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**ENHANCED WEB-BASED RESULT PROCESSING AND MANAGEMENT SYSTEM  
(A CASE STUDY OF KOGI STATE UNIVERSITY, DEPARTMENT OF COMPUTER SCIENCE)**

**APPROACH**

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**ABSTRACT**

The technological development and impact of computers and internet on our lives that has been verified over time affected various sectors of activity. And almost every task today is being run through computers. Getting information and quickly turning it into a product that consumers want is the essential key to staying in business and all of this is done nowadays using computers and applications or information systems. And the education system is undeniably the backbone of the society, it focuses at preparing the young talents for the future. However, currently the process of students' result management and declaration at Kogi State University, is performed almost manually with extensive human intervention, the students' results are generated through a spreadsheet application and then printed on a paper, attached to a wall for declaration and then stored. The current research aims at creating an enhanced web-based student result management system, reducing time, effort and improving security. The methodology adopted for the elaboration of the research is based on qualitative study. The research results in the development of an Enhanced Web-Based Students' Results Processing and Management System using Structured System Analysis and Design Method (SSADM) capable of computing overall students' results using a robust programming tools such as SQL, Php, CSS, Html, JavaScript, etc The work met all the objectives intended. It is how ever recommended for all tertiary institution.

**1. INTRODUCTION**

Result processing is a task that must be carried out accurately and thus should not be done manually to avoid loss in filling data's and computations.

This has promoted the need for a computerized database management system for computation, grading and result processing.

Obviously this will positively affect the release of results and improve the grading system to its standard. Hence the improvement of performance in the processing of students in the Kogi state university is what this project work is all about.

## **2. REVIEW OF COMPUTER SYSTEMS AND OTHER RELATED CONCEPTS**

The introduction of computer into information technology has massively improved the information need of organization; the success of this machine is dependent on the knowledge base. Therefore, one can be prompted to ask aloud “what is a computer”. Funk (1980) defined a computer as an electronic device that can perform automatically and at a high speed a sequence of logical operations according to instructions given to it in form of a pre-arranged program.

Anigbogu (2000) defined a computer as an electronic device capable of accepting data and instructions, processing the data based on the instructions to generate results or output in such a manner that is yet to be equalled by any other known machine to mankind.

Chimezie (1990) stated that “Computers are looked upon as obedient servants who are ever ready to free man from tedious procedures and produce results as compared with human computing time”.

Obilikwu (1995) described computer as a machine that is capable of accepting input data, store and process the data based on instructions given by the computer user and in this way produce expected results generally called output. These definitions of computer would lead us to answer the question “what is a program?”

In his definition, Obilikwu (1995) defined a program as a sequence of instructions given to the computer to perform a specific operation. From Encarta Encyclopaedia, computer program is a set of instructions that directs a computer to perform some processing function or combination of functions. The above definitions of computer clearly demonstrated the limitless area of operations of computer in as much as such task is programmable. Computer is applicable in virtually all areas of human endeavour ranging from Agriculture, Education, Business, Sports, Entertainment, Medicine, Construction and Military etc.

French (1992), in his book titled “Computer Science” fourth edition, he relates the relevance of computer to management and stated that, “a company needs information in which to base decisions concerning the current operations and future plans. It requires the information to be timely and accurate”. He then cited the example of the use of computer in the area of management control to production and stated “production must be able to respond quickly to

changes in demand and other circumstances. To do so requires the provision of up to date information this is accurate and timely”.

Aluko (1991), stated that “in virtually any job whether clerical, technical, business, or professional; whether it is a banking, medicine, education etc. Computers are useful tools” and that “computers are tools with which we calculate, measure, assess, store, retrieve, regulate and monitor information”. Hence, the blood and life wire of any system is information. A typical system (Education, Management etc.) cannot survive without good management information system (MIS).

Management Information System (MIS) are information systems, typically computer-based, that are used within an organization. The concept of Management Information System is a complex variable although Murdick (1971), simplified it when he said “there is probably no more challenging and diversified subject than management theory, system theory and computer science”.

