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Coding: Simplified Approach and Techniques for Beginner – Programmers

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Abstract:- Current trends in internet and its supportive branches have given rise to various skills and optimization adapted by various people across the globe, and also expanded their knowledge in developing any imaginable idea or more personal interest to create something, a website or an application, to solve a problem facing the globe. Different people in different parts of the world have fallen in love to learn new thing and join the leading league of "coding." This study elucidates the simplified approach and techniques that can be adopted by beginners to start thinking about moving to a new profession or improving the present career which requires a computer programming or "coding" to aid the professional development.

Keywords:- *coding, websites, front and back -end, application, HTML, CSS, JavaScript, Python, coders, beginners.*

I. INTRODUCTION

Coding can be beneficial in various ways including working from home, office and schools. However, technology sector provided a very wide range for coding more than in the workplace, and it can be of very important for some professions like educationists, economists, scientists and financial traders. Likewise, for most experts outside the technology sector, coding is just starting to enter the workplace, and gradually beginning to increase in relevance in any of the following ways; advertisement: traditional printings and media have been eroded and replaced by digital campaigns. In attracting a large number of visitors that see the campaign, advertisers who understand coding and search engine optimization use the keywords used by most competitors, and effectively use the data to create an eye catchy campaigns that can drive vast majority of customers/consumers to the products or services; sales: the invention of e-commerce has greatly reshaped the process of sales and services leading to great turn out of profit. Salespeople who code enjoy the process than ordinary persons that don't know or understand the concept of coding by finding and retrieving their own leads from web pages and directories and then sorting and quantifying those leads; design: a digital web page design without a program or code looks static and nonresponsive. For it to look dynamic and responsive a designer with basic experience in coding can program his drawing into product. Designers who code easily can also bring their designs to life by effectively advocating for specific designs made somewhere or imagined; operations: bounty profit can be generated, in part or in whole by reviewing, estimating and analyzing an organization's cost of production, and everything in – between; marketing: optimal promotion of products and services by using personalizing communication is one of the strategies that often increases results and profits. Advance or ultimate marketers who code can run a set of customer database query to and create personalized infrastructures that include customer information and products attached to specific interests of the customers. The coders could write few codes by trying thousands of permutations to ensure there is optimization in various methods used in producing, packaging, transporting and delivering goods and services to the end users.

II. CLASSIFICATION OF CODING LANGUAGES

Languages in coding are basically classified into two major parts in terms of compilations and interpretations, and thereafter into low – level languages and high – level languages. Interpreted languages are considered handier than compiled languages, while compiled languages execute faster than interpreted languages. High-level programming languages like JavaScript, Python, and Ruby are interpreted [1]. For these languages, the interpreter runs and executes the program directly, translating each statement one line at a time into machine code. High-level programming languages like C++, COBOL (Common Business Oriented Language), and Visual Basic are compiled. For these languages, after the code is written, a compiler translates all the code into machine code, and an executable file that can be run on another's person Personal Computer (PC) is created. This executable file is then distributed via the Internet, CD-ROMs (Compact Disc – Read Only Memory), USB (Universal Serial Bus) - Drive or other media. Program or Software installed on PC, like Microsoft Windows or Mac OS X, are coded using compiled languages, usually C or C++ [2].

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III. CONCEPTS IN CODING

A. Types of Programming Languages

Coding requires different approaches and skills. One way to code efficiently is thorough scan and selecting the needed and easy programming languages. There are many languages currently utilized by coders. As beginners, coding a website/web application is best achieved and done by learning and using languages like (Hyper-Text Markup Language) HTML, (Cascade Styling Sheets) CSS, Java, JQuery, JavaScript (JS) and Hypertext Preprocessor (PHP). Mobile application development requires Java (for Android) or Swift (for iOS). Choosing the suitable and efficient language is extremely important, and views about each of them are drawn for the beginners below: *HTML, CSS and JAVASCRIPT:* front-end web coders are to be skilled in these three languages, HTML is used extensively for marking up text so that computers can understand it, yes! It remains the simplest languages of all. Thus, HTML is the building block for all coders to deepen into programming world. It has many versions with HTML5 being the newest version. CSS cannot stand alone, it goes alongside with HTML to style and format the content inserted on webpages. This formatting includes anything thinkable from margin to layout to pagination to alignment, etc.

JavaScript is quite different from Java, but may have similar role in back – end web development. Like CSS, JavaScript is also a dependent language that cannot produce any effect itself on a page without marrying the content of the HTML. It is exclusively used for responsiveness of a web page, and the interaction of the web elements; *Java:* java is possibly the king of programming languages in the modern world, this might be due to its application in leading technology. It is widespread, useful, and it is mainly adopted for creation and development of Android and back-end web development in some cases. Java is quite a functional language for learning how to code for beginners. It is relatively simple to learn, it reads like English, and requires more improvement to enter the professional stage in using java; *python:* python is one of the most adorable languages existing to relieve the coders who need super versatility in coding, and it has lots of different uses. Academician and researchers use python to create data analysis programs to help their studies. It is also behind the rise of new technologies dominantly in data science which cut across to fields like machine learning including artificial intelligence (AI).

