Smart Quiz

Project Proposal

By

Mr. Chaichan Suttee   542115016

Mr. Supawit Kamjina 542115064

Department of Software Engineering

College of Arts, Media and Technology

Chiang Mai University

Project Advisor

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Mr. Jayakrit Hirisajja

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*CS = Chaichan Suttee

*SK= Supawit Kumjina

*JH = Jayakrit Hirisajja

Abstract

In general, when lecturers teach many courses, they tend to have less time to prepare for actual teaching. The lecturers often face problems or spending a significant amount of time on uploading materials, managing scores, giving assignments to students. For students, they may sometimes miss receiving some information, files, or quizzes because they are not informed at the moment that those files are uploaded. Using a flash drive for distributing data is not a reliable solution because it takes time, and the files may not be distributed thoroughly to every student.

In this project, we plan to develop a web service and web application. "Smart Quiz" is a system that helps to manage scores, upload/download course materials, share files and assign quizzes and provides convenience to both lecturers and students. Maintaining course materials on the server, the lecturers can manage scores, take the assignments, and view the scores.

The lecturers can access to our Smart Quiz without the installation. The lecturers and the students can use our Smart Quiz on the web browser. With our system, we would like to offer another choice to the universities and schools that are looking for convenient and efficient way to managing courses.

Contents

Chapter One | Introduction and Background

In order to manage a course, lecturers usually use programs and websites to calculate score, keep attendance score, receive assignment files from students, assign quizzes to students, and share course materials with students by using flash drives or uploading them to web storage. However, these process tasks of managing often face challenges. The lecturers use office program for calculating scores and use a website for announcing those scores that there are many tools and processes for managing their courses. It also has too many steps for managing courses, so the lecturers have to spend too much time for managing courses. The lecturers upload materials but some students may not noticed that materials are already uploaded. Sometimes, student's flash drive can get lost.

When the lecturers teach many courses and find these problems, it affects the efficiency in teaching because the lecturers will have less time to prepare for actual teaching. For students, they may sometimes miss receiving some information, files, or quizzes because they have not noticed that those files are uploaded. In the situation of students using a flash drive for distributing data may not be done thoroughly with every student. The problems mentioned above are not uncommon in many schools and universities. The lecturers need a better system to manage courses without experiencing these issues.

Smart Quiz is a system that helps to manage a score, upload/download course materials and assign quizzes which provides convenience to both lecturers and students. The lecturers can manage scores and create assignments, and students can take the assignments and view the scores.

Chapter Two | Literature Review

2.1   Business Review

Overview

In University, there are many activities in the courses study that occur during the semester between lecturers and students for example giving an assignment, taking a quiz, a test. And each semester has many course that the lecturers and the students have to enroll it. Furthermore, each course also has a different material depend on what lecturer would like to provide to the student.

There are the problems to both student and lecturer in the courses. Most of the problem that occurs is sometimes the students missed a message from the lecturers. Some students did not know a schedule assignment time. The lecturers have the problem about sharing material content from teaching to the students. The checking of the student's assignment was delayed because there is too many problems to deal with, for example, submitting in time or not, miss submitting, and etc.

Generally, in the University, lecturers will teach students through electronic content or projector. The lecturers have to share materials content and tell the schedule by announcing in the classroom or the Facebook group. Considering the number of students in the class. Some students cannot hear the lecturer announcement, some students do not check the Facebook group frequently. Those students may miss the communication from the lecturer. In order to solve these problems, the developer decided to make a solution for it.

"Smart Quiz" the course management is a web application that provide the service to assist the lecturers and students to do activities that happen in the courses. It let the lecturers to share material for teaching and to making a quiz through the application, and let the students to get news and to take an assignment from the lecturers. Besides, it also provides the service to manage the courses enrollment, so the lecturers can know how many students in the classes, the scores of taking quiz/assignment from the students.

Target

- The users can manage their courses information through a web browser.

Benefit

- To provides convenience to both lecturers and students to manage their courses more efficiently.

