

Students Online Learning Measurement System Based On Estimated Time

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In this age of information and significant advancements in every area of knowledge, technology has become a crucial part of everyday human life. One of the most essential areas for our future surely is Information and Communication Technology (ICT). However, the current systems are not sufficient enough to measure the knowledge level of the student with accuracy. What we want to demonstrate here is to create a system that can almost perfectly track the activities and the abilities of every student in his/her studying years. In this paper, we attempt to further ahead of the goal of reaching a highly accurate grading system. The proposed system has been designed and implemented using the tools: (MySQL, HTML, CSS, PHP, JavaScript, JQuery, Ajax, and Bootstrap). The students and staff of the selected institutions participated in the implementation. The results have been obtained and evaluated using student measurement.

Key words: *E-Learning, Random Question, Knowledge Measurement System, Online Learning.*

Introduction

The definition of online courses varies; depending on the participant's education level and the type, of course, he/she is taking. Obviously, at all levels, e-learning involves taking a course via a computer (Biswas, 2013). An official definition would be a "network-enabled transfer of skills and knowledge using a computer." The motivation behind creating this project is that it will work within teaching specialisation, which is Website Database and Coding. Those are also included in this study. This project is beneficial and vital for its online courses (anytime and anywhere) (Davies and Graff, 2005). Lecturers and students do not have to



spend too much time and money. Another important fact is that it helps learners who have disabilities or are sick and unable to participate in learning, to finish their study easily and without any major difficulties. Also, at the end of the course/test, it points out which course the learners have taken and which questions they have understood the most or have not understood based on the points which have been given to the learners during the test (Richardson and Swan, 2003). The plan is to get benefits from these online courses and also to increase overall knowledge. Students will have the opportunity to make useful relationships with expert and knowledgeable teachers to obtain higher degrees (Swan, 2002; Swan, 2001). It is preferable to join many online courses for observing any weaknesses and shortfalls in the courses in order to work on improving the flaws. Finally, we would attempt to create this project simply and efficiently, so that it can be used by anyone. Another significant point is that we must show care and focus on the security and privacy of online courses to protect this project from the attacks of hackers (Tallent-Runnels et al., 2006). As we have explained previously, we would look up for extra references to be more familiar and to make a greater online course.

To receive more information and data about any online course, we have to study and examine other courses. It is beneficial to collect data from those who ask for online systems (Curtis and Lawson, 2001). It is also necessary to obtain data from the learners to improve the quality and to fulfil their needs. It is obligatory to pay attention very much to the time since time differs from one country to another even in some countries time is different from one city to another (Ushida, 2005). All of the learners have to do their exams at the same time. For that reason, we must create an online course in a simple way to be used by all members without any difficulties. Another important thing to mention is that the system should be multilingual because many people want to study the courses in their own languages. Some learners find it more appealing when they observe studying materials in their mother tongues; therefore, it is appropriate to add all of the possible worldwide languages. Whoever enters the online courses needs to register, and then he will get a code from the instructor so that he can participate in the course. When a member signs in the course, he can perform various actions such as commenting on subjects, asking questions and getting answers from the instructor. For creating discussions and conversations among students and with their tutors, there must be a group where all of the members would have the ability to enter and discuss the subjects (Wallace, 2003; Alstete and Beutell, 2004). Uploaded studying material and assignments have to be available and easily accessible, while the students can upload their homework and papers successfully regardless of different file formats. The participants do their exams and tests within the specified time. Everyone would have the opportunity to view their scores and grades without the ability to edit them. For creating such a project, there must be a simplified and modern programming language to provide the best quality and security (McGill and Klobas, 2009; Beatty and Ulasewicz, 2006). As we know that not all learners are professional in using current technology, for that reason, we would focus on the simplicity and privacy of

our courses. In order to create such a system, we will attempt to use the best Programming Language to highly secure the program. By any account, Programming Visual Studio C# with SQL Server database, ASP.NET C# or (HTML, CSS, JAVA script, PHP, bootstrap, JQuery, and Ajax) are the most beneficial Programming Languages. This language can help to provide this system on devices such as smartphones, iPods and other tablets. The architecture of the system consists of the following parts, which are responsible for making an overall interaction (Greenwood et al., 2001; Weaver et al., 2008).

