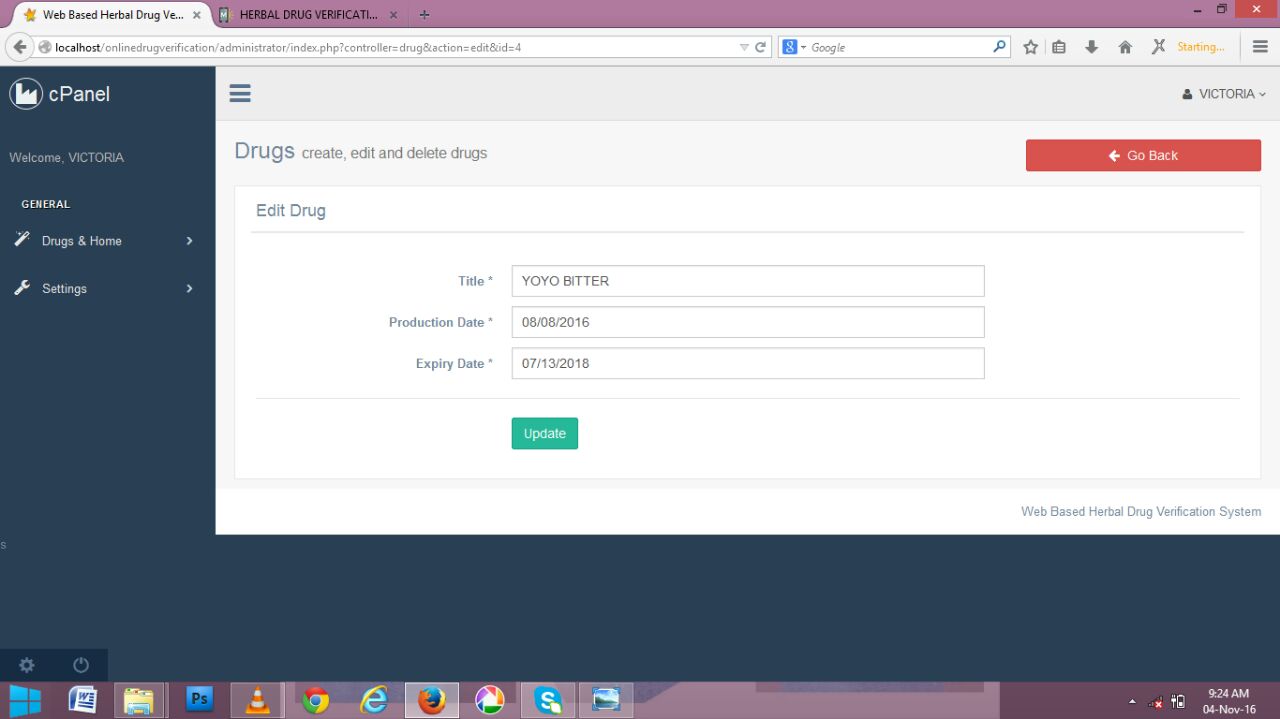
The developed system was designed to consist of five modules described as follows:

* + 1. **Home Page**: This page contains all the available commands and serves as a link to all other modules in the program. To access any of the menu command, click at the modules to view all the sub modules. This page enables the administrator to enter their username/ password. If the password entered is valid, the system will then open the program menu. But if the password is not valid the user will be denied access to the program. Its structure as shown in figure 3.1



