Implementation of a Web System for College of Education Administration

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Abstract

Colleges of education especially the Federal College of Education, Pankshin, usually gives two weeks period for registration of students whenever a session begins. These two weeks for registration has not been enough. Lecture hours were lost because registration of students and lecture went together. This is because the registration exercise is being handled manually. This paper will discuss how a new system will be developed to handle this exercise that is being handled manually. The system will manage the student from the time of purchasing an entry form from the college to the time the student finishes from the college. The system is a web based andl provides an online application form, WAEC and NECO authenticatio result presented by the prospective candidates, process the admission, provide a platform for all the fee payment, course registration, calculate GPA and CGPA at the end of every semester and session respectively and compute the transcripts on demand. With this new system students will complete the semester and session registration within the period allocated for it. There will be no need for extension of time and there will be no lecture hours lost.

Key Words: WAEC, NECO, CGPA, course registration, transcripts, online application

1. Introduction

The first step in the admission process is the purchase and completion of application form from the College. When admission is offered, the student needs to register his or herself in the departments where the admission was given. Registration entails paying of all the necessary fees, filing all the necessary forms and submitting these forms to appropriate place after duly signed. It is then that the student is considered to belong to a given department of the College.

Federal College of Education, Pankshin is made up of 28 (twenty eight) departments. A semester lasts between 14 (fourteen) to 16 (sixteen) weeks. Within this period, registration , lectures, revision and examination take place. Two weeks are slated for registration but because it was not enough, students always sought for an extension of the time. The extension of registration period definitely affects the whole semester. Below is the process of manual registration.:

i. Students proceeds to admission office with copies of their academic credentials for screening to confirm whether or not the student is qualified. The admission office will perform this task.

ii. The cleared student will proceed to the bursary with his clearance form to pay an acceptance fee and get a receipt.

iii. The student will then present the receipt of acceptance fee to the admission officer to collect his admission letter and schedule of payment.

iv. The student proceeds to the college bursary to pay the required fees.

v. The student after paying school fees will proceed to the school to obtain the course registration form.

vi. The student then proceeds to his department to obtain the required courses to offer, their status and their credit units. It is worthy to note here that a student of the College of Education belongs to three departments. The two departments where he combines and then

education e.g English or French students belong to English department, French departments and Education departments.

vii. After filling the course registration form, the student will present the original copies of the three to the HODS for their endorsement.

viii. After endorsement by the three HODS, he presents the signed form to the school secretary and admission officer for their endorsements.

ix. He then photocopied the endorsed form into 5(five) places and then submits the duly signed form to admission office and the various HOD's.

It is only when this processes are completed, that a student can be considered registered and qualified for lectures, tests, assignments and examinations. There are always a long queue in the admission office, bursary, school secretary's office and HOD's office because everybody wants to beat the dead line of two weeks given for registration.

Because of the problems associated with the manual process of registration, calculations of GPA, CGPA and transcripts, the paper looks into how software could be developed to manage students from the time of purchasing an entry registration form to the time he finishes his program and transcripts issued if he so demands.

The software will be able to:

i. Provide an online application form
ii. Query WAEC/NECO database to authenticate the credentials presented.
ii. The student will be able to pay acceptance fees, school fees and other fees without queuing up in the bursary.
iii. The software will be able to issue a Statement of account to the Bursar or the Provost of the college on demand.
v. The software will calculate GPA and CGPA (Grade Point Average for semester and Cumulative Grade Point for sessions) respectively.
vi. The software will issue transcript at the completion of the program on demand.
vii. The software will produce an updated information on student performance on request..

2. 0 Literature Review
Software Development Life Circle

This section discusses the early works on software developments. Since its discovery in the early 1970s, software engineering has received scholarly treatment by several computer scientists. Most specific to our needs is the contribution of Mynath (1990) that deals with the application of software engineering principles and techniques to an on-going student's project, especially web application. Derek (1979) rather explains the production of quality software – software that delivered on time and within budget that satisfies all requirements. Ince (1988) attempts to explain why software engineering is the most challenging technical activity the human race has ever carried out and why unlike other engineering discipline, it is taught with certain problems.