E-Learning

For adapting an E-learning system, the design and implementation of LMS needed to get involved in E-learning for educating and training their staff. LMS is aimed at managing an E-learning system for establishing the organisation and delivery of teaching materials, managing and administrating resources, and tracking learning activities and results. However, the design and implementation of such a system is not an easy task and construction needs professionals and specialists. E-learning means a lot and people with very different roles interpret it differently (Hrastinski, 2008). They have described "education" as "a general term defining a wide variety of ICT based applications and processes, which include computer-based learning, web-based learning, digital learning, and any form of learning which depends on or is enhanced by electronic communication using the latest ICT technologies (Eliana et al., 2016). E-learning would revolutionise modern education because this could offer quicker learning for all participants in the training process at a reduced cost, greater access to educational and transparent transparency. This allows the delivery of education and critical information in various locations to companies or colleges. Staff and students can then get training if they like, at home or in the office. Employers could in effect, expect a good return on initial workplace preparation, no more. At computer age, employers and staff alike face the challenge of keeping up with technology that is continuously changing. Training and rework out never ceases. Companies have increasingly virtualised training programs (Temperini et al., 2015). Since its advent, computer technology has not only been developed to improve current learning theory but also to promote new learning approaches (Karim et al., 2017).

Literature Review

It is proposed that connection in online learning software engineer's advances student-focused learning energises more extensive understudy investment and creates more inside and outside and contemplated dialogues than customary face-to-face projects. One reason behind the importance of online communication is that learners encounter a feeling of group enjoying, mutual interdependence and a sense of trust and interaction among community members which means that members of the community have shared goals and values. Taking

part in online discussion environments work for a dual purpose: to improve education and to offer help (Davies and Martin, 2005).

This exploration inspects the routes in which course members use instantaneous verbal markers to reinforce the improvement of online groups. The discoveries support the significance of collaboration for internet educating and learning. The discoveries from our first review propose that three components are related to the understudy impression of fulfilment and learning in online courses (Swan, 2002). Scholars have said that the configuration and communication of the course design seriously depend upon learner's contentment and preservation in online courses. This paper studies online learning concerning their relationship with the satisfaction of learners (Swan, 2001).

A few of the surveyed concentrates indicated the requirement for a more sophisticated approach than only moving content-based courses to the Internet. They essentially suggested the utilisation of new advancements and sound teaching methods as models. A few determinations we could make from the research we investigated. Participants wanted to move at their own particular pace although this required a high level of self-administration. Students did not have any desire to be bolted into finishing assignments in the meantime as others and needed to have the capacity to push forward in their courses at their own particular pace (Tallent-Runnels, 2006). The literature on common learning has recognised a variety of behaviours that describe successful cooperative learning in face-to-face circumstances. Proof of these behaviours was found in the messages that were sent by students as they work together in online workgroups. There are some shared aims between the collaborative behaviours described by Johnson & Johnson (1996) in face-to-face situations and those observed in this study, although there are several main differences. Those dissimilarities include the shortage of 'challenge and explain' rounds of communication that are believed to portray good exchanges in face-to-face lessons (Sun et al., 2017).

