



FINAL YEAR PROJECT – PROJECT PROPOSAL

Course ID: COMP1682

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I. Overview of the project

As we all know, technology is becoming important and necessary for all of us today, especially in the innovations of Industry 4.0. Not only does it help us reduce the amount of work we have to do in the past, but we can also make our work more efficient by adopting technology. According to (Lillisrinijap, 2023), he pointed out and said that technology has been influencing the way we learn, communicate and think. Therefore, technology has a strong impact on every profession as well as many aspects of our lives and one of those aspects can be mentioned in management studies. This can be said to be a system that not only supports creating, editing or storing content, but also helps to share and manage useful content for schools or other large organizations. More than that, has become one of the most dangerous elements that the world and we are dealing with in the past few years. The more dangerous thing about Covid-19 is that this virus easily spreads to society from one individual to another. As a result, Covid-19 has strongly affected many aspects of our lives such as social distancing causing millions of people around the world to lose their jobs (Crayne, 2020). Not only that, Covid-19 also affected economic activities, causing the economy to be severely affected. According to (UNESCO, 2020), there are already 1.5 billion children and young people in 195 countries unable to go to school due to social distancing, from primary school to university. To avoid the restrictions caused by the Covid-19 pandemic, many solutions have been put in place to maintain the educational progress.

So, the idea of this project is to develop a system called Learning Management System CMS, which will help teachers and students easily interact with each other through a website, but also Store all the content, important information such as instructors, courses, documents for teachers and students. The system will allow teachers to post assignments, courses for students, grade and give comments on students' work, so that students will go to the system to get assignments, study courses that the teacher wants. she gives, watches lectures, submits papers and views her grades on the system, etc. The system has an interesting function that can call video calls to connect and interact with each other. Moreover, this video call can be used as an online class in case they cannot attend the class.

To be able to build a website, the frontend and backend are the things that need the most attention. It can be said that there are many languages like frameworks suitable for developing CMS Learning Management System such as PHP, Ruby, Node.js, etc.

PHP is a popular open-source scripting language that automates the execution of tasks in a particular runtime environment and it is used for a web server (Valade, 2023). According to (Sklar, 2023), the PHP language is powerful for website development and it's easy to do normal website programming. Furthermore, PHP has the ability to embed HTML files. Therefore, it is widely used on many famous websites such as Wikipedia, Facebook (Sklar, 2023). PHP can integrate with many different database management systems including MySQL (SINGLA, 2022).

Node.js is suitable for real-time web applications, and Node.js not only helps humans to handle large amounts of I/O operations, but also integrates a lot of useful packages available, APIs

and Sockets. io helps me build an efficient system (Altexsoft, 2022). Moreover, it is capable of handling single-threaded queries, Node.js consumes less RAM and runs faster without creating new threads like PHP, Ruby, ASP.NET (Satheesh, 2023). Therefore, it will help users handle multiple accesses quickly.

For the database management system, there are many options for CMS Learning Management System databases such as MySQL, MongoDB, etc. Each type of DBSM has its own advantages and disadvantages but in this system. According to (Banker), MongoDB is a non-relational open- source database management system. MongoDB is widely used in recent years because of its visual data model, and data is stored in JSON documents instead of tabular like relational databases, so querying will be very fast. Not only that, the product presentation can be easily presented in a single document, making the query much more convenient and fast. According to (Damodaran, 2016), MySQL is a relational open- ource database management system. Unlike MongoDB, data is stored in the form of tables that are closely related to each other. Programmers use queries on the data stored in the database to perform the tasks they desire. In addition, in MySQL, data replication can be reduced because the information is stored in many different tables.

For software development methods, Agile and Waterfall and the most popular in recent years. Each method presents the user with many of their advantages. According to (DeClute, 2022), Agile method is an iterative and incremental software development method, which is a specific approach to software project management. It includes an integrated and interactive workflow that completes requests as quickly as possible. This model has the ability to meet changing needs that Waterfall cannot. Besides, unlike Agile, the Waterfall model is effective when the requirements and tasks are clearly defined (DeClute, 2022) Each stage must be well executed before moving on to the next because Waterfall is a sequential method (S.Balaji, 2012). As such, waterfall is easier to implement than Agile, and each stage is guaranteed to be the quality of the product.