Every software development starts with accurate definition of the problem for which a solution is sought. Most authors subscribed to the experience we equally had that this stage constitutes the most critical and difficult stage of the software development life circle (SLDC) Kruse (1989) stated that the hardest single part of building software system is deciding precisely what to build. No other part of the conceptual work is as difficult as establishing the detailed technical requirement, including the entire interface to people and machines and other software system. No other part of the work so cripples the resulting system if done wrong. No other part is more difficult to rectify later.

Ideally, the problem is analyzed and expanded to produce the system specification which is stated in more formal document known as statement of the system scope. Some software puritans even insist that this specification be made in the only medium that has offered a high degree of precision – Mathematics (Ince 1988).

2.2 Web Application

A web application is an application that is accessed over a network of computers such as internet or intranet. The term may also mean software application that is hosted in a browser controlled environment Chaffee (2000). Web applications are popular due to ubiquity of web

browsers, and the convenience of using web browsers on a client. The ability to maintain a web application without distributing and installing software on potentially thousands of client computers is the key reason of their popularity, as is the inherent support for cross platform compatibility.

In earlier computing models, e.g. in client, server, the load for the application was shared between codes on the server and code installed on each client locally. In other words as Davidson and Coward (1999) stated, it is an application that had its own client program which served as its user interface and had to be separately installed on each user's personal computer. An upgrade to the server-side of the application will typically also require an upgrade and the client-side code installed on each user work station.

At this stage of web development, each individual web page is delivered to the client as a static document, but the sequence of pages could provide an interactive appearance, as user input in returned through web form element embedded in the page make up. In latest development, client side scripting languages allows programs to add some dynamic elements to the user interface that ran on the client-side. So instead of sending data to the server in other to generate an entire web page, the embedded scripts of the downloaded page can perform various tasks such as input validations, or show/hide parts of the page.

2.1.1 Web structure/architecture

Applications are usually broken into chunks called "tiers", where every tier is assigned a role. Peterson (2000) explained that traditional applications consist of only one (1) tier, which resides on the client. Web applications lend themselves to n-tiered approach by nature. Though many variations are possible, the most common structure is the three-tired application. The three tiers are called presentations,

4.0 Design of The Software

In accordance with the techniques of modern software development, this stage was modularized into two activities. They are the user interface design and the detailed design.

application and storage. A web browser is the first tier (presentation) an engine using some dynamic web content technology such as (PHP) is the middle tier. (application logic) and data base is the third tier (storage). The web browser sends request to the middle tier, which services them by making queries and updates against the data base and generates a user interface. Extorsey (2007) has a different name for the three tiered architecture of the web. He called it presentation layer, function layer and the data layer.

2.3 School Administration Software

This is an idea of creating computer software that will help the administration carry out their tasks. There are more than 250 (two hundred and fifty) school administration software that exist in he world today according to Julie (2006). Some of the school administration software is designed to manage relationship between student's classes, instructors, prospects, curriculum and more, like power vista Roll Call, Johnston (1999).

3.0 Methodology

This section describes the methodology adopted for the development of the software for managing colleges of education. The methodology deployed for the development of this software is the Structure System Analysis and Design Methodology (SSADM). This methodology is encapsulated in the following steps:

1. Problem identification
2. Organization of federal college of education Pankshin
3. Methods of data collection
4. Brief history of the college
5. Present procedure for registration
6. Weaknesses of present registration method.