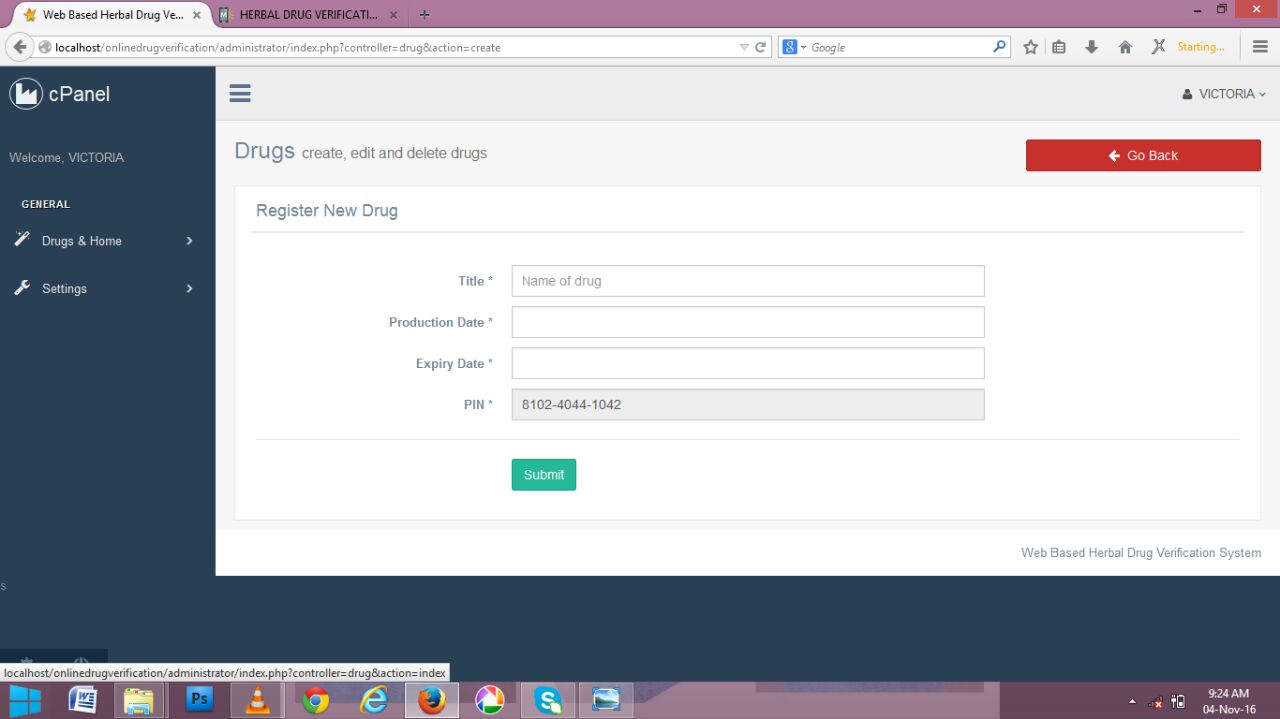
**Fig 3.1:** Home page of the developed system

* + 1. **Drug edit page:** This is the module that allows user to edit and delete drugs. Its structure as shown in figure 3.2



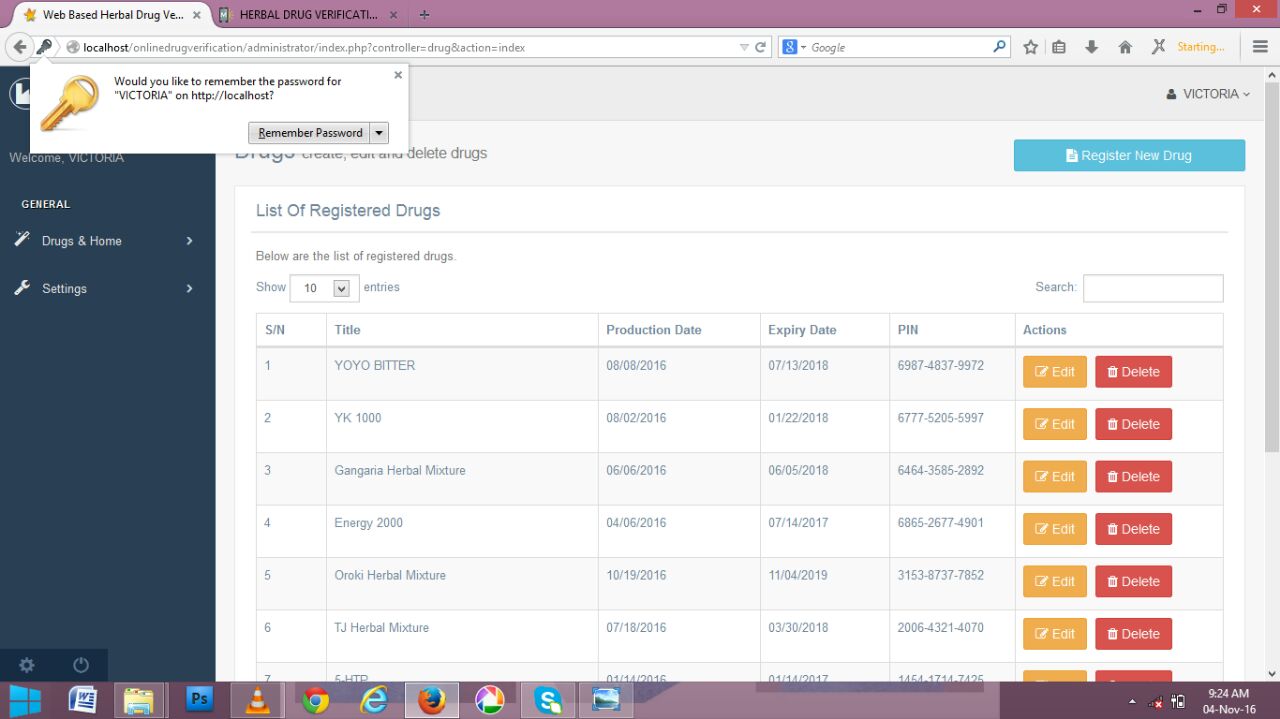
**Fig 3.2:** Drug edit page of the developed system