Admission processing system, result processing system, course registration system is typical information processing system or organizational information system on candidates’ admission and performances. World Net describes an information system (IS) as “a system consisting of the network of all communication channels used within an organization, and includes software and hardware”. It may also be defined as “a system that collects and processes data (information) and provides it to managers at all levels that use it for decision making, planning, program implementation and control.

The aim of information system to admission, registration and result processing in tertiary institutions is improving the quality and accuracy of information provided to all involved as well as assisting them in compiling and reporting information. The information system (IS) has common data set on admission, admittance regulations of different institutions and admission procedures.

Computerization is a social process for providing access to and support for computer equipment to be used in activities such as teaching, accounting, writing, designing, circuits, file processing etc. Computerization entails social choices about the levels of appropriate investment and control over equipment and expertise, as well as choices of equipment.

Dunlop and Kling (1991), by the early 1990s, computing and telecommunications accounted for half of the capital investments made by private firms. However, paper (1980) Feigenbaum and McCorduck (1983) and Yourdon (1986) stated that the most fervent advocates of computerization have argued that the actual pace of computerization in schools, factories and homes is too slow.

Taylor (1980), classified computer-based education include both computer-assisted instruction programs that interact with students in a dialogue and a broader array of educational computer applications such as simulations or instruction in computer programming. There is major national push for extended application of computer based education at educational levels. For example, in the mid 1980s private several colleges and Universities required all their freshmen students to buy a specific kind of Micro-computers and others invested heavily in visions of “wired Campus”.

Kling (1983) avers that computer-based education has been promoted with two different underlying ideologies in all levels of education. Some educators argue that computer- based instructional approaches can help fulfill the traditional values of progressive education: the simulation of intellectual curiosity, initiative, and democratic experiences. For examples, Kling (1984) has argued that computerized tertiary institutions are qualitatively different than traditional ones: College students with micro computers in their dorm rooms will be more stimulated to learn because they will have easy access to instructional materials and more interesting problems to solve.

Papert (1979), argues that in a new computer based school cultivate students will no longer simply be taught mathematics. These visions portray an enchanted social order transformed by advanced computing technologies. Other advocates are a bit less romantic, but not less enthusiastic.

For example, Cole (1972), stated because of the insatiable desire of students for more and more information at a higher level of complexity and more sophisticated level of utilization, more effective means of communication must be used.

Computers can provide a unique vehicle for this transmission. Hence, it is important to note that computer based education goes a long way in helping the students as well as the staff to effectively make use of the computerized course registration system. It also helps in convincing the stakeholders of the importance and need for adopting the computerized admission, registration and result processing system as it provides effective and accurate handling of student’s files.

Therefore, a computerized course registration system is usually a system, which is implemented with a computer to achieve the utmost efficiency and desired goals. In well developed countries, where education systems are computerized; course registration system should be and/or is one of the modules contained in the college portal. A “College Portal” therefore is personalized software that captures the entire education business process and makes all operations accessible via the web, thus allowing schools to effectively serve all

stakeholders, students, lecturers, administrators and parents. It provides many functionalities including Admissions, Registration, Financial Services (transactions and processing), Exams & Records, Grading, Staff Management, Facility Management, Student self-care (My school), Alumni Records, Library and College shop, etc, and supports workflow and Messaging and provides other collaboration tools and advanced reporting engines.

Russell, M. (1987), dealt extensively on the need for the use of computers on such database system like computerized course registration system. In the words of Dimorji (2003), at the center of any information system is a database, which is any collection of related information grouped together as a simple item. The term can also apply to the ways in which information catalog is used, analyzed, stored and used manually.

Russell was also of the view that without a computer, effective handling of Candidates' records cannot be achieved effectively. According to him, "The oxford University has more than ninety-six thousand student's records. No person would precisely remember the details of these records". The computer is the most possible application to retain an unlimited number of records with the utmost current updating possibilities. This is true as can be seen as posited by Eloba (1992), Computer in school record keeping, Technical Education Today, Vol. 3 No 182. "That at a department with over a thousand candidates, with the use of computer, all qualified for admission only 100 candidates need to be chosen. With the ranking of the scores or grades of the candidates, the management is in position to choose best candidates with the best results with ease and on time" with the use of computer. Again, many computerized systems have become more than tools, they are environments that people sometimes find hard to change and so on.