2.2 Business tools and Software reviews
2.2.1 Turn it in [1]

Turnitin is an Internet-based plagiarism-prevention service created by iParadigms, LLC, The universities and high schools buy licenses to submit essays to the Turnitin website, which checks the documents for unoriginal content. The results can be used to identify similarities to existing sources or can be used in formative assessment to help students learn how to avoid plagiarism and improve their writing
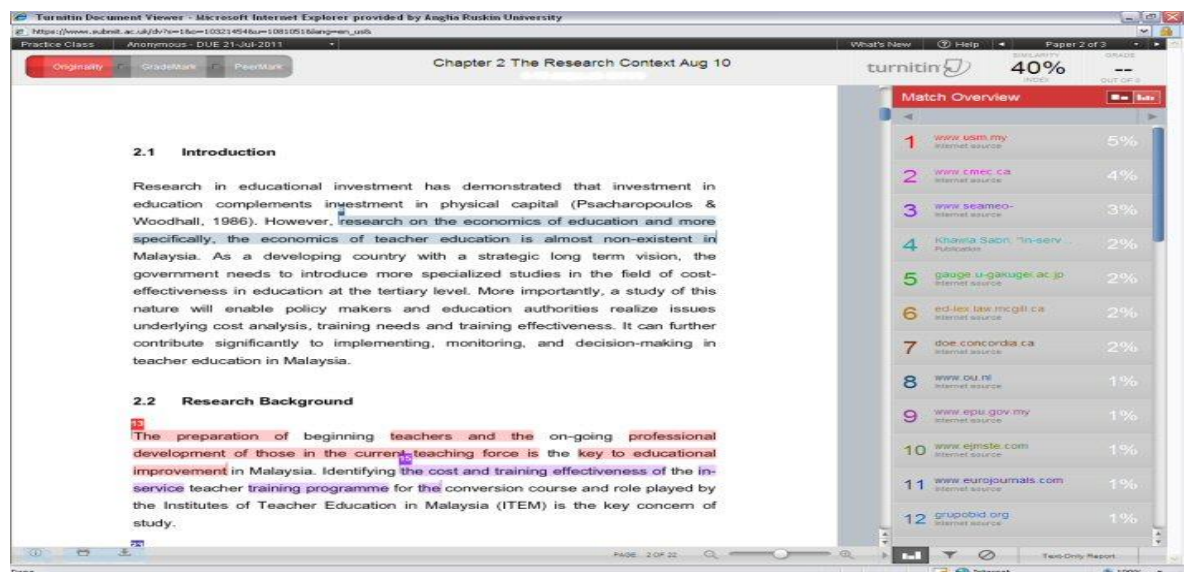

Figure 1 shows the Turnitin main page. When users send the homework. They can check the plagiarism form this page.

Pro

1. Lecturer can check the plagiarism
2. Lecturer can create the password for student who's add the course

Cons

1. The system is complicated for register
2. The system is complicated for add the course

2.2.2 CMU online [2]

CMU online is a web application that provides data storage services to lecturers and students at Chiang Mai University. CMU online supports general features as follows.

1. Lecturers who are the owner of a course can upload and download files.

2. Students can join a course and download files from the course page.

3. Lecturers can make announcements via the board of the website.

4. Lecturers can check the number of students that joined the course.

Figure2 CMU online main page

Figure 2 shows the CMU online main page. When users sign in the CMU online, they can see all the courses that joined in the left side page.

Pros

CMU online a web service that is provided by Chiang Mai University. Users can sign up for free. Lecturers can upload and download materials using the services provided by the system. Student can download materials from the web page. Sharing course materials is fairly easy for both lecturers and students. CMU online is better than general storage web sites because a lecturer can control who are allowed to join the course.

Cons

1. The system does not provide notifications to the users. When lecturers upload files in their course page, students may not know about it unless they open and see the course page themselves.
2. CMU online has some bad interface. For example, interface in part of a student does not separate categories of course, which may confuse students.

2.3 Technology Review

2.3.1 ASP.NET [3]

Figure 3 ASP .NET

Technology description

ASP.NET is a development framework for building dynamic websites, web applications and web services using HTML, CSS and JavaScript. Developers can also create Web APIs, mobile sites, use real-time technologies like Web Sockets. ASP.NET was developed by Microsoft.

Alternative technology

- PHP, JSP

The selection of this technology

.   - ASP.NET can build dynamic web application and web service.

- ASP.NET support the MVC development model.

2.3.2 JavaScript

Technology description

JavaScript is a programming language known as the "script". Translation operates on each command. It is commonly used as part of web browsers, which allow client-side scripts to interact with the user, control the browser, and change the content displayed on the We can add the JavaScript programming web pages to process data of both the display and receiving - transmitting. And that can interact with users immediately. JavaScript is also used in server-side programming and building games as well as desktop and mobile applications.

Alternative technology

Haxe

The selection of this technology

- We use JavaScript for calculating data, displaying, sending – receiving data for interacting with the user.
- JavaScript is easy to learn.

2.3.3 HTML 5

Technology description

HTML5 is a language that was developed for use as a markup language. Website for writing the latest version is being developed by WHATWG (The Web Hypertext Application Technology Working Group). Several features have been added to allow developers to use more easily.

