

Mocktime

Designing a reliable mock examination system to enhance student learning experience and tutor interaction



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# **Abstract**

Web-based mock examination will be used towards to educational institution, to help students prepare towards to their end of year/term exams. In addition, it is a way for the examiner to analyse and gather statistics on student’s knowledge. This could be seen as a way for lectures and students to interact with each other and to be able to build a stronger understand in the contents that has been delivered at the lecture. With the use of an online mock examination system it will be easier for the lecturer/teacher to add or modify any questions that they believe is related to the content which was taught at the lecture. This way, students will have the ability to log into the online mock examination with their login credential and access it from anywhere at any time to analyse their learning progress.

# **Declaration**

“I declare that this dissertation represents my own work except where otherwise stated.”

Jomin Kaitholil George

# **Acknowledgements**

I would first of all like to thank my project supervisor, Dr. Ellis Solaiman, for introducing this field to me and also for all the valuable support that he has provided throughout the process.

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# **Chapter 1: Introduction**

## **Introduction**

Examinations are used as a technique to judge someone else’s personality and knowledge in a particular area or field. Most of the examination systems provide the end user with their results as soon as the candidate finish the exam. Candidate is given a limited time to answer all the question in an exam which will be set by the examiner and after the time expires, candidate won’t be able to modify or answer any other questions. Examiner then will evaluate each candidate’s answers either by using automated or manual marking process and then the results will be published or sent to the candidate through the website. (Tests, 2012)

Web-based mock examination is aimed for Educational Institute to prepare an exam and to enhance student learning by helping them prepare towards to their end of year/term exams. Most of the examination system which are available requires the examiner to manually mark or go through each question in order to ensure that the system has marked each question for the student accurately. In most of the online examination system there would be an additional check in place for question types which are hard to mark (such as fill-in-blank, essay based questions) by the system. For example, a question like “what is a router?” can have many answer and the examiner wouldn’t be able to place a mark scheme for the online examination software to check since it is impossible (students can answer in many ways). Also it would take up more time if the examiner has to mark it manually (roughly 200 students).

Solution to this would be, not requiring examiner to manually mark the mock examination questions instead the student mark their self-based on a mark scheme that will be given at the end of the mock exam. Each student will be asked to mark their answer based on a set of marking scheme which will be provided by the examiner. This way the examiner can see how well the students understood the material which was taught at the lecture. The key point here is that it’s a mock exam and whatever the student scores would not take in consider for their assessment criteria’s instead it’s a way for the student to tell the examiner what they have not understand or did understand within a topic (each question will be linked into a topic from the lecture) from the lecture material.

I believe it is vital to provide the examiner with detailed reports and analytics on the performance of each student. There will be a wide range of reports that can be collected after an exam to show the examiner which questions are poorly answered by the majority of the students and that will give the examiner/lecturer an idea of which topics should be covered in more detail.

## **Motivation**

Introducing a mock examination system into curriculum will encourage students to learn from their mistakes and progress towards to a target set by their selves. With the help of internet, it create opportunities for creating and managing exams more reliably and consistently.

Research suggests that around 75% of students consider themselves to be procrastinator (Busch, 2015), researcher Pier Steel states “the further away an event is, the less impact it has on people’s decisions.” Mock exam is seen as the best practice for revision and there are several memory strategies which have been found to be effective. Testing yourself over and over again with the help of Mock Exam is a way to improve your knowledge and having that ability to improve your understanding.

Pressure can lead into nervousness, anxiety problems, frustrations and also results in making poor performances (Nhs.uk, 2016). However this is not the case for everyone, some people concentrate more when they are under pressure. Mock exam is a great prospect from student’s side, for them to figure out and practise an exam within an exam condition (e.g. time limit).

## **Project Aim and Objectives**

### **Aim**

To develop a mock examination engine that enables student’s self-assessment and to give the examiner ways of analysing the performance of each student.

### **Objectives**

1. **To explore current mock examination software used by educational centres.**

This involves in researching into current software’s or project related to mock examination software and then looking at what sort of features and functions that they have in place to support with the end user.

1. **To understand how current mock examination software which can be improved to enhance student learning.**

I will be looking at what the current systems offer for the end user (e.g. different functions and features) and then coming up with ideas on how it can be improved to enhance student learning from using my system.

1. **To implement an improved mock examination software that help examiners to analyse students’ performance.**

This will be looking into ways that I could improve the system for the examiner to provide them with logical data analyses which would offer wide range of possibilities on how well the student is doing and what they are struggling on.

1. **To evaluate the effectiveness of the system in terms of quality characteristics (e.g. maintainability, reliability).**

Once I implement the system, I will ensure that I have evaluate the system in terms of quality characteristics (e.g. would the system be running 24/7 and would it be reliable from errors to occur).

## **Deliverables**

Upon completion of this project, the following deliverables will be presented:

* Detailed report on each stages of the project.
* Fully functional website which will be designed both for examiner and student.

