

E-Learning and Online Examination Android Application using Smart Adaptive Algorithm

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Abstract - Online examination is used primarily to measure cognitive abilities, demonstrating what has been learned after a particular educational event has occurred, such as the end of an instructional unit or chapter. Learning from an android application with Intelligence would be beneficial for Students. We shall provide the practice paper on Android platform to solve which shall boost the confidence of the individual. After gaining the confidence a real time MCQ based examination shall be conducted which will be Adaptive in nature and provide analysis about answering pattern of the student. The Questions would be uploaded by the professor itself with different difficulty levels.

Adaptive learning measures the accuracy of Student and responds according to previous attempt of the question. System will work with the intelligence by giving notifications or pop-ups to students on the time when they are likely to give Examinations.

I. INTRODUCTION

Mobile phones are being extensively used by people at all levels, businessman, doctors, engineers, service man and common man and woman in their day-to-day activities. Today communication is next to impossible without a mobile phone. The use of a mobile phone is not limited to speaking alone it is being used in making use of various applications, recording information and transmitting it to a phone or a computer as was being done by a computer. Yet, because of the smart-phone's powerful capabilities and ubiquity in high income countries, and increasing penetration into low income populations, it makes considerable sense to explore how the smart-phone can be liberated from its dependence on infrastructure and phone credits, and thus be freed to provide resilient communications capabilities that are well suited to use in crisis situations In the proposed system we will create an application for Examination, which can be installed on Android based Smartphones. This software is developed for android system. Two main reasons to choose Android OS instead of another one are:

First, Android is an open source operating system, and thus allows reusing some pieces of program to create a new application. It is also quite well documented and sources

can be found on Internet to learn how developing applications for this platform.

Second, Android is fast growing operating system, and it became the world's leading smart phone platform in January 2015. It is also available on cheap smart phones like the Chinese Huawei IDEOS. This android application allow Students to appear for exams and both Students as well as Professor can perform analysis which would be independent of infrastructure.

The remaining parts of this paper are arranged as follows. Section II gives Problem Definition of this project. Section III explains E-Learning/M-learning. Section IV gives literature review of proposed system. Section V explains methodology proposed scheme. Section VI presents the conclusion.

II. PROBLEM DEFINITION

E-Learning and Online Exams Application is being launched because a need for a destination that is beneficial for both institutes and students. With this application, institutes can register and host online exams. Students can give exams and view their results. This Application is an attempt to remove the existing flaws in the manual system of conducting exams. Online Exams Application fulfils the requirements of the institutes to conduct the exams online in

a single application. They do not have to go to any software developer to make a separate site for being able to conduct exams online.

The purpose of the project is to provide online facility to Institutes to conduct online exams and to Students to give online exams by using a single application. Institutes can enter and edit the questions dynamically. Also they can view the result which shall help in studying the result pattern. Students can login and give their respective exams and view their score then and there. Others can view sample papers to get look and feel of the online examination system. The purpose of the Project can be summarized as follows:

- a. To practice for Exams (Dumps) by the pre-uploaded set of questions.
- b. To give Online Exam uploaded by professor itself.
- c. It helps the organization to track the development of student.
- d. It helps to get result within a click and update the valuable information of the student faster and direct without wasting time.
- e. Analysis of different patterns can also be done which can be futuristic implementation.

III. E-LEARNING/M-LEARNING

E-Learning is learning utilizing electronic technologies to access educational curriculum outside of a traditional classroom. In most cases, it refers to a course, program or degree delivered completely online.

There are many terms used to describe learning that is delivered online, via the internet, ranging from Distance Education, to computerized electronic learning, online learning, internet learning and many others. We define eLearning as courses that are specifically delivered via the internet to somewhere other than the classroom where the professor is teaching. It is not a course delivered via a DVD or CD-ROM, video tape or over a television channel.

M-Learning is one of the latest developments in e-Learning, which takes advantage of mobile devices for learning on accessible portable platforms; ideal for people on the go or for taking your training away when you can't access a regular computer. The term has more recently been adopted for the use of e-learning on mobile device platforms, meaning smart phones and tablets like the iPad or Samsung Galaxy.

IV. LITERATURE REVIEW

In the existing environment there are many ways in which Students can appear for examination. The students can appear for examination by the means of Physical infrastructure and even they can appear on Desktop based application. Given the application of this interactive learning, it is expected to add the interest of learning among university students to use computer since the existing of this technology recently has been widely used by society as a consequence of the advance of Information and Technology [8][9].

The proposed system is compared with the following existing systems as shown in table Comparison: System comparison:

System	Features	Disadvantage
Physical Examination system	Physical Examination system it needs a physical set up of an infrastructure where students will appear for exams.	less mobility as needs to reach a physical location, no chance of performing analysis and it would be difficult for professor to do
Computer based Applications	Exams can be given on a single desktop based applications without any infrastructure requirement.	The system lacks mobility, cost comprises hardware cost as well software cost of Domain.
Proposed System	Android based application which is highly mobile and which does not require any physical infrastructure and not even any physical set up.	The only disadvantage of proposed system is that it requires an internet connection and a Android device.