Python is an interpreted, interactive, object-oriented programming language [1]. It incorporates modules, exceptions, dynamic typing, very high level dynamic data types, and classes. Python combines remarkable power with very clear syntax [1]. It has interfaces, many system calls and libraries, as well as various window systems, and is extensible in C or C++. It is also usable as an extension language for applications that need a programmable interface [1]. Finally, Python is portable: it runs on many Unix variants, on the Mac, and on Windows 2000 and later [1]; *ruby:* ruby is a language that is becoming increasingly popular for full-stack web development. It allows for the smooth integration of both front and back-end components of a new website through the Ruby on Rails framework. A web developer/coder that really the integration of front and back – end component of the app will do great learning at least the basics of Ruby. This makes it more dynamic and builds up the full elements needed to stand upright in the coding world.

B. Cloning Codes for a Web App

Website like sourcecodester.com [3] allows to search and find code reviews for various projects like point of sales (POS), scheduling duties, nightlife, shopping, etc. Beginners can clone such codes and develop it to bring about more functionality. Likewise, beginners can hack their favorite websites to see and even modify the code used to create such web pages as suggested by [2]

C. Where Web Pages Display?

On desktop computers running different operating systems like Windows, Macintosh, etc. and mobile devices running iOS, android, etc., created web pages display in any of the available browser application installed on those devices. Many examples of browsers that exist are Safari, Internet Explorer, Microsoft Edge, Mozilla Firefox, Google Chrome, Opera Mini, UC Web, Puffin, etc. But the most popular web browsers include Google Chrome, Mozilla Firefox, Microsoft Internet Explorer, and Apple Safari. One of the ways to become a powerful coder and creative programmer is to tour and play with websites visited by pointing, clicking and watching every action that takes place while touring with the visited page. This gives an outstanding opportunity to develop a better idea that will be user friendly rather than coder friendly. Most coders/programmers fail to hear the necessary feedback from the end users of their web pages or applications, this makes their efforts to go on extinction. Most android apps available on google play store are well rated and reviewed by the users who have downloaded and perhaps utilized the app for what it claims to do. Their reviews provide a means for improvement and advancement.

D. Working System of World Wide Web (WWW)

After URL (Uniform Resource Locator) is typed or supplied, such as sourcecodester.com[3], into a browser, the subsequent steps as provided by Abraham ***et al.,***[2] happen behind the scenes in the seconds before the page loads: computer sends request for the web page to a router which distributes internet access throughout a home or a workplace; *the router* passes the request on to Internet Service Provider (ISP). ISP is a company like Comcast, Time Warner, AT&T, or Verizon [2]; *ISP* then converts the words and characters in the typed URL — "sourcecodester.com," into a numerical address called the Internet Protocol (IP) address. *An IP address* is a set of four numbers separated by periods (such as 192.168.101.1). Just like any physical contact address, this number is unique, and every computer has one, this makes any computer traceable in case of crime or vulnerability. ISP has a digital phone book, similar to a physical phonebook, called a domain name server that's used to convert text URLs into

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IP addresses [2]; *the website server* is another important core – part that receives the request and sends a copy of the web pagecode to computer device for its browser to display; *web browser* renders the code onto the screen – which is thus visible to every user and handler of such page.

IV. FRONT AND BACK END CODING

Previous section in this paper explained the concept of browser accessing the webpages. It is then worthwhile to clarify further the way actual website is constructed for beginners to understand all the techniques utilized and how they could take a very snappy look into the architectural design of any particular website. With this in place, the study explains the categorical ways of coding to effect change functionally. *Appearance:* appearance is the visible end of any website, including layout and applied styling, such as font family, font – weight, font - size, font typeface, alignment, padding, shadow as well as web responsiveness to certain contents. The groups of coders who can put this forward are generally called the "front end coder/programmer/developer" depending on the level of their professionalism. The appearance is created using languages like HTML, CSS, and JavaScript which have been made easy using Bootstrap.

Bootstrap contains the codes for CSS and JavaScript or JQuery, and it's sometimes regarded as plugins; *logic and reasoning*: logic and reasoning determine what content to show and when. For example, a Nigerian accessing JUMIA E – Commerce website should see the Nigerian Products, whereas a British accessing the same site should see British product. The groups of coders who can put this forward are generally called the "back end coder/programmer/developer" depending on the level of their professionalism. Logic is created using languages like PHP, Ruby and Python; *storage:* storage saves any information supplied by the users. This information is most times referred to as "storing data". User generated data and profile info are stored and later retrieved. This category is part of the back end coding, and the generated data are usually stored in databases like SimpleDB, SQLite 3, SQLite 2, PostgreSQL, Oracle (Beta), MongoDB, MS SQL and MySQL. Beginners can quickly grasp the knowledge involved using the 'structured query language' as needed when working with MySQL; *infrastructure:* infrastructure delivers the website from the hosting server to the users, the client device. Infrastructure is configured taking priority to versions of supported databases, back end languages, SSL (Secure Sockets Layer), etc. When the infrastructure is adequately configured, no one notices it, but it can throw an error request when website becomes unavailable because of high traffic.

