UNSW
AUSTRALIA

School of Computer Science and Engineering

Faculty of Engineering

The University of New South Wales

Requirements to theses submitted in the Faculty of Engineering

Thesis submitted as a requirement for the degree of

Bachelor of Engineering

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Abstract

More and more educational institutions depend on online learning management systems for distributing resources to students, which has been accelerated by the coronavirus pandemic, and so there are a huge number of learning management systems available. These systems have a wide variety of features such as quizzes, blogs, assessment management, integrations with third party platforms such as Zoom and TurnItIn, and more.

However, many of these systems do not have an efficient or useful way to reuse content and resources used in other courses. Time is wasted organising and uploading content for students. Many of these learning management systems are also difficult to use for both teachers and students and are missing key features such as forums and teachers may look to other platforms such as Piazza for these features in conjunction with the learning management system.

Therefore, we will implement a learning management system with an improved UI that is more accessible and easier to use for both teachers and students, and adopts a system where teachers can upload content to a specific topic. This topic then can be reused for other courses, allowing for easier course creation and management.

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(Expand acknowledgements in the future)

Abbreviations

BE Bachelor of Engineering

UNSW University of New South Wales

LMS Learning Management System

Contents

Chapter 1

Introduction

Having a set of clear requirements to their thesis is important to student finalising their BE, or other, degree. Such requirements are both in relation to the physical appearance of the thesis, as well as the writing style and organisation. The present document tries to concisely state the theses requirements while appearing in layout and structure as a thesis itself.

Chapter 2 explains the background for this document. Chapter 3 states the style and submission related requirements to theses submitted at the school. Chapter **??** explains content related requirements to theses. Chapter 4 evaluates the thesis requirements template. Finally, Chapter 5 draws up conclusions and suggest ways to further improve the thesis requirements template.

Chapter 2

Background

2.1 Comparison table

Categories	Canvas	WebCMS	Moodle	D2L Brightspace	OpenLearning	Edmodo	Google Classroom
Topic Tree			No		No		
Account			Yes		Yes		
Course Pages			Yes		Yes		
Assignments			Yes		Yes		
Dashboard			Yes		No		
Quizzes/Exams/Tests/Polls			Yes		Yes		
Forums			Yes		No (comments system only)		
Multiplatform Access			Yes (Has separate mobile application)		Yes		
Accessibility			Yes		Yes		
Grading			Yes		Yes		
Attendance			Yes (Requires a plugin)		No		
Calendar			Yes		Yes		
Enrolment			Yes		Yes		
Blogs/Wikis/Discussions			Yes		Yes		
Notifications			Yes		Yes		
Lectures and Tutorials			Yes		Yes		
Third Party Integration			Yes		No (API is provided)		
Inbox/Messaging			Yes		Yes		
Gamification/Karma System			No		Yes		
High Quality User Interface			Yes		No		
Open Source			Yes		No		
Data Migration			Yes		No		
Performance (out of 10)			6		1		

2.2 Moodle

2.2.1 Overview

Modular Object-Oriented Dynamic Learning Environment, more commonly known as Moodle, is a learning management system founded in 2002 by Martin Dougiamas. Supporting over 60% of higher education institutions around the world, including UNSW,

Moodle provides an open-source, personalised learning platform aimed at supporting both students and educators. Moodle's modular design is centered around providing a personalised experience, giving users' the flexibility to build and access courses in a way that suits them. With a vast library of plugins, and the ability for developers to design their own, Moodle really provides users with unlimited functionality.

2.2.2 Dashboard

When a logged-in user first accesses Moodle, they are directed to the Dashboard which consists of content blocks for each of the user's courses. User's are provided with numerous ways to customise the dashboard, including:

- Hiding and showing individual courses
- Filtering courses by past, present and future
- Sorting courses alphabetically or by date
- Displaying courses as cards or in a list

Users can use these customisation tools to organise the dashboard based on their needs and as a result, easily find a desired course.

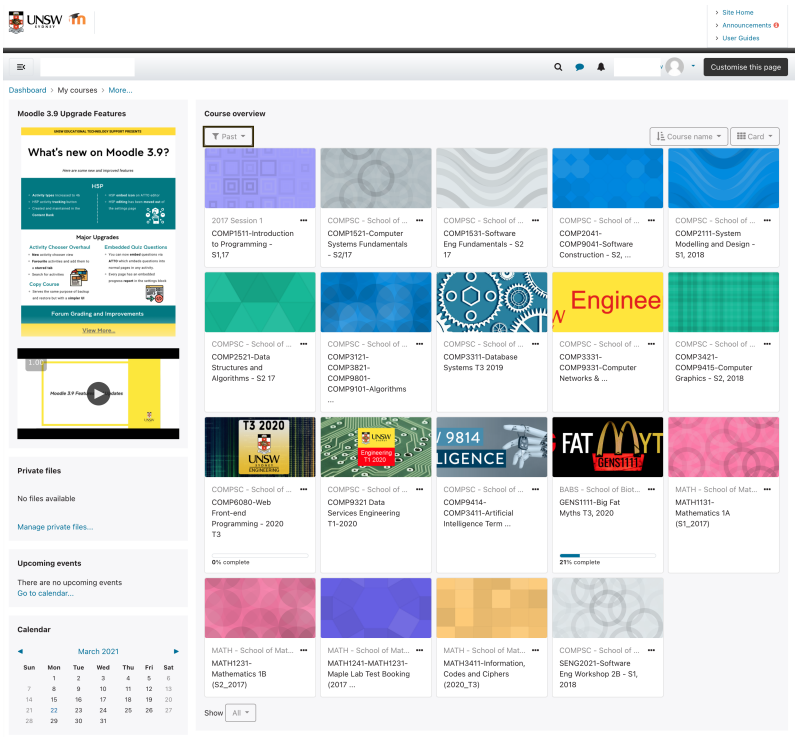

Figure 2.1: Moodle's Student Dashboard

2.2.3 Course Pages

A course page consists of various links to resources. These links can be separated into collapsible subsections which help with the organisation of a course. Course admins can customise the subsections based on how they would like to structure a course. Course admins can also customise the way in which students work through course content by blocking access to resources until certain criteria have been met.

