DUY TÂN UNIVERSITY
International School

Capstone Project 2

CMU-SE 451

Project Plan

Version 1.2

Date: 13 May 2022

SENIOR PROJECT MANAGEMENT SYSTEM FOR INTERNATIONAL SCHOOL

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PROJECT INFORMATION

Project acronym	Senior Project Management System for International School		
Project Title	SPMS		
Start Date	18 Feb 2022	**End Date**	15 May 2022
Lead Institution	International School, Duy Tan University		
Project Mentor	Chau, Truong Ngoc		
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REVISION HISTORY

Version	Date	Comments	Author	Approval
v1.0	27/02/2022	Initial Release	All Members	x
v1.1	14/04/2022	Update document	Tien	x
v1.2	13/05/2022	Format document	Phuoc	x

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SIGNATURE

Document Approvals: *The following signatures are required for approval of this document.*

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Huy, Truong Dong *Member*		Date:
Dat, Nguyen Thanh *Member*		Date:

1. Project overview

1.1. Project description

Table 1.1: *Project description.*

Project code	SPMS	**Contract type**	Internal project
Customer		**End–user**	Students and lecturers of Duy Tan University
Project type	Internal	**Project Manager/ Scrum master**	Tien, Nguyen Van
Project Category	Development	**Business domain**	Application
Application type	Website		

1.2. Scope and purpose

1.2.1. Purpose

- Define the business needs and problems in detail.
- Provide solutions for business needs.
- Provide overview about resources, schedule, solution and budget for the project.

The proposal merely introduces the project to the student development teams, and provides the up-front information necessary for the team to develop a specification.

1.2.2. Scope

During the current epidemic, organizing students to do projects has become difficult when all jobs have to be done online. It is difficult for students to access the project implementation process and the scientific council is also very difficult to organize for students to carry out the project. To solve this problem, the team decided to create SPMS to help organize and manage graduation projects for students easily. Students easily understand the implementation program and implement the management process. The Scientific Council easily manages students to carry out projects, view progress, evaluate or update notifications for students of timely changes, helping to reduce risks and capacity.

1.3. Assumptions and constraints

Table 1.3: *Assumptions and constraints.*

No	Description	Note
Assumptions		
1	Nodejs version v14.8.0 (or above) and lower version not supported.	Scope
Constraints		
1	The project is developed within 90 days.	Schedule
2	The project shall conform to security requirements specified.	Security
3	The product operates at a high level of performance.	Quality
4	The application operation in website.	Scope
5	The project will be implemented by a team including 4 members.	Resources
6	The financial estimation for the project is at a budget limit of $3680	Budget

1.4. Project objectives

1.4.1. Standard Objectives

Table 1.4.1: *Standard Objectives.*

Metric	Unit	Committed	Note
Start Date	dd-mm-yyyy	15-02-2022	
End Date	dd-mm-yyyy	15-05-2022	
Duration	days	90	
Team Size	Person	4	
Billable Effort	Person-day	$2	
Number of work hours per day for one engineer	Person-hour	4	

1.4.2. Specific Objectives

- Based on human resources, allowable time and budget, we will build a Senior Project Management System for International School.
- The system operates with high performance and safety for the user. User security data is encrypted and stored carefully, avoiding data loss.
- The deployment system is minimized defects and good control of risks by the project team.
- Strengthen brand promotion activities and bring products to users.

1.5. Project risk

Table 1.5: *Project risk.*

Risk	Description	Probability	Impact	Mitigation Strategy
Incorrect requirements	Developing the product which does not accord with the requirements	3	5	Discuss and communicate frequently with Stakeholders
Estimate working time	Actual working time is not enough to finish a task compared to the estimated previous time	2	4	Review old tasks and evaluations to estimate for the new task. Replan for each sprint.
People	Team member who is ill, has health problems, or busy	4	3	Notify the scrum master (or ask a colleague to help you) Complete the assigned tasks when possible

Team Communication	Team members can conflict with each other while discussing something related to the project. Working online	4	2	Conduct a meeting to share knowledge, experience and learning methods
External problems	It has power problems, laptop, personal computer, network system	3	3	Find another workplace (library, coffee shop, ...) Notify the scrum master to assign appropriate tasks

2. Project development approach

2.1. Technical process

2.1.1. Reasons for selecting

- To keep up with today's increasingly changing technology trends, we want a truly flexible and easy project development model to adapt to that change. Our project will develop more new features in the future. We will continuously update and apply new technologies that increase the attractiveness and intelligence of the application.
- Currently, our team is a small team with little experience in project development. Therefore, we cannot avoid problems that arise in the software development stages and requirements can be changed to be more suitable. For the traditional model that requires managerial skills and high accuracy, it will not suit our team.

