CAT404 – Software Engineering Major Project

Project Proposal

Postgraduate Practicum Management System

Subsystem 3: Practicum Report Management Subsystem

SE22230053

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Abstract

Practicum reports are needed during the period of practicum course to record student's practicum experiences in the host company. It serves as evidence of what has been completed by the postgraduate students and also as a documentation to enable the transfer of knowledge from author to its reader. There are about hundreds of students' report submitted to the school and it is hard for programme manager to manage different types of reports in short period of time. For instance, it is hard for programme manager to get useful insights from students' reports by reviewing individually. Hence, Practicum Report Management subsystem is proposed to help programme manager to properly store, manage and track postgraduate students' reports systematically. This subsystem serves as a platform to store and manage the students' reports properly so that all the reports can be accessible by anyone with permission. Besides serving as report repository, this subsystem is aimed to assist programme manager to perform report analysis and provide an overview of the programme structure such as the total number of students who have submitted the reports and etc. In order to prevent students from losing their reports, this subsystem also allows students to upload different versions of reports as a backup and they can choose the final report to be submitted.

Keywords: Report Repository, Report Management, Report Analysis

1. Project Background

The School of Computer Sciences in Universiti Sains Malaysia (USM) offers two types of master programme for students who want to pursue their master's degree which are mixed mode and coursework mode. In the coursework mode, there are two courses available which are Master of Science (Data Science and Analytics), MSc (DSA) and Master of Science in Digital Transformation, MScDT. CDS506 Research, Consultancy & Professional Skills is one of the core courses in both programmes and it is a pre-requisite course before enrolling in CDS590 Consultancy Project & Practicum course for MSc (DSA) and CDT594 Digital Transformation Project and Practicum course for MScDT. During CDS506, postgraduate students are required to find a practicum workplace and work on the project given. While doing the projects, students are required to write reports such as activity plans, mid-term report, final report and etc. as well as perform presentation on the findings and outcome of the taken project. Without a proper system, lecturers would have difficulties in tracking and managing different type of report in short period of time. For that reason, a report management system is needed to properly store and manage the students' reports.

Practicum Report Management system is one of the subsystems under Postgraduate Practicum Management Systems. This subsystem aims to offer a consolidated platform to store all the students' reports so that everyone can access the reports by making a request. Data visualization tools such as dashboard is very useful especially in the business world to visualize the company's overall performance and assist the top-level management in decision-making. In our context, dashboard plays an important role by providing a comprehensive overview of the students' report such as the number of students who involved in similar topic via tools like graphs and charts. Before dashboard, programme manager needs to spend hours gathering the data from different sources and manually formatting the reports using Excel. By having a more interactive dashboard in the system, it can help to save a lot of time and make analyzing reports much simpler.

To summarize, Practicum Report Management is a subsystem of Postgraduate Practicum Management system which serves as a report repository. It also facilitates report depositing by the students and provide visualization to programme manager to

perform some analysis tasks. We hope that this system could substantially reduce the burden of the programme managers to manage the master's programmes and help them to work more efficiently.

2. Problem Statements

While undergoing the courses, postgraduate students need to submit reports at each milestone such as activity plan report, mid-term report and final report. However, for the current existing system CS-Practicum Information System (CS-PracTIS), there are some lacking features and functionalities that could help the lecturers to manage and organize the reports more efficiently and effectively.

In the current system, there is no repository that can help to record all the students' reports. Thus, it is difficult for students and lecturers to find and search for the previous students' works. Without a report repository, lecturers can only access the reports which belong to students under their supervision. Hence, not every lecturer could view the works of other students which make the reports not accessible to everyone.

Besides, in the current system, there is no report versioning feature which allows the student to upload different versions of reports and presentation slides. Therefore, students can only upload their final reports once without any backup. If there are any incidents such as deleting the reports unintentionally or facing PC failure, students will lose all their reports and they will need to redo everything from scratch.

The current system does not provide a dashboard that can provide a comprehensive view and insights of the data. Dashboard play an important role in summarizing the collected data and display the analysis results in a more interactive way. Without a dashboard, it is difficult for the lecturers or programme manager to gather important information from the students' reports and monitor students' performance. Not only that, more time will be spent in gathering and analyzing hundreds of students' reports.

3. Motivation

One of the motivations to create a report management subsystem is in adherence to the Open Science initiative. Open Science is the movement to enable research output

to be accessible by all members of society, free of cost [1]. It is a broader term that includes open research data, open access, open scientific publications etc. [1]. The scientific research done by the researchers can benefit us by transferring knowledge more quickly. The increase access of the research data can lead to more innovation of new products and ideas among the individuals [1]. Hence, we would like to implement the idea of open science by creating a report repository so that students and lecturers can access the previous works done by the students more easily.

The second motivation of proposing this solution is to provide a platform for students to store a copy of their reports and presentation slides in our system as a backup. Students can upload different versions of reports in the system and select the final report to be submitted to their supervisor. This is to prevent them from losing their reports and presentations slides and ensure their reports are kept safely.