Kling and Suzanne (1988), argue that we have much to learn about future uses and consequences of computerization by carefully examining past and present experiences. Knowing fully well how the University program is being run (manually), studying the past and present experiences energize the idea of computerization of the board or the program.

Also, Kling, (1994) illustrates that systems being computerized offers exciting possibilities of manipulating large amount of information rapidly with little effort to enhance control.

### **3. METHODOLOGY**

A methodology is a system of methods used in a particular area of study. It is a body of practices, procedures and rules used by those who work in a discipline or engage in an enquiry. It is in other words, a set of working methods.

It also includes the techniques and methods which are used to collect and analyze information. The types of methodologies includes: Prototyping, Object Oriented Analysis

and Design Methodology (OOADM), Expert Systems and Structured System Analysis and Design Methodology (SSADM).

For the purpose of this research work, the SSADM is used.

**Structured Systems Analysis and Design Methods (SSADM):** Structured Systems Analysis and Design Methodology (SSADM) is an integrated set of standards which guides the analysis and design of computer systems.

#### **4. RESULTS AND DISCUSSION**

This section describes implementation requirements of the software, hardware, operating systems and memory requirement for installation of the software as well as detailed implementation arrangement.

##### **System Implementation**

The new system was implemented using Java 2 Enterprise Edition (J2EE) programming language. This is because the programming language has the advantage of easy development, flexibility and it has the ability of providing the developer/programmer with possible hints and it produces a graphical user interface.

##### **4.11.2 Hardware and Operating System Requirement**

This is for the implementation of the web application software. For effective and efficient functioning of the system, the following hardware and software specifications are recommended.

##### **Software Specifications**

The system requires minimum of the following Operating System

- ❖ Web browser (Chrome/Firefox/Opera-mini...)
- ❖ Windows XP Home and Microsoft (Professional Service Pack 2, 3)
- ❖ PHP 4.5
- ❖ MYSQL 3.0
- ❖ Apache 2.2
- ❖ XAMPP 5.53 or higher

##### **Requirements for Processor**

The software requires a minimum of 600 MHZ Pentium processor. It is however recommended that for optimum performance faster processors like 1.5GHZ Pentium grade processor be used.

### **RAM Size**

The minimum RAM requirement is 512mb but 1GB or higher is recommended for flawless execution. This is because all connection to the server will use memory on the RAM for processing of request.

### **Disk Space**

The computer must have a minimum of 2GB of Hard disk space available. The user may be able to make more space available by removing temporary files on your computer.

### **Run/Operate the Software**

In order to run or operate this application software, the user must be sure to pay careful attention to the software requirements relative to the prerequisite programs listed earlier that must be installed prior to proceeding installing the application.

### **Detailed Implementation Plans**

The full implementation of this project is to eliminate the old manual system and its deficiencies and run a full web-based automated result processing system to improve the overall effectiveness and efficiency of the academic process.

### **Changeover**

The kind of changeover to be implemented in this case is a direct changeover as both the old process and new process cannot run concurrently. Hence detailed planning must be effectively implemented to avoid a failed implementation.

### **File Conversion**

File conversion plans must be prepared and arrangements made for parallel runs before phasing out the old system. The files in the manual process should be input into the new system database using Postgres Plus.

For this product software, a test -run recommended on the process using test-data which can be readily generated from previous result. This should be done at least one month before the new academic semester so that any error noticed can be readily corrected before switching fully to the new system.

### **Training of Operators and Users**

There is the need to train the potential users of this application on the mode of operation of the new system. The training of the officials will be based on their interaction with the system. For example, the admin will be taught how to use the functions available.

The software is designed to be more user friendly for easy access to all the user and operators that have the administrative privileges/permissions.

The database was designed with MYSQL. The database contains information of the entities of the Timetable Generating System. It organizes and manages the information to obtain the

report required to support the application relational database where a common field relates to different tables of data to each other.

## DATABASE SPECIFICATION

In the database specification, the following database tables below are used to illustrate the structures of the database of the proposed system.

