10

DESIGN AND DEVELOPMENT OF A UNIFIED SUBSCRIBERS' SIM REGISTRATION PLATFORM USING TOP-DOWN APPROACH

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Abstract

Compulsory SIM registration in Nigeria started in 2008 in response to several mobile crimes being perpetrated by fraudsters and also to improve service delivery. The decentralized systems currently in use in the country lack flexibility to register heterogeneous SIM cards and encourage multiple registrations. This work, the "design and development of a centralized, unified subscribers' SIM registration platform" therefore seeks to address these loopholes. The work employs top-down design approach using HTML, PHP, JAVASCRIPT, CSS, and MySQL as development tools. The new system surpasses the existing one as it is able to register all SIM cards of the four (4) major telecommunication operators in Nigeria and verify if a SIM had already been registered thus bringing stability, flexibility, and single platform for all. It is recommended that SIM card availability/sales on the road side should be stopped or such SIM cards be denied access to network until they are properly registered.

Key Words: Multiple SIMs, SIM registration, status verification, NCC, Subscribers.

Introduction

In a world where people's appetites for committing crimes already are insatiable, the emergence of communication technologies, particularly mobile technologies in a way, have only made matters worse for it. So many people have fallen victim to these mobile fraudsters already. This has become an eyesore of some sort as even the downtrodden are not spared. Something rather urgent must be done to stop/ rescue this appalling trend. Unfortunately, since the launch of GSM services in 2001 till around early 2008, it wasn't required to register SIM cards, a situation that profited many mobile fraudsters with no consequences since they could not be traced by their respective numbers. Consequently, in the first quarter of 2008, security agencies, Nigerian Communications Commission (NCC), mobile telecoms operators, telecoms associations, the Nigerian Identity Management Commission, National Population Commission, media and a host of others held a consultative forum where it was agreed that SIM card registration should commence immediately.

SIM Registration Overview

A SIM (Subscriber Identification Module) Card is the card issued by mobile phone operators which provides the individual user with the appropriate number recognized by that network. A subscriber inserts the card into his or her mobile phone to access the mobile phone network [1].

Since the launch of GSM services in Nigeria in 2001, SIM cards were offered to subscribers without the requirement to provide proper identification by the users [1]. Sometime in early 2008, security agencies approached the Commission to assist in resolving crimes perpetrated through the use of phones in which criminal elements cannot be identified with the number of the phones that they used. Consequently, the Commission held a consultative forum involving various telecoms operators, consumer groups, security agencies, telecoms associations, the Nigerian Identity Management Commission, National Population Commission, National Census Commission, the media and a host of others [1]. All the participants agreed that it is appropriate and necessary to register phone users in the country. Another committee was then set up to further look at the details of the implementation of the registration programme and submits its recommendations to the Nigerian Communications Commission (NCC). Upon reviewing the recommendations of the committee, the Board of the NCC approved the registration of all phone subscribers in the Federal Republic of Nigeria [1].

This commenced on March 28, 2011, when the official flag off of the registration of all SIM cards was performed by Dr. Eugene Juwah, the Executive Vice Chairman of the Nigerian Communications Commission in Abuja [1].

Analysis of the Existing System

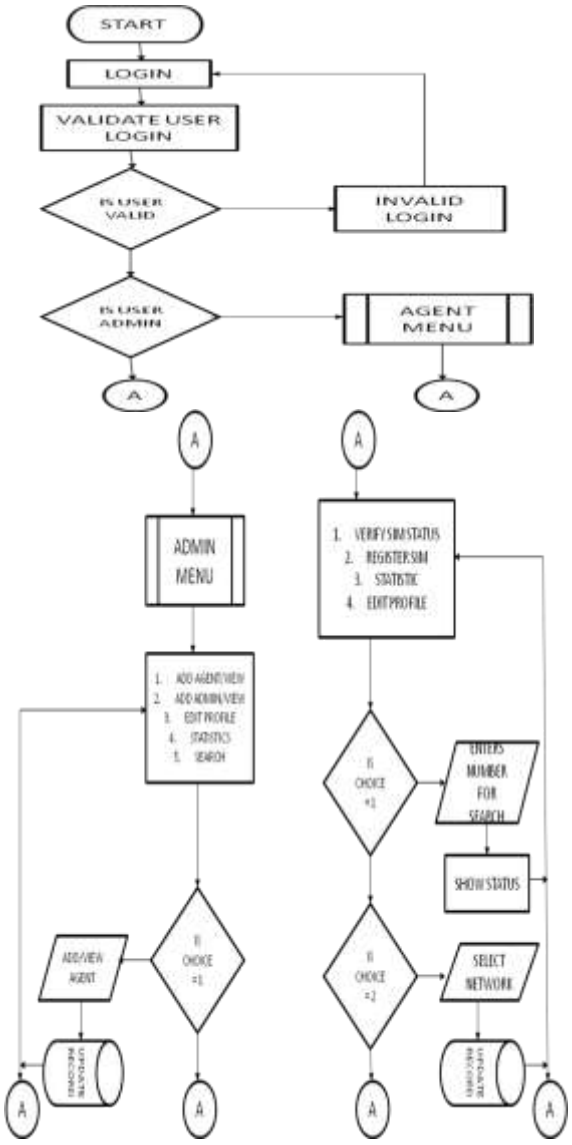
The current system is operator dependent, that is, different GSM operators has individual platform for registering their teeming subscribers. The system registers a SIM card to a subscriber one at a time usually not minding if such subscribers possess more than one SIM cards which is usually the case today. For the few operators that may be able to register alternate SIM card it strictly has to be of same operator. The system does not verify if a SIM had already been registered. The shortcomings of the current system include time wasting, duplication of data, financial waste due to several registration outlets of individual platform, fraudulent practices of unregistered agents and most of all unreliability (Recently, many owners of old SIMs were asked to go and re-register their SIMs).