## **Relevance to Degree**

This project requires knowledge gained from the modules over the three years of study at Newcastle University. The creation of database within this project clearly points out Database Technology (CSC2024) to be as a beneficial module since it contains examples of good practice in Database Design and UML. Another module which is relevant would be the Web Technology which give an overview of current languages for the within the website field and their features. Overall, the skills developed and gained throughout studying computing are strongly tested throughout this project.

## **Project Plan**

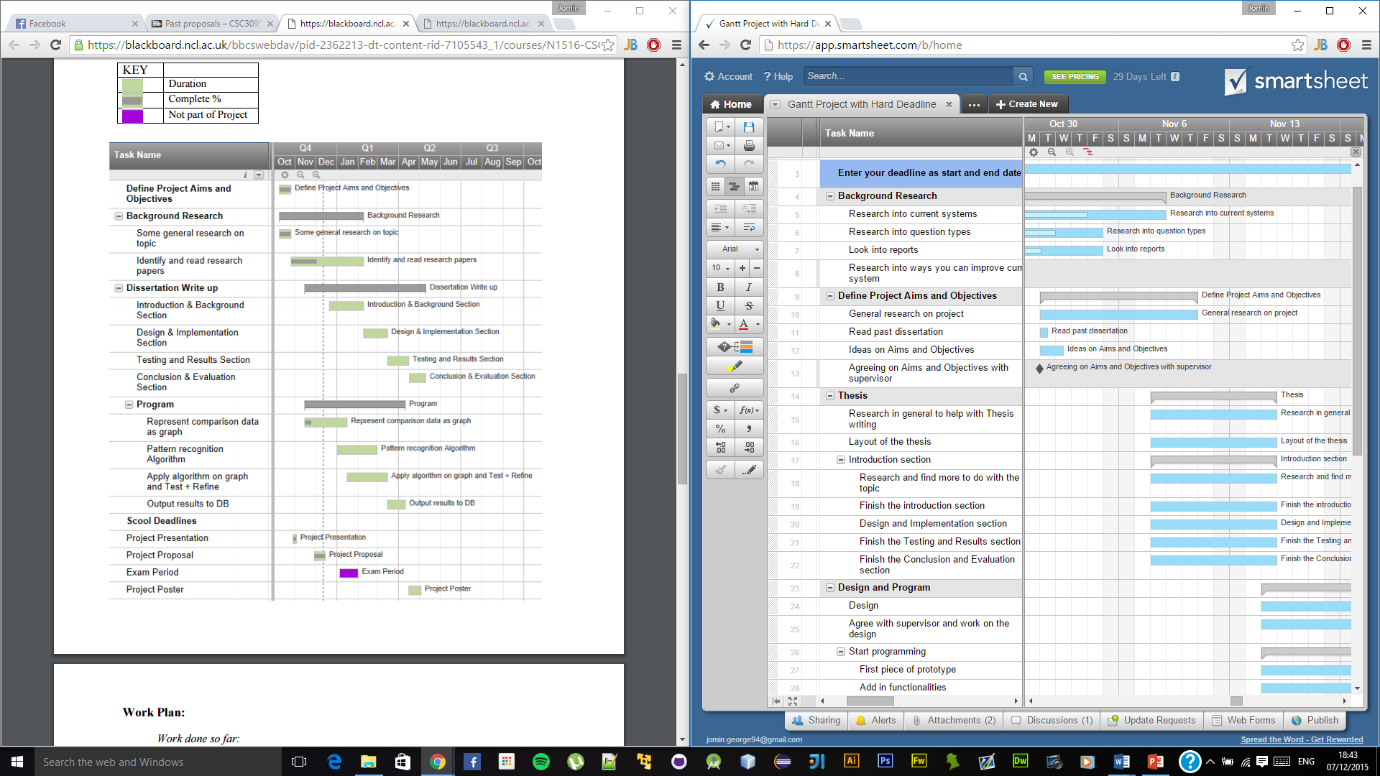
Figure 1 shows a snippet of the Gantt chart, showing the work plans that is proposed for this project.

Figure 1: Gantt chart

## **Project Structure**

Chapter one will be the **Introduction**¸ details the motivation behind this project as well as identifying the current problems within an existing project/area. In addition, within this section it will state the research aims and objectives as well as identifying the importance of the proposed research area.

Chapter two provides **Background Research** which involves in review of a detailed study of the current systems/projects that are available and then analysing each one against this project.

Chapter three will be **Requirement Gathering and Analysis**¸ within this section, there will be a complete analysis of the current system and what the new system will have in order to solve the issue (e.g. functional requirements, non-functional requirements). In addition, this chapter will also include preliminary research (interviews to find what different users found about a system).

Chapter four is **Design** which will present diagrams and datagram models of my system. This will be done by taking reviews of the system design in a detail to ensure that every core aspect of this project has been met.