Last but not least, the motivation of having a report management subsystem is to help programme manager to gain more value and insights from the data by creating a dashboard. For instance, the programme manager can view the most popular topic taken by students in every academic year and the overall performance of the student.

4. System Objectives

This project aims to develop a web-based application which revolves around the following objectives:

- To provide long-term report preservation to all students and lecturers.
- To facilitate report depositing and report versioning for the students.
- To provide data visualization to programme manager for data analysis purposes.

5. Proposed Solutions

Based on Figure 5.1, we can see that Practicum Report Management subsystem consists of three submodules which are Report Repository, Report Submission & Versioning and Dashboard. In Table 5.1, the functionalities of each submodule are further explained and described.

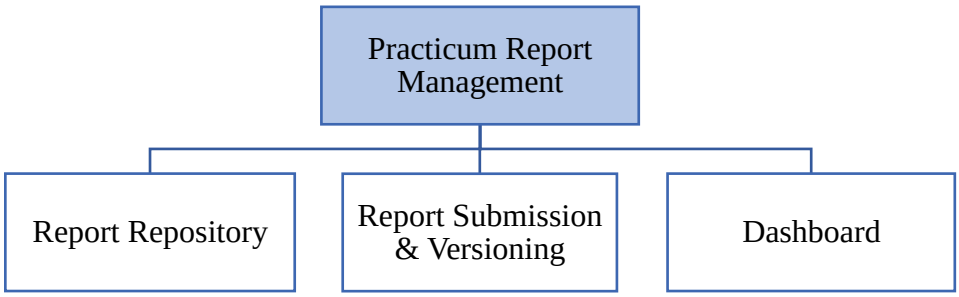

Figure 5.1: Module Breakdown Structure of Practicum Report Management Subsystem

Table 5.1: Description of Each Submodule

Submodules	Description
Report Repository	A platform to centralize all postgraduate students reports in one place so that everyone could access the report easily. The report can be searched easily by applying filter such as academic year, topic, keyword and etc. This submodule also assists the programme manager to manage the reports in a more organized manner where they could search the report just in one place.
Report Submission & Versioning	Manage different version of student's report and provide a platform for students to back up their reports. Students can keep track of the changes made in each report and choose the final report and final presentation slides to be submitted.
Dashboard	Facilitate programme manager to perform data analysis and obtain meaningful insights such as the trending topic and the total number of students who have submitted reports and etc.

6. Benefits / Impact / Significance of Project

Practicum Report Management subsystem is designed for students and lecturers to view and manage the reports properly. It helps to centralize all the students reports in one place to ease the process of searching the reports. Report searching can be based on academic year, topic and keywords. Additionally, a report repository also escalates knowledge transfer as everyone can just access the reports by sending a request to the author.

Moreover, this subsystem helps student to store a copy of students' works to prevent loss of reports due to incidents like mistakenly remove the reports, PC failures and etc. In addition, report versioning is important to allow students to track the changes made in the report and make a clear separation between draft and final report. With this feature, it allows students to delete redundant reports with confidence and they can easily roll back to the previous version of report if needed.

Finally, this subsystem can help programme managers to save more time and improve the work efficiency. Imagine that without the help of dashboard, the program manager needs to review hundreds of report one-by-one and extract meaningful data from the reports. With this subsystem, it can significantly reduce the time for the program manager to review and analyze the data.

7. Uniqueness of Proposed Solutions

One of the uniqueness of the system is it can automatically categorize the reports based on the project title using machine learning approach. Manually classifying and categorizing the report is time-consuming and tedious. Therefore, by implementing text classification, this subsystem can automatically categorize the students report based on several categories which come from the 10-10 MySTIE framework. This feature not only can help the programme manager to arrange the students' report in a more systematic way, but it also makes the searching task much easier and faster.

Besides, another uniqueness of the proposed solution that we would like to highlight is allowing students to upload different versions of reports. As for the current system, report versioning feature does not exist where students can only submit the final report and presentation slides to their respective supervisors. With the report versioning feature, students can track their report history and compare the changes made in the report. As a result, students can easily go back to the previous version as they desired. Plus, scenarios like report missing or PC failure are very common in a student's life. Hence, this subsystem can serve as a platform for students to back up their report to prevent that kind of situations from happening.

8. Expected Outcomes

Table 8.1: Expected Outcome for Each Submodule

Submodules	Expected Outcomes
Report Repository	• Display all students' reports. • Allow lecturers to send request to the author in order to view the report. • Allow users to search report based on academic year, topic and keywords. • Allow students to accept or reject the request to access their report.
Report Submission & Versioning	• Allow students to upload different version of reports and presentation slides as a backup. • Allow students to submit the final version of the report and presentation slides to their respective supervisor.
Dashboard	• Display graphs and charts which can provide meaningful insights to programme manager.

9. Status of the Project

This project is a new project developed to assist the program manager in managing the postgraduate students who are undergoing their practicum project in a chosen organization. The development of this subsystem will start from scratch and this project is still in the planning stage.