* + 1. **Drug registration Page:** this module enables user to add new herbal drug by supplying herbal drug title, production date, expire date and pin in the space provided. Its structure as shown in figure 3.3



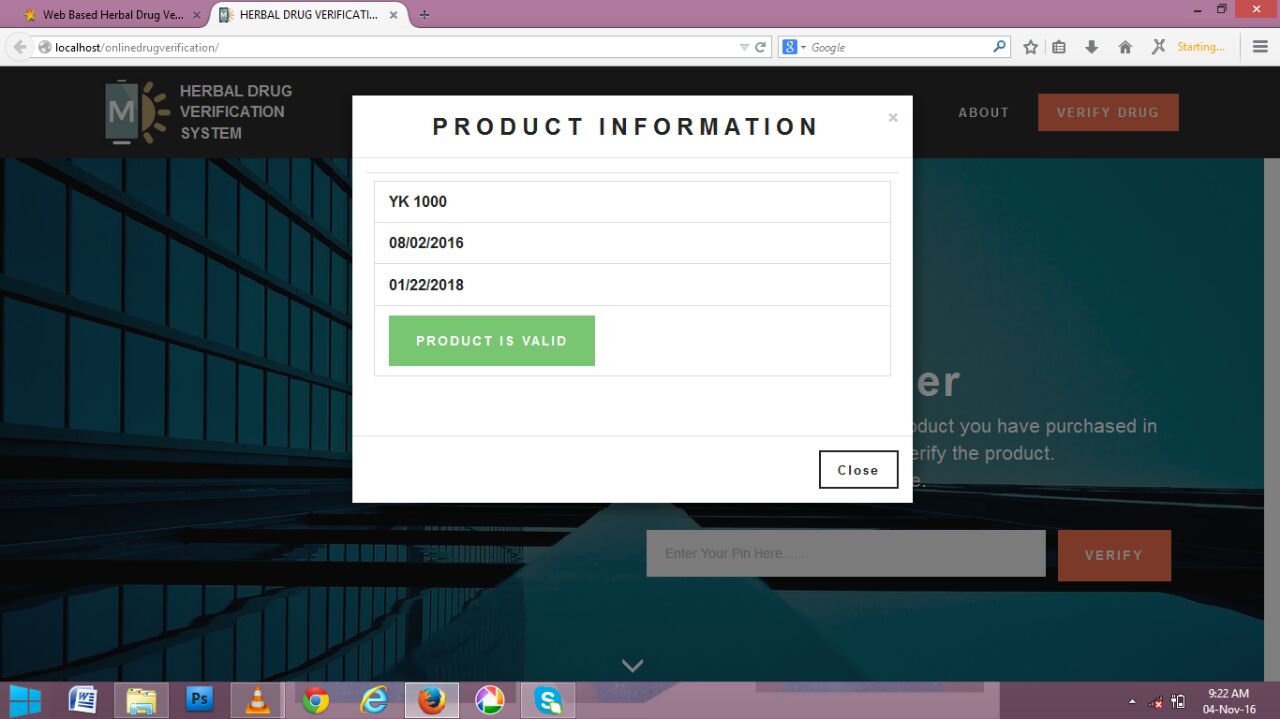
**Fig 3.3:** Drug registration page of the developed system

* + 1. **List of registered herbal drug Page:** This page allows user to view all the registered herbal drug and allow them to edit herbal drug record by clicking on the edit button provided at the right hand side of the grid view. Its structure as shown in figure 3.4



**Fig 3.4:** List of registered herbal drug Page of the developed system

**3.2.5 Product information Page:** This page displays the status of registered herbal drug. Its structure as shown in figure 3.5



**Fig 3.5:** Product information page of the developed system

**3.3 System Implementation**

The Object Oriented (O-O) paradigm being the natural way of implementing UML designs, the implementation of the tool was done using the O-O style. The programming languages of choice were PHP and MYSQL. The detailed documentation obtained at the detailed design stage was translated into classes of the target programming language. An attempt at separation of the graphical user interface (GUI) and the functionality was made. This was to enable the development of a loosely coupled system.