V. SIMPLIFIED APPROACH AND TECHNIQUES TO CODING WEB APPLICATIONS

Web applications are much common and easier to build than mobile applications, require little to no additional software to develop, test and run. One of the important uses of web app is its ability to run on all devices, including desktops, laptops, and mobile devices. The languages used to code basic web applications as presented above in this paper, include HTML (Hypertext Markup Language), CSS (Cascading Style Sheets), and JavaScript. Additional languages that handle the back end can be integrated using languages like PHP, Python, Ruby, etc.

A. Researching what to build and develop

Researching what to build is one of key components that beginners should put in mind when conceiving any idea. The broad knowledge on technology and how to use it is very important, and this could be navigated by considering the following set of questions: who will benefit from the idea? How the idea will be implemented? Has anyone done something like that before? What was the approach and languages used? Can I get the source codes? And so on…

B. Designing what to build and develop

After the thorough research has been done and completed, the app's visual design that incorporates all of the researching elements and describes exactly how the users will interact with every page and feature needed to be done. The layout adjustments and other responsive features will be included in other to allow for multi – device switch irrespective of the device the users are holding. Corel Draw, Photoshop, Keynote, etc. are some important designing frameworks that beginners who code can play with. In addition to visual design, complex apps also have technical designs and decisions to finalize. This include storage and retrieval of user data. In doing this, there is need for choice of database and the best way to integrate the database into the application.

Furthermore, coders must design the database by choosing the fields to store. The process is analogous to the process of creating a MS excel (.xls) file to model an input — the first decision comes by counting the number of columns to use, which defines the information of each user. Row is auto increment, and increases automatically when a new user registers/adds information or features like credit card payments information.

C. Coding, Debugging and Running your app

With research and fantastic design done, the bearing of the journey has been drawn and determined. The next thing is to start with coding the developed idea which is done with the combination of both front and back end skills. On large projects, it's more common to see specialized front-end and back-end coders/programmers instead of one person doing it all alone. Simple websites by beginners are coded using HTML, CSS, and JavaScript: HTML is used to place text on the page. CSS is used to

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style the HTML contents. JavaScript is used to add interactive properties that allows the users to like and share content on other groups and shows the number of other people who have liked and shared the same content. Websites with more advanced functionality as always demonstrated by content management system (CMS)[4], such as user login information, and file uploads typically require a programming language to implement these features. Although Python, Ruby, and PHP aren't the only programming languages these sites can use, they are among the most popular ones which are used by the back end handlers/coders. Most of the languages suggested here are easy to learn, and can be adopted by anyone who decides to earn his/her daily meat using codes. Each of these languages also has prevalent and well-documented frameworks. A framework is a collection of generic components, such as user accounts and authentication schemes that are reused frequently, one of such framework is Laravel, and other CMSs [5-7] allowing developers to build, test, and launch websites more quickly [2, 8]. Debugging is one of the vital parts in creating a web application. Debugging can be frustrating especially when seeing unexpected displayed window. Common errors to watch out for are *syntax errors:* these are errors initiated by misspelling words, by omitting characters, or by including extra characters; *logic errors:* In logic errors, syntax is correct, but the program behaves differently than expected, such as sum or arithmetic error**;** *display errors:* these are common mainly in web applications. With display errors, code might run and work properly, but visualization won't appear properly, these errors sometimes might be due to obsolete browsers used in testing or running the codes. Display errors are corrected by extensive testing using different devices and browsers.

As the demand for coding platform increases, there are evolutions of many websites, CMS and platforms that allow coding with the help of online editors, version control and quick publishing, which are light and versatile. However, working offline is not bad as well. It requires some additional environment set – up which includes: editors, browsers, and lastly a local host server like XAMPP, WAMP Server or Laragon for windows which all support Apache and IIS for Mac. Editors like preinstalled Notepad or Notepad ++ [9], Atom, Sublime Text, Visual Studio Code, CoffeeHTML are the text editors that can be used to write all codes and saved in different extensions .htm or .html for HTML file, .css for CSS file, .js for JavaScript file, .py for Python file, and so on. Browser: many browsers exist, including Firefox, Safari, Microsoft Edge, Internet Explorer, and Opera.

VI. CONCLUSION

Daily rise in pool of internet users has increased the interests of young generations especially in pursuing the recent technology. Simplified approach and techniques for beginners to lay a solid foundation in real world of coding are grafted in this paper. However, any beginner who desires to know more about coding needs advanced and complex approach which are not detailed in this paper before a robust and a secure application can be built.

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