Key phrases: System Course Management, Learning Management CMS, Node.js, PHP, Socket.io, MongoDB, MySQL, Waterfall Model, Course Management.

II. Project Aim

This project aims to design and develop a learning management system CMS to help teachers and students interact easily on the website including information about classes, courses or students. You can submit assignments for teachers to view and grade. Not only that, Admin can manage the account of each role. Moreover, they can interact with each other on the system easily, they can connect with each other by connecting via video call which can be used as a classroom or online conference.

III. Objectives

CMS Learning Management System

Objective 1: Project Proposal & Literature Review

Activities:

- Discuss project ideas.
- Search & read materials to find out critical information.
- Writing project proposal & literature review

Deliverables:

- Project Proposal Report.
- Literature Review

Objective 2: System Design

Activities:

- Draw the Entity Relationship Diagram.
- Draw the wireframe design.
- Draw the sitemap.
- Draw use case diagram.
- Draw activities diagram.

Deliverables:

- System Entity Relationship Diagram.
- Wireframe design of CMS Learning Management System
- Sitemap of CMS Learning Management System
- Use case diagram of CMS Learning Management System
- Activities diagram of CMS Learning Management System

Objective 3: Implement the functionality of each role in CMS Learning Management System

Activities:

- Implement Admin function.
- Implement Academic Affairs Department function.
- Implement Student function.
- Implement Teacher function.

Deliverables:

- System has the functionalities for all role.

Objective 4: Implement video call feature

Activities:

- Develop the video stream.
- Implement connect user function.
- Implement mute function.
- Implement stop video function.
- Implement chat function.

Deliverables:

- System has the video call function

Objective 5: Complete CMS Learning Management System

Activities:

- Combine the functions to complete the system.

Deliverables:

- All the functionalities work.

Objective 6: Conduct Testing

Activities:

- Apply test levels.
- Provide potential test cases.
- Conduct test.

Deliverables:

- Test logs.

Objective 7: Evaluation

Activities:

- Writing final report to discuss the system.
- Writing the evaluation.

Deliverables:

- Final report.

IV. Legal, Social, Ethical and Professional Issues

1. Legal

In this project of mine, privacy is the biggest concern because this system can store many types of information not only from students but also from teachers and academic departments. So, users will have to share their information to identify. According to the Data Protection Act (Legislation.gov.uk, 2018), systems must follow the rules of using their information fairly, lawfully, transparently, using it for a clear purpose, and keeping it confidential their. In addition, personal information is not only used for lawful purposes, but some appropriate technical measures must be taken to protect users from unauthorized and illegal access. Because if I sell users' information, I will be violating principle 2 of the Data Protection Act 1998. Therefore, I must ensure that I will not use their information for negative purposes. I must take care of this matter carefully and responsibly, as some bad consequences can happen to the customer and me if the user's information is leaked to the outside.

Another problem is, when I forgot to encrypt the content as well as the user's password in the database. Hackers will take advantage of my vulnerabilities to access users' information for malicious purposes and negatively affect users. In that case, I violated principle 7 of the Data Protection Act 1998, because I was unable to protect the user's information from external factors. Therefore, I need to take care of this matter very carefully and meticulously.

2. Social

The CMS learning management system helps students and teachers keep up with their learning progress. Especially when the Covid-19 epidemic broke out and everyone had to follow social distancing rules. It not only helps reduce travel costs, but also brings convenience to both teachers and students. Although it is only a temporary method, students can still prepare, learn new lessons on the system and keep up with the learning process at home. Students can join classes quickly instead of having to prepare and travel to class as usual. However, besides that, it has a disadvantage that students and teachers cannot interact effectively with each other. Not only learning, the CMS Learning Management System also supports the Admin to manage faculties, classes, courses,... more effectively.

3. Ethical

The ethical problem with this system is that students can easily copy material without interpreting their work and turn it in to the teacher. They would be in violation of UNSW's Plagiarism Policy (Sydney, 2023). It will create bad habits for students later on because plagiarism is considered stealing other people's ideas and other intellectual property.

Furthermore, their reputation may be negatively affected, they may also be suspended from their university. Therefore, students must be aware of the problem of plagiarism to avoid it.

To solve this problem, teachers should ask their students to upload their assignments or work to TurnItIn (plagiarism checker) so that they can check the level of plagiarism of each student. If the work has a high rate of plagiarism, it may be disqualified and will be considered an unsatisfactory test. Furthermore, teachers should have a "demo" day to check that their students understand their lectures and assignments.