10. References

[1] "Open Science: Purpose, Benefits, and What it Means for You." https://blog.theopenscholar.com/en/open-science-purpose-benefits (accessed Oct. 29, 2022).

11. Appendix

[Practicum Report Management System] Project Schedule

Gantt Chart Template © 2006-2018 by Vertex42.com.

Project Start Date: 17 Oct 2022 | Display Week: 1
Project Lead: Heng Kai Xuan

WBS	TASK	START	END	DAYS	% DONE	WORK DAYS
1	**Pre-Project Activities (Planning)**		-			-
1.1	Project bidding	17 Oct 2022	21 Oct 2022	5	100%	5
1.2	Study project background	22 Oct 2022	24 Oct 2022	3	100%	1
1.3	Identify problems and objectives	25 Oct 2022	25 Oct 2022	1	100%	1
1.4	Determine project scope	26 Oct 2022	29 Oct 2022	4	100%	3
1.5	Write initial proposal	30 Oct 2022	5 Nov 2022	7	100%	5
1.6	Project proposal vetting	6 Nov 2022	10 Nov 2022	5	0%	4
1.7	Amendment on project proposal	11 Nov 2022	20 Nov 2022	10	0%	6
2	**Analysis**		-			-
2.1	Interview on stakeholders	21 Nov 2022	26 Nov 2022	6	0%	5
2.2	Determine system capabilities, functional, and non-functional features	27 Nov 2022	3 Dec 2022	7	0%	5
2.3	Verify and validate on the requirements	4 Dec 2022	7 Dec 2022	4	0%	3
2.4	Write System Requirement and Design (SRD) Report	8 Dec 2022	25 Dec 2022	18	0%	12
3	**Design**		-			-
3.1	Identify the detailed workflow of each use case	26 Dec 2022	1 Jan 2023	7	0%	5
3.2	Design user interface layout for applications	2 Jan 2023	8 Jan 2023	7	0%	5
3.3	Design the database structure	9 Jan 2023	15 Jan 2023	7	0%	5
3.4	Design the overall structure of the system	16 Jan 2023	22 Jan 2023	7	0%	5
4	**Implementation**		-			-
4.1	Write code for report repository module	23 Jan 2023	21 Feb 2023	30	0%	22
4.2	Write code for report submission & versioning module	22 Feb 2023	23 Mar 2023	30	0%	22
4.3	Write code for dashboard module	24 Mar 2023	22 Apr 2023	30	0%	21
5	**Testing & Integration**		-			-
5.1	Perform unit testing	23 Apr 2023	2 May 2023	10	0%	7
5.2	Perform integration testing	3 May 2023	12 May 2023	10	0%	8
5.3	Perform system testing	13 May 2023	22 May 2023	10	0%	6
6	**Deployment**		-			-
6.1	Deploy the whole system	23 May 2023	1 Jun 2023	10	0%	8