The Proposed System

Unified Subscribers' Registration System (USRS) is a single platform portal that will serve all the GSM operators in Nigeria. The system is flexible and user friendly to say the

least. In this work, we have adopted the top down approach which refers to a style of programming where an application is constructed starting with a high-level description of what it is supposed to do, and breaking the specification down into simpler and simpler pieces, until a level has been reached that corresponds to the primitives of the programming language (s) to be used. The system exploits the rich functionalities of JAVASCRIPT, dynamism and interactivity of PHP and a host of other tools, of course, coupled with the authors' ingenuity to deliver a system that far surpasses the current system.

Algorithm



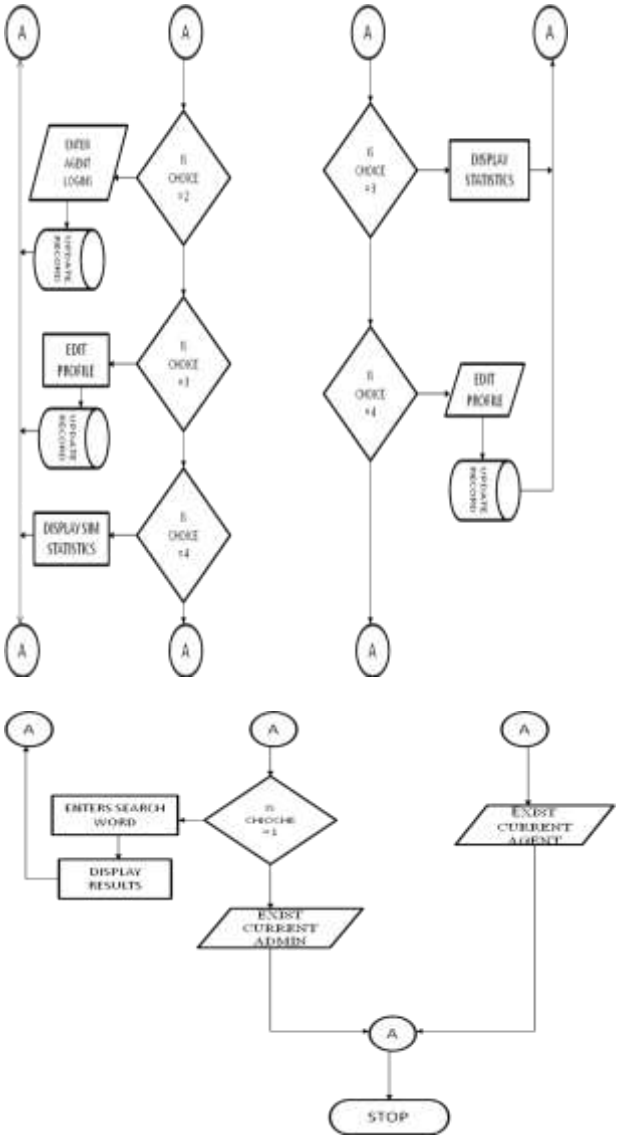


Fig. 1 Program Flowchart

Discussion and Result

In this work, we have proposed a system for the Nigerian Communications Commission (NCC). The commission will serve as the overall administrator who will then add other administrators, that is, the GSM operators. The GSM operators can then add their respective agents who will be saddled with the responsibility of registering SIM card owners. This work assumes a working (cordial) relationship among all the GSM operators and the NCC. Before registering a SIM, the system would verify if the SIM had already been registered (see fig. 2).