2.1.2. Agile methodology

- Agile software development refers to a group of software development methodologies based on iterative development, where requirements and solutions evolve through collaboration between self-organizing cross-functional teams.
- Agile software development is more than frameworks such as Scrum, Extreme Programming, or Feature-Driven Development (FDD).
- Agile software development is an umbrella term for a set of frameworks and practices based on the values and principles expressed in the Manifesto for Agile Software Development and the 12 Principles behind it. When you approach software development in a particular manner, it's generally good to live by these values and principles and use them to help figure out the right things to do given your particular context.

2.1.3. Scrum process

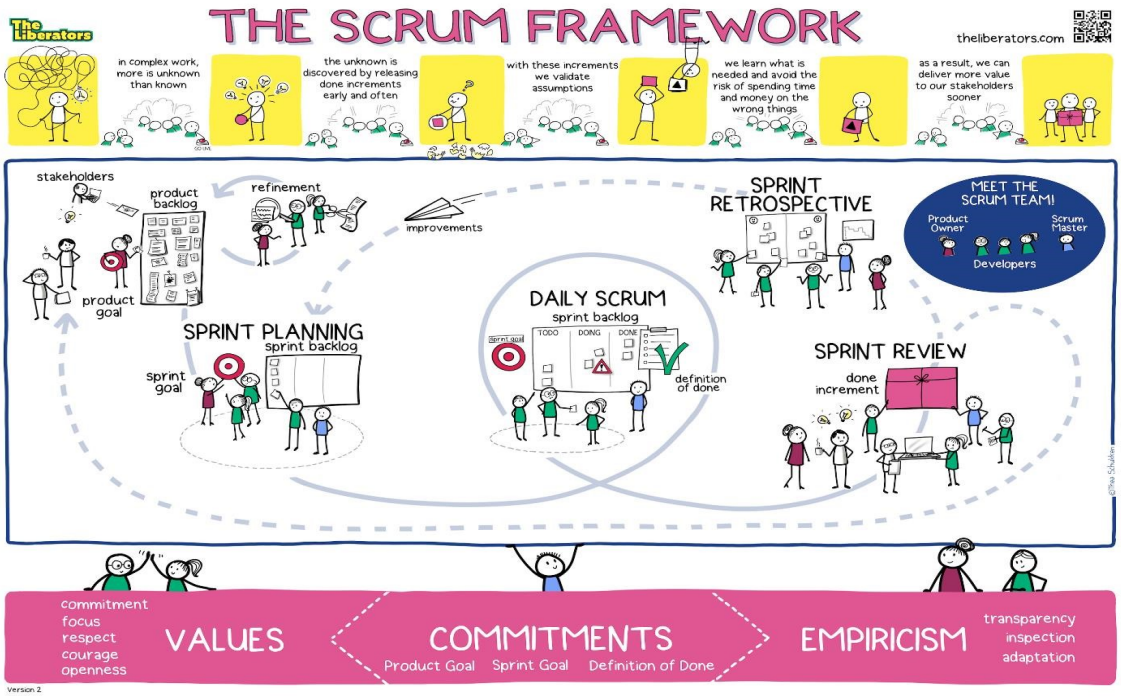

Figure 2.1.3: *Scrum model.*

- Scrum is a subset of Agile. It is a lightweight process framework for agile development, and the most widely-used one.
- Scrum is most often used to manage complex software and product development, using iterative and incremental practices. Scrum significantly increases productivity and reduces time to benefits relative to classic "waterfall" processes. Scrum

processes enable organizations to adjust smoothly to rapidly-changing requirements and produce a product that meets evolving business goals.

- An agile Scrum process benefits the organization by helping it to

- Increase the quality of the deliverables.
- Cope better with change (and expect the changes).
- Provide better estimates while spending less time creating them.
- Be more in control of the project schedule and state.

2.2. Quality management

2.2.1. Strategy for meeting quality objectives

Table 2.2.1: *Strategy for meeting quality objectives.*

Strategy	Expected benefits
Do defect prevention using the standard defect prevention guidelines and process; use standards developed in JavaScript for coding.	10–20% reduction in defect injection rate and about 2% improvement in productivity.
Group review of program specs for first few/logically complex use cases. Group review of design docs/first time generated code by project leader, developer, and one consultant.	Improvement in quality as overall defect removal efficiency will improve; some benefits in productivity as defects will be detected early.
Introduction of Agile methodology and implementing the project in iterations. Milestone analysis and defect prevention exercise will be done after each Iteration.	Approximately 5% reduction in defect injection rate and 1% improvement in overall productivity.