Table 1: Academic Session

<b>Academic_session</b>		
<b>COLUMN NAME</b>	<b>DATATYPE</b>	<b>DESCRIPTION</b>
<b>id</b>	Integer	Primary key of the table
<b>begin</b>	Character varying	Beginning of session
<b>name</b>	Character varying	Name of Session
<b>end</b>	Character varying	End of session
<b>previous_session</b>	Character varying	Session before current
<b>mode</b>	Integer	

Table 2: Course

<b>course</b>		
<b>COLUMN NAME</b>	<b>DATATYPE</b>	<b>DESCRIPTION</b>
<b>id</b>	Integer	Primary key of the table
<b>name</b>	Character varying	Course Title
<b>code</b>	Character varying	Course Code
<b>unit</b>	Integer	Course Credit Unit load



<b>objective</b>	Character varying	Objective of course
<b>department</b>	Integer	Department of ownership of course

Table 3: Department

<b>department</b>		
<b>COLUMN NAME</b>	<b>DATATYPE</b>	<b>DESCRIPTION</b>
<b>id</b>	Integer	Primary key of the table
<b>name</b>	Character varying	Name of department
<b>description</b>	Character varying	Description of department
<b>code</b>	Character varying	Departmental code
<b>faculty</b>	Integer	Faculty of department

Table.4: Faculty

<b>faculty</b>		
<b>COLUMN NAME</b>	<b>DATATYPE</b>	<b>DESCRIPTION</b>
<b>id</b>	Integer	Primary key of the table
<b>name</b>	Character varying	Name of faculty
<b>description</b>	Character varying	Description of faculty
<b>institution</b>	Integer	Institution of faculty

Table 5: Grade

<b>grade</b>		
<b>COLUMN NAME</b>	<b>DATATYPE</b>	<b>DESCRIPTION</b>
<b>id</b>	Integer	Primary key of the table
<b>value</b>	Integer	Grade equivalent
<b>grade</b>	Character varying	Statement of grades
<b>description</b>	Character varying	Grade remarks
<b>fail</b>	Boolean	Test for Failure

Table.6: Level of Study

<b>level_of_study</b>		
<b>COLUMN NAME</b>	<b>DATATYPE</b>	<b>DESCRIPTION</b>
<b>id</b>	Integer	Primary key of the table
<b>name</b>	Character varying	Levels of study
<b>previouslevel</b>	Integer	Level before current level

Table.7: Result

<b>result</b>		
<b>COLUMN NAME</b>	<b>DATATYPE</b>	<b>DESCRIPTION</b>
<b>id</b>	Integer	Primary key of the table
<b>Cgpa</b>	Double precision	
<b>total_units_offered</b>	Integer	Total number of units offered by student
<b>Subj_grade</b>	Integer	Defined the grade of each subject

Table 8: Semester

<b>semester</b>		
<b>COLUMN NAME</b>	<b>DATATYPE</b>	<b>DESCRIPTION</b>
<b>id</b>	Integer	Primary key of the table
<b>name</b>	Character varying	Semester of study
<b>session</b>	Integer	Academic session reference
<b>type</b>	Integer	Semester type

Table 9: Sex

<b>sex</b>		
<b>COLUMN NAME</b>	<b>DATATYPE</b>	<b>DESCRIPTION</b>
<b>id</b>	Integer	Primary key of the table
<b>name</b>	Character varying	Sex

Table 10: State

<b>state</b>		
<b>COLUMN NAME</b>	<b>DATATYPE</b>	<b>DESCRIPTION</b>
<b>id</b>	Integer	Primary key of the table
<b>name</b>	Character varying	State of origin
<b>code</b>	Character varying	State code
<b>country</b>	Integer	Country identity

Table.11: Validation Record

<b>validation_record</b>		
<b>COLUMN NAME</b>	<b>DATATYPE</b>	<b>DESCRIPTION</b>
<b>Id</b>	Integer	Primary key of the table
<b>validator_name</b>	Character varying	Name of validator
<b>validator_id</b>	Character varying	Identity of validator
<b>Date</b>	Date	Date of validation

## 5. CONCLUSION

Realizing a project of this nature is very exciting. However, a lot of problem were encountered which if looked into, will go a long way toward reducing the tension associated with the design, construction and implementation of the project.

