Fpt University

TRƯỜNG ĐẠI HỌC FPT

CAPSTONE PROJECT REPORT

Report 2 – Project Management Plan

– Hanoi, March 2023 –

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I. Record of Changes

Date	A*, M, D	In charge	Change Description
14/01/2023	A	All team members	Add major features
16/01/2023	M	All team members	Update information of Project Management Plan
16/02/2023	M	All team members	Update information of Project Management Plan
17/02/2023	M	All team members	Update management approach
20/04/2023	M	All team members	Update project deliverables
24/05/2023	M	All member	Update Project Risks

*A - Added M - Modified D - Deleted

II. Project Management Plan

1. Overview

1.1 Scope & Estimation

- Effort includes analyzing, designing, coding, testing
- Man-days capacity of team = 19 weeks * 6 * 5 = 570 man-day

Table 1.1 - Work breakdown structure for Gym Management website.

No	WBS item	Complexity	Estimate Effort (man-Day)
	Gym Management website		
1	**Project Initiating**		**20**
	Determine Project Scope and Features	Medium	10
	Report 1 - Project Introduction	Medium	10
2	**Project Planning**		**25**
	Project time and scope estimation	Complex	10
	Report 2 - Project Management Plan	Complex	10
	Technical Training	Medium	5
3	**Software Development**		**50**
	Analyze & Create SRS	Complex	10
	Design Mock-up & Prototypes	Complex	10
	Analize & Create SDD	Complex	10
	Update SRS	Medium	5
	Create Development Plan	Complex	10
	Create Testing Plan	Medium	5
4.1	**Iteration 1**		**95**
	Update SRS & SDD	Complex	10
	Create Test Case for Iteration 1	Complex	10
	Coding Front-end for Iteration 1	Medium	30
	Coding Back-end for Iteration 1	Medium	30
	Execute Unit Test	Medium	5
	Execute Integration Test	Medium	5
	Deploy Iteration 1	Medium	5
4.2	**Iteration 2**		**95**
	Update SRS & SDD	Medium	5
	Create Test Case for Iteration 2	Medium	10
	Coding Front-end for Iteration 2	Medium	30
	Coding Back-end for Iteration 2	Medium	35
	Execute Unit Test	Medium	5
	Execute Integration Test	Medium	5
	Deploy Iteration 2	Medium	5
4.3	**Iteration 3**		**95**
	Update SRS & SDD	Medium	5
	Create Test Case for Iteration 3	Medium	5

No	WBS item	Complexity	Estimate Effort (man-Day)
	Coding Front-end for Iteration 3	Medium	35
	Coding Back-end for Iteration 3	Medium	35
	Execute Unit Test	Medium	5
	Execute Integration Test	Medium	5
	Deploy Iteration 3	Medium	5
4.4	**Iteration 4**		**100**
	Update SRS & SDD	Medium	5
	Create Test Case for Iteration 4	Medium	5
	Coding Front-end for Iteration 4	Medium	35
	Coding Back-end for Iteration 4	Medium	40
	Execute Unit Test	Medium	5
	Execute Integration Test	Medium	5
	Deploy Iteration 4	Medium	5
5	**System testing**		**40**
	Update Report 5	Medium	5
	Execute Full System Testing & Fix Bugs	Complex	25
	Deploy Beta Version	Complex	10
6	**Transitioning**		**30**
	Report 6 - User Guide	Medium	5
	Final Project Report	Medium	5
	Prepare Thesis Presentation	Complex	10
	Create Live Data	Medium	5
	Optimize and Refactor Source Code	Complex	5
7	**Closing**		**20**
	Optimize and Refactor Source Code	Medium	10
	Minor Update and Finalise Software	Medium	5
	Thesis defense presentation	Medium	5
Total Estimated Effort(man-day)			**570**

1.2 Project Objectives

#	Quality Stage	No. of Defect	% of Defect	Notes
1	Reviewing	25	35.71%	
2	Unit Test	20	28.57%	
3	Integration Test	15	21.43%	
4	System Test	7	10.00%	
5	User Acceptance Test	3	4.29%	

#	Quality Stage	No. of Defect	% of Defect	Notes
Total			**100%**	

1.2.1 Timelines

- This project must be finished before May 31, 2023.

1.2.2 Allocated Effort

- All members spend full effort in doing this project

1.2.3 Team Objectives

- Team members improve skills in working in a group.
- Each member improves both technical skills and soft skills.
- Team successfully applied a software development process.

1.3 Project Risks

#	Risk Description	Impact	Possibility	Response Plans
1	Don't understand requirements	High	High	Conduct a teacher to clear up any requirements required.
2	Not completed on time	High	High	All members need to work overtime to complete
3	Members misunderstand the requirements	High	Low	Organize more daily meetings for discussing requirements and members have to confirm that they understood the problem clearly.
4	Lost data	Medium	High	Backup data regularly
5	Tasks assigned is behind schedule	Medium	High	Encourage team members to raise their issues to recognize the problem and encourage them to work overtime to cover the schedule.
6	Knowledge and skill are limitations	Medium	Medium	The technical leader will study and transfer them to all members during the project.
7	Lack of knowledge about technology used in project	High	Low	Leader must support members to increase skill and knowledge.