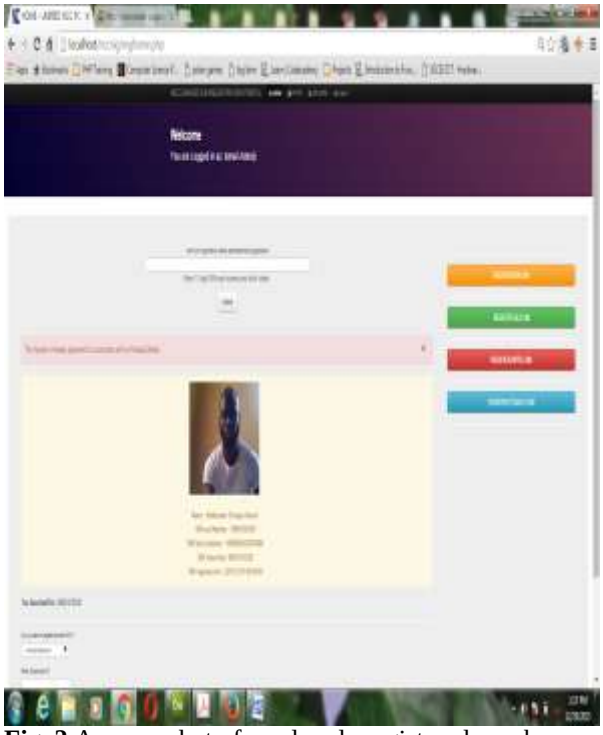


Fig. 2 A screenshot of an already registered number

In the event that an already registered subscriber owns multiple SIMs and wishes to register them, we ask if they would like to register another SIM (see fig. 2) and if so we register the new SIMs cleverly without taking their details again. This was possible because of the 'sub_ID' column that connects our 'subscribers' and 'sims' tables.

For a new subscriber, we collect their details, take their pictures via webcam and register them accordingly.

We have chosen MYSQL as our DBMS. MYSQL is unarguably the most popular free database management system and it works seamlessly with PHP. Our database 'nccnig' has five tables namely 'sims', 'subscribers', 'users', 'webcam', and 'finger'. Application designers/developers are often faced with the question of whether to store large objects like images in a file system or in a database. According to [3], objects smaller than 256K are best stored in the database while objects larger than 1M are best stored in the file system. For performance we have stored our images in a file system and saved the URL in the database.

The system defaults to the homepage where both administrators and agents are expected to login (see fig. 4).

Fig. 4 Homepage

Finally, a detailed statistics of all SIMs and SIMs registered to individual GSM operator were published as output from the system (see fig. 5).

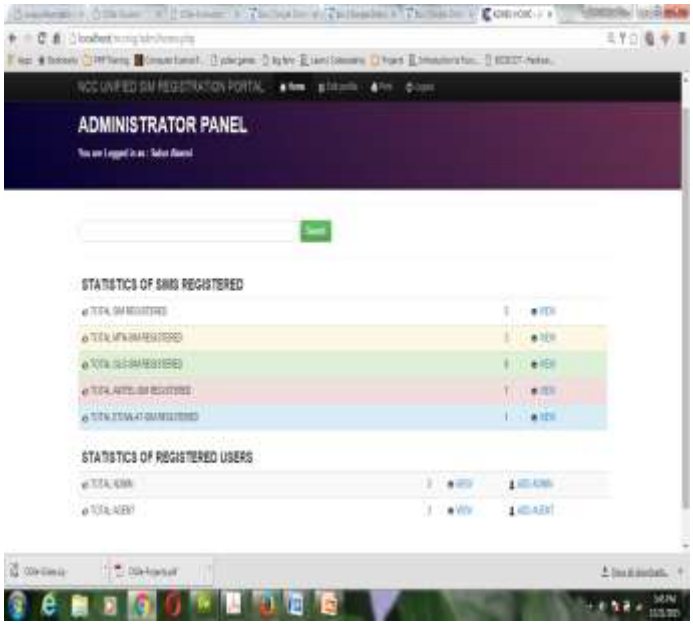


Fig. 5 Statistics of registered subscribers

Future Work

Web based systems like these may be vulnerable to malicious attacks because of the high market value of some subscribers' data. As such encryption of subscribers' data at the highest level could be incorporated in future work.

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