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USE OF CLOUD COMPUTING FOR DEVELOPMENT STANDARDIZED TEST FOR EQUIVALENCY QUALITY ASSESSMENT AS DETERMINANTS OF SCHOOL GRADUATION IN THE NATIONAL EXAM SYSTEM FAIR

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Abstract

Issues around National Exams (Ind; Ujian Nasional/UN) is still the main problem in education that spawned a lot of controversy, one of which is about the method of determining graduation. The final value for the determination of graduation obtained from the combined value of school subjects tested nationally and value the UN, which is weighted 40% of the value of school subjects tested nationally and 60% of the value UN (Regulation of the Minister of Education and Culture of the Republic of Indonesia Number 3 in 2013). The problem that then arises in this regard is the lack of equality of quality assessment used for assessment in school, so it can not guarantee the quality of the justice due to differences in a given test. It is very urgent to find a solution, because the value of the school is used also in the new admissions system (SNMPTN) invitation. The problem is very urgent to find a solution is to produce a standardized assessment system through school equivalency exam quality using equiting process and question bank. In most large-scale testing programs, the preparation of similar tests which were extremely important. This should be done for the rapid treatment in the event of a leak test and to compare the results of the test participants using different tests such. This activity can be done using the response theory item (item response theory). Due to the widespread use of computer technology, the utilization of virtualization as cloud computing has provided opportunities for schools, teachers and students to interact with the server to access facilities, virtual desktop and applications without having to invest and maintenance independently. It is becoming an increasingly easy opportunity to do as the development of data networks increasingly varied and widespread.

Key words: standardized tests, graduation determination, equalization problem

INTRODUCTION

National Exam (NE) has led to a prolonged controversy that still leaves a number of issues and petanyaan interesting to pursue. The controversy was more prominent in the presence of various problems in the NE in 2013, especially high school/K, such as ; delay national exam in 11 provinces, about the packet delays, shortage of question paper and answer sheet, packet switched subjects, poor quality paper, scattered national exam, can not follow because dealing with the law, the school did not get a question and answer sheet, material no exam as scheduled, NE problems for students with special

needs, as well as the delivery of about one area.

Another issue that arises, and considered not fulfill a sense of justice is about how to determine the successful completion of the national examination system. Regulation of the Minister of Education and Culture of the Republic of Indonesia Number 3 Year 2013 On Criteria Graduate Students From Education Unit and the Implementation Exam School/Madrasa/Educational Equality and the National Examination, one of the article reveals that, the final value for determination of graduation obtained from the combined value of school of subjects tested nationally and Value NE, namely the 40% weighting value of school subjects tested nationally and 60% of the value of the UN. The problem that then arises in this regard is the lack of equality of quality assessment used for assessment in schools (half of 3 (three) to 5 (five) for the junior/senior high/vocational school), so it can not guarantee the quality of the justice due to differences tests are given.

Similar problems occur also in the new admissions system (SNMPTN), especially on the invitation. The government's decision to use the invitation and eliminate write lines of the National Selection State University (SNMPTN) in 2013 invited a lot of criticism, despite the write path and remain independently managed by the state university together (SBMPTN). The system was considered potentially trigger manipulation attempts massive grades at school. Although this has been tried anticipated to make the School and Student Data Base (PDSS), a database containing the track record of the school and academic achievement of students who are interested in entering state universities through the invitation. Sticking criticism is the use of school grades to date there has been no standardization of quality assessment and trigger follow- manipulation on student grades in school. This system has been criticized because it would give birth to a new form of massive manipulation in the education system at the secondary school level because the condition is not yet ready. Especially this year, enrollment quota to state universities through the invitation equated flatten when school quality, teacher quality affects the quality of the questions given in the exam are also very diverse school. This condition is different from the previous year, which is set by the accreditation status of each school, ie a school with accreditation to get 50 percent of the quota for the number of students applying to state universities, while as much as 30 percent accreditation of B, C and accreditation by 15 per cent.