**3.4 Evaluation of the Developed System**

Evaluation of the developed system was carried out based on the following criteria;

**3.4.1 Accessibility**

After the system had been tested, the result shows that the new developed system is accessible i.e. the new developed system was available at any convenient time of the users and responsiveness, user can access it anytime they need it or fill like using the new developed system.

**3.4.2 Speed**

From the test and the result generated shows that the new developed system performs all the necessary things it supposes to perform and it does not keep the user wait. The test performed shows that the efficiency and effectiveness of the new developed system is very easy to use, user friendliness and fast in operation.

**3.4.3 Evaluation Methodology**

The developed system was evaluated by administering questionnaire on eighty (80) users. The completed questionnaire were collected and analyzed.

**CHAPTER FOUR**

**4.0 RESULT AND DISCUSSION**

**4.1 Results**

The result of the evaluation of the developed system is as presented in tables 4.1, 4.2 and figures 4.1 and 4.2 below:

Table 4.1: Response of the users on the accessibility of the developed system

|  |  |  |
| --- | --- | --- |
| **The developed system is easy to access** | **Frequency** | **Percentage** |
| Strongly Agree | 55 | 68.75% |
| Agree | 15 | 18.75% |
| Disagree | 7 | 8.75% |
| Strongly Disagree | 3 | 3.75% |
| **Total** | **80** | **100%** |

**Figure 4.1:** A Graphical Representation of the newly developed system accessibility

**Table 4.2:** Response of the users on the speed of the developed system

|  |  |  |
| --- | --- | --- |
| **The developed system is very fast in operation** | **Frequency** | **Percentage** |
| Strongly Agree | 60 | 75% |
| Agree | 15 | 18.75% |
| Disagree | 5 | 6.25% |
| Strongly Disagree | - | 0% |
| **Total** | **80** | **100%** |

**Figure 4.2:** A Graphical Representation responses of the developed system speed

**4.2 Discussion**

Table 4.1 and figure 4.1 shows that 70 out of 80 users agreed and only 10 disagreed that the system is easily accessible. Also Table 4.2 and Figure 4.2 shows that 75 out of 80 users agreed that system is very fast in operation. From the result shown in the table it is concluded that majority of the user agreed that the system is easy to accessible and fast in operation.

Hence the developed system is capable of allowing prompt and unrestricted access to verify herbal drugs information.

**CHAPTER FIVE**

**5.0 CONCLUSION AND RECCOMMENDATION**

* 1. **Conclusion**

In this project, a web based on herbal drugs was designed and implemented using MySQL, Hypertext markup language, CSS3, J-Query and PHP. The developed system was also evaluated based accessibility and speed

It is then concluded that the objective of the study were achieved and the system developed is capable of allowing prompt and unrestricted access to verify herbal drug information.

**5.2 Recommendation**

It is recommended that:

1. It is recommended that the Nigerian hospital, chemist and public users are adequately trained on the use of Information Technology in herbal drug verification system.
2. Computer literacy program should be organized for the hospitals and chemist. This can be carried out set by set. At the end of the training, it is recommended that the herbal drug verification system be deployed to every hospitals, chemist, and public user for verifying herbal drug information.

