WEB-BASED REGISTRATION SYSTEM WITH ONLINE EXAMINATION

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ABSTRACT

In this paper present the state of the art of web database system, client-server architecture that makes automatically exam generation and marking system. In this system consists of a user-authenticated web site and SQL database storing all information. If the user wants to be a member, must answer the register exam. Moreover user may answer the certificate exam, and can be answering the specialized certificate exam fields. The demand for web-based examination is increasing rapidly. In addition a web site for an examination is frequently implemented, because examinations are repeatedly performed. This exam system automatically carries out multiple-choice type examinations and process the result. In this paper we studies ways of how different management role between Administrator and user. Also, this system have been examined earlier manual paperwork in the project to take advantage of already existing information, so that avoiding unnecessary implementation of input forms.

Key words: online examination, Web-based registration, client-server architecture

1. INTRODUCTION

Myanmar Computer Professional Association's member web database provides data management services, a web server provides the application services such as facilitates to download old question, generate the register and certificate exam, upload forum, modify the profiles, sending information among member via email by administrator.

A web-based examination system which conducts exams through web will reduce a large proportion of workload on examination. The self-adapted examination system is a sub-system of the Myanmar Computer Professional Association (MCPA) Web Site Application. During this user must get at least half of the total marks. The examinations are allocated to multiple choice examinations. If user answer the exam, choice the correct answer of the multiple choices, and continue the exam to finish. Our system cache the user's answer and compare with answer database and if user's answer is correct, calculate the marks and feedback the result with the marks. The use of three-tier architecture in this case allows the information transfer between the web server and the database server to be optimized.

2. RELATED WORK

Synthesis System for Web Based Examination Generation and Marking By XML, Masahiro Yamamoto, Faculty of Intercultural Communication, Hosei University. The Bharat Petroleum Corporation (BPCL) India uses online registration system. BPCL's need was to develop Web based online Fire and Safety Regulation Exam System for their employees and other personnel who are working on refinery site. Web Based Student Registration System, ECE 345 Design Project. Gary Chen and Otto Lee, TA: Ajay Patel is to provide a readily accessible and user-friendly system for student to register for classes. The Design and Implementation of Web-Based E-learning Examination System is Based on J2EE. In the course of implementing this system, J2EE system structure was studied. Also, the CELTS standard was employed as a metadata standard, and relevant standard was used to design the question pool, and set up standardization and portability question pool

structure of the examination question structure. [1]

3. SYSTEM IMPLEMENTATION

Web-based application systems are implemented with HTML. Therefore, our aim is to generate an examination describe with JSP and HTML. In order to do so, generate computer screens on the web which administrator to make an examination easily input a question and answering items into the system on the web. At this time, the system has prepared several basic question patterns. When administrator makes an examination, admin input the question and corresponding answer. The system then generates and randomized the question and examination's screen according to the input information. Administrator inputs the correct answers to the examination, Java is generated for the user, based on answering data replied by user according to the examination. Java makes marking the examination and display the result easily. User answers are maintained and record the exam count in database. Generating result is achieved by comparing with the correct answers. [2]

4. OVERVIEW OF THE SYSTEM

The system of web based examination has several functions that are Examination generation, Forum process, Updating news, member searching, Library system, Download Old Question, Update Member Profile. In examination generation has five functions. That is Initial System Screen, examination generation, correct answer input, answer input, and marking rules. This role is assigned to the person who is administrator in the system and responsible for the configuration and maintenance of the system.

4.1 Initial System Screen

When the system starts, a Home Page is generated. The system analyzes the admin or member by login name and password. On the admin role screen, there are examination generation, answer input, correct answer input, marks count. User wants to register, user enters

the name and pushed signup button, an Examination screen is generated.