Therefore, it is very urgent to find a solution, is to produce a standardized assessment system through school equivalency exam quality through process equiting and Question Bank. In most large -scale testing programs, the preparation of similar tests which were extremely important. This should be done for the rapid treatment in the event of a leak test and to compare the results of the test participants using different tests such. This activity can be done using the response theory item (item response theory). There are three assumptions that must be met in the response theory item, namely : 1) unidimensi, 2) local independence, and 3) invariance. Steps to perform activities based on the theory of the response equivalency test item, namely : 1) estimate the parameters, 2) to estimate the scale of the response theory grains with linear transformation, and 3) equate Silverback. While the design used equivalency test items according to the response theory there are three, namely : 1) the design of a single group, 2) equivalent group design, and 3) design of the anchor test. The methods are currently being developed to perform equivalency tests according to the theory of the

response items are : 1) regression method, 2) the mean and sigma method (mean and sigma method), 3) the mean and sigma method strong (robust mean and sigma method), and 4) the characteristic curve method. Based on the study of the problems above, in this enelitian, standardized assessment models will be developed based CMI (Computer Management Instructional) to ensure equality of quality assessment as determining the data base system of graduation in the national final examination and equitable SNMPTN Invitation Line.

CMI would be more useful if supported by Computer Virtualization technology has provided an opportunity for schools, teachers and students to interact with the facility to access the server, virtual desktop and applications without having to invest independently and maintenance, which is now known as Cloud Computing Technology. Cloud Computing technology is combined use of computer technology (" computing ") and the development of Internet-based (' cloud '). Cloud (cloud) is a metaphor of the Internet, which is often depicted as a cloud in computer network diagrams. Cloud Computing is also an abstract image of the presented information infrastructure as a service (as a service), so that users can access via the Internet (" in the cloud ") without knowing what was inside.

However, the test is a commonly used strategy to improve the quality of education when the resources owned by a country is relatively limited. Therefore, the UN plays a strategic role in the education system in developing countries like Indonesia. Conceptually, the test is an evaluation of potential strategies to promote the quality of education through (1) quality control graduate, and (2) the driving motivator for teachers, students, and education providers to increase their efforts optimally. While SNMPTN remains very important as a condition of entry perguruang initial high is the bridge for the government in this case the campus to prepare for the resources actually qualified. The invitation system is a form of recognition of higher education on the performance and credibility of the learning process and the evaluation results at secondary school level.

RESEARCH METHOD

Model Analysis and Infrastructure

At this stage, requirements analysis and specification (requirements analysis and specification) of the problem to be solved. Starting with the identification of the need to use a word processing application documents, tables and presentations by teachers and students. This study focuses on how to provide CMI to a scoring system applications word processing documents, tables, presentations and processes equiting about standardized tests that can be used on computers and free proper application of conventional documents. Broadly speaking, the stages of this analysis is how the system is then referenced in the execution of the next stage.

Data Collection and Study of Literature

At this stage, the study of literature by collecting existing information about the studies that have relevance to the issues to be investigated. Reference information is used in the

form of journals, articles and other writings that discuss the CMI program for the development of assessment using cloud computing systems and applications that can be used in the system. Based on the references collected, the application of cloud computing can be implemented in Java language and XML. There is also an open source application besifat so it can be used for free.

Design and System Design

At this stage, the design of software applications such as document -based virtual CMI based on the results of the analysis of the needs and specifications (requirements analysis and specification) as well as the identification of problems that have been created previously. Virtual systems architecture design document that will be created can be seen in Figure 1. In designing the system, the authors use UML diagrams to describe the design of system software application to be designed (Dennis, A., Wixom, BH, Tegarden, D., 2005). Use-case diagram of the application to be made can be seen in Figure 2.