Table: System Comparison

V. METHODOLOGY

1. There will be a Java-Android Application which will have front end i.e., design, will be done using Xtensible Markup language (XML) which will be binded with Java files in src under parent directory.

2. There will be a java based android activity code using Volley library in java to call server running in PHP. The main reason to do this to collect the data from PHP. Note that PHP is used as middleware.

3. When the control passes to PHP, PHP will call the database server which will have different tables and tuples. These tuples will be having information and the response of the questions asked to the student. These tuples will also keep a record of Standard Error (SE) which will help to implement Adaptive algorithm.

The parts of system architecture are as follows:



Fig 1: System Architecture.

1. Front End (Android App):

The Front End consists of an Android App which can be used by both Students as well as Professors. There would be two sections for log-in, one for Students and other for Teacher. Students would appear for Examinations using this Application and can learn as well as practice for a particular topic.

2. Middleware (PHP script):

The Middleware would be a PHP script by which Android application and Database would be linked. PHP script will automatically execute the queries to Database. Other technologies such as Java Script can also be used in middle ware but PHP script is safe as well as dynamic.

Formula being used:

For Non-Adaptive,

Number of Questions in each level = (Total Number of Questions) / 3. If the total no of questions are even, then the round off values are added to the difficult level.

For example, Total no of questions are 10 then Easy level has 3 questions, moderate level has 3 questions and difficult level has 4 questions respectively.

For Adaptive,

Total Number of Questions required to be entered into the System = $5 + ((n-5)*3)$

Where n is the number of questions to be asked in the Exam. Here 5 indicates the easy questions to be asked at the start of examination and the next part indicates the questions for each level.

For example, if $n = 10$, then total number of questions to be entered into system is 20.

So Easy questions would be 10, moderate and difficult questions would be 5 and 5 respectively.

Adaptive Algorithm:

The use of Adaptive Algorithm is an important step in the system as students answer is recorded and accordingly action is being taken. So learning at different levels is being done by students.

Step 1: Start the examination by initializing the counter i and n as total no of questions.

Step 2: Start the exam with 5 Easy set of questions, increment i and n after every question.

Step 3: check the no of correct answers.

Step 4: If the no is greater than or equal to 3 then ask next i.e. 6th question as Moderate level else if the no is less than 3 then ask next i.e. 6th question as Easy only.

Step 5: The result of 6th question is stored, if 6th question was easy and correctly answered then next question will be of moderate level, if 6th question was moderate and answered correctly then next question would be of difficult level else it will be of easy level.

Step 6: The loop continues till the counter i equals to n.

Step 7: If i equals to n then stop the loop and end the examination.