Chapter five is **Testing and** **Implementation**, within this section it will give an overview of the tasks and process to reach goal of the research. In addition, this chapter will explain and discuss all the implementation decisions that had to be taken for this project, for example the various elements of the language learning course. With the help of this chapter, it will help to identify issues within the new built system.

Finally, Chapter six will be **Evaluation**, provides an overall evaluation on the project based on the evidence gathered and how the project has met the criteria. In addition, this chapter also talks about what possible works can be done in the future for this project.

# **Chapter 2: Background Research**

## **Existing Examination Tools or Products**

There are a variety of Examination products which are designed and implemented to aid the end user to conduct an examination utilising the Internet. By the end of this chapter, it will provide a good amount of information and requirements for a new system. Analysing and evaluating systems which exists currently will help to explain in detail about the implementation and user expectations that has to a system.

### **Respondus**

Respondus offers varies different products such as Respondus 4.0, LockDown Browser, Respondus Monitor and Study Mate (Respondus.com, 2016). All these products have been used for the purpose of assessment in the educational institutes (over 2,000 colleges and universities in over 50 countries uses Respondus to enhance learning system). Respondus works closely with partners and they provide an easy integration with their partners system (e.g. Blackboard, Design Science, Moodle, and Pearson).

Respondus 4.0 is the 4th version of Respondus, it is a windows based application which makes it easier for the end user to create and manage exams for technology partners such as Blackboard Learn, Moodle, Canvas, and other eLearning systems (Version 4.0, 2016). Respondus 4.0 supports up to 15 question types including calculation and algorithmic formatted. Since the end user have access to the Test Bank Network (contains thousands of test banks for leading books in higher education e.g. Pearson) it makes it easier for the examiner to set an exam. Respondus allows the examiner to import questions which are saved on a MS Word, RTF format, and tab/comma delimited format. In addition, Respondus also provides “Spell Check” for an entire exam file which will consists of American English, British English, Dutch, German, French and medical dictionary (Features, 2016). See Appendix A to see every feature that this product offers.

LockDown Browser is a custom browser that Respondus provides for the purpose of assessment. When an assessment starts, students are locked within the browser until they submit their exam for marking. Everything else apart from accessing the browser for carrying out the exam will be locked out and limited to functionality to prevent anyone from cheating. LockDown integrates with most of the well-known eLearning assessment system such as Blackboard, Canvas, Moodle, and Sakai. Assessments are displayed full screen using the browser and cannot minimise or maximise. Copying, pasting, print screen, print, task switching and any other features that operating system provides are all blocked from running (Browser, 2016).

Respondus Monitor is an additional application for LockDown Browser which make use of the webcam and video hardware peripherals to prevent anyone from cheating during an exam. During an online exam, it will automatically notify the examiner if the student has been caught in any way for suspicious behaviour such as taking screenshots, using copy/paste functions or even different person entering the video frame. With the help of this product, it guarantees that right person is taking the test since a video will be monitor from the start of an exam session (Monitor, 2016).

Study Mate is mainly designed to develop the students learning knowledge within a course material. In order to make it collaborative and combined for everyone Respondus designed different types of activities such as self-assessment, games and even learning activities which engages students with the course contents. Crosswords, fill in the blank, fact cards, flash cards and order matching are some of the games that Respondus offers (Respondus, 2016).

### **Moodle Quiz**

Moodle is an eLearning platform which is primarily designed to provide examiner and the learner with a secure and robust system to create and manage learning environment such as exam, making course material available and interact with lecture materials with the use of games/activities provided. (Moodle, 2016).

Moodle Quiz supports different variety type of questions this includes essay, matching, multiple choices, short answer, true and false and many more. Moodle provides the examiner the control on who can see the quiz, when and how they will be get scored, how feedback will be provided and also statistics to get from an exam. Moodle quiz tools is very powerful and flexible in terms of monitoring and diagnosing the students’ performance. “Chapter check” is an example of feature that Moodle provides to ensure that the student have read and understood a chapter that was told by the examiner/teacher. Creating a little mini test will help to identify how many students in a class has read and understood the material, also most importantly provides the examiner/teacher with data which will show the students’ knowledge within each aspect of the reading material and pin point where each person is doing good or bad(Moodle, 2016).

Since test and quizzes that are set out on Moodle requires outside class work, there is a high risk of people could end up in cheating. However to prevent this from happening Moodle take precautions such as randomising the questions order and also the answer order, timer in place for each question or the entire exam, and also limitation in the number of time a student can take a specified exam. (Quiz Practices, 2016)

### **GoConqr**

### **Speed Exam**

### **Pro Profs Quiz Maker**

### **Existing Products Summary**

See Appendix A - Existing product features for detailed feature listing.

## **Graphical Visualisation**

## **Web Framework**

## **Possible Technologies**

### **Client Side Technologies**

### **Server Side Technologies**

## **Version Control**

## **Database**

## **Methodology**

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### **Books**

# **Appendix A – Existing Products Features**

### **Respondus**

# **Appendix B -**