2.2.2. Quality control

Table 2.2.2: *Quality control.*

Review Item	Type of Review	Reviewer	When
Project plan, Project schedule, CM Plan	One-person review	Mentor	End of Initiation stage
Product Backlog, User story	Group review	Mentor	End of 90% requirements
Design document, object model	Group review	Mentor	End of 90% design
Sprint Backlog	One-person review	Scrum master	Beginning of each stage
Test case	Group review	Team member	End of detailed
Code	Group review One-person review	Team member Mentor	After coding for first few programs

2.2.3. Measurements program

Table 2.2.3: *Measurements program.*

Data to be collected	Purpose	Responsible	When
Size: No. of KLOC/ FP	Early estimate project cost	PM/SM	At the end of stages
Effort: No. person-day	Calculate project effort for scheduling	Team members	Daily
Quality: No. defects detected	Early evaluate product quality and the feasibility of the project	Reviewer, Tester	Right after the review/test
Schedule	Divide work and allocate resources properly, ensure the project is completed on time and on budget	PM/SM	Weekly and at the end of stages

2.3. Unit testing strategy

Grey Box:

- It is a combination of a Black Box and White Box testing. It is the type of testing in which the tester is aware of the internal functionality of a method or unit but not in a deep level like white box testing. In this, the user is partially aware of the internal functionality of a system.
- Write test cases before fixing the defect and independent of each other.
- Write cases to verify behavior, also write test cases to ensure the performance of the code
- Execute test cases continuously and frequently.

2.4. Integration testing strategy

Big bang Strategy:

- All components are put together at the same time, there is no order, except all are integrated at the same time.
- Towards the end of the project, we started to apply this tactic to test the entire application. Beta testing is a type of user acceptance testing where the product team gives a nearly finished product to a group of target users to evaluate product performance in the real world.

3. Estimate

3.1. Size

Table 3.1: *Size.*

Software Scale Drivers	
Precedence	Nominal
Development Flexibility	Nominal
Architecture / Risk Resolution	Nominal
Team Cohesion	Very High
Process Maturity	Nominal

3.2. Effort

Table 3.2: *Effort.*

Activity/ Process	Total budgeted Effort Usage (USD)	Total % budgeted Effort Usage (%)	Sprint 1		Sprint 2		Sprint 3		Sprint 4	
			USD	%	USD	%	USD	%	USD	%
Requirement	350	9.51	150	12.5	100	9.52	100	12.82	0	0
Design	300	8.15	100	8.33	100	9.52	50	6.41	50	9.09
Coding & Unit Testing	1500	40.76	500	41.67	500	47.62	300	38.46	200	36.36
Testing	230	6.25	50	4.167	50	4.76	80	10.27	50	9.09
Deployment	250	6.79	50	4.167	50	4.76	50	6.41	100	18.18
Support for accepting	150	4.08	50	4.167	50	4.76	50	6.41	0	0
Project planning	250	6.79	50	4.167	50	4.76	50	6.41	50	9.09
Project review	250	6.79	50	4.167	50	4.76	50	6.41	50	9.09
Training	400	10.87	200	16.67	100	9.52	50	6.41	50	9.09
Total (USD)	3680	100	1200	100	1050	100	780	100	550	100

3.3. Schedule

3.3.1. Project milestone & deliverables

Table 3.3.1: *Project milestone & deliverables.*

No.	Task	Duration (days)	Time Start	Time Finish
1	**Initial and plan**	**14**	**15 Feb 2022**	**28 Feb 2022**
2	**Development**	**72**	**01 Mar 2022**	**11 May 2022**
2.1	Sprint 1	18	01 Mar 2022	18 Mar 2022
2.2	Sprint 2	26	19 Mar 2022	13 Apr 2022
2.3	Sprint 3	18	14 Apr 2022	01 Apr 2022
2.4	Sprint 4	10	02 May 2022	11 May 2022
3	**Final Release**	**1**	**15 May 2022**	**15 May 2022**

3.3.2. Schedule detail

Table 3.3.2: *Schedule detail..*

No.	Task Name	Duration (Days)	Start	Finish	Assign to
1	**Initial and plan**	14	**15 Feb 2022**	**28 Feb 2022**	**Team**
1.1	Project's Kick-off Meeting	3	15 Feb 2022	17 Feb 2022	Team
1.2	Discuss about project idea	1	18 Feb 2022	18 Feb 2022	Mentor, Team
1.3	Create Proposal Document	1	19 Feb 2022	19 Feb 2022	Team
1.4	Present Proposal & Approval Project	1	20 Feb 2022	20 Feb 2022	Team
1.5	Create User Story	2	21 Feb 2022	22 Feb 2022	Tien
1.6	Create Product Backlog	1	23 Feb 2022	23 Feb 2022	Tien
1.7	Create Project Plan	2	24 Feb 2022	25 Feb 2022	Tien
1.8	Create Architecture Document	1	26 Feb 2022	26 Feb 2022	Dat
1.9	Create Project Plan	3	15 Sep 2021	17 Sep 2021	Tien