4. Professional

Since my project will be developed for a university, it is extremely important to make sure the system works properly. Therefore, the system will be maintained to check if the features are still working well or not to improve, maybe add new features to the system. According to the BCS Code of Conduct (Gulfcollege, 2023). "Not only continuously develop professional skills, knowledge, expertise but also awareness of evolving technology and standards related to your profession", I have to specialize in technology as well as its framework to make the system work more efficiently and gain more valuable lessons and learn more valuable experience.

V. Project Plan

1. Work Breakdown Structure

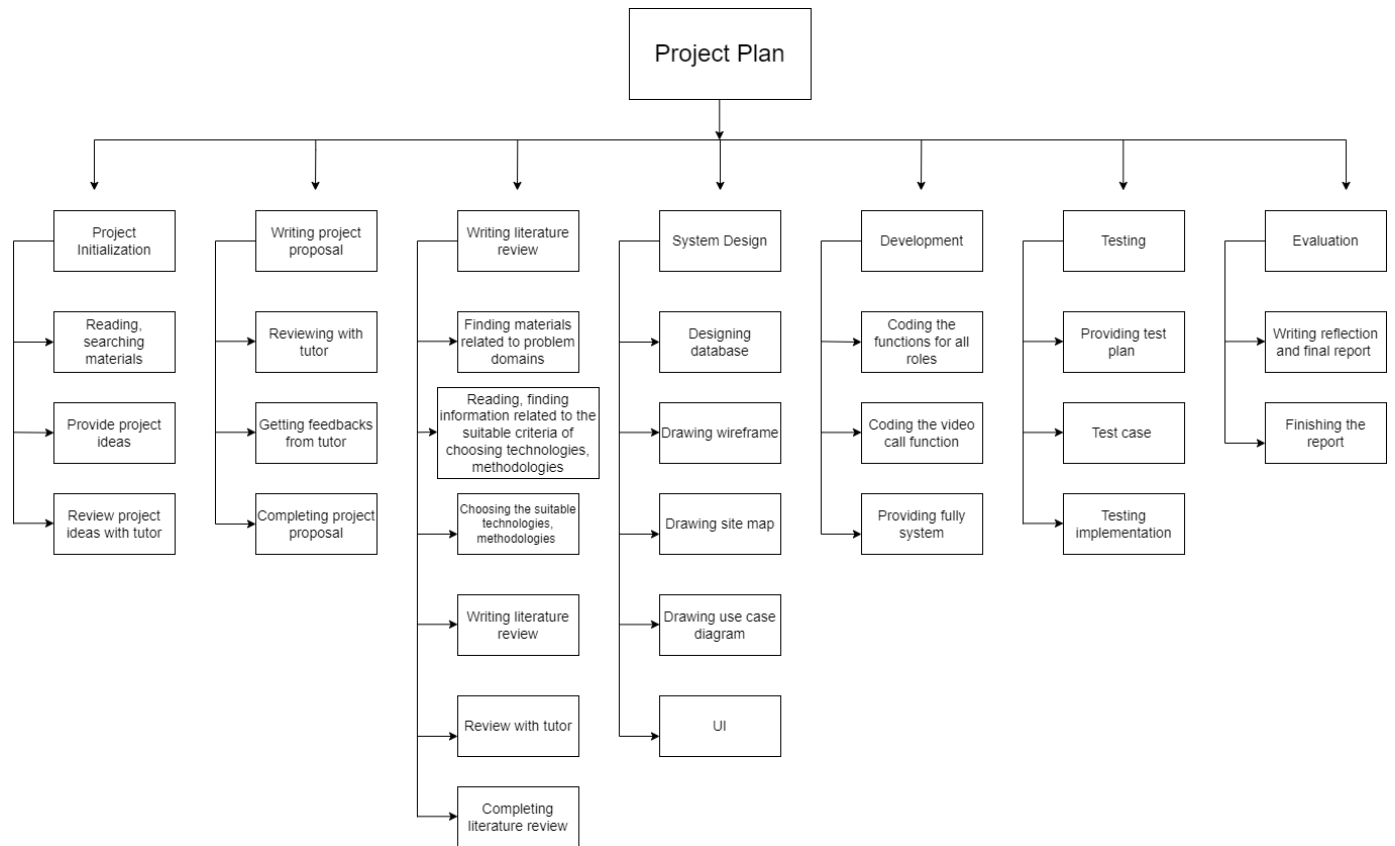


Figure 1 - Work Breakdown Structure

2. Gantt Chart

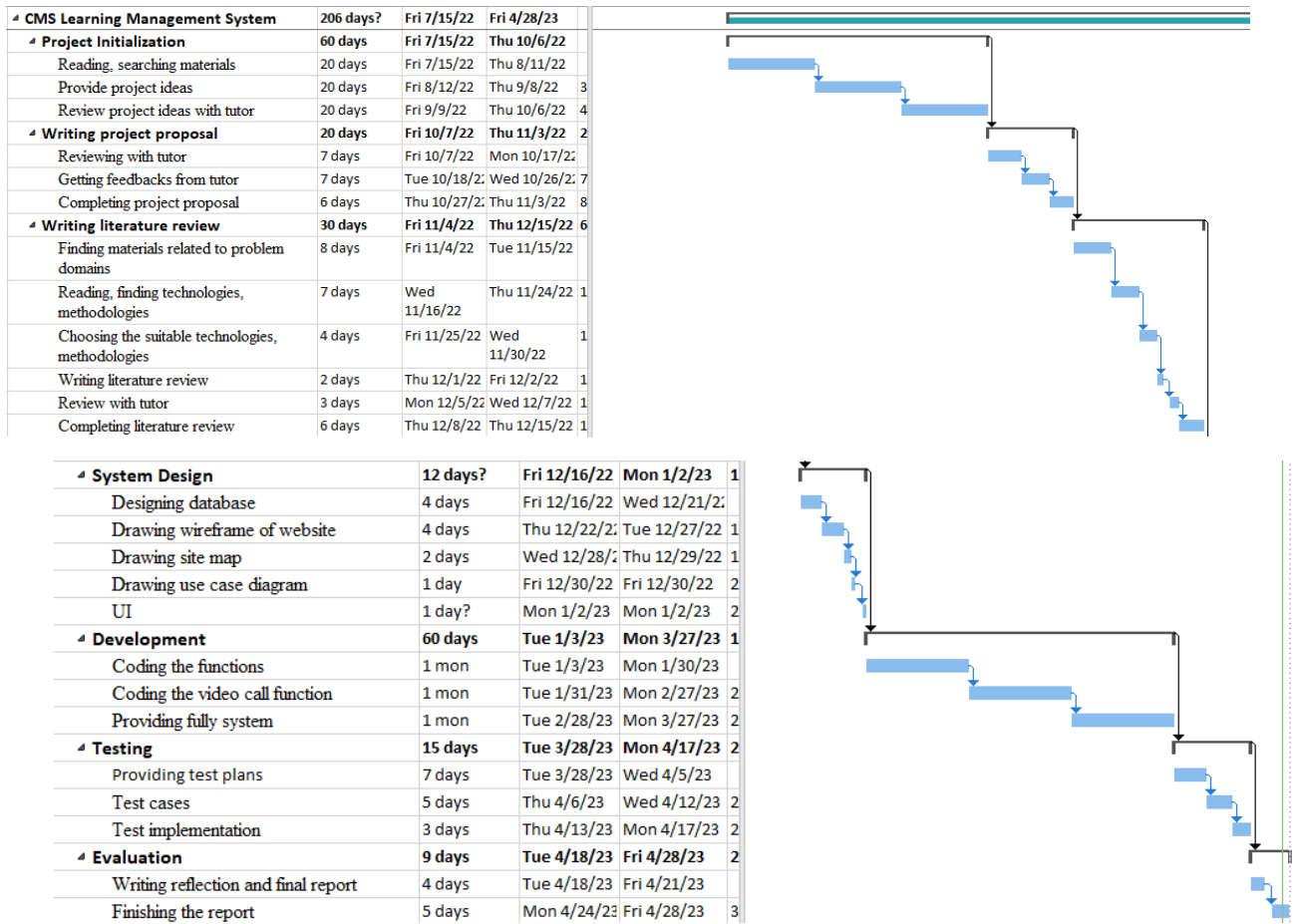


Figure 2 - Gantt Chart

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