The feature of HTML5

- Semantic Markup: Adding the Element more readable and allows us to make SEO more effective.
- Form Enhancements: Enhancements to Form such as Input type, Attribute or Element.
- Audio / Video: Support for audio and video files without the need to use the Embed Code of the Third Party.
- Canvas: Used in the drawing. It requires Java script help
- Content Editable: Content can be edited directly through the web page.
- Drag and Drop: Drag and Drorp Object is increase performance .It increase the response between the system and the user.
- Persistent Data Storage: There is easy to manage the data by collecting data on the user's machine.

Alternative technology

- HTML4

The selection of this technology

- HTML5 can access sites easier than older version.
- HTML5 is support multimedia content.
- HTML5 is standardized for creating the user interface of website.

2.3.4 Cascading Style Sheets 3 (CSS3)

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Figure 4 CSS3 Logo

Technology description

CSS3 is the Style Sheets language for helping to define the look and formatting of a document written in a markup language. It is commonly used to create interfaces written in HTML and XHML.

Alternative technology

- CSS2

The selection of this technology

- CSS3 is easier to implement page layout.
- CSS3 is the latest standard of CSS that works with HTML5 and provide a richer set of features (e.g. text effects, 2D/3D transformations, animations).

2.3.5 JavaScript Object Notation (JSON) [4]

Technology description

JSON (JavaScript Object Notation) is a data interchange - format. It is based on a JavaScript programming language. JSON is a text format that is completely language independent. JSON uses sending and receiving data to and from different platforms.

Alternative technology

- XML

The selection of this technology

- JSON can send and receive data between different platforms.
- JSON is based on JavaScript, which the developers are familiar with.

2.3.6 Google Spreadsheets API [5]

Figure 5 Google Spreadsheets API Logo

Technology description

Google Spreadsheets API lets you develop client applications that read and modify worksheets and data in Google Sheets, data can be anything from a spreadsheet to a text file delimited. It use to Computing financial data stored in an inaccessible system and present statistics to users in a web browser

Alternative technology

- JExcel Api

The selection of this technology

- Google Spreadsheets API is easier to manage the spreadsheets.
- Google Spreadsheets API can be used with JSON

2.4 Development Tool Review
2.4.1 Microsoft Visual Studio 2013 [6]

Tool description

Microsoft Visual Studio is Integrated Development Environment developed by Microsoft. It enables developers to develop a wide variety of software including web applications and web services that are compatible with Microsoft Windows technologies and devices. Visual Studio supports .Net languages which include VB.NET, C++, C#.

Alternative tool

- Visual Studio .NET.

- Visual Studio2012.

The selection of this tool

- Microsoft Visual studio is used for developing .Net Framework.
- Provide c# and asp.net inside

2.4.2 Internet Information Service (IIS) [7]

Tool description

Internet Information Service (IIS) is a web server developed by Microsoft. It is a secure, easy-to-manage, modular and extensible platform for reliably hosting websites, services and applications and provides a set of Internet-based services for servers including HTTP, HTTPS, FTP, FTPS, and SMTP.

Alternative tool

- Apache Tomcat, AOLserver.

The selection of this tool

- Internet Information Service works with .Net, both of which are developed by Microsoft.
- Internet Information Service is a part of the Window operating system. It is easy to using.

2.4.3 Microsoft SQL Server [8]

Tool description

Microsoft SQL Server is a relational database management system developed by Microsoft. As a database, it is a software product whose primary function is to store and retrieve data as requested by other software applications.

Alternative tool

- Microsoft SQL Server 2008
- Microsoft SQL Server 2008 R2
- Microsoft Windows Azure

The selection of this tool

- Microsoft SQL Server can use T-SQL language for querying data.
- Microsoft Visual studio can be easily used with Microsoft SQL Server.
- Support .NET Framework

2.4.4 Photoshop [9]

Tool description

Adobe Photoshop is a program that helps create and edit images. It is also equipped with many tools to support the creation of video and multimedia presentations as well as to design and develop websites. Adobe Photoshop software package consists of two programs, Photoshop and ImageReady.

Alternative tool

- Paint, GIMP, Pixlr Editor.

The selection of this tool

- Photoshop can create and edit images for user interface.

2.4.5 Google Chrome [10]

Tool description

Google Chrome is a free-ware web browser which developed by Google, Inc. Google Chrome combines a minimal design with sophisticated technology to make the web faster, safer, and easier.

Alternative tool

- Mozilla Firefox.

- Internet Explorer

The selection of this tool

- To run application.

- Supported HTML5.

- Supported CSS3.

- Fast to load web pages.