1.10	Create Database document	1	27 Feb 2022	27 Feb 2022	Phuoc
1.11	Create User Interface	1	28 Feb 2022	28 Feb 2022	Huy
2	**Development**	**72**	**01 Mar 2022**	**11 May 2022**	**Team**
2.1	**Sprint 1**	**18**	**01 Mar 2022**	**18 Mar 2022**	**Team**
2.1.1	**Initial Sprint 1**	3	01 Mar 2022	03 Mar 2022	**Team**
2.1.1.1	Sprint planning meeting	1	01 Mar 2022	01 Mar 2022	Team
2.1.1.2	Create Sprint Backlog for Sprint 1	1	02 Mar 2022	02 Mar 2022	Tien
2.1.1.3	Create Test Plan document for Sprint 1	1	03 Mar 2022	03 Mar 2022	Tien
2.1.2	**Design UI**	**2**	**02 Mar 2022**	**03 Mar 2022**	**Huy, Dat**
2.1.3	**Design Test Case**	**2**	**02 Mar 2022**	**03 Mar 2022**	**Phuoc**
2.1.4	**Code**	**10**	**04 Mar 2022**	**14 Mar 2022**	**Team**
2.1.4.1	[Front-end] Home [User]	1	04 Mar 2022	04 Mar 2022	Huy
2.1.4.2	[Front-end] Login [User]	1	05 Mar 2022	05 Mar 2022	Dat
2.1.4.3	[Front-end] Logout [User]	1	06 Mar 2022	06 Mar 2022	Dat
2.1.4.4	[Front-end] Register [User]	1	06 Mar 2022	06 Mar 2022	Dat
2.1.4.6	[Front-end] User Information [User]	1	07 Mar 2022	07 Mar 2022	Dat
2.1.4.7	[Front-end] Update Information [User]	1	08 Mar 2022	08 Mar 2022	Dat
2.1.4.8	[Front-end] List Account[User[Admin]]	1	05 Mar 2022	05 Mar 2022	Huy
2.1.4.9	[Front-end] Update Account[User[Admin]]	1	10 Mar 2022	10 Mar 2022	Dat
2.1.4.10	[Front-end] Create Account[User[Admin]]	1	11 Mar 2022	11 Mar 2022	Dat

2.1.4.11	[Front-end]get List Students[User[Moderator]]	1	06 Mar 2022	06 Mar 2022	Huy
2.1.4.12	[Front-end] Create Students[User[Moderator]]	1	07 Mar 2022	07 Mar 2022	Huy
2.1.4.13	[Front-end] Update Students[User[Moderator]]	1	08 Mar 2022	08 Mar 2022	Huy
2.1.4.14	[Front-end] Introduce Capstone[User]	1	09 Mar 2022	09 Mar 2022	Huy
2.1.4.15	[Front-end]get List Mentor[User[Moderator]]	1	12 Mar 2022	12 Mar 2022	Dat
2.1.4.16	[Front-end] Update Mentor [User[Moderator]]	1	13 Mar 2022	13 Mar 2022	Dat
2.1.4.17	[Front-end] get list Notification [User]	1	13 Mar 2022	13 Mar 2022	Dat
2.1.4.18	[Front-end] update Notification [User[Moderator]]	1	07 Oct 2021	07 Oct 2021	Dat
2.1.4.19	[Back-end] Sign in [User]	2	04 Mar 2022	05 Mar 2022	Tien
2.1.4.20	[Back-end] Register to execute capstone	2	06 Mar 2022	07 Mar 2022	Tien
2.1.4.21	[Back-end] get All Account[User]	1	04 Mar 2022	04 Mar 2022	Phuoc
2.1.4.22	[Back-end] insert Account[User]	1	05 Mar 2022	05 Mar 2022	Phuoc
2.1.4.23	[Back-end] delete Account[User]	1	06 Mar 2022	06 Mar 2022	Phuoc
2.1.4.24	[Back-end] update Account[User]	1	07 Mar 2022	07 Mar 2022	Phuoc
2.1.4.25	[Back-end] get All Student[User]	1	07 Mar 2022	07 Mar 2022	Tien
2.1.4.26	[Back-end] delete Student[User]	1	08 Mar 2022	08 Mar 2022	Tien