The course page sidebar can also be edited to include different sections like course contacts, calendars, announcements and useful links.

Within a course page, students can access announcements, discussions, forums, quizzes, polls and course resources like lecture notes and assessment notifications. Course admins can open assignment submissions and provide students with assessment feedback and grades.

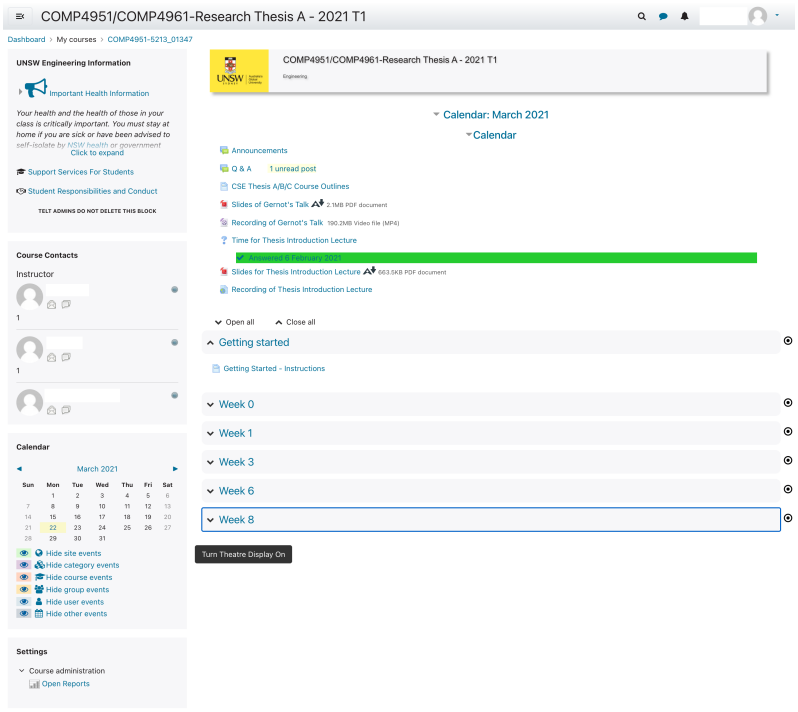

Figure 2.2: Moodle's Student Course Page

2.2.4 Forums

Moodle provides course admins with the ability to create one or more forums attached to a course page. Students and admins are able to post to the forum, reply to others, star posts and subscribe to conversations. There is no easy way to search through forum posts which can make it difficult to find information, especially when the post list is long. There is also no functionality for filtering sorting posts. Overall, the forum functionality in Moodle is pretty basic and could use a lot of improvement when it comes to the organisation of information and the overall experience.

2.2.5 Performance and Accessibility

The performance of Moodle is average, with Google's Lighthouse performance tool giving it a score between 60% - 70%, depending on the amount of content on the page. A similar score was achieved for the accessibility of the website, with the biggest issues

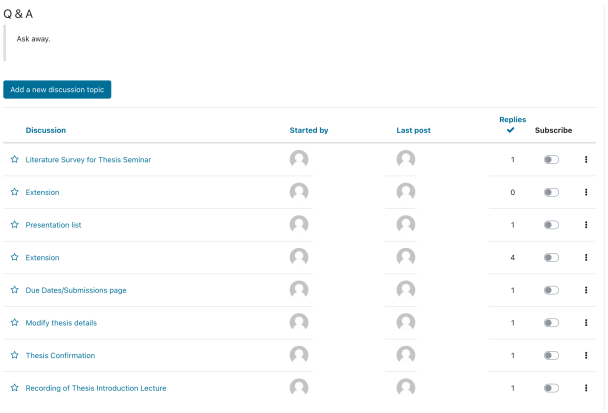

Figure 2.3: Moodle's Forums

being lack of contrast between background and foreground colours, as well as HTML elements missing the appropriate attributes required for assistive technology.

2.2.6 Data Migration

Moodle provides users with the option to backup and restore data associated with a course. Automated backups for courses can be set up to reduce the risk of losing data. These backups can also be used to migrate data to a different platform. Admins are able to easily select which parts of the course they would like to backup in the backup settings. The backup files can then be easily saved and restored at any time.

2.2.7 Conclusion

While the user interface, performance and accessibility could use some improvements, Moodle successfully delivers all the required functionality need to support students and educators.

Chapter 3

Project Plan

Chapter 4

Evaluation

This chapter is mainly provided for the purpose of showing a typical thesis structure. There are no more thesis requirements described.

4.1 Results

The result of this work is the present document, being both a LaTeX template and a thesis requirement specification.

4.2 Discussion

The Dual function of this document somewhat de-emphasises the primary purpose of the document, namely the thesis requirements. It would be better, if these could be stated on a few concise pages (cf Appendix 1, p**??**).

Chapter 5

Conclusion

A thesis requirements/template document has been created. This serves the dual purposes of giving students specific requirements to their theses — both style and content related — while providing a typical thesis structure in a LaTeX template.

5.1 Future Work

Extract the requirements from the template in order to have very concise requirements.

Bibliography