4.2 Examination Generation

The system generates an examination building screen on the web page. In this system, contains two kinds of examination, registration and certificate exam. Each exam type use multiple selections question type. First after that, admin describe questions. The system generates and randomized the question, after that question and answer with check box are generated in exam section.
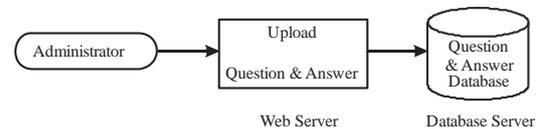

Figure 1. Upload Question

4.2.1 Update questions & answers
Administrator wants to add new question to the examination, Administrator must input the question and its answer. If administrator wants to update the question, admin also must update the Question and Answer. If Admin wants to add more question for exam, admin must upload the new question and update question counts in randomize function. In this system monthly update the question by admin. Admin wants to assign some question as old question, select the question and press Move button. Member can download old question, according to monthly.

4.2.2 Correct Answer Input
Correct answer to an examination is performed according to the screen, generated by Exam Generation. This is the same as the traditional web-based applications. When admin test answering an examination replies to questions, based on answer on the screen, a correct answer table is modified in MCPA database. The correct answer for the question is provided by the administrator while creating a new question. If the administrator checks the answer and question, by using the show all question with answer.

4. 3 Answer Input

If a user wants to answer an examination, Exam Generation function generates that Exam. For user to answer an examination they reply to questions based on this screen. Exam question type is Multiple Selections, several user information and voting results corresponding to the answer items are generated. The system provides the question and the system store the answer. And compare with the correct answer table in MCPA database.

4.4 Marking

After the user finish answering the exam, when the finish button in Exam Screen is pressed, the marking process starts. Marking is performed by comparing the answer input by user and compare with answer ID in answer database, it is correct or not. After comparing process, sum all marks, and also check the result of the user's marks, and display the result of user pass the exam or not.

4.5 Requirement of web-based System

The requirements supplied in the project description for the web-based system can be seen as following.

Main system: The system functions should be implemented using Java as programming language. It should be possible to change the system behavior by adding or removing functions.

Interface: A human interface to the system consisting of HTML web pages must be implemented. All interaction with the system should be possible using a regular web browser. The interface should be intuitive, straightforward and easy to use even for a person with limited computer experience.

Notifications: Users should be notified via e-mail as soon as there are new tasks available for them to perform in the system. The e-mails should be automatically generated by the system to achieve an effective workflow.

Security: A certain degree of security is required from the system since it will be handling important information. This should be considered in the design and implementation.

User types: Users with different responsibilities and tasks, like teachers and students, will use the system. To control which actions that can be performed by which user, it will be necessary to define different user types.

Data storage: All information that will be repeatedly processed by the system should be stored in a SQL database.

Logging: All activities that change the state of the system and all system errors should be logged. [3]

4.6 Forum Process

The forum is main place of the knowledge sharing places. Forum in this system is divided by category. The member can go to forum that member is interesting category. The system administrator can post the new forum category, update, and remove the unwanted forum category. Forum pages can view by admin.

4.7 Member Searching

An additional feature is indexing, search and retrieval. System indexes all data within an organization. Individuals can then search for data using keyword, which system retrieval.

4.8 Information Generation

If the system has the information to retrieve such as seminar date, ICT exhibition, the system generates the information and send to the member via email, also post to the news page of the system.

5. DISTRIBUTED DATABASE OF THE SYSTEM

Interactions between the server and the client involve retrieving sets of records, which puts fewer loads on the network than single-record

transactions. Database servers are sometimes referred to as SQL ENGINES in that their only interaction with client machines is through basic SQL commands to accept and produce data. In a true distributed database, the data itself is located on more than one machine. There are various possible approaches, depending on the needs of the application and the degree of emphasis placed on central control versus local autonomy.