2.1.4.27	[Back-end] approve for Student[User]	1	09 Mar 2022	09 Mar 2022	Tien
2.1.4.28	[Back-end] update Student[User]	1	10 Mar 2022	10 Mar 2022	Tien
2.1.4.29	[Back-end] get All Mentor [User]	1	08 Mar 2022	08 Mar 2022	Phuoc
2.1.4.30	[Back-end] insert Mentor [User]	1	09 Mar 2022	09 Mar 2022	Phuoc
2.1.4.31	[Back-end] delete Mentor[User]	1	09 Mar 2022	09 Mar 2022	Phuoc
2.1.4.32	[Back-end] update Mentor [User]	1	10 Mar 2022	10 Mar 2022	Phuoc
2.1.4.33	[Back-end] export file Mentor [User]	1	11 Mar 2022	11 Mar 2022	Tien
2.1.4.34	[Back-end] get All Notification[User]	1	11 Mar 2022	11 Mar 2022	Phuoc
2.1.4.35	[Back-end] Create Notification[User]	1	12 Mar 2022	12 Mar 2022	Phuoc
2.1.4.36	[Back-end] delete Notification[User]	1	13 Mar 2022	13 Mar 2022	Phuoc
2.1.4.37	[Back-end] update Notification[User]	1	14 Mar 2022	14 Mar 2022	Phuoc
2.1.5	**Testing**	**2**	**15 Mar 2022**	**16 Mar 2022**	**Huy, Dat**
2.1.6	**Fix bug**	**2**	**16 Mar 2022**	**17 Mar 2022**	**Huy, Dat**
2.1.7	**Re-testing**	**1**	**17 Mar 2022**	**17 Mar 2022**	**Huy, Dat**
2.1.8	**Release Sprint 1**	**1**	**18 Mar 2022**	**18 Mar 2022**	**Team**
2.1.8.1	Sprint review meeting	1	18 Mar 2022	18 Mar 2022	Team
2.1.8.2	Retrospective	1	18 Mar 2022	18 Mar 2022	Team
2.2	**Sprint 2**	**26**	**19 Mar 2022**	**13 Apr 2022**	**Team**

2.2.1	**Initial Sprint 2**	3	**19 Mar 2022**	**21 Mar 2022**	**Team**
2.2.1.1	Sprint planning meeting	1	19 Mar 2022	19 Mar 2022	Team
2.2.1.2	Create Sprint Backlog for Sprint 2	1	20 Mar 2022	20 Mar 2022	Tien
2.2.1.3	Create Test Plan document for Sprint 2	1	21 Mar 2022	21 Mar 2022	Tien
2.2.2	**Design UI**	**4**	**20 Mar 2022**	**23 Mar 2022**	**Huy, Dat**
2.2.3	**Design Test Case**	**2**	**20 Mar 2022**	**21 Mar 2022**	**Phuoc**
2.2.4	**Code**	**14**	**24 Mar 2022**	**06 Apr 2022**	**Team**
2.2.4.1	[Front-end] List Group [User]	3	24 Mar 2022	26 Mar 2022	Huy
2.2.4.2	[Front-end] detail Group [User]	3	27 Mar 2022	29 Mar 2022	Huy
2.2.4.3	[Front-end] Create Group [Moderator]	3	30 Mar 2022	01 Apr 2022	Huy
2.2.4.4	[Front-end] update Group [Moderator]	2	02 Apr 2022	03 Apr 2022	Huy
2.2.4.5	[Front-end] assign mentor for Group [Moderator]	2	04 Apr 2022	05 Apr 2022	Huy
2.2.4.6	[Front-end] Delete Group [Moderator]	1	06 Apr 2022	06 Apr 2022	Huy
2.2.4.7	[Front-end] Submit Topic[User[Student]]	1	24 Mar 2022	24 Mar 2022	Dat
2.2.4.8	[Front-end] Update Topic[User[Student]]	1	25 Mar 2022	25 Mar 2022	Dat
2.2.4.9	[Front-end] Topic List[User]	1	26 Mar 2022	26 Mar 2022	Dat
2.2.4.10	[Front-end] Detail Topic[User]	2	27 Mar 2022	28 Mar 2022	Dat
2.2.4.11	[Front-end]Approve Topic[User[Moderator]]	1	29 Mar 2022	29 Mar 2022	Dat

2.2.4.12	[Front-end]Submit Topic Template[User[Moderator]]	2	30 Mar 2022	31 Mar 2022	Dat
2.2.4.13	[Front-end] Topic template List[User]	1	01 Apr 2022	01 Apr 2022	Dat
2.2.4.14	[Front-end]Upload file Topic Template[User]	1	02 Apr 2022	02 Apr 2022	Dat
2.2.4.15	[Front-end] Group List [User]	2	24 Mar 2022	25 Mar 2022	Tien
2.2.4.16	[Back-end] detail Group [User]	2	26 Mar 2022	27 Mar 2022	Tien
2.2.4.17	[Back-end] Group List of mentor [Mentor]	1	28 Mar 2022	28 Mar 2022	Tien
2.2.4.18	[Back-end] Create Group [Moderator]	2	29 Mar 2022	30 Mar 2022	Tien
2.2.4.19	[Back-end] update Group [Moderator]	2	31 Mar 2022	01 Apr 2022	Tien
2.2.4.20	[Back-end] assign mentor for Group [Moderator]	1	02 Apr 2022	02 Apr 2022	Tien
2.2.4.21	[Back-end] Delete Group [Moderator]	1	03 Apr 2022	03 Apr 2022	Tien
2.2.4.22	[Back-end] export file Group List [Moderator]	1	04 Apr 2022	04 Apr 2022	Tien
2.2.4.23	[Back-end] Submit Topic of Student[Student]	1	24 Mar 2022	24 Mar 2022	Phuoc
2.2.4.24	[Back-end] Submit Topic of mentor[Mentor]	1	25 Mar 2022	25 Mar 2022	Phuoc
2.2.4.25	[Back-end] Upload file Topic template[Mentor]	2	26 Mar 2022	27 Mar 2022	Phuoc
2.2.4.26	[Back-end] approve for Student[Moderator]	1	28 Mar 2022	28 Mar 2022	Phuoc
2.2.4.27	[Back-end] Topic Student List [User]	1	29 Mar 2022	29 Mar 2022	Phuoc