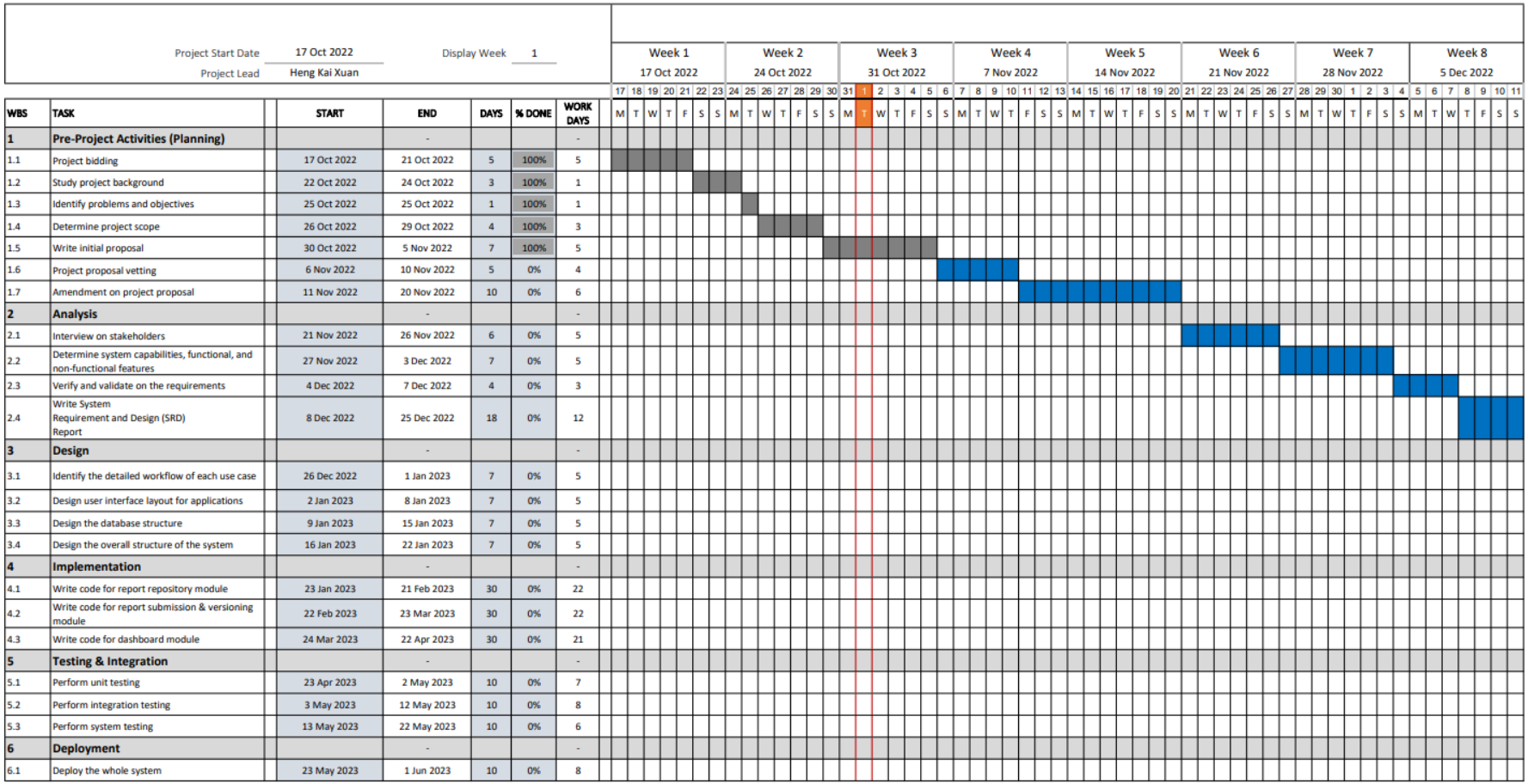

Figure 11.1: Gantt Chart of Week 1 to Week 8

[Practicum Report Management System] Project Schedule

Gantt Chart Template © 2006-2018 by Vertex42.com.

Project Start Date: 17 Oct 2022 | Display Week: 9
Project Lead: Heng Kai Xuan

WBS	TASK	START	END	DAYS	% DONE	WORK DAYS
1	**Pre-Project Activities (Planning)**		-			-
1.1	Project bidding	17 Oct 2022	21 Oct 2022	5	100%	5
1.2	Study project background	22 Oct 2022	24 Oct 2022	3	100%	1
1.3	Identify problems and objectives	25 Oct 2022	25 Oct 2022	1	100%	1
1.4	Determine project scope	26 Oct 2022	29 Oct 2022	4	100%	3
1.5	Write initial proposal	30 Oct 2022	5 Nov 2022	7	100%	5
1.6	Project proposal vetting	6 Nov 2022	10 Nov 2022	5	0%	4
1.7	Amendment on project proposal	11 Nov 2022	20 Nov 2022	10	0%	6
2	**Analysis**		-			-
2.1	Interview on stakeholders	21 Nov 2022	26 Nov 2022	6	0%	5
2.2	Determine system capabilities, functional, and non-functional features	27 Nov 2022	3 Dec 2022	7	0%	5
2.3	Verify and validate on the requirements	4 Dec 2022	7 Dec 2022	4	0%	3
2.4	Write System Requirement and Design (SRD) Report	8 Dec 2022	25 Dec 2022	18	0%	12
3	**Design**		-			-
3.1	Identify the detailed workflow of each use case	26 Dec 2022	1 Jan 2023	7	0%	5
3.2	Design user interface layout for applications	2 Jan 2023	8 Jan 2023	7	0%	5
3.3	Design the database structure	9 Jan 2023	15 Jan 2023	7	0%	5
3.4	Design the overall structure of the system	16 Jan 2023	22 Jan 2023	7	0%	5
4	**Implementation**		-			-
4.1	Write code for report repository module	23 Jan 2023	21 Feb 2023	30	0%	22
4.2	Write code for report submission & versioning module	22 Feb 2023	23 Mar 2023	30	0%	22
4.3	Write code for dashboard module	24 Mar 2023	22 Apr 2023	30	0%	21
5	**Testing & Integration**		-			-
5.1	Perform unit testing	23 Apr 2023	2 May 2023	10	0%	7
5.2	Perform integration testing	3 May 2023	12 May 2023	10	0%	8
5.3	Perform system testing	13 May 2023	22 May 2023	10	0%	6
6	**Deployment**		-			-
6.1	Deploy the whole system	23 May 2023	1 Jun 2023	10	0%	8

