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AN AUTOMATED APPROACH TO THE DESIGN OF ONLINE CAREER COUNSELING SYSTEM

[1]NWOSU .A. AND [2]ABDULAZEEZ S.A
[1]Department of Information Technology
National Open University of Nigeria.
[2]Department of Mathematics, Statistics and Computer Science
Kaduna Polytechnic, Kaduna.
Email: crossdelina20012001@yahoo.com, ysabdul94@yahoo.com

ABSTRACT: *Due to high rate of examination malpractices, prostitution, drop-outs and vices in our tertiary institution today, one is force to look for alternative way of reducing such societal ills through effective career counseling system. Online career counseling system has emerged as a viable alternative to conventional counseling system. There are limitations to the existing career counseling approaching in Nigeria. To address these shortcomings, we have developed online career counseling suitable for deployment in any system connected to a network (intranet, internet). The research work commenced with a study and overview of career counseling. The different counseling approaches were surveyed. Some existing web-based counseling system were examined with their applicability and limitation to our peculiar environment noted. Based on our findings, a Online Career Counseling was developed to provide career counseling to candidates on the suitability or otherwise of their chosen career. The key factors identified and used in evaluating the candidate's suitable for a chosen career include: his academic achievement, his personal attributes. Most of the existing online career storage techniques rely on relation model and relational database technologies for these tasks. The mis-match of the rigid 2D tables of relational model jeopardizes the scalability of such repositories and frequently renders a repository inefficient for some types of data and queries. We have proposed a system that can store data in the XML repository. The model was finally implemented as a web-based system using baby web as web server, ASP as the server-side scripting language, HTML 5.0 as client-side scripting language and XML as the relational database.*

Keywords: Semantic Web, XML 2D, Career Counseling

Introduction

Careers guidance is a portion of guidance programme designed to assist student in their career development and career counseling is the portion of the guidance programmed involving student concerning their development. (Carolyn, 2000) Guidance and counseling of individual had been in African heritage with specialist and methods varying from one

another (Saye, 2003). The various African counseling methods as outlined (Saye, 2003) include the use of incantation, telepathy spirits and form of divinity in one form or the other. It is however, observed that the failure of such counseling methods results from poor remuneration of the counselor, continuity of the relations and expansion in the popularity of the counselor.

A Semantic Web document not only offers human understandable content but also formal semantic describing the content of the document in an automotive way. Computers essentially play a role in parsing web pages for displaying and processing jobs. They have no reliable way to draw the semantics from a page. The Semantic Web will improve the meaningful content of the web pages. It is not completely a new generation of web, but an extension to the current Web which concentrates on the need of machine understandable metadata for the web documents. There is a gap within the Web of data, on one side; XML provides a popular format for data exchange with a rapidly increasing amount of semi-structured data available.

The rest of the paper is organized as follows: Section 2 discusses related research in online career. Section 3 introduces system models such as database model, AJAX, HTML5.0, CSS3.0 and XML. Section 4 introduces system architectural design and Section 5 defines a detailed description of the proposed system. Finally, the paper is concluded with section 6.

Conceptual Framework

Most of the existing online careers Counseling System repositories rely on relational models for data storage by writing them into SQL queries and then executing them in the RDB engine. Relational models does not scale well as the evaluation of a complex query invokes many self-joins. Resulting in a cost of huge increase in storage space and decrease in the scalability and update efficiency. However it suffers storage redundancy and large overhead in query evaluation. The systems reviewed are completely alien to our youths or the target population of this country to whom this research work is intended. Also ADMISSION requirement into academic program for the various occupations as defined are different from what is obtainable in our country (e.g. WAEC, NECO, NABTEB).

System Models - Database Model, AJAX, HTML5 and CSS 3.0, XML

Most of the known web-based career counseling systems were designed around one or two communication models of computing namely the peer-to-peer model and the client-server model (Thomas, 2004). Our system, 'Career Online Counseling System' (OCCS) (Adewale, 2006c) 'three-tier architecture model' of the purpose of communication; typical of most web-based systems, according to the model, at the base of application is the database tier, consisting of the database manager that maintains the database containing the data which user create, modify and query Xpath used to provide the required functionality. The middle

tier contains most of the application logic which is built on top of the database tier and communicates data between the other tiers. The web server is ASP web server and it is running under Windows XP operating system specifically chosen to achieve fast, secured and efficient client-server communication with the database using server-side ASP functions. The coordination of all the procedures in the system is implemented using Ajax and ASP scripting language.

a. **Database Model:** Online career counseling database system is designed using XML as database with the scripting code (ASP codes) being used to generate request from user to the database system and return result of the request through the web server to the user.