Chapter Three | Quality Standard

3.1 ISO 29110 for Very Small Entity (VSE) [11]

ISO 29110 is a guide applies to a very small entity, enterprise, organization, department or project up to 25 people dedicated to software development. The guide provides project management and software implementation process which integrate practice based on the selection of ISO/IEC 12207 systems and software engineering-software life cycle process and ISO/IEC 15289 software engineering-software life cycle process guideline for the content of software life cycle process information product (documentation) standards elements

3.1.1 Project management process

The purpose of the software management process is to establish and carry out in a systematic way the task of the software implementation project which allows complying with the project's objectives in the expected quality. Time and cost

Selected process

3.1.1.1 Project planning process

3.1.1.2 Project plan execution process

3.1.1.3 Project assessment and control process

3.1.1.4 Project closer process

3.1.2 Software implementation process

The purpose of the software implementation process is the systematic performance of the analysis, design, construction, integration and test actives for new or modified software products according to the specified requirements.

Selected process

3.1.2.1 Software implementation process

3.1.2.2 Software requirement analysis process

3.1.2.3 Software architectural design process

3.1.2.4 Software construction process

3.1.2.5 Software integration process and test process

3.1.2.6 Software delivery process

Chapter Four | Project Plan

4.1 Motivation

Based on experience, we found several problems of course management. Firstly, when lecturers teach many courses, the efficiency in teaching is decreased because the lecturers have less time to prepare for actual teaching. Secondly, students may sometimes miss receiving some announcements, files, or assignments because they have not noticed that those files are uploaded. Lastly, in the case of the students using the flash drive for distributing data, this method may not be done entirely for every student. However, most of the Thai students use smartphones and personal computers.

Regarding mentioned problems, we are going to develop the Smart Quiz which supports personal computer to provide convenient to lectures and student. This designed system integrates the technologies of web service such the system will provide some functions including taking the assignment for students and managing course and score for lecturers.

4.2 Aim and objectives

4.2.1 Aim

The aims of this project are 3 parts.

- The first part is to develop web application which support score management, assignment and quiz management, and communication service for lecturers.
- The second part is to develop web application which help view scores, take assignments and quizzes, and communicate with lecturers for students.
- The third part is to develop we application which help manage semester, manage user account for an administrator

4.2.2 Objectives

- To build a system which helps
    - Lecturers can communicate with students more easily.
    - Lecturers manage courses more efficiently by saving time and effort wasted in using many different tools.
    - Students access to quizzes or assignment more easily and conveniently.

4.3 Deliverables and limits

4.3.1 System Architecture

ASP.NET

Web application — IIS — **Web Service** **MS SQL** — DB
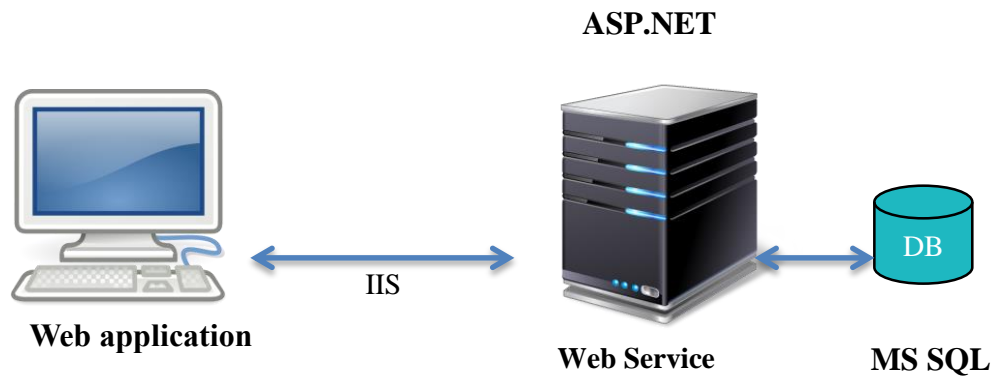
Figure 6 the architecture of Smart Quiz

The architecture of Smart Quiz is shown in Figure 8. It consists of the web application, which the user can access by using a web browser.

The system uses JSON for interchanging data between the web services and the web application.

4.3.2 Deliverables

-Proposal

-Project plan

-Software requirement specification

-Software design document

-Testing document

-Traceability record

-Software quality assurance document

-Certification client and server system

-Video clips for demo program

-Poster A1 for presentation

4.3.3 Limits

- Internet connection is required for using this system.

- Users need to log in before using this system.

- User need to have Gmail account for using Google spread sheets system

4.4 Future Work

The license can be implemented for education. This system can be used in any universities and schools that would like to use the system to support lecturers or teachers in course/class management.