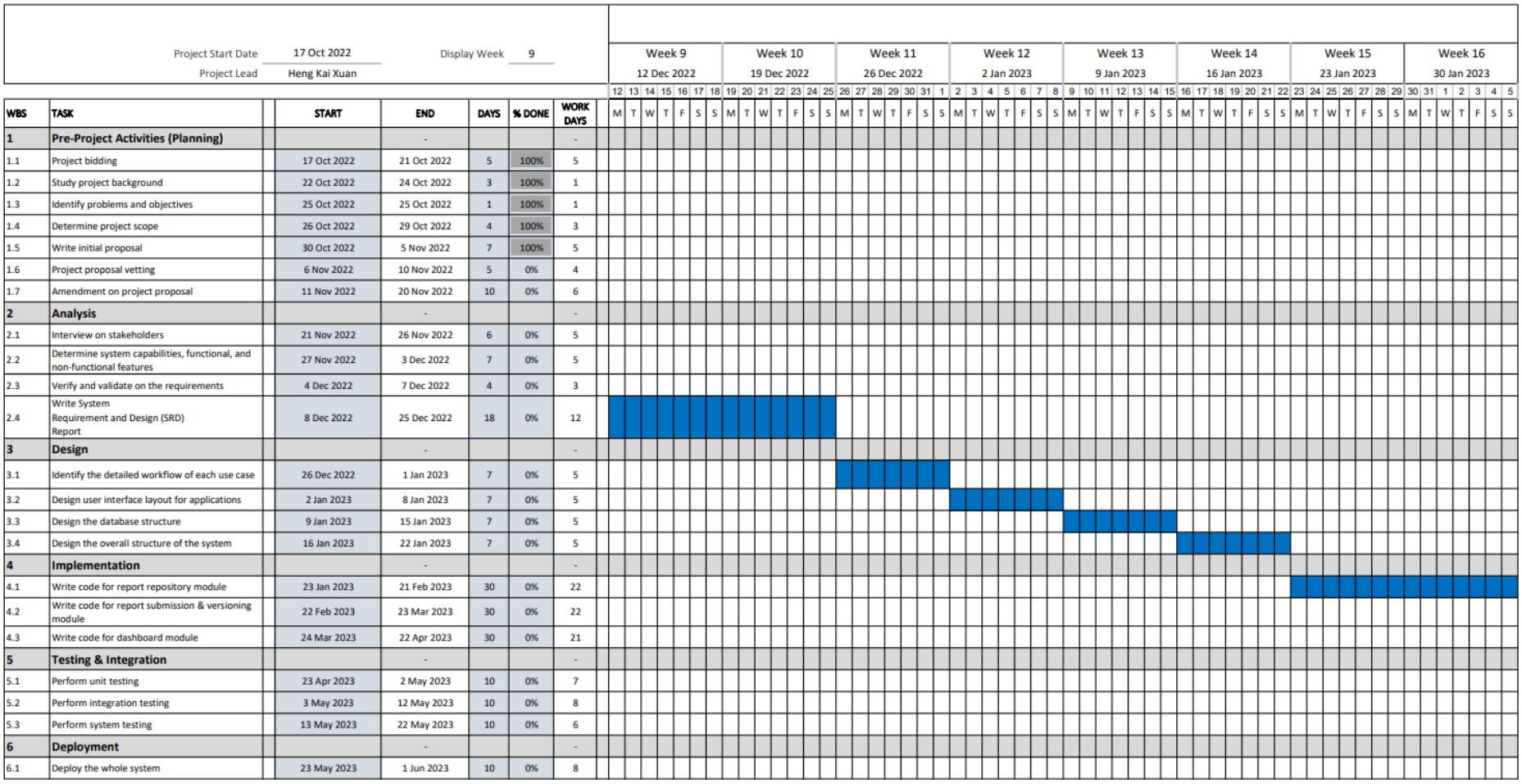

Figure 11.2: Gantt Chart of Week 9 to Week 16

[Practicum Report Management System] Project Schedule

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Project Start Date: 17 Oct 2022 | Display Week: 17
Project Lead: Heng Kai Xuan

WBS	TASK	START	END	DAYS	% DONE	WORK DAYS
1	**Pre-Project Activities (Planning)**		-			-
1.1	Project bidding	17 Oct 2022	21 Oct 2022	5	100%	5
1.2	Study project background	22 Oct 2022	24 Oct 2022	3	100%	1
1.3	Identify problems and objectives	25 Oct 2022	25 Oct 2022	1	100%	1
1.4	Determine project scope	26 Oct 2022	29 Oct 2022	4	100%	3
1.5	Write initial proposal	30 Oct 2022	5 Nov 2022	7	100%	5
1.6	Project proposal vetting	6 Nov 2022	10 Nov 2022	5	0%	4
1.7	Amendment on project proposal	11 Nov 2022	20 Nov 2022	10	0%	6
2	**Analysis**		-			-
2.1	Interview on stakeholders	21 Nov 2022	26 Nov 2022	6	0%	5
2.2	Determine system capabilities, functional, and non-functional features	27 Nov 2022	3 Dec 2022	7	0%	5
2.3	Verify and validate on the requirements	4 Dec 2022	7 Dec 2022	4	0%	3
2.4	Write System Requirement and Design (SRD) Report	8 Dec 2022	25 Dec 2022	18	0%	12
3	**Design**		-			-
3.1	Identify the detailed workflow of each use case	26 Dec 2022	1 Jan 2023	7	0%	5
3.2	Design user interface layout for applications	2 Jan 2023	8 Jan 2023	7	0%	5
3.3	Design the database structure	9 Jan 2023	15 Jan 2023	7	0%	5
3.4	Design the overall structure of the system	16 Jan 2023	22 Jan 2023	7	0%	5
4	**Implementation**		-			-
4.1	Write code for report repository module	23 Jan 2023	21 Feb 2023	30	0%	22
4.2	Write code for report submission & versioning module	22 Feb 2023	23 Mar 2023	30	0%	22
4.3	Write code for dashboard module	24 Mar 2023	22 Apr 2023	30	0%	21
5	**Testing & Integration**		-			-
5.1	Perform unit testing	23 Apr 2023	2 May 2023	10	0%	7
5.2	Perform integration testing	3 May 2023	12 May 2023	10	0%	8
5.3	Perform system testing	13 May 2023	22 May 2023	10	0%	6
6	**Deployment**		-			-
6.1	Deploy the whole system	23 May 2023	1 Jun 2023	10	0%	8

