

A web-based online examination system for computer science education

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Abstract— The use of online tools to teach courses in various disciplines has gained popularity in the past decade. assesment is an essential activity to achieve the objectives of the course being taught to improve the teaching and learning process. there are several educational taxonomies that can be used to assess the efficacy of assesemnt in engineering learning by aligning the assesment tasks in line with the intended learning outcomes and teaching and learning ctivities. Designing and assessing learning outcomes could be a challenging activity for Engineeringeducator.

Computer-based assessment became one of the most common forms of technology enhanced assessment since the 1990s. Bloom's Taxonomy is widely used as a classification scheme to determine different levels of cognitive competencies. This Online Examination System is a software solution, which allows any industry or institute to arrange, conduct and manage examinations via an online environment. It can be done through the Internet/Intranet and/ Local Area Network environments. Some of the problems faced during manual examination systems are the delays ocured in result processing, filing poses a problem, filtering of records is difficult. The chance of loss of records is high also record searching is difficult. Maintenance of the system is also very difficult and takes lot of time and effort. Online examination is one of the crucial parts for online education system. It is efficient, fast enough and reduces the large amount of material resource. An examination system is developed based on the web. This paper describes the principle of the system, presents the main functions of the system and students evaluation.

I. INTRODUCTION

To know student capabilities in engineering studies requires observation of student performance in particular assignment, to use end of term written assignments in this regards toper form this is a non-trivial task. These assignments may fall short on testing the student on all conceptual requirements of his field. By just taking lectures and conduct final semester exam cannot help us to know standard and level of a student. In this research, we have made online examination system for Outcome Based Education(OBE) system. The Online Examination System is an electronic application. This

framework will help the college/Institution to assess the inquiry have different alternative with one right reply. The college/Institution can direct the online examination and report the outcome in a couple time. The examination office is in charge of the creating the inquiry paper and it would be totally secure. Online Examination framework give remotely access to understudies. It assists the inspector with reducing the work of leading exam, checking answer sheets and producing result. All these work is finished by the machine. All the information is put away on the server. What's more, customers can get to these databases and give exam. Here we utilize a customer server model. Executive offer access to instructor and understudies. Understudies who have account on the framework will have the capacity to give exam. There are two sorts of exam segment Practice and Real test. Understudies can give both tests. Right answer will be highlighted in diverse shading. Subsequent to submitting test the outcome will be created and examinations is done on the premise of result and send it to every single under study. [7] Math, Physics and Information Engineering College Online examination is the crucial parts among online education. It is efficient and fast enough and reduces the large amount of material resources. Examination system is developed based on web.

II. RELATED WORK

In [11] researcher developed Blooming Anatomy Tool (BAT). This gives train particular rules to Blooming anatomy multiple-choice questions (MCQs) result of this study shows that the blooming anatomy tool can be helpful in education and their research in the anatomical sciences to help in adjusting eyewitness judgment on Bloom ordered levels and enhance consistency.

[8]Examination process is important activities for institutions to evaluate student's performance. Thus the quality of the exam questions would determine the quality of the students produced by the institutions, also preparing exam questions is challenges, tedious and time consuming for the instructors. Current technologies help instructors to store the questions banks in computer databases. The issue arise is how the current technologies would also help the instructors to auto generate the different sets of questions from time to time without concern about repetition and duplication from the pass exam while the exam bank growing.

[rajesh kumar blooms----self] exhibited an online web application based on bloom's taxonomy in information technology education, from this portal we have found level of each student and identified weaknesses of each student according to levels of blooms taxonomy.

[rajesh kumar blooms ---5]this paper is to display the utilization of Bloom's Taxonomy to survey a given entry and the utilization of gauge models over that assessing. This paper depicts the technique to utilize the past indications of an understudy and the inquiry paper substance to arrange the inquiry paper to a particular level using the requested gauges of the Cognitive territory and the use of straight backslide to the envision.

III. SCOPE OF THE STUDY

Online Examination arrangement is a Multiple Choice Questions based Examination framework. It gives a simple way to utilize the environment for both test-conductors and understudies showing up for examination. Online Examination System is a web application that sets up a system between the establishments and understudies. Establishments enter on the site the inquiries they need in the exam. These inquiries are shown as a test to the qualified understudies. The answers enter by the understudies are then assessed what's more, their score is computed and spared. This score then can be got to by the organizations to focus the passes understudies or to assess their execution. Online Examination System gives the stage yet does not specifically take an interest in, nor is it included in any tests led. Inquiries are posted not by the site, but rather clients of the site. The site requires an organization to enlist before posting the inquiries. The site has a manager who watches out for the general working of the framework.