2.2.4.28	[Back-end] Topic template List [User]	1	29 Mar 2022	29 Mar 2022	Phuoc
2.2.4.29	[Back-end] update topic [Student]	1	30 Mar 2022	30 Mar 2022	Phuoc
2.2.4.30	[Back-end] update topic [Mentor]	1	31 Mar 2022	31 Mar 2022	Phuoc
2.2.4.31	[Back-end] delete topic[Student]	1	01 Apr 2022	01 Apr 2022	Phuoc
2.2.4.32	[Back-end] delete topic[Mentor]	1	01 Apr 2022	01 Apr 2022	Phuoc
2.2.4.33	[Back-end] export file Topic Student List[Moderator]	2	02 Apr 2022	03 Apr 2022	Phuoc
2.2.4.34	[Back-end] Upload file document template[Moderator]	2	03 Apr 2022	04 Apr 2022	Dat
2.2.5	**Testing**	2	**05 Apr 2022**	**06 Apr 2022**	**Huy, Dat**
2.2.6	**Fix bug**	**4**	**07 Apr 2022**	**10 Apr 2022**	**Huy, Dat**
2.2.7	**Re-testing**	**1**	**11 Apr 2022**	**11 Apr 2022**	**Huy, Dat**
2.2.8	**Release Sprint 2**	**2**	**12 Apr 2022**	**13 Apr 2022**	**Team**
2.2.8.1	Sprint review meeting	**1**	12 Apr 2022	12 Apr 2022	Team
2.2.8.2	Retrospective	**1**	13 Apr 2022	13 Apr 2022	Team
2.3	**Sprint 3**	**18**	**14 Apr 2022**	**1 May 2022**	**Team**
2.3.1	**Initial Sprint 3**	3	**14 Apr 2022**	**16 Apr 2022**	**Team**
2.3.1.1	Sprint planning meeting	1	14 Apr 2022	14 Apr 2022	Team
2.3.1.2	Create Sprint Backlog for Sprint 3	1	15 Apr 2022	15 Apr 2022	Tien
2.3.1.3	Create Test Plan document for Sprint 3	1	16 Apr 2022	16 Apr 2022	Phuoc

2.3.2	**Design UI**	**2**	**15 Apr 2022**	**16 Apr 2022**	**Huy, Dat**
2.3.3	**Design Test Case**	**1**	**16 Apr 2022**	**16 Apr 2022**	**Tien**
2.3.4	**Code**	**10**	**17 Apr 2022**	**26 Apr 2022**	**Team**
2.3.4.1	[Front-end] List stage and task [User]	4	17 Apr 2022	20 Apr 2022	Dat
2.3.4.2	[Front-end] View stage of project [User]	3	21 Apr 2022	22 Apr 2022	Dat
2.3.4.3	[Front-end] Report contribution	3	23 Apr 2022	25 Apr 2022	Dat
2.3.4.4	[Front-end] Create Defense [Moderator]	2	17 Apr 2022	18 Apr 2022	Huy
2.3.4.5	[Front-end] assign group for Defense [Moderator]	2	19 Apr 2022	20 Apr 2022	Huy
2.3.4.6	[Front-end] Update Defense [Moderator]	2	21 Apr 2022	22 Apr 2022	Huy
2.3.4.7	[Front-end] List Defense [Moderator]	2	23 Apr 2022	24 Apr 2022	Huy
2.3.4.8	[Front-end] Detail Defense [Moderator]	2	22 Apr 2022	26 Apr 2022	Huy
2.3.4.9	[Back-end] List stage and task [User]	2	17 Apr 2022	18 Apr 2022	Phuoc
2.3.4.10	[Back-end] View stage of project [User]	2	19 Apr 2022	20 Apr 2022	Phuoc
2.3.4.11	[Back-end] Report contribution [Student]	2	21 Apr 2022	22 Apr 2022	Phuoc
2.3.4.12	[Back-end] Group contribution [Student]	2	23 Apr 2022	24 Apr 2022	Phuoc
2.3.4.13	[Back-end] Create Defense [Moderator]	2	17 Apr 2022	18 Apr 2022	Tien
2.3.4.14	[Back-end] assign group for Defense [Moderator]	1	19 Apr 2022	19 Apr 2022	Tien