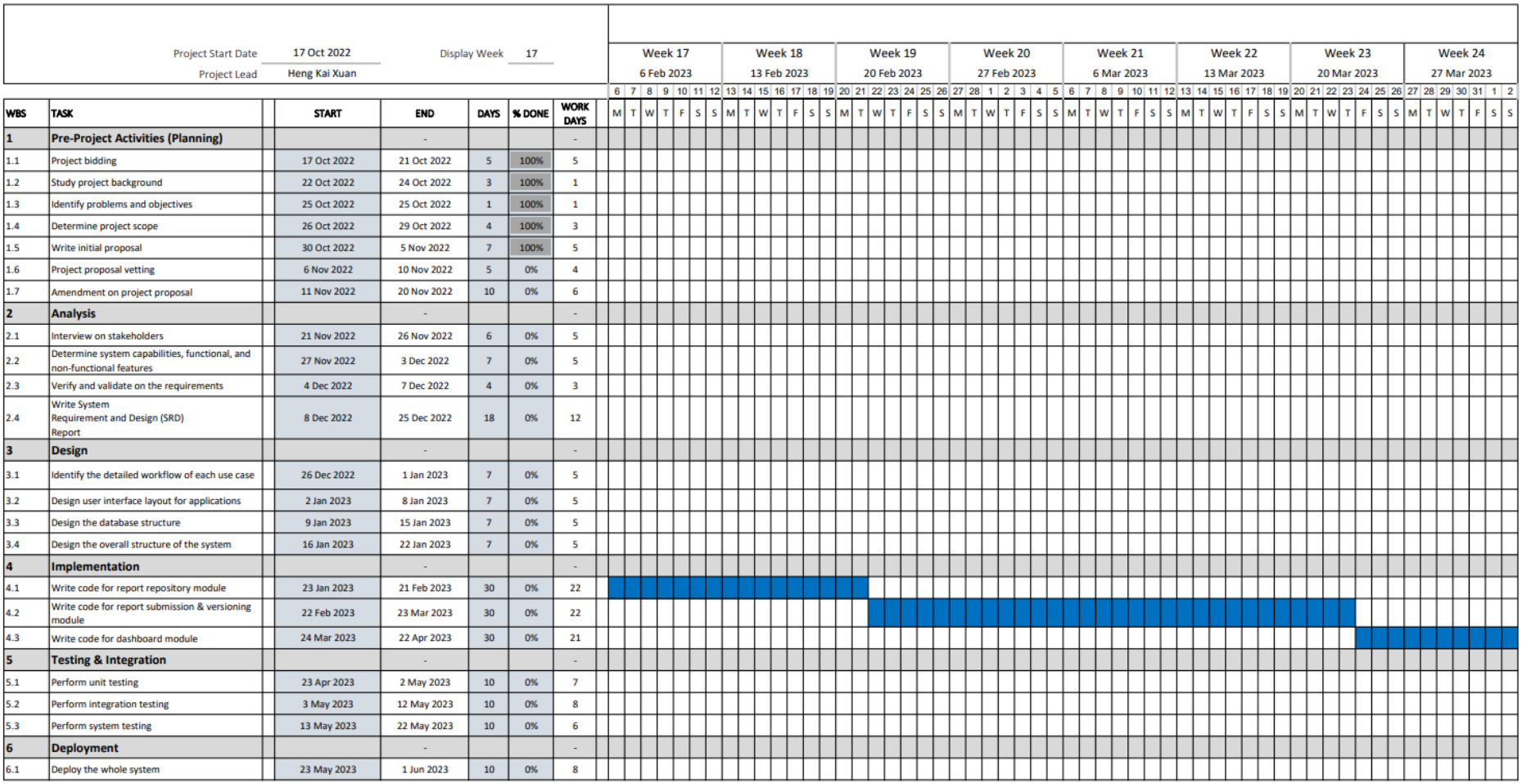

Figure 11.3: Gantt Chart of Week 17 to Week 24

[Practicum Report Management System] Project Schedule

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Project Start Date: 17 Oct 2022 | Display Week: 25
Project Lead: Heng Kai Xuan