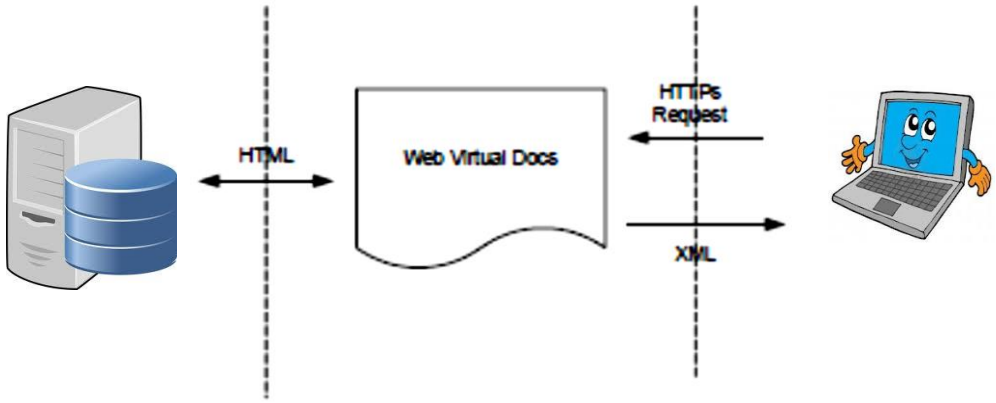

Figure 1. Diagrams System Design using UML program

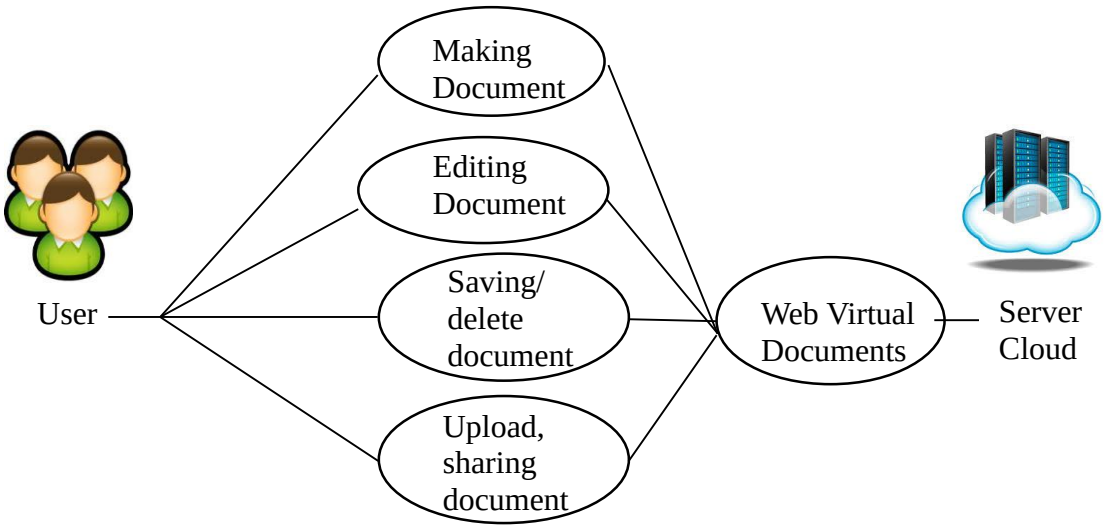

Figure 2. Use-Case Diagram Virtual Applications Document

Functional Testing

CMI functional testing program for this scoring system, using a black box testing method (black box) to view the system response to instructions given and uncover system errors. Testing is done using a desktop computer. Starting with the test application features and functions contained in the application. Interface of the application of this virtual berbabis document using a desktop computer can be seen in Figure 3.

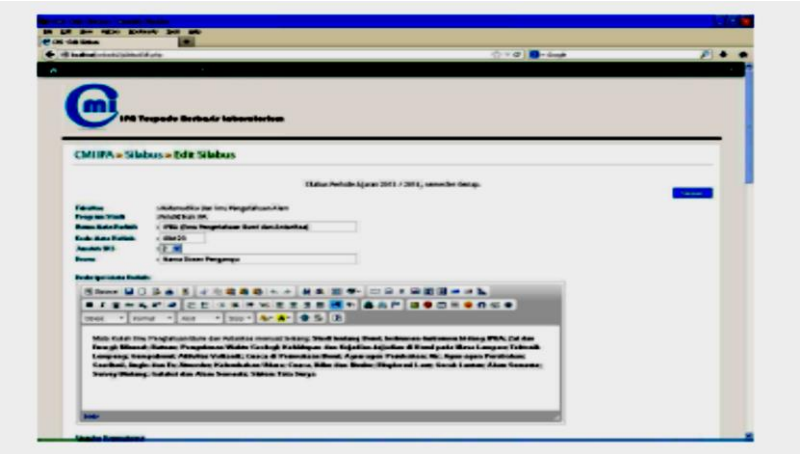

Figure 3. Application Display on Desktop Computers

Qualitative Testing

Tests using a qualitative questionnaire about CMI program development assessment system with cloud computing systems. The method used was a questionnaire survey method onliner simple random sampling techniques (simple random sample onliner) with the target respondents are academic community commonly uses the Internet and application documents. Reasons for using online sampling method because it is based on consideration of the population is large enough and the limitations of time and cost (Neuman, WL, 2000).

Implementation and Evaluation System

After analyzing and designing the CMI system design development assessment system, then the implementation phase. System implementation stage is the stage of putting the system in order to be ready for operation. After the implementation process and testing conducted, an evaluation of the results of testing the application so as to prepare an application that can support the needs of document processing software in the educational institutions (Sedarmayanti, 2002, Nazir, M., 2005).