The universities would have the benefit from our system. Students and lecturers would have more convenience from our system. The system can be further expanded to support some courses or classes that need additional features. The system may also support other types of devices and platforms such as Android and Window phone for several users.

4.5 Software Process
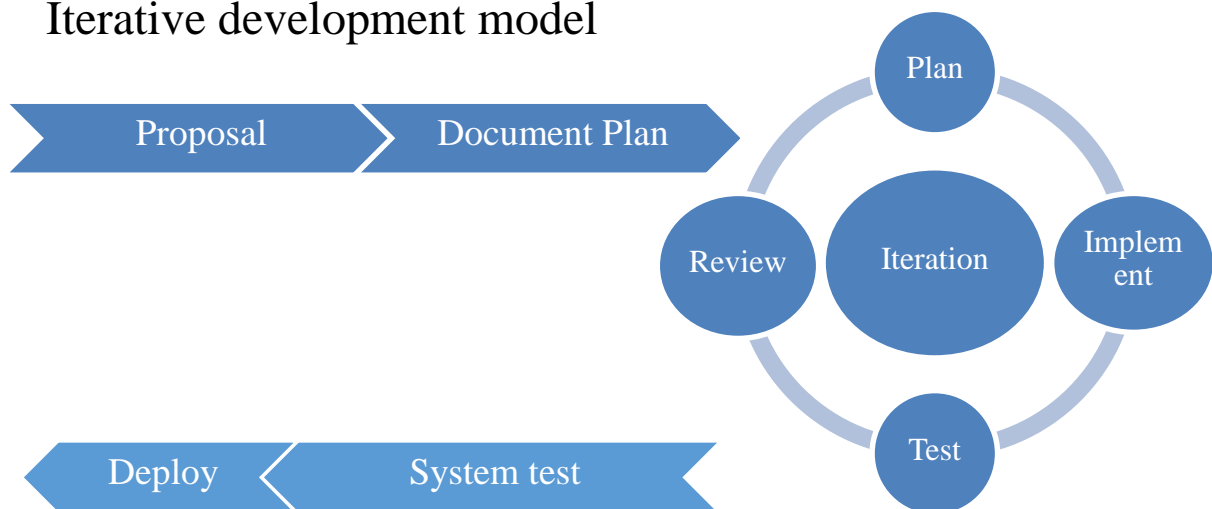
Iterative development model

Figure7 Iterative development model

The iterative development model is one of the software development models which evolves from the waterfall model. By changing process flow from step to step into iterative step. When the process flows into iterative, the process will start from the first step then go to the next phase till the last. After that, the process will back to the first step and start again. The iteration will be repeated until all processes planned are complete then out from the loop and go to next main phase.

Proposal phase: This phase is about creating a proposal for Smart Quiz.

Document plan phase: This phase is the document for planning and designs the overall system from requirement given by the user. Iterative all features: This phase is to separate the system into many features, and then iterative create all feature from the first feature to the final feature. For this phase, it will be divided into 4 phases. There are;

- **Plan:** Planning the method for creating and test each feature.

- **Implement:** Implementing and coding each feature.

- **Test:** Testing and fixing each feature.

- **Review:** Reviewing and maintaining each feature to meet the feature plan.

System test phase: This phase will integrate all features into one system and then create test document from system testing.

Deploy phase: This phase is about deploying the whole system to server and use as a regular mobile application.

4.6 Schedule & Milestones

There are three types of users:

- Administrator

- Lecturer

- Student

4.6.1 Features

Feature#1 User registration

Description: This feature supports registration of users for using the system.

Users: Lecturer, Student, Administrator

Details:

1-1 Lecturer/Student: Lecturer/Student can request to register in the system.

1-2 Administrator: Administrator can approve registration requests from Lecturers and Students.

Feature#2 Login to the system

Description: This feature supports access to the system.

Users: Lecturer, Student, Administrator

Details:

2-1 Lecturer/Student/Administrator: User can login to the system.

2-2 Lecturer/Student/Administrator: User can logout from the system.

Feature#3 Course management

Description: This feature supports managing semesters to respond academic year that change over time by Administrator. Lecturer manages his/her courses offered in each semester. Student accesses course information registered.

Users: Administrator, Lecturer, Student

Details:

> **3-1 Administrator:** Administrator can create, edit, and delete semesters.
>
> **3-2 Administrator:** Administrator can create, edit, and delete a course in the semester.
>
> **3-3 Administrator:** Administrator can register a list of students to a course.
>
> **3-4 Lecturer:** Lecturer can access information of his/her course.
>
> **3-5 Student:** Student can see access information of his/her course registered.