IV. OBJECTIVE

- To develop an online examination tool for assessment of students.
- The main objective of this online exam system is to reduce the work of conducting the exam.
- The online examination system is a web based application which is useful all over the educational and corporate sector.
- To measure the end level of students using Bloom's Taxonomy
- Being a coordinated Online examination framework it will decrease paper work.

V. Roles

There are three main roles in this online examination system.

1. Administrative
2. Instructor
3. Student.

The Administrative/ Head of department have all authorities he can do all changing in online examination system, can assign course/subject to instructor, instructor can make exam, tests, online quiz etc.

Student can attempt the exam, choose the questions from exam pool and he can perform his authorities. Like edit profile, take test, view result etc.

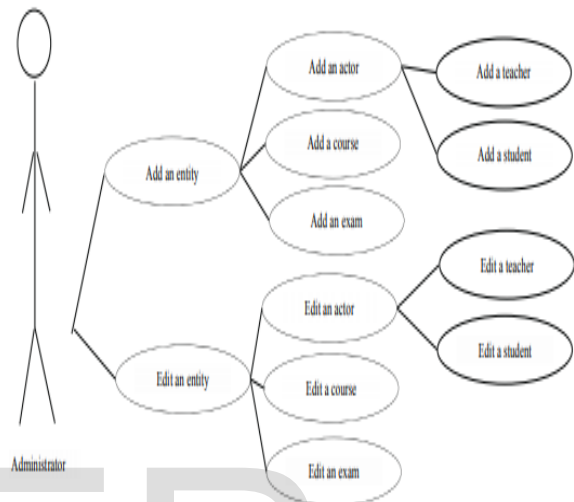


Fig. 1. The Use Case UML diagram for the "Administrator"

actor User scenario name: Administrator uses the system

Actor: Administrator

Scenario Steps:

1. Administrator wants to add an entity.
2. System gives the entity types.
3. Administrator adds an actor / a course / an exam.
4. System records the information.
5. Administrator wants to edit an entity.
6. System gives the entity types.
7. Administrator edits an actor / a course / an exam.
8. System records the information.

User scenario name: Teacher uses the system

Actor: Teacher

Scenario Steps:

1. Teacher wants to view his/her personal info.
2. System gives his/her personal info.
3. Teacher wants to view lists.
4. System gives the entity list types.
5. Teacher views the students/lessons list.
6. System shows the students/lessons list.
7. Teacher wants to create an exam.
8. System gives to adding or editing options.
9. Teacher adds a question / an answer / an examination time (ET) / the number of the students (NS).
10. System records the information.
11. Teacher edits a question / an answer / an examination time / the number of the students.
12. System records the information.
13. Teacher

wants to print out the created exam. 14. System makes the exam printed out. 15. Teacher wants to view the results. 16. System gives the result types. 17. Teacher wants to view the results of an exam / of a single student. 18. System gives the results of an exam / of a single student.

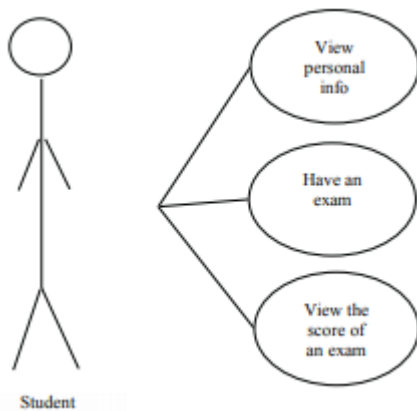


Fig. 2. The Use Case UML diagram for the “Student”

User scenario name: Student uses the system

Actor: Student

Scenario Steps:

1. Student wants to view his/her personal info.
2. System gives his/her personal info.
3. Student has an exam.
4. System records the information.
5. Student wants to view the score of an exam.
6. System gives the score of an exam

VI. ARCHITECTURE DESIGN OF OLINE EXAM SYSTEM

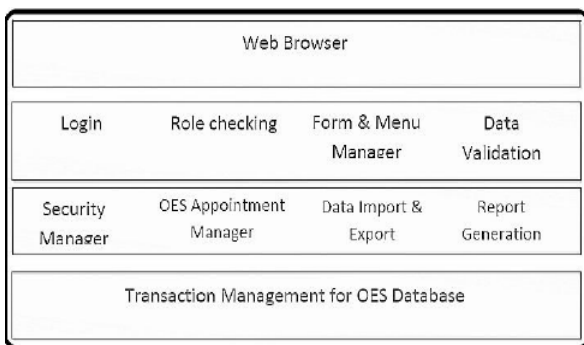


Fig.3Architctural Design of the Online Exam System

VII. TOOLS AND TECHNIQUES

PHP (PHP remains for Hypertext Preprocessor is recursive acronym)it is broadly used open source and server-side scripting programming language which is developed to build a various number of simple and rapid web applications development which can be run and operated on Linux, Windows operating systems. PHP is easy, dominant and object-oriented.