RESULT AND DISCUSSION

Applications are designed to be implemented is the development of CMI assessment system with configuration of cloud computing using proxmox ve 2.1 and runs on the Linux operating system Ubuntu 10.10, to perform the function of cloud computing used 2 configuration server (Hewitt, C., 2008). The first server as a front for proxmox server and the second server as a server node. For the virtual machine operating system created by using KVM (Kernel Virtual Machine) (Anonymous, 2006). Nodes are used to embed and call a virtual document so that applications do not need a public IP again. In ubuntu terminal, conducted the installation of Apache as a web service, the PHP source code to create application programs that have been designed, Mysql database for placement of the application program, and last performed PhpMyAdmin for easy installation set up a database system (Graham, S., et al., 2004). Programming language used is PHP 5.3.5 by utilizing existing components.

Basic commands are often used is a tag. Writing html tagtag always followed by a closing tag. Format application program is divided into two parts, namely the HEAD and BODY (Wahyudi, D., 2003). The steps are performed in building application programs that log menu, the main menu, area word processing documents, spreadsheet documents area, document presentation area.

Menu Login

The login menu is a GUI for the user to login. Users are identified through the username and password have been registered previously by admin. Layout a background of red and white shades. menu login can be seen in Figure 4.

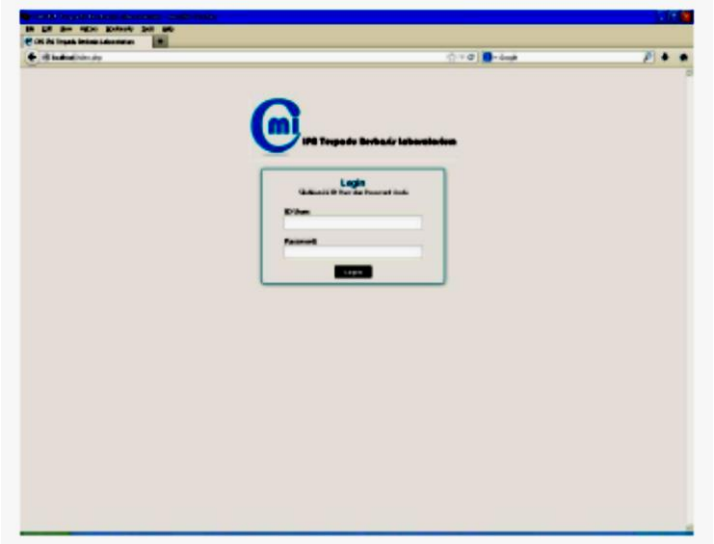

Figure 4. Login page CMI program assessment program based Cloud Computing

Main Menu

Main menu of the main page for administrators where there will be an explanation of the use of the system incrementally. On the main menu tabs are also provided to separate work and reporting. Each administrator will be given fordel own and shared folders to store documents and share them with other users. The main menu can be seen in Figure 5.

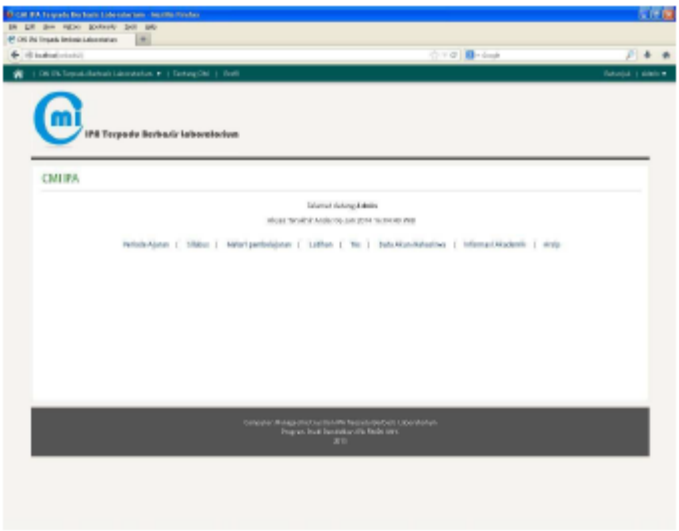

Figure 5. Home for Administrators

Word Processing Documents area

To create a word processing document on the CMI program assessment system using cloud computing, it will be provided an area to write a document where the user can set his writing. Users can manage the use of the font, character size, paragraph alignment, character models, and so on.