Database use cause of advantages such as reduce data communications costs by putting data at the location where it is most often used, aggregate information from different sources, provide a more robust system, build in extra security by maintaining copies of the database at different sites. The System is composed of five functional modules, Initial System Screen, Examination Generation, Correct Answer Input, Answer Input and Marking and Displaying as shown in Fig 2.
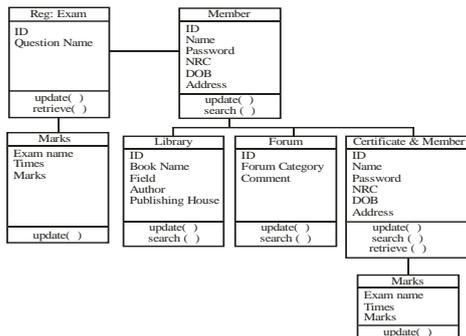

Figure 2. Database Design of System

5.1 Initial System Screen of MCPA

When the system runs, the Initial System Screen (Home Page) is generated. On the screen user login created and there can be entering admin, and user.

5.2 System Screen of Upload Question

While inserting the Question and Answering, select the check box of the Correct Answer Input. The type of question is Multiple Selection; the voting button corresponding to the correct answer is checked. After that, voting results corresponding to the answer item is generated.
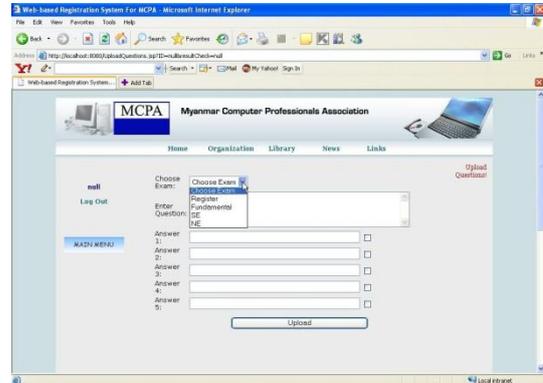

Figure 3. Upload System Screen

5.3 Marking and Displaying Result

When pressed the Finish button at the user role, the Marking process starts. The Marking process is performed by comparing the Correct Answer in Correct Answer Table with user answer cache. It is easy to make mark because they are in same database with different table. After the marking process is complete, a result is generated and displays the user with user's marks. Displaying the marking result is attained on marking function.
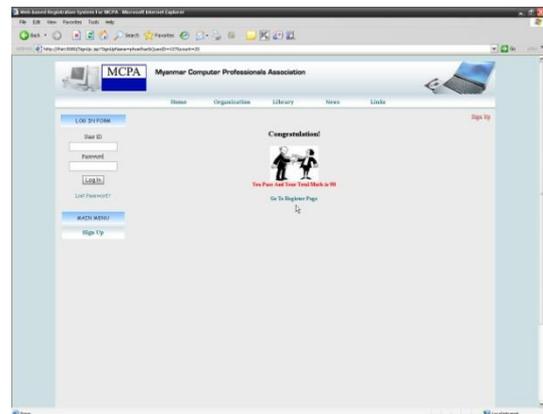

Figure 4. System Screen of Marks and Result

6. SYSTEM CONFIGURATION

The Synthesis System is composed of a browser, a WWW server, the synthesis software and a file system as shown in Fig 6.
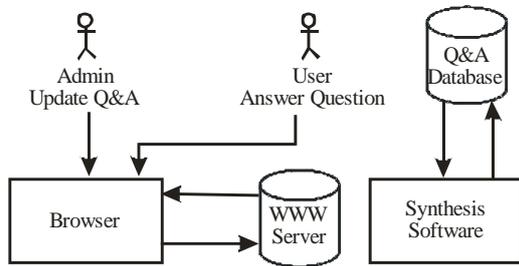
Figure 5. System Configuration

Browser: The browser is used for displaying the Initial System Screen, Examination Generation, Correct Answer Input Screen, Answer Input Screen, and Marking Results. It is a conventional browser, e.g. Internet Explorer.

WWW Server: A WWW server stores the Synthesis Software and SQL store the MCPA database. The Apache Active Server and SQL server is used.