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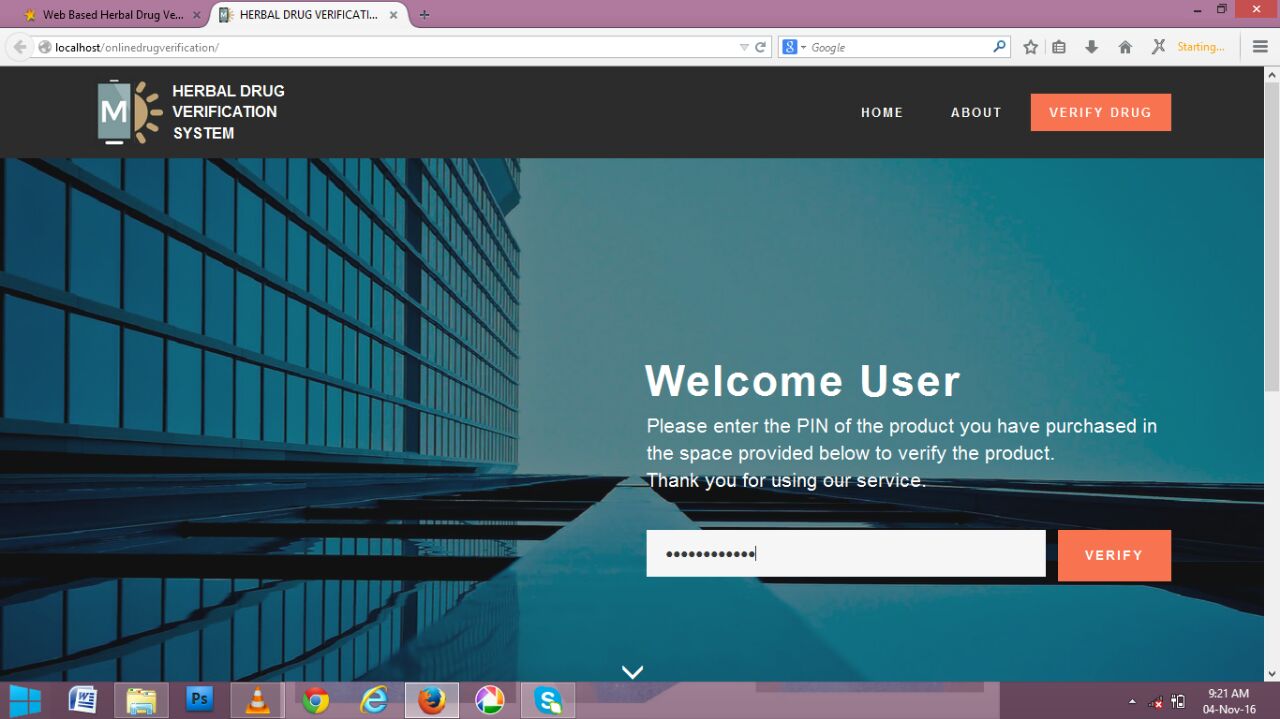
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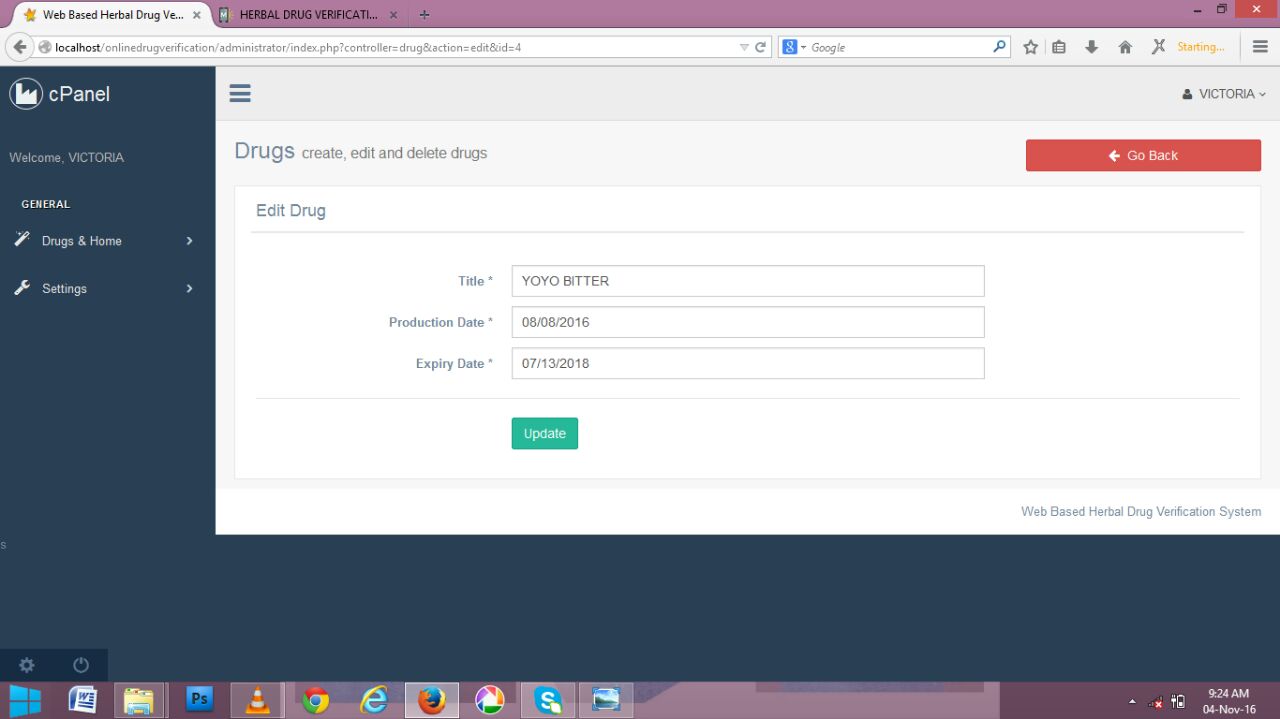
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**APPENDIX III: FLOWCHART**