Table 1.3 - Risk Management for Gym Management website.

2. Management Approach

2.1 Project Process

After several meetings and thorough research, our team has decided to use the Iterative and Incremental Model. It is a combination of Iterative Model and Incremental Model. It starts with Initial Planning and ends with Deployment with repeated cycles in between.

Figure 2.1 - Iterative & Incremental Software Development Process Model

The Iterative and incremental model is based on working through repeated cycles (iterative) and smaller portions (incremental) at a time. This process brings huge advantages for developers in utilizing what was learned in previous versions of the system. Besides, each cycle can be used with different models such as mini Waterfall, V-model, etc. Additionally, using this process model bring to us some advantages:

- Potential defects are spotted and dealt with early
- Functional prototypes are developed early in the project life cycle
- Less time is spent on documenting and more on designing
- Testing is facilitated by the modules being relatively small
- Most risks can be identified during iteration and higher risks can be dealt with as an early priority
- Successive iterations can be managed easily as milestones
- An operational product is delivered with every iteration

- Customer feedback is based on working products rather than technical specifications

2.2 Quality Management

2.2.1 Document

- Reviewing the document must be carefully guaranteed and evaluated by the leader.
- The document's team must follow the template of seniors and the university.
- The report should be accomplished with the same format, font, size, and alignment...

2.2.2 Coding

- Using Java coding standards for best coding practice.
- Code reviewing by members and performs UT test after finishing a feature
- Following the comments of reviewers are still important for verifying the intent of the code
- Implement coding conventions

2.2.3 Testing

- Integration testing and System testing after implementing main functions.
- Test cases are created based on the SRS and SDD document
- Testing's team runs test cases and finds issues that must log in Excel files to fix, not keep out of sight to get a high point of coding.

2.3 Training Plan

Table 2.3 - Training Plan for Gym Management website.

Training Area	Participants	When, Duration	Waiver Criteria
Java Spring MVC Spring Security	Hoang Minh Hieu Le Dai Duong Trinh Dinh Khanh Nguyen Cong Nam	14/01/2023 03/02/2023	Mandatory
GitLab	All members	14/01/2023 24/01/2023	Mandatory
Postman	All members	14/01/2023 24/01/2023	Mandatory

3. Project Deliverables

Table 3 - Project schedule

#	Deliverable	Dua date	Notes
1	Project Idea	14/01/2023	Ideas for the project
2	Report 1 – Project Introduction	15/1/2023	Product Background Existing Systems Business Opportunity Product Vision Project Scope & Limitations
3	Report 2 – Project Management Plan	04/02/2023	WBS Project Process Plan and Schedule Project Organization Project Communication Configuration Management
4	Report 3 – SRS v1	14/02/2023	Business Rules Use Case Diagram & Use Case Description Functional Requirements Non-Functional Requirements
5	Report 4 – Software Design v1	21/02/2023	System Architecture Back-end Architecture Front-end Architecture Database design
6	Code & Implement Iteration 1	07/03/2023	Detailed Design Code & Unit test Integration & System test cases
7	Code & Implement Iteration 2	22/03/2023	Detailed Design Code & Unit test Integration & System test cases
8	Report 3 – SRS v2	24/03/2023	Business Rules Use Case Diagram & Use Case Description Functional Requirements

#	Deliverable	Dua date	Notes
			Non-Functional Requirements
9	Report 4 – Software Design v2	31/03/2023	System Architecture Back-end Architecture Front-end Architecture Database design
10	Code & Implement Iteration 3	14/04/2023	Detailed Design Code & Unit test Integration & System test cases
11	Report 3 – SRS v3	16/04/2023	Business Rules Use Case Diagram & Use Case Description Functional Requirements Non-Functional Requirements
12	Report 4 – Software Design v3	23/04/2023	System Architecture Back-end Architecture Front-end Architecture Database design
13	Code & Implement Iteration 4	07/05/2023	Detailed Design Code & Unit test Integration & System test cases
14	Report 3 – SRS v4	09/05/2023	Business Rules Use Case Diagram & Use Case Description Functional Requirements Non-Functional Requirements
15	Report 4 – Software Design v4	12/05/2023	System Architecture Back-end Architecture Front-end Architecture Database design
16	Report 5 – Test Document	24/05/2023	Test Plan Test Cases Test Reports
17	Report 6 – Software User Guides	29/05/2023	Deliverable Package

#	Deliverable	Dua date	Notes
			Installation Guides User Manual
19	Final Code & Report	31/05/2023	All reports Presentation Slide Source Code