Provided the save button to allow users to store documents. The menu is a word processing document can be seen in Figure 6.

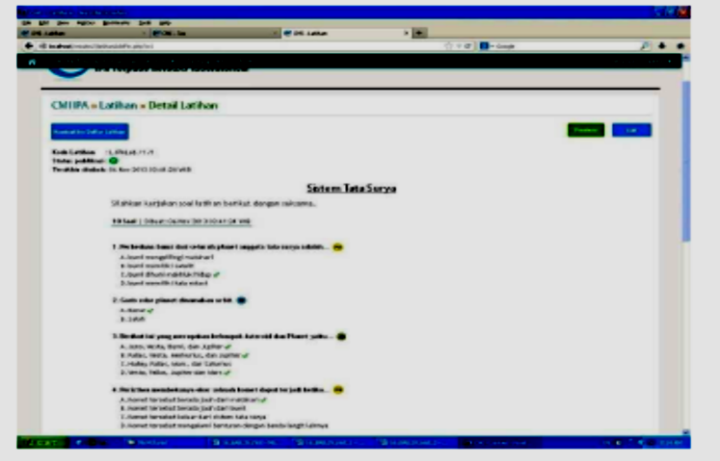

Figure 6. Menu Word Processing Documents

Area Document Spreadsheet

To create a spreadsheet document for CMI assessment program using the cloud computing system will be provided an area to process the data spreadsheet. Users can set the model character, paragraph alignment, character size, and provide a function or formula in a particular cell. Provided the key to export a file that has been made into several models extention such as PDF and Microsoft Excel. Menu spreadsheet document can be seen in Figure 7.

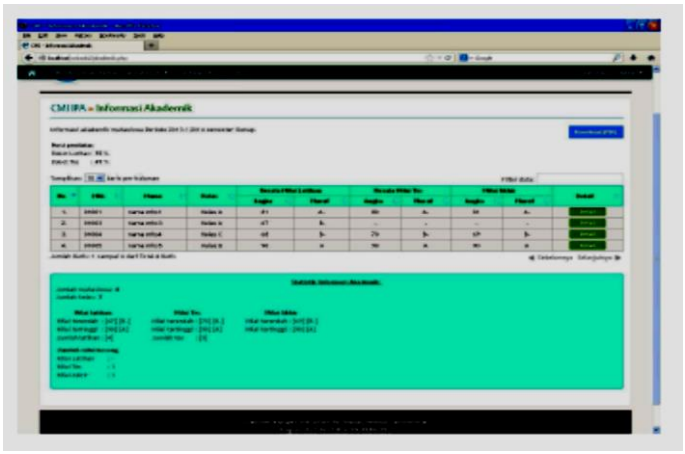

Figure 7. Area Document Spreadsheet

Document Presentation Area

To make the presentation of a document about the development and assessment results using the CMI CMI program with the cloud computing system will be provided to make a presentation at the same area can be presented directly from the application. Users can set the font, style and size of characters, adding and reducing the number of slides, adding images and text, and so on. Menu presentation can be seen in Figure 8.

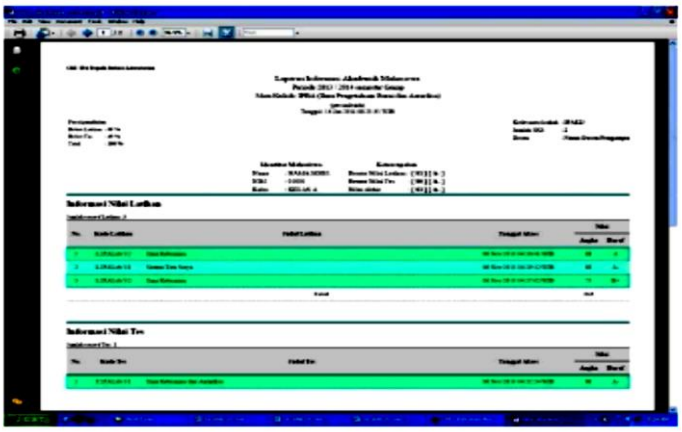

Figure 8. Area Document Presentation

At the time of application CMI assessment program run by the cloud computing system, the necessary IP address settings on the server as well as username and password for the administrator application. Administrator (admin) set the pattern of the user's document storage, adding and reducing users, grant permissions to users in the form of a username and password and set the right user.