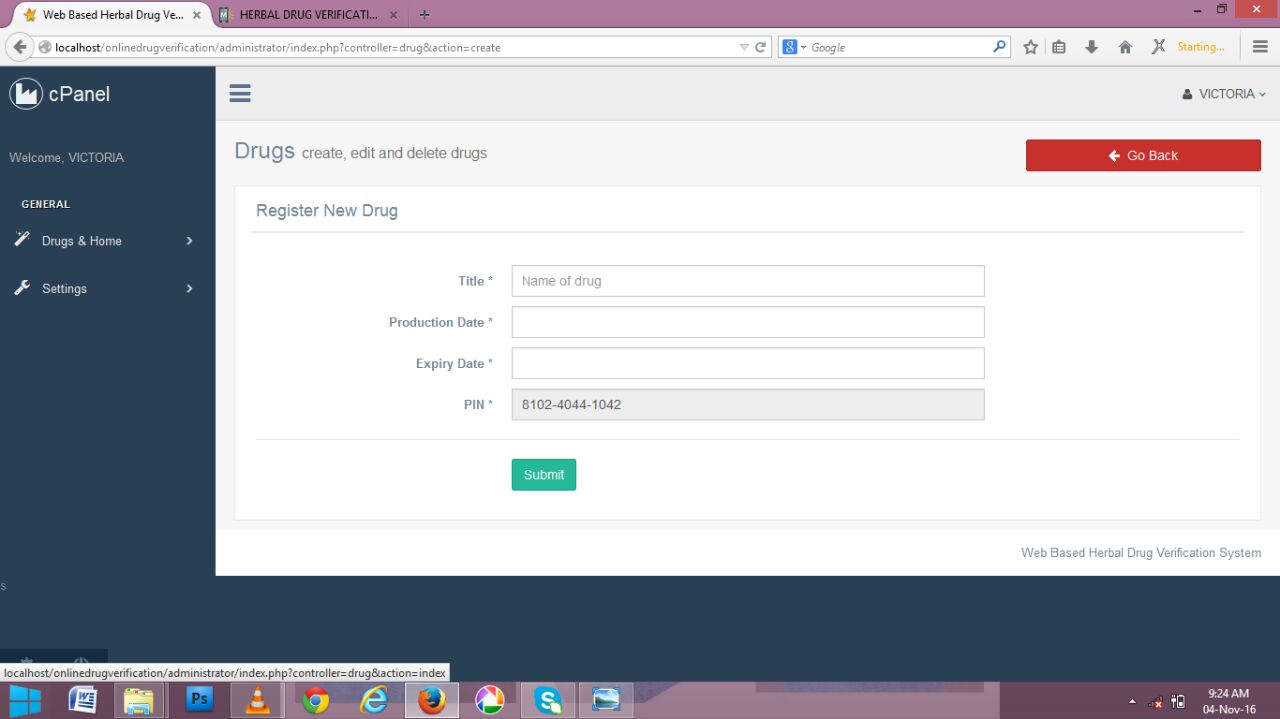
**APPENDIX VI: OUTPUT**



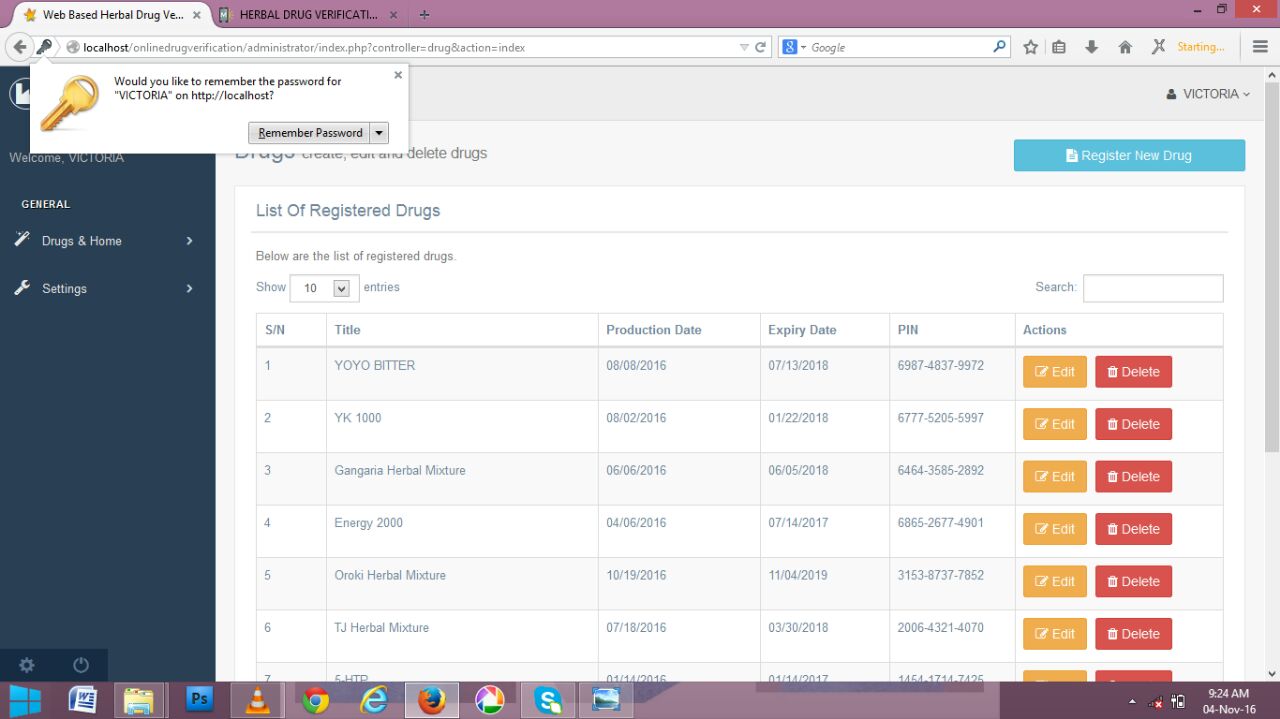
**Home page**



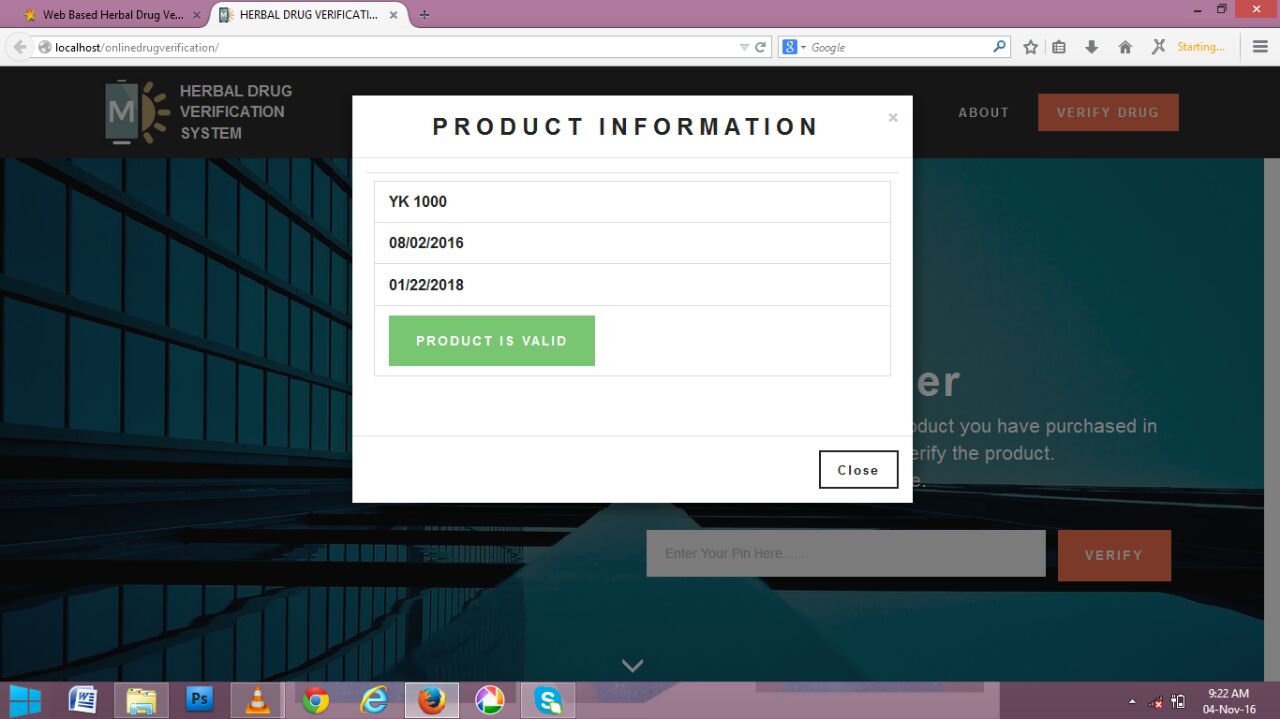
**Drug Edit Page**



**Drug Registration Page**



**List of Registered Herbal Drug Page**



**Product Information Page**

**APPENDIX V: SOURCECODE**

<?php

session\_start();

require\_once '../../vendor/autoload.php';

require\_once '../database/connection.php';

$username = $\_POST['username'];

$password = $\_POST['password'];

$user = new User();

if ($user->validateUser($username, md5($password)) == 1) {

$\_SESSION['username'] = $username;

header('location: ../../index.php?controller=drug&action=index');

exit();

} else {

header('location: ../../index.php?errorCode=1');

exit();

}

<?php

class DrugController {

function index() {

$drug = Drug::all();

require\_once 'app/views/drug/index.php';

}

function edit() {

$id = intval($\_GET['id']);

$drug = Drug::find($id);

require\_once 'app/views/drug/edit.php';

}

function create() {

$tmp\_pin = PinGenerator::generate();

if (static::pin\_exists($tmp\_pin)) {

self::create();

} else {