In spite of the constraints encountered during the implementation of this project, the aim of the project is well accomplished.

## REFERENCE

**Anigbogu, S.O.** (2000). *Computer Application and Operation First Edition*, Optimum Press (Printers, Publisher and Designers), Awka, Nigeria.

**APTECH Team** (2005), *Java Simplified – 1*. Aptech Limited, Mumbai, India.

**Blementhal, S.C.** (1999). *Management Information System*, Hall Inc, Eaglewood, New Jersey.

**Brian K. Williams & Stacey C. Sawyer** (2003). *Using Information Technology: A Practical Introduction To Computers & Communications*. McGrawHill Irwin, Montreal.

Ukem, E. et al. (2012). A software application for university students results processing. *Journal of Theoretical and Applied Information Technology*, Vol. 35 No.1:10.

- O. Ukem & E. O. Onoyom-Ita** (2011). “A Software Application for The Processing Of Students Results”, *Global Journal of Pure and Applied Sciences* Volume 17 No. 4.
- Eloba, P.C** (1998). *Computer in School Record Keeping Technical Education*, Ekon Press. Ikeja, Lagos State.
- A. Ofoegbu** (2009). “Development of a Computer Programme to Calculate Students GPA and CGPA Using Java”. A final year project in the Department of Physics, University of Calabar, Nigeria,.
- French, C.S** (1992), *Computer Science*. Fourth Edition DOUBLE PRECISION, Webstar Publication, Ltd Aldine Place, London.
- Curtis & G. Longworth** (1998). *Guide to Software Engineering Paradigm*.
- Kola Adeyemi & Austine Osunde** (July 2005). “An Assessment of the Academic Achievement of Students in Two Modes of Part-Time Programme in Nigeria” in the *International Review of Research in Open and Distance Learning*.
- Moses E. Ekpenyong** (September – December), 2008. “A Real-Time IKBS for Students Results Computation”, *International Journal of Physical Sciences (Ultra Scientist of Physical Sciences)* Volume 20, Number 3(M).
- Duan R. and Zhang M.** (2010). Design of Web-based Management Information System for Academic Degree and Graduate Education.
- Bharaagoudar S. R., Geeta R. B. and Totad S. G.** (2013). Web-based Student Information Management System. *International Journal of Advanced Research in Computer and Communication Engineering*, (Vol.2, Issue 6). Retrieved from [www.ijarce.com](http://www.ijarce.com) .
- Hemn B.B. and Wu Fei** (2014). Student Management Information System. *International journal of Computer Engineering and Technology(IJCET)*, Vol. 5, Issue 2.
- Mariusz Czerniak** (2010). Student Management Information System for Polish Universities at its tenth anniversary. Warsaw: MUCI.
- Ajay S. B. and Abhishek K.** (2012). Student Database Management System.
- <https://www.wikipedia.com/> Student Information System.**
- Bhatt J., Jain R., Kadge S. and Parate P.** (2016). Result Generation System for CBGS Scheme in Educational Organization. *International Journal of Research in Engineering and Technology (IJRET)*, Vol. 5, Issue 2 from <http://www.ijret.org>

**Nmaju O., Nwachukwu E. O., and Ugwu C.** (2013). A Novel Web-based Student Academic Records Information System. *West African Journal of Industrial and Academic Research*, Vol. 7, No. 1

**Okonigene, R.E., Ighalo, G.L and Ogbeifun, E.** (2009). Developed personal record software . *The Pacific Journal of Science and Technology*, 9(2):407-412.

**Pratap, K.J. M.** (2010). *Software Engineering (A Lifecycle Approach)*. NEW AGE INTERNATIONAL (P) LIMITED, PUBLISHERS, 4835/24, Ansari Road, Darya-ganj, New Delhi - 110002 Visit us at [www.newagepublishers.com](http://www.newagepublishers.com). ISBN (13) ; 978-81-224-2846-