Feature#4 Assignment and Quiz management

Description: This feature supports assignment and quiz management by Lecturer. This feature can process Student's answer to each question of an assignment or quiz and compute the score. Moreover, this feature supports preventing Student from copying assignments or quizzes which are multiple choices and true/ false questions. The system can randomize the order of questions.

Users: Lecturer

Details:

> **4-1 Lecturer:** Lecturer can assign, edit and delete assignments or quizzes which are multiple choices, true/false questions, short answers.
>
> **4-2 Lecturer:** Lecturer can limit access to the assignment or quiz of authority.
>
> **4-3 Lecturer**: Lecturer can review overall student's answer in each choice of assignment or quiz in chart format.
>
> **4-4 Lecturer:** Lecturer can post an assignment or quizzes.
>
> **4-5 Lecturer:** Lecturer can check whether the assignments are submitted in time.
>
> **4-6 Lecturer:** Lecturer can randomize the order of questions in an assignment or a quiz.

Feature#5 Taking assignments and quizzes

Description: This feature supports taking assignments and quizzes by student.

Users: Student

Details:

> **5-1 Student:** Student can take assignments or quizzes which are multiple choices, true/false questions, short answers

Feature#6 Score management

Description: This feature supports managing scores in each course. Score management helps Lecturer add, edit, delete, and calculate scores using Google's spreadsheets. This feature supports exporting data in pdf format for convenience of Lecturer.

Users: Lecturer

Details:

> **6-1 Lecturer:** Lecturer can add, edit, delete, and calculate scores in his/her course.
>
> **6-2 Lecturer:** Lecturer can export all student's total score in pdf format.
>
> **6-3 Lecturer:** Lecturer can import Excel sheets into the system.
>
> **6-4 Lecturer:** Lecturer can generate a grade summary report.

Feature#7 Checking Score/Grade for student

Description: This feature provides an overall score in each course for studying planning of student.

Users: Student

Details:

> **7-1 Student:** Student can access his/her score (e.g. assignment score, quizzes score) in each course.

Feature#8 Notification

Description This feature supports notification for Student. Lecturer can notify Student when he/she uploads assignments, quizzes, scores, document files by E-mail

Users: Lecturer, Student

Details:

>**9-1 Lecturer:** Lecturer can E-mail notify Student when he/she upload assignments, quizzes, scores, document files.

>**9-2 Student**: Student can receive E-mail notification form Lecturer when he/she uploads assignments, quizzes, scores, document files.

Feature#9 Communication System

Description: This feature provides a comment system, which allows Student to ask questions and Lecturer make comments related to the file posted. This feature provides the popular posts when Student asks the same question. They can vote the post for a popular post. Lecturer can stick the post when student votes the popular post.

Users: Lecturer, Student

Details:

>**10-1 Lecturer Student:** Lecturer/Student can post messages in posts page.

>**10-2 Student**: Student can ask a question or leave a comment related to the file uploaded.

>**10-3 Lecturer:** Lecturer can answer a question or make a comment related to the file uploaded.

>**10-4 Lecturer:** Lecturer can stick the post when the student's post have the popular post**.**

>**10-5 Student**: student can click vote the post for the popular post**.**

Relation between Feature and Users

Feature number	Lecturer Web application	Student Web application	Administrator Web application
Feature 1	✓	✓	✓
Feature 2	✓	✓	✓
Feature 3	✓	✓	✓
Feature 4	✓		
Feature 5		✓	
Feature 6	✓		
Feature 7		✓	
Feature 8	✓	✓	
Feature 9	✓	✓	

4.6.2 Milestones

Final Progress Milestone

Figure 8 Final Progress Milestone (Tentatively from early - May until early - July)