WBS	TASK	START	END	DAYS	% DONE	WORK DAYS
1	**Pre-Project Activities (Planning)**		-			-
1.1	Project bidding	17 Oct 2022	21 Oct 2022	5	100%	5
1.2	Study project background	22 Oct 2022	24 Oct 2022	3	100%	1
1.3	Identify problems and objectives	25 Oct 2022	25 Oct 2022	1	100%	1
1.4	Determine project scope	26 Oct 2022	29 Oct 2022	4	100%	3
1.5	Write initial proposal	30 Oct 2022	5 Nov 2022	7	100%	5
1.6	Project proposal vetting	6 Nov 2022	10 Nov 2022	5	0%	4
1.7	Amendment on project proposal	11 Nov 2022	20 Nov 2022	10	0%	6
2	**Analysis**		-			-
2.1	Interview on stakeholders	21 Nov 2022	26 Nov 2022	6	0%	5
2.2	Determine system capabilities, functional, and non-functional features	27 Nov 2022	3 Dec 2022	7	0%	5
2.3	Verify and validate on the requirements	4 Dec 2022	7 Dec 2022	4	0%	3
2.4	Write System Requirement and Design (SRD) Report	8 Dec 2022	25 Dec 2022	18	0%	12
3	**Design**		-			-
3.1	Identify the detailed workflow of each use case	26 Dec 2022	1 Jan 2023	7	0%	5
3.2	Design user interface layout for applications	2 Jan 2023	8 Jan 2023	7	0%	5
3.3	Design the database structure	9 Jan 2023	15 Jan 2023	7	0%	5
3.4	Design the overall structure of the system	16 Jan 2023	22 Jan 2023	7	0%	5
4	**Implementation**		-			-
4.1	Write code for report repository module	23 Jan 2023	21 Feb 2023	30	0%	22
4.2	Write code for report submission & versioning module	22 Feb 2023	23 Mar 2023	30	0%	22
4.3	Write code for dashboard module	24 Mar 2023	22 Apr 2023	30	0%	21
5	**Testing & Integration**		-			-
5.1	Perform unit testing	23 Apr 2023	2 May 2023	10	0%	7
5.2	Perform integration testing	3 May 2023	12 May 2023	10	0%	8
5.3	Perform system testing	13 May 2023	22 May 2023	10	0%	6
6	**Deployment**		-			-
6.1	Deploy the whole system	23 May 2023	1 Jun 2023	10	0%	8