Synthesis Software: The Synthesis Software is the nucleus of this system and has five functional modules as previously described. It is written with a JSP, SQL, CSS (Cascade Style), and script language. [2]

7. THREE TIER ARCHITECTURE

The three-tier model is more advanced and flexible than the traditional two-tier model because the separation of the application logic from the client and server gives application logic processes a new level of autonomy. The processes become more robust since they can operate independently of the clients and servers. Furthermore, decoupling the application logic from the data allows data from multiple sources to be used in a single transaction without a breakdown in the client/server model. Standard Web applications are the most common examples of three-tier systems. The first tier is the user interface, provided via interpretation of HTML by a browser. The embedded components displayed by the browser reside in the middle tier; these could be Java applets, ActiveXs, or some other kind of entity that provide the application logic pertinent to the system. The

final tier is the data served from a Web server. The development of efficient and reliable systems with more than three tiers is still an imprecise science, but research in distributed computing continues to increase the availability and usefulness of such systems. [4]
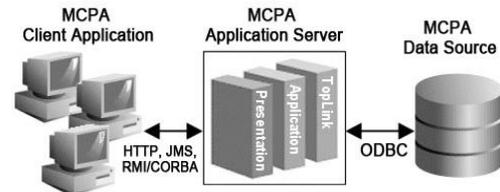

Figure 6. Three Tier Architecture

The three-tier Web application architecture offers the following advantages: High performance, lightweight persistent objects, High degree of flexibility in deployment platform and configuration. [4]

8. CASE STUDY

This system used client / server architecture. MCPA has many duties and responsibilities. My system is the web based registration examination of MCPA among of MCPA processes. User can answer the Online Certificate Exam, sponsored by MCPA. Current system of MCPA Exam type is paper based. This system reduces the time consuming and no need to wait to know the result. This system feedback the result immediately and inform the user needed for other knowledge's via email. Provide the seminar and other IT information to the member via email.

9. SYSTEM ARCHITECTURE

This system uses three-tier-architecture. The admin input the questions; store the question in the database. The system provides the question if the user answer the exam. Server session has share access, so that, the many users can access, update the member database at the same time without waste of time.
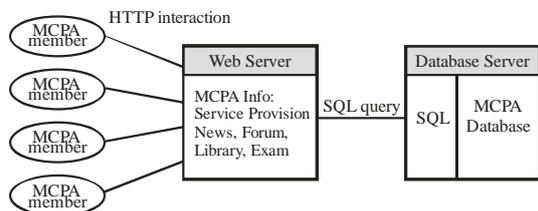
Figure 7. The distribution architecture of MCPA online-exam system

The essential problem with a two-tier client-server approach is that the three logical layers – presentation, application processing, and data management – must be mapped onto two computer systems. Three-tier client-server architecture, the presentation, the application processing and the data management are logically separate processes. A single server can run both the application data management as separate, logical servers. It is relatively straightforward to separate the application processing and the data management and execute these on separate processors. The MCPA web server provides the application services such as facilities to generate examination, answer certificate exam, update profile, upload and download question, member searching, library process, etc. The three-tier can allow transfer information between the web server and the database server to be optimized. Three-tier client-server architectures that makes distribute the application processing across several servers are inherently more scalable than two-tier architectures. And Network traffic is reduced. [5]

10. CONCLUSION

Nowadays, creating a web site to publish on the web by using internet is more and more popular. The fundamentals of browsing information, inserting and searching are explored. At present, all code work of Web-Based Examination System has already been accomplished. As a result of this system, member can be made in a timely manner without waste of time. The complete facilities and extra curricula activities provided by the educational center can be seen in this system. Email facility is also given to get more inquiry. All of the member by using the forum of our system so can get the IT

information and other knowledge from anywhere, anytime. Our examination system uses multiple choice exam type. As a result, implementation time and costs are reduced drastically. If more different types are required, it is possible to easily extend the system. This function needs to be improved. This is a prototype system. User interface is to be improved for practical use.

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