4.1 The user interface

The user interface specifies how the software system is seen and used by the user. It is designed using the menu selection interface style. Some of the interfaces are pictorially presented below:

i. The home page: This is the home page of the federal college of education, Pankshin and it is presented particularly below:
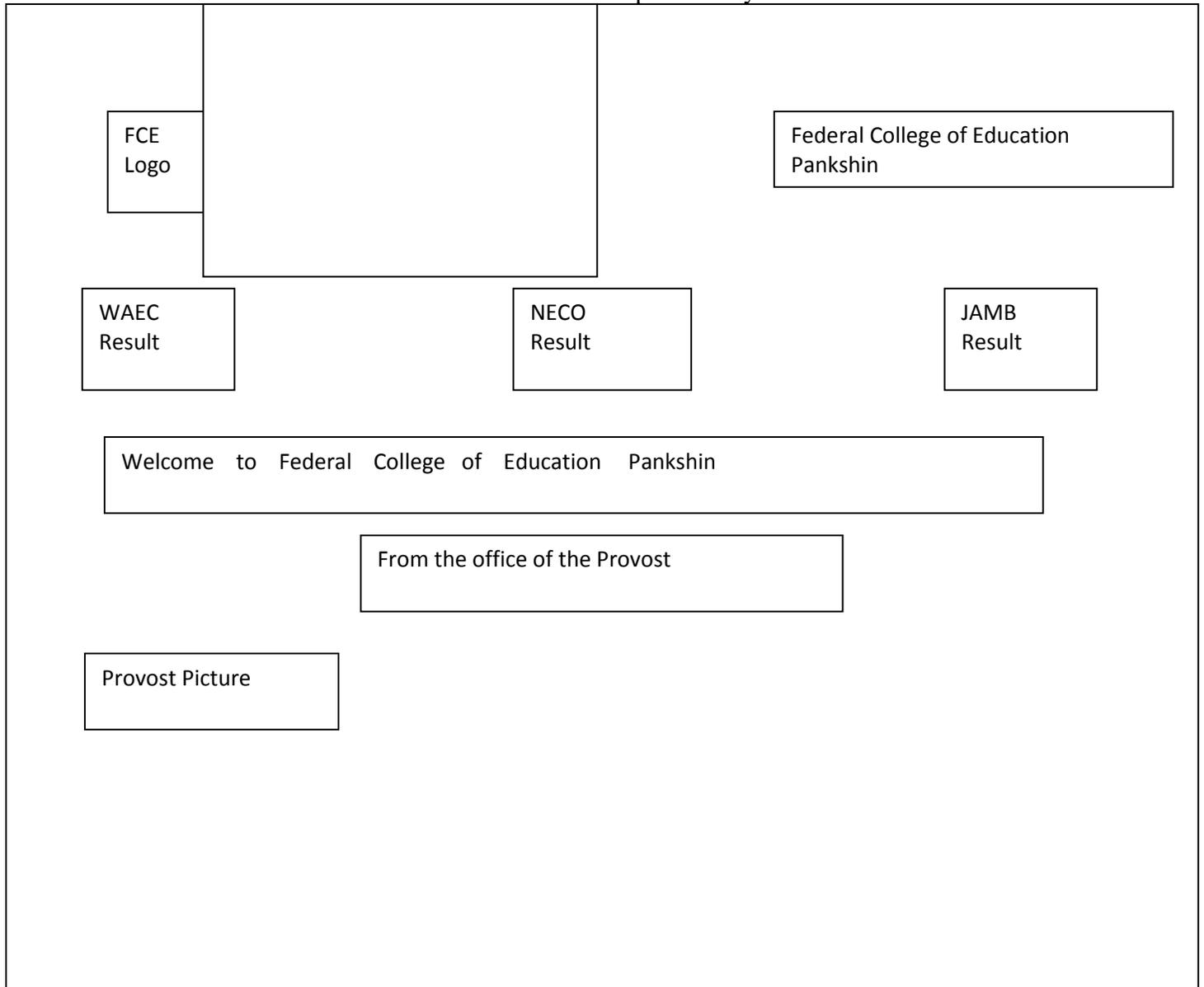
FCE Logo		Federal College of Education Pankshin
WAEC Result	NECO Result	JAMB Result