PHP code can be effectively inserted into HTML files as well as having interface capability and its license is free of cost.

Furthermore, JQuery and AJAX are also used as helping tools with HTML and PHP to make web applications interesting and interactive and dynamic.

Table 1

level	No:Student got level	Percentage% of student got level
1	50	100
2	43	86
3	27	54
4	20	40
5	15	30

Table 1 shows the level and number of students who get percentage according to levels.In this regard after the test students were pointed to material that would aid their understanding if they answered incorrectly.

Number of students answering questions corresponding to different cognitive levels in given time (after the lecture)

VI. CONCLUSION

In today’s world of education the main focus of a tutor is to help the students attain the learning objectives of the course that is being taught. The tutor tries his best to understand the mind of the student and to induce the subject’s concepts into the student’s young brain. We have exhibited an online examination system for OBE system in information technology education, from this portal we have found level of each student and identified weaknesses of each student according to levels of blooms taxonomy. This will also help for instructors in making their query (questions) and improve pedagogical design for students’ .It also guide students’ knowledge level & skills by learning outcomethe abstract as the conclusion.

REFERENCES

- [1] Bloom, B. S., Engelhart , M. D ., Furst, E. J., Hill, W. H.,& Krathwohl, D. R. (1956). Taxonomy of educational objectives, handbook I: The cognitive domain (Vol. 19, p. 56). New York: David McKay Co Inc.
- [2] Anderson, L. W., Krathwohl, D. R., Airasian, P., Cruikshank, K., Mayer, R., Pintrich, P., ... & Wittrock, M. (2001). A taxonomy for learning, teaching and assessing: A revision of Bloom’s taxonomy. New York. Longman Publishing. Artz, AF, & Armour-Thomas, E.(1992). Development of a cognitive-metacognitive framework for protocol analysis of mathematical problem solving in small groups. Cognition andInstruction, 9(2), 137-175.
- [3]] Scott, T. (2003). Bloom's taxonomy applied to testing in computer science classes. Journal of Computing Sciences in Colleges, 19(1), 267-274.
- [4] Lister, R., & Leaney, J. (2003). Introductory programming, criterion-referencing, and bloom. ACM SIGCSE Bulletin, 35 (1), 143-147.
- [5] Oliver, D., Dobeles, T., Greber, M., & Roberts, T. (2004, January). This course has a Bloom Rating of 3.9. In Proceedings of the Sixth Australasian Conference on Computing Education-Volume 30 (pp. 227-231). Australian Computer Society, Inc..
- [6] Starr, C. W., Manaris, B., & Stalvey, R. H. (2008). Bloom's taxonomy revisited: specifying assessable learning objectives in computer science. ACM SIGCSE Bulletin, 40(1), 261-265.

- [7] Manaris, B., & McCauley, R. (2004, October). Incorporating HCI into the undergraduate curriculum: Bloom's taxonomy meets the CC'01 curricular guidelines. In *Frontiers in Education*, 2004. FIE 2004. 34th Annual (pp. T2H-10). IEEE.
- [8] Athanassiou, N., McNett, J. M., & Harvey, C. (2003). Critical thinking in the management classroom: Bloom's taxonomy as a learning tool. *Journal of Management Education*, 27(5), 533-555.
- [9] Crowe, A., Dirks, C., & Wenderoth, M. P. (2008). Biology in bloom: implementing Bloom's taxonomy to enhance student learning in biology. *CBE-Life Sciences Education*, 7(4), 368-381
- [10] De Bruyn, E., Mostert, E., & Van Schoor, A. (2011, September). Computer-based testing-the ideal tool to assess on the different levels of Bloom's taxonomy. In *Interactive Collaborative Learning (ICL)*, 2011 14th International Conference on (pp. 444-449). IEEE
- [11] Thompson, A. R., & O'Loughlin, V. D. (2015). The Blooming Anatomy Tool (BAT): A discipline-specific rubric for utilizing Bloom's taxonomy in the design and evaluation of assessments in the anatomical sciences. *Anatomical sciences education*, 8(6), 493-501
- [12] Bhargav H S, Application of Blooms Taxonomy in day-to-day Examinations IEEE(2016)
- [13] Chowdhry, B. S. (2013). Successful transformation of ICT graduate program: A role model for developing countries. *Wireless personal communications*, 69(3), 1013-1023.

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