2.3.4.15	[Back-end] Update Defense [Moderator]	1	20 Apr 2022	20 Apr 2022	Tien
2.3.4.16	[Back-end] List Defense [Moderator]	2	21 Apr 2022	22 Apr 2022	Tien
2.3.4.17	[Back-end] Detail Defense [Moderator]	2	23 Apr 2022	24 Apr 2022	Tien
2.3.4.18	[Back-end] Export defense list file [Moderator]	2	22 Apr 2022	26 Apr 2022	Tien
2.3.4.19	[Back-end] Delete Defense [Moderator]	2	22 Apr 2022	26 Apr 2022	Tien
2.3.5	**Testing**	**1**	**27 Apr 2022**	**27 Apr 2022**	**Huy, Dat**
2.3.6	**Fix bug**	**1**	**28 Apr 2022**	**28 Apr 2022**	**Huy, Dat**
2.3.7	**Re-testing**	**1**	**29 Apr 2022**	**29 Apr 2022**	**Huy, Dat**
2.3.8	**Release Sprint 3**	2	**30 Apr 2022**	**01 May 2022**	**Team**
2.3.8.1	Sprint review meeting	1	30 Apr 2022	30 Apr 2022	Team
2.3.8.2	Retrospective	1	01 May 2022	01 May 2022	Team
2.4	**Sprint 4**	**11**	**02 May 2022**	**12 May 2022**	**Team**
2.4.1	**Initial Sprint 4**	**1**	**02 May 2022**	**02 May 2022**	**Team**
2.4.1.1	Sprint planning meeting	1	02 May 2022	02 May 2022	Team
2.4.1.2	Create Sprint Backlog for Sprint 4	1	02 May 2022	02 May 2022	Tien
2.4.1.3	Create Test Plan document for Sprint 4	1	02 May 2022	02 May 2022	Phuoc
2.4.2	**Design UI**	**1**	**03 May 2022**	**03 May 2022**	**Huy, Dat**
2.4.3	**Design Test Case**	**1**	**04 May 2022**	**04 May 2022**	**Tien**
2.4.4	**Code**	**6**	**05 May 2022**	**10 May 2022**	**Team**
2.4.4.1	[Front-end] Submit Grade of Group	4	05 May 2022	08 May 2022	Huy

2.4.4.2	[Front-end] Report Grade of Group	2	09 May 2022	10 May 2022	Huy
2.4.4.3	[Back-end] Submit Grade of Group	4	05 May 2022	08 May 2022	Phuoc
2.4.4.4	[Back-end] Report Grade of Group	2	09 May 2022	10 May 2022	Phuoc
2.4.5	**Testing**	**1**	**11 May 2022**	**11 May 2022**	**Huy, Dat**
2.4.6	**Fix bug**	**1**	**11 May 2022**	**11 May 2022**	**Huy, Dat**
2.4.7	**Re-testing**	**1**	**11 May 2022**	**11 May 2022**	**Huy, Dat**
2.4.8	**Release Sprint 4**	**1**	**12 May 2022**	**12 May 2022**	**Team**
2.4.8.1	Sprint review meeting	1	12 May 2022	12 May 2022	Team
2.4.8.2	Retrospective	1	12 May 2022	12 May 2022	Team
3	**Closing**	3	13 May 2022	15 May 2022	Team
3.1	Release	1	13 May 2022	13 May 2022	Team
3.2	Project Meeting	1	14 May 2022	14 May 2022	Team
3.3	Final Submission	1	15 May 2022	15 May 2022	Team

3.3.3. Project schedule

The Effort estimation is documented in Sprint Backlog

3.4. Resource

Table 3.4: *Resource.*

Position	Member	Effort
Back-end Developer	Tien, Phuoc	
Front-end Developer	Huy, Dat	
Designer	All members	
Data Engineer	Tien, Phuoc	
Tester	Huy, Dat	

3.5. Infrastructure

Table 3.5: *Infrastructure.*

Work/Product	Purpose	Expected availability by	Note
Development Environment			
Win 10	Operating system to run application and tools for project	Construction stage	
Postgres SQL	Use open source database to management and store data	Construction stage	
HTML5, CSS3, JavaScript, material-ui	Development language for Web interface	Initiation stage	
React, Redux, hook	Framework, library for User Interface	Initiation stage	
Win 10	Operating system to run application and tools for project	Construction stage	
Hardware & Software			
Laptop	Deployment application		
Other Tools			
Git	Source version control	Definition stage	
Slack	Communication	Initiation stage	
Trello	Task tracking	Initiation stage	