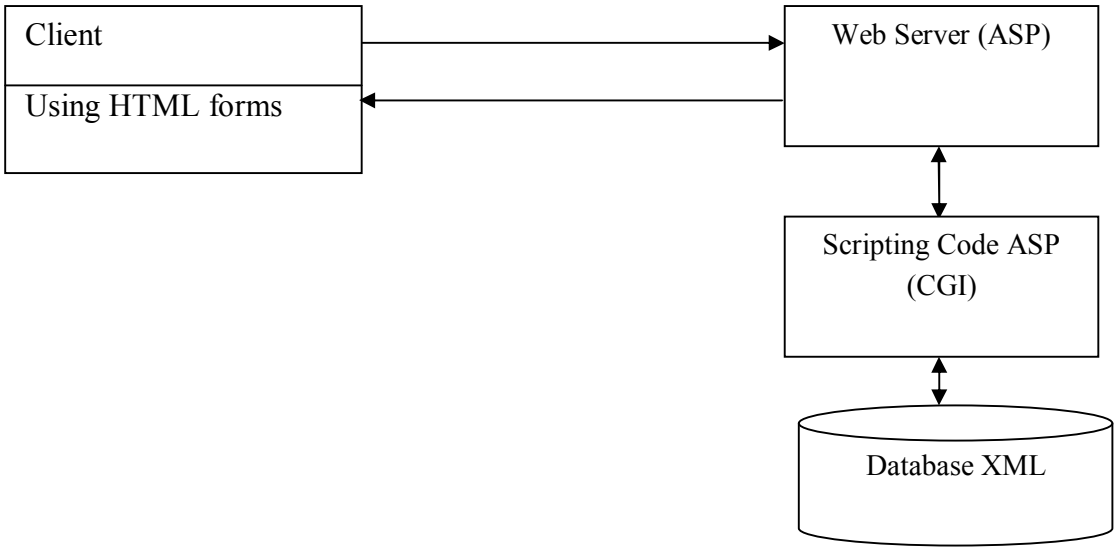

Fig 1: OCCS Database Structure

b. **AJAX**: This is an abbreviation for Asynchronous JavaScript and XML. It uses the java script XHTML Request function to create a tunnel from the client's browser to the server and transmit information back and forth without having to refresh the page. The data travels in XML format because it transmits complex data types over clear text. AJAX uses XHTML and CSS for the data presentation of the view layer, DOM, short for Document Object Model, which dynamically manipulates the presentation, XML for data exchange and XMLHttp request as the exchange engine that ties everything together.

c. **HTML5 AND CSS 3.0**: They both offers better readable codes semantically meaningful layouts. Equally offers multimedia contact using simple, meaningful and

easy- to- maintain markup. It gives the power of embedding audio, video and vector graphics into web pages without the usage of flash. HTML5 and CSS3 give better results which are compatible with the previous version of the browsers. They reduces time wasted in creating custom tools or using third – party solution.

d. XML: As the W3C standard document format for writing and exchanging information on the Web, XML (Extensible Markup Language) is mostly concerned about syntax. XML is textual language quickly gaining popularity for data representation and exchange on the Web. XML Schema is a standard for describing the structure of an XML document. Documents that conform to an XML Schema are called schema-valid (Zhou and Yuqing, 2010). Nested, tagged elements are the building blocks of XML. Each tagged element has a sequence of zero or more attribute/value pairs, and a sequence of zero or more sub elements. These sub elements may themselves be tagged elements or they may be "tag less" segments of text data. XPath is a declarative query language for XML that provides simple syntax for addressing parts of an XML document (Carroll, *et al.,* 2004). XML is used to store and transport the data between different applications. XML is very flexible and can transfer the data over http, ftp, or through email.

System Architectural Design

a. The candidate fills in the registration form by entering: name, gender, email address, state.
b. The candidate selects qualification type from a list such as. SSCE, NECO, NABTEB.
c. He selects from multiple list box all subjects passed at credit level.
d. If required subject entered is accepted based on the requirement, it proceeds to another interface if not counseling is done by asking candidate to get the required subject.
e. Candidate clicks proceed.
f. Candidate login using email and password.
g. He selects his choice of career (profession) from a list.
h. He select from the list, those areas he possesses (attribute).
i. Candidate clicks proceeds. System provides counseling information to the candidate based on all the data he has provided and this is based on the required attribute for the chosen career.

PROPOSED FRAMEWORK

The proposed system is designed to map from schema to UML class diagram and from UML class diagram to ODL (Object Definition Language) and from ODL to XML schema and XML documents that stores in an XML repository and XPath queries to be evaluated against the

XML documents using the latest XML query evaluation techniques. Although our work involves storage of data using XML techniques to enhance storage efficiency, the XML-based data management and query evaluation approach which is scalable and capable of supporting high query performance for XPath queries.