$pin = $tmp\_pin;

}

$drug = Drug::all();

require\_once 'app/views/drug/create.php';

}

function addnew() {

$post\_var = array\_values($\_POST);

Drug::create($post\_var[0], $post\_var[1], $post\_var[2], $post\_var[3]);

self::index();

}

function update() {

$id = intval($\_GET['id']);

$post\_var = array\_values($\_POST);

Drug::update($id, $post\_var[0], $post\_var[1], $post\_var[2]);

self::index();

}

function delete() {

$id = intval($\_GET['id']);

Drug::delete($id);

self::index();

}

protected function pin\_exists($pin) {

return Drug::pin\_exists($pin);

}

}

<?php

class SettingsController {

function index() {

$users = User::all();

require\_once 'app/views/settings/index.php';

}

function user\_delete() {

$id = intval($\_GET['id']);

$user = User::delete($id);

session\_destroy();

self::index();

}

function user\_edit() {

$users = User::all();

$auser = User::find($\_GET['id']);

require\_once 'app/views/settings/index.php';

}

function user\_create() {

$post\_var = array\_values($\_POST);

$user = User::create($post\_var[0], md5($post\_var[1]), $post\_var[2]);

session\_destroy();

self::index();

}

function user\_update() {

$post\_var = array\_values($\_POST);

$id = intval($\_GET['id']);

$user = User::update($post\_var[0], md5($post\_var[1]), $post\_var[2], $id);

session\_destroy();

self::index();

}

}

<?php

class ImgExtractor {

public static function extractor($string) {

$doc = new DOMDocument();

$doc->loadHTML($string);

$xpath = new DOMXPath($doc);

$src = $xpath->evaluate("string(//img/@src)");

return $src;

}

}

<?php

class Mailer {

public static function sendMail($post\_var) {

$n = htmlspecialchars($post\_var['name']);

$em = htmlspecialchars($post\_var['email']);

$pn = htmlspecialchars($post\_var['phone']);

$m = htmlspecialchars($post\_var['message']);

$to = "admin@creativedemschools.com";

$headers = "From: " . $n . " Email Address: " . $em;

$subject = "From Creativedemschools.com Contact Us Page";

$message = "Name: " . $n . "\nEmail: " . $em . "\nPhone Number: " . $pn . "\nMessage: " . $m . "\n";

mail($to, $subject, $message, $headers);

$to = "info@creativedemschools.com";

if(mail($to, $subject, $message, $headers)){

return true;

}else{

return false;

}

}

}