Welcome to Federal College of Education Pankshin

From the office of the Provost

Provost Picture

Fig 1: FCE Pakshin Home Page

ii. Portal log in

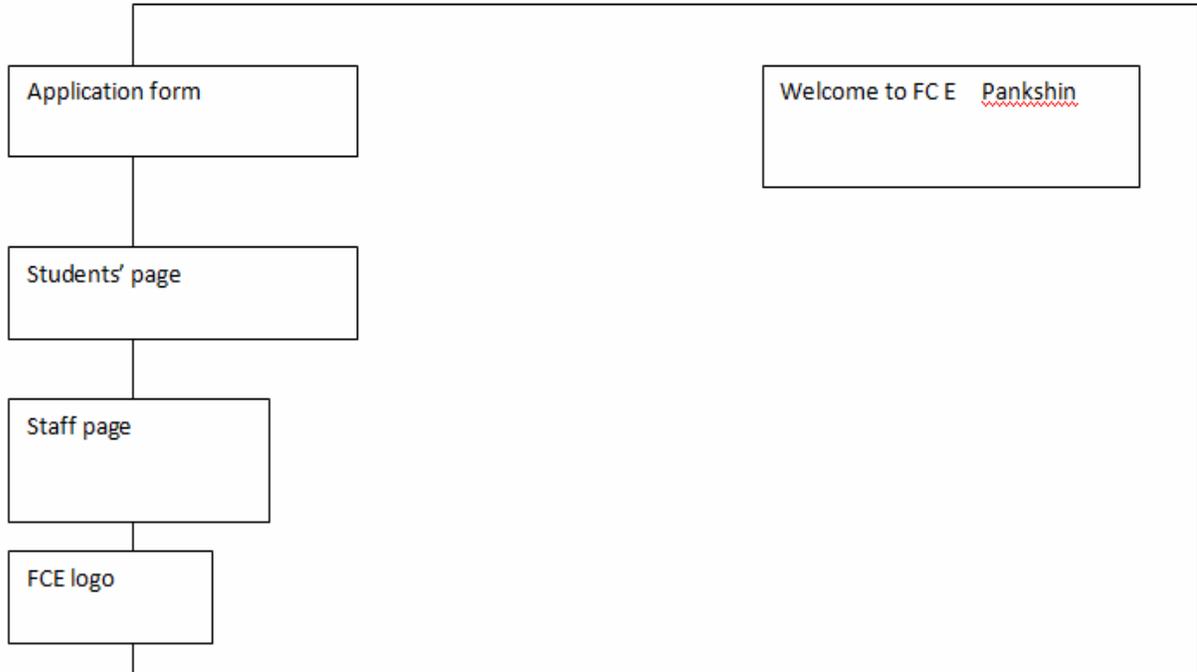This is portal log in for entry application, students check admission, students page and staff page.
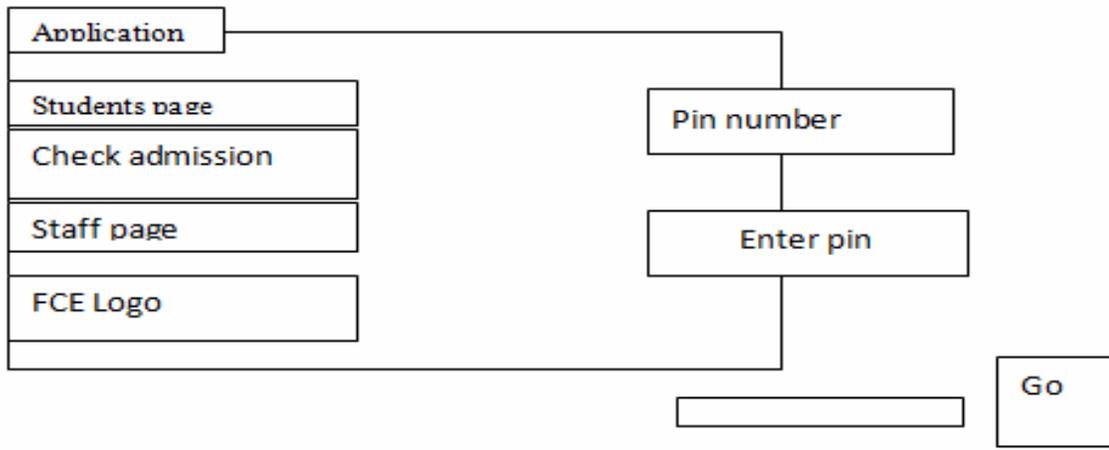
Application form