The proposed system design

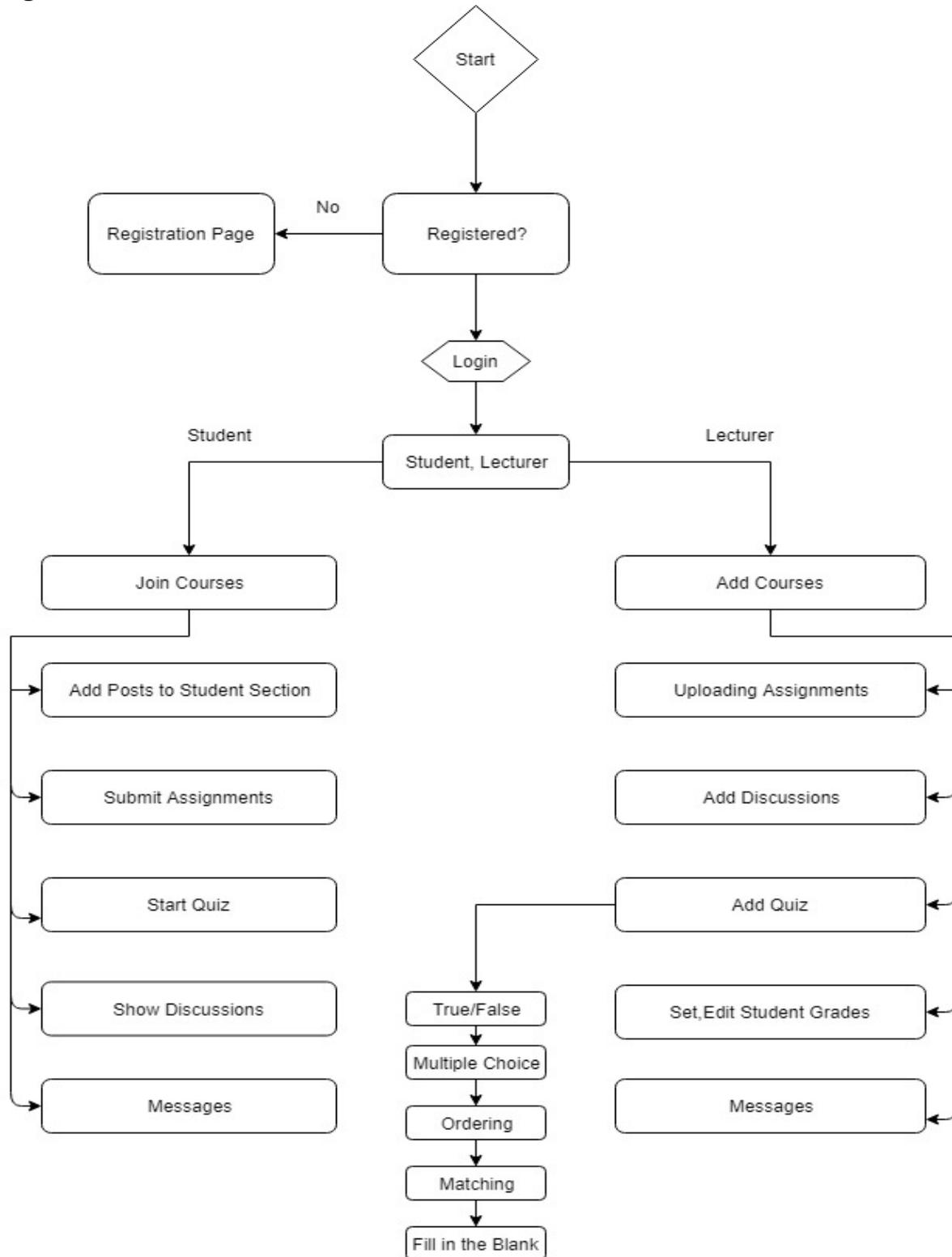
Data integrity consistency of data when making databases, consideration should be given to data integrity and how to look after it. A decent database will authorise data integrity at whatever point conceivable. In addition, constraints can be applied to the data entry in order to enter correct data to the database. An example of data integrity is checking student's legal age by DBMS when inserting data during registration. Database Management System (DBMS) can enforce access to data in the database, which governs what data are visible to which level of user. Thus, all data should also be securing student and lecturer information and this information should be encrypted. In general data security is securing data against unapproved access, so unauthorised persons should not access this data.



During the implementation of the E-learning System (ELS), the database and web application are needed. Until the application can interact dynamically with the learner, many tools of programming languages, web services, and databases are applied to the system, such as PHP, HTML, and MySQL. The database is used as storage of information typed in the web browser by the user. The application cannot achieve its purposes without the database (Cavus et al., 2007).

One of the most essential parts of the proposed system design is the database system. All the data related to ELS staff (lecturer, student) are stored in database tables. The database was implemented by using the MySQL database and it can be accessed by using PHP scripting language. Students and lecturers can register and use this system with each one having a different degree of accessibility in the system. Also, each student and lecturer have different information and responsibilities; for example, the lecturer can create courses and students can join, after approving from lecturer student can access all course information.

Figure 1. The Structure of Modules Connections for ELS



Student Module

After opening the website user will choose whether he/she is a student or a lecturer, after choosing, the user will prompt to enter the login data (email, password), then the student will access the E-learning module after correct login. Illustrates the mechanism of the student module dataflow for the ELS. The system database will provide the necessary information to the student. The student has the main role in this system, so he/she can register and join courses. Also he/she can post articles and submit assignments and see discussions, do quizzes, and send or receive messages.