Either in the form of user data and the document data is the data admin permissions. Furthermore, users who have been granted access rights in the form of a username and password
can use the application to access the IP address that has been provided by the cloud server. Login menu is displayed first, after the login process is done properly then display the main menu to display the user. Users have been able to work by creating word processing documents, spreadsheets, and presentations on the Documents tab.

Functional testing

Methods of testing performed using black box testing (black box) to view the system response to instructions given and uncover system errors. Features like the system that was set before that save, alter/edit and distribute/share documents tested. Tests performed on the storage process the save button, then the user can give the name of the document. At the top of the results given information storage process. Documents that have been stored dilist on the main menu and given the option to edit/modify and download the document.

Testing the process of converting/editing documents for any list of documents on the main menu. Each document is shown the name, date of manufacture, and at the end of the information given keys to edit the document. Editing process successfully after system displays a document that has been selected and made safe again. Tests performed on the sharing of documents in the main menu list. Documents you want to share selected in advance, and then selected the file update button to select the desired

folder of other users. Election of another user permissions set by admin. Each user is required to give testimony or information to admin that created a separate group for groups who want to create and edit a document.

Qualitative testing

Qualitative testing is done by using the questionnaire method onliner simple random sampling technique (simple random sample onliner). Online questionnaire that has been distributed to the academic community made regular use of the Internet and the application documents. There are 5 variables in the assessment of this questionnaire is variable ease of access, ease of use, attractiveness, features that are given, and the view (interface) applications. Each variable is given a 1-5 rating scale with a scale of 1 to responses " Very Poor " and 5 for the response scale of "Very Good ".

Based on the results of the questionnaire showed that the application of the variable document for ease of access, ease of use, attractiveness applications, the features are given, and the view (interface) application averages have approached the scale of the response is very good. This means the application of virtual -based document has been declared eligible documents used to support the activities of the academic community. But there are also some input from the respondents suggested that a construct like the look made more attractive, additional tutorials use, the addition of other features as well as the use of public domain and IP to accelerate access to applications. Graph variable questionnaire results accessibility applications can be seen in Figure 9.

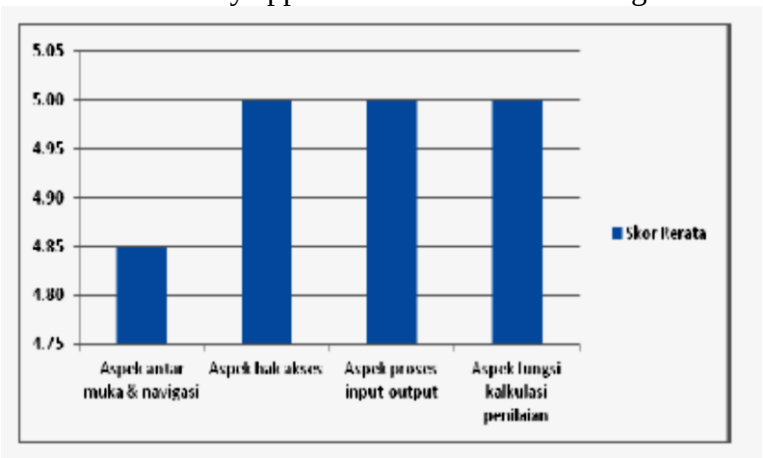

Figure 9. Questionnaire about the Ease of Access by User

CONCLUSION AND SUGGESTION

After doing the research and testing of the results of research on the CMI program - based assessment of cloud computing, obtained some conclusions. In most large -scale testing programs, the preparation of similar tests which were extremely important. This should be done for the rapid treatment in the event of a leak test and to compare the results of the test participants using different tests such. This activity can be done using the response theory item (item response theory). Due to the widespread use of computer

technology, the utilization of virtualization as cloud computing has provided opportunities for schools, teachers and students to interact with the server to access facilities, virtual desktop and applications without having to invest and maintenance independently. It is becoming an increasingly easy opportunity to do as the development of data networks increasingly varied and widespread.

Functional testing proved that the application of this document have been able to perform all the functions of the results of the design and analysis of such systems create a new document, store, modify/edit, and distribute it to other users. Qualitative Tests prove that the application documents in variable accessibility, ease of use, attractiveness, features, appearance (interface) application averages have approached the scale of the response is very good. Broadly speaking, the application of virtual -based document has been declared eligible documents used to support the activities of the academic community. For further development, need to do some things like, create a more attractive appearance, added tutorial use, adding other features as well as the use of public domain and IP to accelerate access to applications.

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