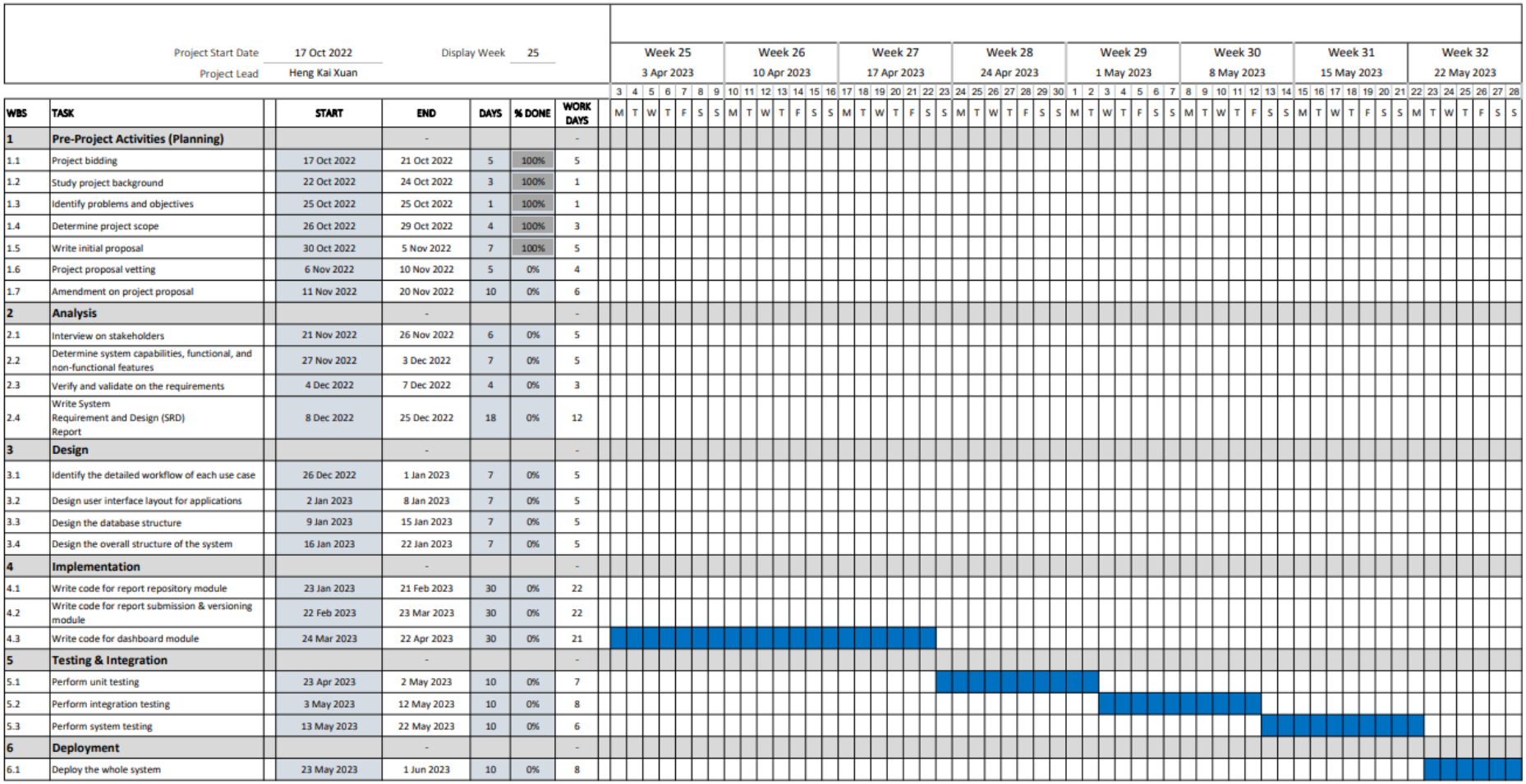

Figure 11.4: Gantt Chart of Week 25 to Week 32

[Practicum Report Management System] Project Schedule

Gantt Chart Template © 2006-2018 by Vertex42.com.

Project Start Date: 17 Oct 2022 | Display Week: 33
Project Lead: Heng Kai Xuan

WBS	TASK	START	END	DAYS	% DONE	WORK DAYS
1	**Pre-Project Activities (Planning)**		-			-
1.1	Project bidding	17 Oct 2022	21 Oct 2022	5	100%	5
1.2	Study project background	22 Oct 2022	24 Oct 2022	3	100%	1
1.3	Identify problems and objectives	25 Oct 2022	25 Oct 2022	1	100%	1
1.4	Determine project scope	26 Oct 2022	29 Oct 2022	4	100%	3
1.5	Write initial proposal	30 Oct 2022	5 Nov 2022	7	100%	5
1.6	Project proposal vetting	6 Nov 2022	10 Nov 2022	5	0%	4
1.7	Amendment on project proposal	11 Nov 2022	20 Nov 2022	10	0%	6
2	**Analysis**		-			-
2.1	Interview on stakeholders	21 Nov 2022	26 Nov 2022	6	0%	5
2.2	Determine system capabilities, functional, and non-functional features	27 Nov 2022	3 Dec 2022	7	0%	5
2.3	Verify and validate on the requirements	4 Dec 2022	7 Dec 2022	4	0%	3
2.4	Write System Requirement and Design (SRD) Report	8 Dec 2022	25 Dec 2022	18	0%	12
3	**Design**		-			-
3.1	Identify the detailed workflow of each use case	26 Dec 2022	1 Jan 2023	7	0%	5
3.2	Design user interface layout for applications	2 Jan 2023	8 Jan 2023	7	0%	5
3.3	Design the database structure	9 Jan 2023	15 Jan 2023	7	0%	5
3.4	Design the overall structure of the system	16 Jan 2023	22 Jan 2023	7	0%	5
4	**Implementation**		-			-
4.1	Write code for report repository module	23 Jan 2023	21 Feb 2023	30	0%	22
4.2	Write code for report submission & versioning module	22 Feb 2023	23 Mar 2023	30	0%	22
4.3	Write code for dashboard module	24 Mar 2023	22 Apr 2023	30	0%	21
5	**Testing & Integration**		-			-
5.1	Perform unit testing	23 Apr 2023	2 May 2023	10	0%	7
5.2	Perform integration testing	3 May 2023	12 May 2023	10	0%	8
5.3	Perform system testing	13 May 2023	22 May 2023	10	0%	6
6	**Deployment**		-			-
6.1	Deploy the whole system	23 May 2023	1 Jun 2023	10	0%	8

Week 33	Week 34	Week 35	Week 36	Week 37	Week 38	Week 39	Week 40
29 May 2023	5 Jun 2023	12 Jun 2023	19 Jun 2023	26 Jun 2023	3 Jul 2023	10 Jul 2023	17 Jul 2023
29 30 31 1 2 3 4	5 6 7 8 9 10 11	12 13 14 15 16 17 18	19 20 21 22 23 24 25	26 27 28 29 30 1 2	3 4 5 6 7 8 9	10 11 12 13 14 15 16	17 18 19 20 21 22 23
M T W T F S S	M T W T F S S	M T W T F S S	M T W T F S S	M T W T F S S	M T W T F S S	M T W T F S S	M T W T F S S

Figure 11.5: Gantt Chart of Week 33