- a. The student has the ability to join courses.
- b. See the course contents.
 - i. Accessing assignments (Download and submit).
 - ii. Accessing discussions.
 - iii. Accessing the quiz.
 - iv. Comment and reply
- c. Send and receive messages.
- d. Leave Courses.

Teacher Module

After choosing a teacher, he/she will prompt to enter login data, and then the teacher will access the E-learning module after the correct login. The lecturer can create courses, assignments, discussions, and quizzes in the specific system. In addition, the main task that the lecturer can perform is to set the grades and see student's activity, such as comments and likes. Moreover, just like the students, he/she can send or receive messages.

- a. The student has the ability to create courses.
- b. Create and edit courses contents.
 - i. Create assignments.
 - ii. Create discussions.
 - iii. Create quizzes.
- c. Send and receive messages.
- d. Delete courses.

Measurement of students

This system is used to measure student's performance by their degrees and activity, so the system can measure students by using these three methods:

1- submit assignments: after the lecturer post an assignment to the students in the course, the students can submit their assignment after reading it. So, if the student submits his assignment before the due date (deadline), the lecturer can set a higher degree for that student and otherwise, the student will get zero or low degree.

2- post upvote: there is a section called student posts on the student side. Those students can post articles, their opinions, and other students can upvote their articles. Each upvote is equal to 0.5 points, so at the end of the course, lecturer can see how many points each student has, so he will know which student is better and more active.

3- questions timer: The timer is a feature we inserted in our system for setting a time limit for each test. The way it works is that the faster the student answer the more points he/she gets, this improves the accuracy when ranking students. If let us say a student answer within the time frame of 10 seconds if the time limit is 60, the students will get 8.3 points according to this Equation (1):

$$\text{Points} = ((\text{Time} - \text{Estimated Time}) * 10) / \text{Time} \quad (1)$$

Quiz Measurement System

During the quiz, each question has a different time and grade; also, it can be equal. In measuring students' performance, the focus will be on the estimated time, if the student answered correctly and quickly, he/she would get more points. Also, if a student answered correctly but slowly, he/she will get fewer points, but he/she will get full marks.

Table 1: Question Rating

Question	Answer	Student Answer	Time	Estimated time	Grade	Points
Which is true for printing something in c++?	cout<<	cout<<	20	3	20/20	8.5

Table 2: Quiz Final Result

#	Name	Grade	Time	Estimated Time	Points
1	Akkan	100	150 Sec.	24 Sec.	8.4
2	Faiza	100	150 Sec.	31 Sec.	7.93
3	Yurekli	75	150 Sec.	94 Sec.	3.73
4	Curtis	80	150 Sec.	109 Sec.	2.73
5	Oztekin	60	150 Sec.	112 Sec.	2.53
6	Busra	45	150 Sec.	113 Sec.	2.46
7	Melissa	45	150 Sec.	115 Sec.	2.33

Posts Measurement System

There is a post section in the student panel that each student can post an article about a specific subject after that other students can upvote posts. Each upvote equals 0.5 points; the best post will get the most upvotes. This is an critical point for measuring and classifying the student's intelligence. Table III and IV show examples of posts and upvotes:

Table 3: Post rating

#	Name	Posts	up votes	Points
1	Akkan	2	12	6
2	Faiza	2	11	5.5
3	Yurekli	2	8	4
4	Busra	2	6	3
5	Curtis	1	2	1
6	Melissa	1	0	0
7	Oztekin	0	0	0

Table 4: Course Result

#	Name	Grades	Points
1	Akkan	100	14.4
2	Faiza	100	13.43
3	Yurekli	75	7.73
4	Busra	45	5.46
5	Curtis	80	3.73
6	Melissa	45	2.33
7	Oztekin	60	2.53



Conclusion

Traditional learning is an old way of teaching students it has many drawbacks. In this age of information, we have some other ways to make learning more effective and comfortable with technology. We can take advantage of the internet that is accessible by everyone around the world, another way of learning is called E-learning, the main point of this study is to create and develop an online website for teaching students by the lecturer. Lecturers can create quizzes and choose between 5 different types of questions and set times for each question also the lecturer can share ideas and create assignments. On the other hand, students can enter to make quizzes and assignments as well as. Eventually, they can discuss specific topics and problems that the lecturer has shared.

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