Final Progress Milestone

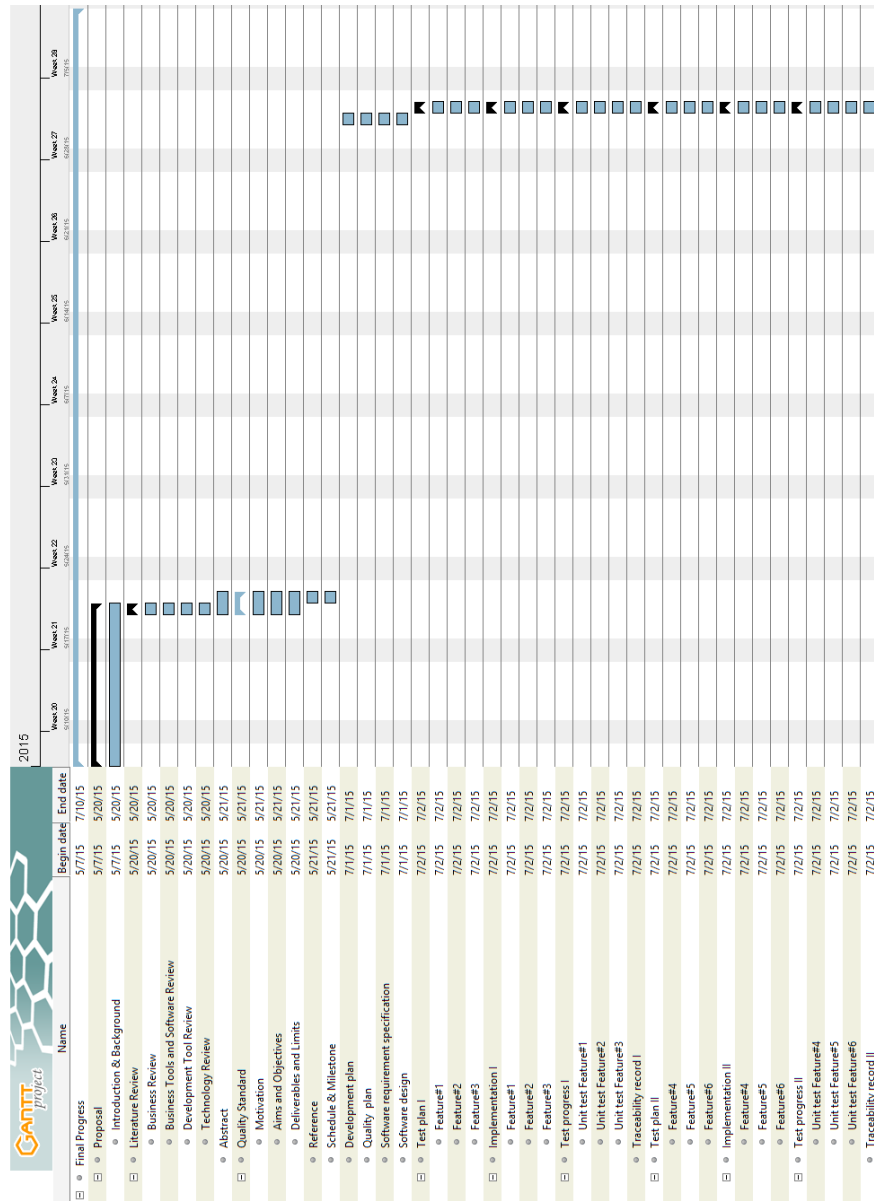|			
○ Traceability record III		7/2/15	7/2/15
⊞ ○ Test plan III		7/2/15	7/2/15
○ Feature#7		7/2/15	7/2/15
○ Feature#8		7/2/15	7/2/15
○ Feature#9		7/2/15	7/2/15
⊞ ○ Implementation III		7/2/15	7/2/15
○ Feature#7		7/2/15	7/2/15
○ Feature#8		7/2/15	7/2/15
○ Feature#9		7/2/15	7/2/15
⊞ ○ Test progress III		7/2/15	7/2/15
○ Unit test Feature#7		7/2/15	7/2/15
○ Unit test Feature#8		7/2/15	7/2/15
○ Unit test Feature#9		7/2/15	7/2/15
○ Traceability III		7/2/15	7/2/15
⊞ ○ Test plan		7/3/15	7/3/15
○ System test		7/3/15	7/3/15
⊞ ○ Documentation		7/3/15	7/3/15
○ Review Development plan		7/3/15	7/3/15
○ Review Quality plan		7/3/15	7/3/15
○ Review Software requirement specification		7/3/15	7/3/15
○ Review Software design		7/3/15	7/3/15
○ Review Software testing document		7/3/15	7/3/15
○ Review Traceability record		7/3/15	7/3/15
○ Integrate all document		7/3/15	7/3/15
⊞ ○ Implementation		7/3/15	7/3/15
○ Implement software deployment		7/3/15	7/3/15
○ Create user manual		7/3/15	7/3/15
○ Review final progress		7/3/15	7/3/15
○ Final progress submission		7/8/15	7/8/15
○ Final progress presentation		7/10/15	7/10/15

Figure 9 Final Progress Milestone (Tentatively from early - July)