3.6. Training plan

Table 3.6: *Training plain.*

Training Area	Participants	When, Duration	Waiver Criteria
Technical			
HTLM, CSS, JavaScript	All members	7 days	Mandatory
ReactJS, NodeJS.	All members	7 days	Mandatory
Process			
Configuration management	All members	2 hrs.	If already trained
Group review	All members	4 hrs.	Mandatory
Git, Slack	All members	4.5 hrs.	Mandatory
Agile	All members	2 hrs.	Mandatory

4. Project organization

4.1. Organization structure

Table 4.1: *Organization structure.*

Role	Responsibility	Name
Scrum Master	- Communicate the value of Scrum. - Teach the organization on Scrum to maximize business value. - Preserve the integrity and spirit of the Scrum framework. - Serve as a coach and mentor to members of the Team. - Respectfully hold the Team, Product Owner and Stakeholders accountable for their commitments. - Continually work with the Team and business to find and implement improvements.	Tien, Nguyen Van

	- As a timekeeper. - Helping the team agree on what they can achieve during each development sprint (or other period of time). - Facilitating the daily standup (sometimes called the daily scrum) and helping the team reach consensus on each of the three questions. - Helping the team continuously make progress on the project by making sure each person is working on the right tasks, helping to remove any obstacles to the team members' progress, and protecting the team from distractions.	
Product Owner	- A spokesperson for the customer and needs to represent them. - Gathers, manages, and prioritizes the product backlog. - Has technical product knowledge or specific domain expertise. - Tracks progress towards the release of a product.	Phuoc, Ha Duc
Developer	- Responsible for quality. - Responsible for delivering the potentially shippable product of the Application each sprint. - Report progress based on the remaining time. - Self-organized. - Owns the Sprint backlog.	All members
Mentor	- Guide on the process. - Monitoring all activities of the Team. - Help with anything. - Reviews project documents - Reviews product.	**Chau, Truong Ngoc**

4.2. Project team

Table 4.2: *Project team.*

Full Name	Position
Chau, Truong Ngoc	Mentor
Tien, Nguyen Van	Dev-team, Scrum master
Phuoc, Ha Duc	Dev-team, Product Owner
Huy, Truong Dong	Dev-team
Dat, Nguyen Thanh	Dev-team

5. Communication and reporting

Table 5: *Communication and reporting.*

Audience / Attendees	Topic / Deliverable	Frequency	Method
Scrum Master, Members	Daily meeting	Daily	Google Meeting/Slack Chat
Scrum Master, Members	Sprint Planning Meeting	When starting a sprint	Google Meeting
Scrum Master, Members, Mentor	Sprint Review Meeting	When finishing a sprint	Google Meeting
Scrum Master, Members	Sprint Retrospective	When the sprint review finish	Google meeting
Scrum Master, Members	Individual Meeting	When need	Google Meeting/Message
Scrum Master, Members, Mentor	Working report, review problems	Once a week	Google meeting

6. Configuration management

Table 6: *Configuration management.*

No	Tool	Content
1	Trello	Track member activities. Track the changing of the document.
2	Slack	Store document resource and designed components, daily scrum**.**
3	Google Meet	Discuss, meet online, stream and share problems**.**
4	Git hub	Repositories for open-source code of the project **.**

7. Security aspect

- The credential data is carefully secured by multi-layer encryption and data integrity is ensured. Regularly back up system data.
- Research on network attack prevention solutions to ensure data security, avoid being exploited and stolen data by hackers.
- Deploy project architecture with a high priority in security. Optimized architectural solutions enable the deployment of data security with 99% reliability.
- Social media, sharing and use of data must be approved by the end user and verified by the organization's management.

8. References

No	Reference item	Source	Note
1	Agile Scrum	https://www.atlassian.com/agile	
		https://www.cprime.com/resourc es/what-is-agile-what-is-scrum/	
		https://www.agilealliance.org/ag ile101/	
		The Scrum Framework by International Scrum Institute	
2	Software Standards	https://www.nws.noaa.gov/oh/hr l/developers_docs/General_So ftware_Standards.pdf	
		https://standards.ieee.org/standar d/12208-2017.html	
		https://sw-eng.larc.nasa.gov/	

9. Definitions and acronyms

Acronym	Definition	Note
PM	Project Manager	
PTL	Project Technical Leader	
QA	Quality Assurance Officer	
CC	Infrastructure Configuration Controller	
DV	Developer	
URD	User Requirement Document	
SRS	Software Requirement Specification	
ADD	Architecture Design Document	
DDD	Detail Design Document	
TP	Test Plan	
TC	Test Case	
SC	Source Code	
CM	Configuration Management	
CSCI	Computer Software Configuration Items	
CI	Configuration Item	
CCB	Change Control Board	