iii. Application form

When you select the application from the menu, it will open to an interface where you will be required to fill in the pin number that will display the admission form. The interface is presented pictorially below

:

Fig 2: FCE Pankshin portal log in

Fig. 3: Application form user interface

iv. Check Admission

The check admission interface is where the applicant who has filled the form will be checking to know if he is offered admission or not. In other to log in, the applicant will have to supply the pin number and then a form generated after filling and submitting the application form:
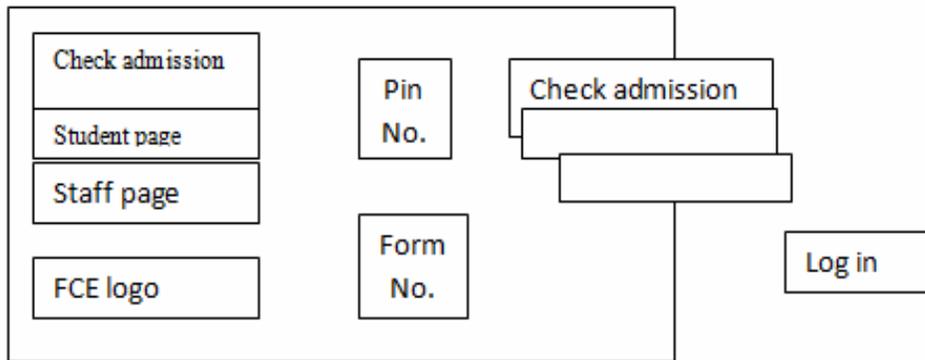

Fig. 4: Check Admissions Interface

If the pin number and form number are correct, the applicant will be able to see his or her admission status i.e if no admission if offered, the reason for no admission will be stated.

v. Student Page

If the student gets admission he will be able to access the system. A user interface is provided for the student will either use his matric number or form number and a password to log in.