2. Responsibility Assignments

D~Do; R~Review; S~Support; I~Informed; <blank>- Omitted

Responsibility	**LuongHDHE141257**	**KhanhTDHE130546**	**DuongLDHE141435**	**HieuHMHE141679**	**NamNCHE141679**
Project Planning & Tracking	S	D	R	R	R
Prepare Project Introduction Document	S	S	D	R	I
Prepare SRS Document (Overview Part)	R	D	S	S	R
Prepare SRS Document (User Requirements)	R	D	S	S	D
Prepare SRS Document (System Diagrams)	S	D	R	R	D
Source code base	D	I	R	R	S
Implement Code	R	D	D	D	D
Set up deployment	D	R	R	R	S
Frontend Developer	S	S	D	D	S
Frontend Test	I	I	R	D	I
Backend Developer	D	I	S	S	D
Backend Developer test	S	D	S	S	R

4. Project Organization

4.1 Team & Structures

Table 4.1 Team & Structures.

STT	Member	Role
1	Trinh Dinh Khanh	Test Leader, Document Leader
2	Le Dai Duong	Frontend Developer
3	Hoang Minh Hieu	Frontend Developer
4	Hoang Duc Luong	Team Leader Project Manager Backend Developer
5	Nguyen Cong Nam	Analysis Leader Backend Developer

4.2 Role & Responsible

Table 4.2: Roles & Responsibilities.

Role	Member	Responsibility
Project Manager	Hoang Duc Luong	Responsible for planning, creating schedules, coordinating communication. Keeping track of the progress of the project. Take responsibility for all requirements and schedule of school. Keep projects with direct goals.
Analysis Leader	Nguyen Cong Nam	Analyze project requirements. Define project scope, create SRS documents. Review SRS created by analysis members. I study and research real estate.
Analysis Member	All members	Define requirements: functional and non-functional requirements. Keep track and contribute to the SRS document. Define detailed flow of features. Review other members and comment.

Role	Member	Responsibility
		I study and research real estate.
Designer	Hoang Duc Luong Nguyen Cong Nam Hoang Minh Hieu Le Dai Duong	Define screens, flow between screens. Design UI UX for a website.
Technical Leader	Hoang Duc Luong	Responsible for choosing technologies for the whole system and overseeing the work done by other programmers.
Frontend Developer	Le Dai Duong Hoang Minh Hieu	Initial and develop frontend. Study technical requirements to apply to projects. Fix bugs.
Backend Developer	Hoang Duc Luong Nguyen Cong Nam	Design database. Study technical requirements to apply to projects. Initial and develop backend server. Review code for each other. Fix bugs. Deploy code to server.
Document Leader	Trinh Dinh Khanh	Writing reports and taking notes after each group meeting. Keeping track of deadlines to submit documents Study and research related diagrams. Brainstorm for 6 reports. Synthesize 6 reports into 1 complete version (report 7). Prepare presentation content in slides.
Document Member	All members	Write content as assigned by the document leader. Keep track and contribute to documents. Review other members and comment.

Role	Member	Responsibility
		Study and research diagrams.
Test Leader	Trinh Dinh Khanh	Define test plan. Assign tasks for other members. Study and research testing tools. Create a test template. Take responsibility for coverage of tests.
Test Member	All members	Create test cases. Implement tests follow a test plan. Create test reports and inform development teams about bugs.

5. Project Communications

Table 5 – Project communication

Communication Item	Who/ Target	Purpose	When, Frequency	Type, Tool, Method(s)
Daily discussion with team member	All members	- Team members report daily work to leaders - Project team members discuss tasks and task issues	20:30 PM Everyday	Online - Google Meet, Messenger
Unexpected meeting	All members	Project team members discuss and solve suddenly important issues	When there are suddenly important issues	Online - Google Meet
Team building	All members	- Enhance team members relationship - Raise the communication problem/project issue	Team self-unified	Offline
Teacher meeting	All members		Every Week	Offline

6. Configuration Management

6.1 Source Code Management

6.1.1 Git version control

Table 6.1.1 – Version control and rules

Category	Descriptions
Management tools	GitLab
Editors	Visual Studio code, IntelliJ
Accessibility	All members
Rules	Code must be reviewed before merge.
	Main branch is merged when an iterative is ended.
	Code of member contain is manage in feature branch before merge to develop

6.1.2 Coding Convention Management

Table 6.1.2 – Coding convention management

Category	Descriptions
Front end HTML	HTML Conventions
Backend Java	Java Coding Conventions

6.2 Tools & Infrastructures

Table 6.2 – Tools & Infrastructure

Category	Tools / Infrastructure
Technology	Java Spring MVC Spring Security Bootstrap studio Figma
Database	MySQL, Xampp
IDEs/Editors	Visual Studio Code, Intellij
Diagramming	Visual Paradigm Community, Draw.io
Documentation	Office 365 (Word, Excel, Docs, Slides...)
Version Control	GitLab (Source Codes), Google Drive(Documents)
Deployment server	Heroku
Project management	Excel (Defects,Schedule, Tasks), OneDrive
Communication tools	Google Meet, Messenger, Zalo

Category	Tools / Infrastructure
Testing Tool/Library	Postman, Brower