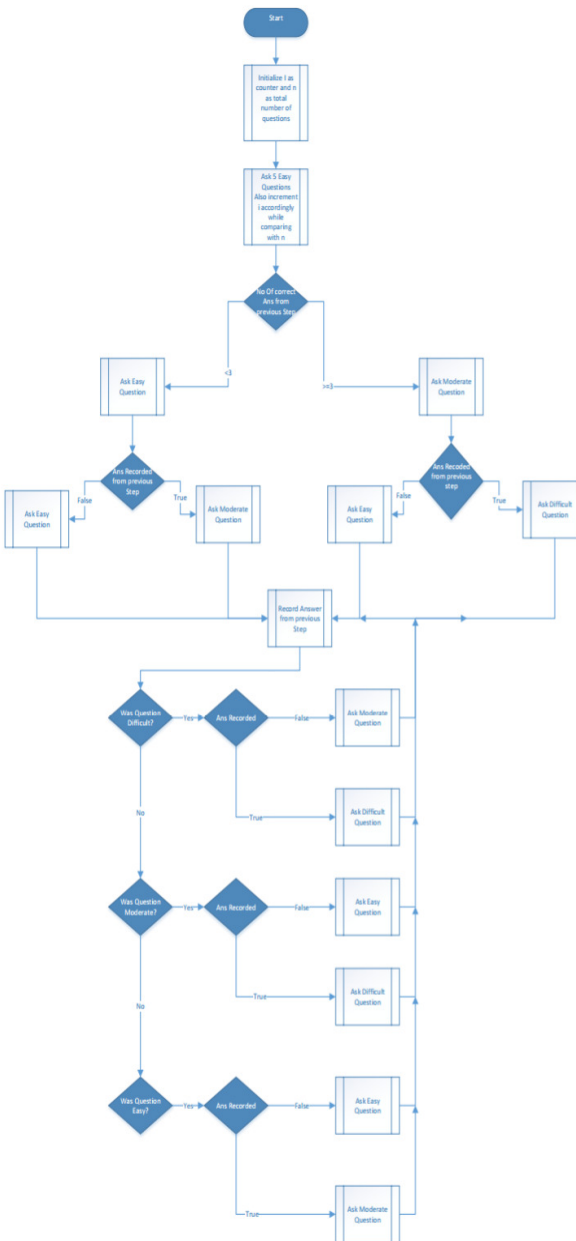


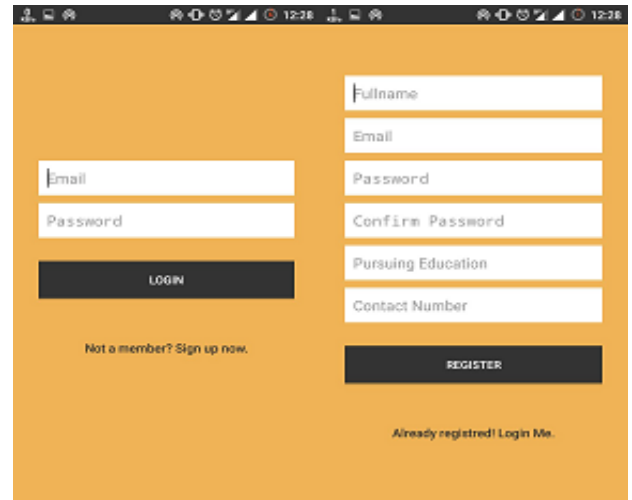
Fig 2: Adaptive Algorithm Flowchart.

VI. IMPLEMENTATION

The implementation is being shown by screenshots of the application which is developed.

Professor:

There will be an application for professor, where they can upload, alter, delete set of Questions and can perform Analysis. They can select the type of Examination i.e. Adaptive or Non Adaptive.

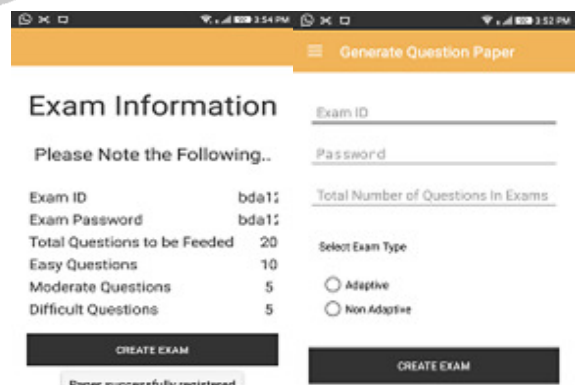


1.Login

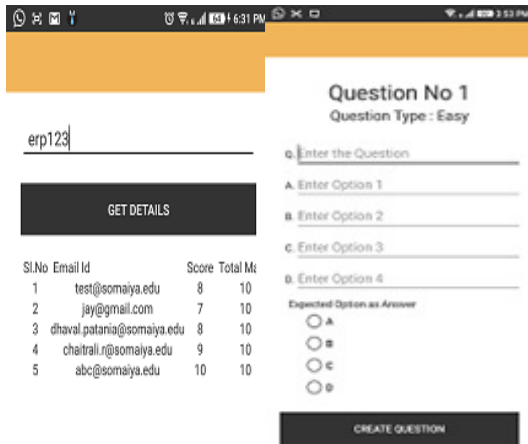
2. Registration



3. Set of the tasks of 4. Analysis professor



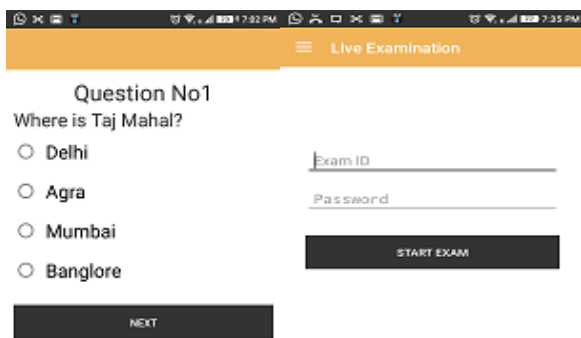
5. Generate Paper -16. Generate Paper-2



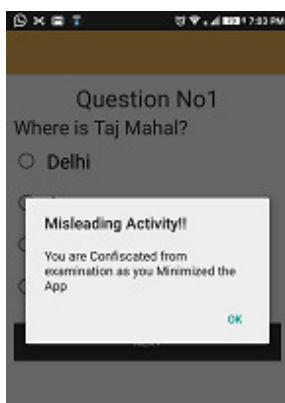
7. Generate Paper-3 8.View Score

Student:

There will be an application for Student, where they can give examination on the questions uploaded by professor.



9. Live Examination-1



11. Live Examination-3

If minimized the App during exam.

10.Live Examination-2

VI. CONCLUSION

E-Learning and Online Examination will eventually help Students as well as professors for Examinations and to remove flaws in current Examination System. Student's answering pattern can be analysed by professors and decisions can be taken. Students can practice with Static set of questions. As adaptive algorithm is being used, Student's ability to answer the questions could be tested using a single application. The results would be generated within a single click. No offensive task can be performed by the Student as Security is handled , if minimized the application during examination he/she will be confiscated from the examination.

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