Document Name	Smart Quiz proposal V.0.5. docx	Owner	CS,SK	Page	32 / 34
Document Type	Proposal	Release Date	29 June 2015	Print Date	1 July 2015
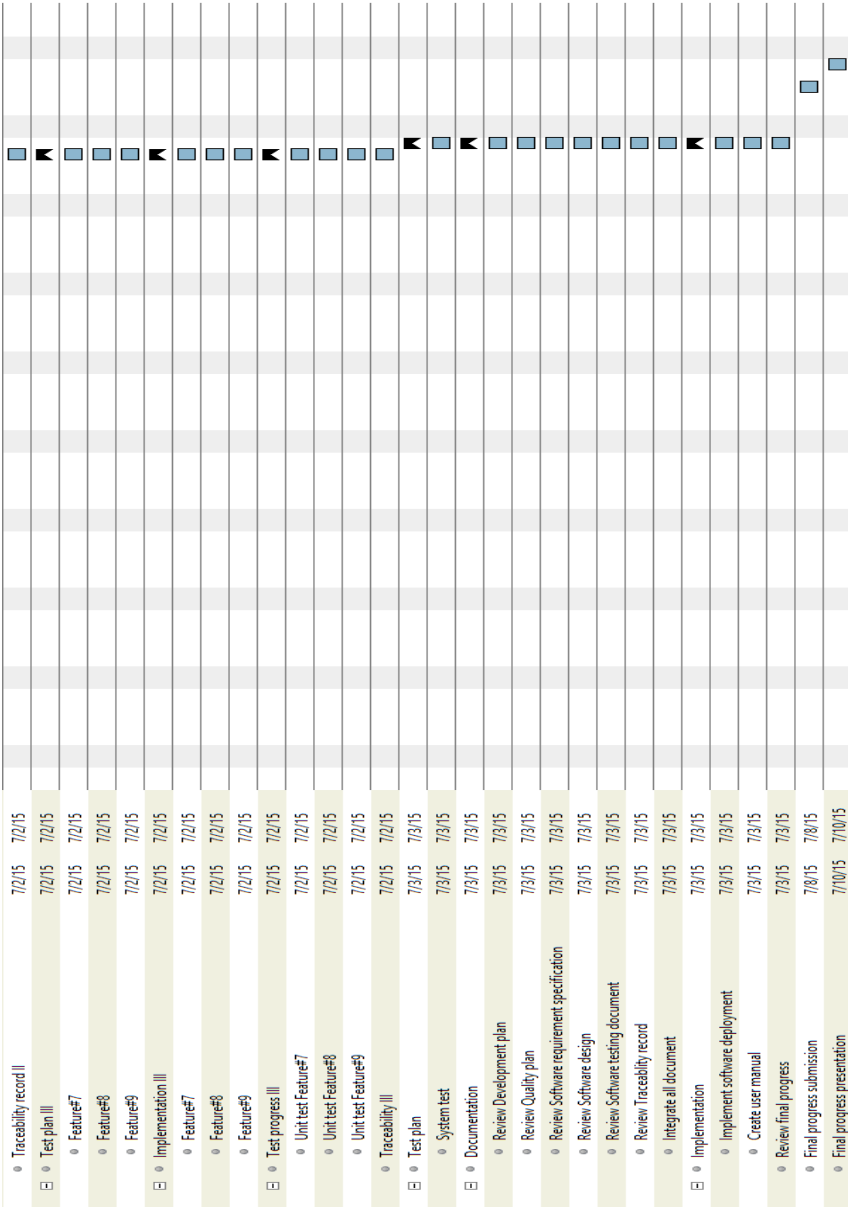
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[11] ISO 29110
DATE 2/5/2015
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5.1 Figure

[1]*Figure 1 Turn it in*
DATE 20/5/2015
http://secure.surveymonkey.com/_resources/25338/22255338/4503217d-6ad5-47d1-9ac5-f6ff8299b5bf.jpg

[2] *Figure 2 CMU online main page*
DATE 20/5/2015
http://cmuonline.cmu.ac.th/

[3] *Figure 3 ASP.NET*
http://www.samcomtechnobrains.com/blogs/wp-content/uploads/2013/06/primary-original.png
DATE 19/5/2015

[4] *Figure 4* CSS Logo
http://blogs.microsoft.co.il/gilf/2011/12/14/css3-animations/
DATE 20/5/2015

[5] *Figure 5 Google Spreadsheets API Logo*
https://developers.google.com/google-apps/spreadsheets
DATE 29/6/2015

[6] *Figure 6 the architecture of Smart Quiz*
DATE 20/5/2015

[7] *Figure 7 Iterative development model*
DATE 20/5/2015

[8] *Figure 8 Final Progress Milestone (Tentatively from early - May until early - July)*
DATE 29/6/2015

[9] *Figure 9 Final Progress Milestone (Tentatively from early - July)*
DATE 29/6/2015