At this level, if the students log in, he will be able to access the following students clearance i.e authentication of his credentials, school fees, room set up, course registration, result processing, course assignment etc. the interface is shown pictorially below:
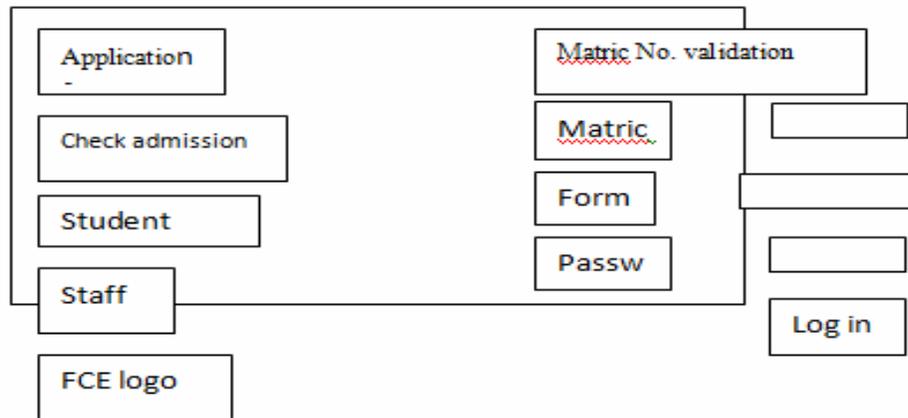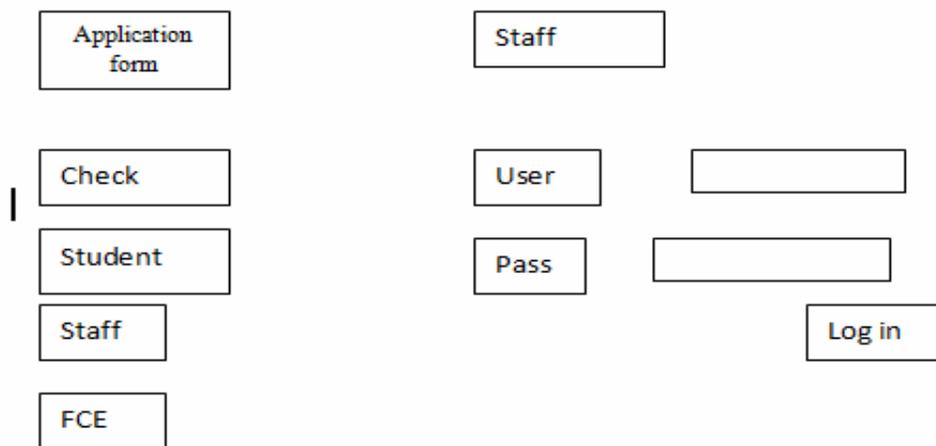

Fig. 5: Students page user interface

vi. Staff Page

At this page staff is allowed to log in using an assigned username by the administrator and a password. Staff will be able to upload their results for students to see, they will also be able to perform any tasks that students might require. The interfaces are shown below:

Fig. 6: Staff page user interface

4.2 Detailed Design

Here, the detailed design of the software is presented using pseudo code. It is independent of any program language. Pseudo code allows the designer to focus on the logic of the algorithm without being distracted by details of language syntax. It is also designed in modules.

The modules presented are the application form module.

Connect to database

Enter the program of study

PRE-NCE;   NCE;
CERTIFICATE COURSE

Enter department

First choice; second choice; third choice

Enter name

Surname; first name; second name

Enter

D. O. B
Gender
Marital status
Nationality
State
LGA
District
Home town
Telephone
Religion
Contact address
Permanent home address
Next of kin
Next of kin address
Next of kin telephone
O'level sitting

1 sitting; 2 sitting

Subject passed

Subject 1; subject 2; subject 3; subject 4; subject 5; subject 6; subject 7; subject 8; subject 9
Grade
Grade 1; grade 2; grade 3; grade 4; grade 5; grade 6; grade 7; grade 8; grade 9
Exam body

WAEC; NECO; IDAE/NECO

Exam number
Exam date
Upload passport
Upload signature

Enter hobbies
Enter e-mail address
Enter your password
Declaration

Submit

If all the necessary information are correct;

Accept

Else

Do not accept

4.3 Coding

The language for coding is PHP.PHP is a general purpose scripting language that suited for web application. PHP scripts are completed at run time by the PHP engine, which increase their execution speed. PHP only passes code within its delimiters. Anything outside its delimiter as sent directly to the out put and is not passed by PHP. The most common type of delimiter are the open and close delimiters.

<?PHP and /?>
Or
<? And /?>

The database used is the MySQL.

5.0 Conclusion

A portal with backend software and data base has been developed for the College to solve the problems students encounter during registration exercise at the beginning of a semester. It has been designed to assist students and staff of the Federal College of Education, Pankshin. The work demonstrated the flexibility of developing a large software system with a modern user interface, following the technique of modern software engineering language (PHP). The web engineering scripting language – PHP primarily acts as a filter, taking up from file or stream containing text and PHP instructions. Output is supported by HTML.

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