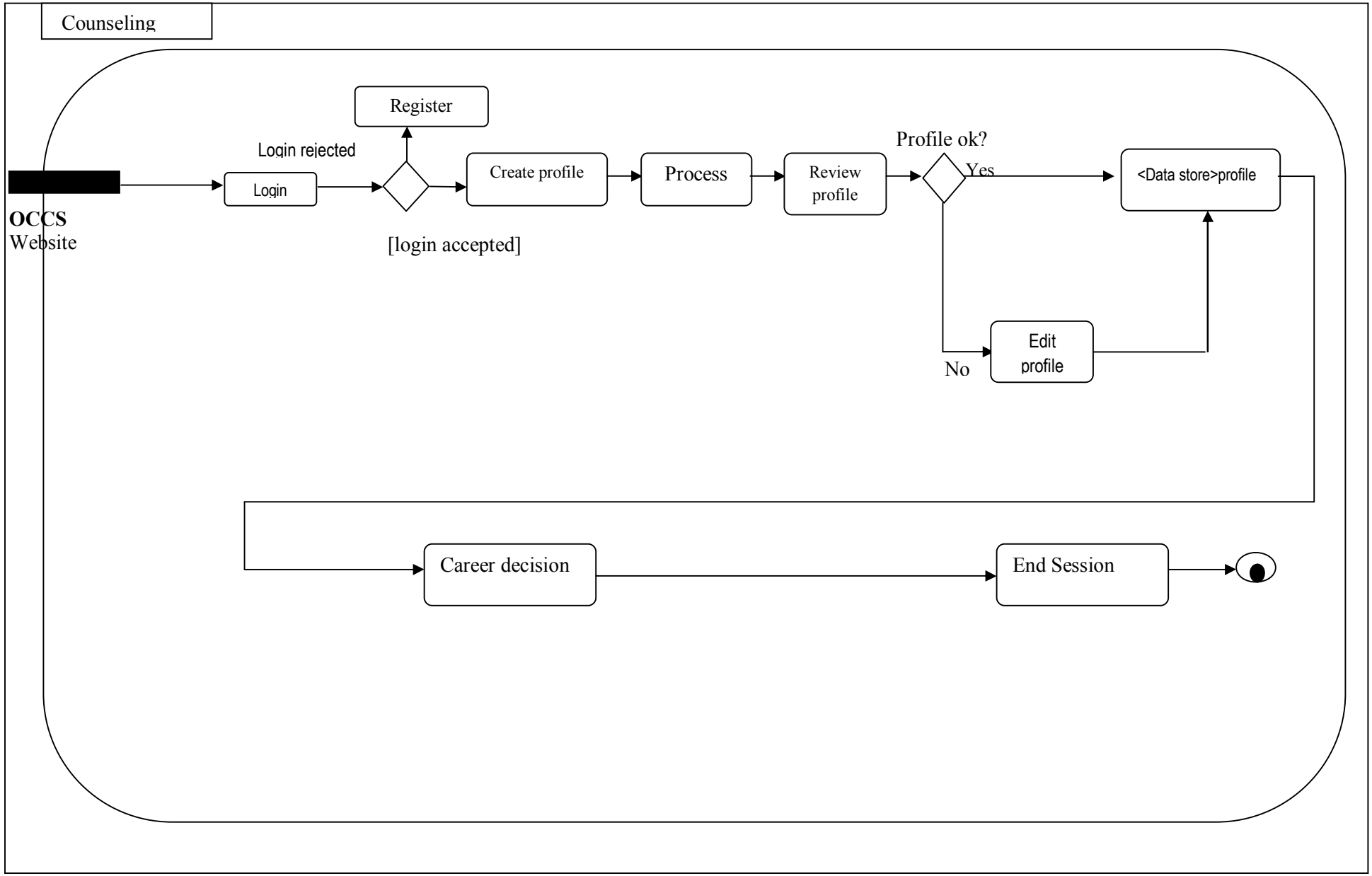

Fig. 2: Online Career System Activities Diagram

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Conclusion

This paper examined the current aspects of career counseling systems in use and identified areas in which each system has failed. An online Career Counseling System (OCCS) was developed to provide career counseling to candidates on their suitability or otherwise of their chosen career. Key factors identified and used by the system in evaluating a candidate's suitability for a chosen career include his academic achievement and his personal attributes required for the career.

To answer the increasing demands on repository, we carefully studied the existing data management systems, identified the preferred properties of an repository and proposed to take advantage of the latest XML data storage. This system identified the mapping from data to UML class diagram and UML class diagram to XML document. In addition, this approach is efficient for time consuming in translation to XML documents for supporting Semantic Web applications in various domains.

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Biographical Note: Abdulazeez, S.A. (PhD) is a Principal lecturer in the Department of Mathematics, Statistics and Computer Science, Kaduna Polytechnic. He holds a Master of Science Degree in Statistics from the University of Ibadan, bagged his PhD degree from the University of Ilorin, Ilorin, Nigeria.

Biographical Note: Nwosu Ambrose is an instructor in Air force Secondary School Kaduna in the Department of Science, Air force secondary school Kaduna. He holds a Post graduate diploma in computer Science from Ambrose Ali University Ekpoma. Also holds a Master of Science Degree in Information Technology from National Open University of Nigeria.