Fpt University

TRƯỜNG ĐẠI HỌC FPT

CAPSTONE PROJECT REPORT

Report 5 – Software Test Documentation

Table of Contents

I. Project Report

1. Status Report

#	Work Item	Status	Notes (Work Item in Details)
1	Test Planning	Completed	Defined testing scope, environment (Web & Sim), and tools.
2	Test Case Design	Completed	Designed 197 test cases covering 5 main modules.
3	Test Execution	Completed	Executed manual and integration tests on the Staging environment.
4	Defect Fixing	Completed	Critical bugs regarding Simulation handshake and JWT Auth resolved.
5	Final Reporting	Pending	Consolidating final metrics and creating this documentation.

2. Team Involvements

#	Task	Member	Notes (Task Details, etc.)
1	Test Lead / Manager	Le Nhat Quang	Test planning, progress tracking, resource allocation.
2	Tester / QA	Le Nhat Quang	Test case design, manual execution, logging bugs.
3	Backend Developer	Dao Trong Duc	Unit testing for APIs, fixing BE logic (Final Exam, Auth).
4	Frontend Developer	Dao Trong Duc	UI/UX adjustments, integration testing with Simulation.

3. Issues/Suggestions

#	Issue	Status	Notes (Solution, Suggestion, etc.)
1	Simulation Handshake Delay	Solved	Optimized the token passing mechanism between Web and Sim Client.
2	Dashboard Performance	Solved	Refactored API queries for "SystemStats" and "EnrollmentTrend" to reduce load time.
3	Final Exam Timer Sync	Solved	Fixed the issue where the timer on FE did not sync perfectly with BE timestamp.

II. Project Management Plan

1. Overall Description

1.1 Test Model
The project follows the Agile Testing Model. Testing is performed continuously alongside development sprints (Sprint 1 to Sprint 4).

- Requirement Analysis: Analyze SRS to identify test scenarios.

- Test Design: Create Test Cases (Excel).

- Test Execution: Execute Functional and Integration tests.

- Defect Tracking: Log issues on Github and re-test after fixing.

1.2 Testing Levels

- **Unit Testing:** Performed by Developers using xUnit (BE) and localized component testing (FE).
- **Integration Testing:** Verifying communication between React FE, .NET API, and the Simulation Client.
- **System Testing:** End-to-end testing of full workflows (e.g., Enrollment -> Learning -> Exam -> Certificate).
- **Acceptance Testing (UAT):** Validating the system against user requirements (Admin, Instructor, Trainee flows).

1.3 Testing Types
- **Functional Testing:** Verifying all features against SRS (CRUD, Workflows).
- **UI/UX Testing:** Ensuring responsiveness and usability (React components).
- **API Testing:** Validating data integrity using Postman.
- **Security Testing:** Verifying Role-based Access Control (RBAC) and JWT Authentication.

2. Test Plan

2.1 Test Stages
[Clearly state the stage in which the test will be executed. Identified below are the stages in which common test are executed]

Type of Test	Stage of Test			
	Unit	*Integration*	*System*	*Acceptance*
Function Test	X	X	X	X
User Interface Test			X	X
Performance Tests		X	X	
Security Test		X	X	
Data Integrity Test	X	X	X	

2.2 Resources

a. Human Resources(Refer to Team Involvements table in Section I.2)

b. Environment

Purpose	Tool	Provider	Version
Backend Server	.NET 8 Web API	Microsoft	Hosted on Azure/Localhost
Frontend Client	ReactJS (Vite)	Open Source	Node.js v18+
Database	SQL Server	Microsoft	Azure SQL / SQL Server 2019
Simulation Client	Unity Build	Unity Tech	Windows Executable (.exe)
Browser	Google Chrome	Google	Latest Version
API Testing	Swagger / Swagger UI / Swagger Editor	OpenAPI Initiative	Latest Version
IDE	VS Code / Visual Studio	Microsoft	Code Editing

2.3 Test Milestones

Milestone Task	Effort (md)	Start Date	End Date
Test Planning	2	10/11/2025	11/11/2025
Test Case Design	5	12/11/2025	18/11/2025
Environment Setup	1	19/11/2025	19/11/2025
Test Execution (Round 1)	5	20/11/2025	26/11/2025
Bug Fixing & Retest	3	27/11/2025	05/12/2025
Final Report Generation	1	06/12/2025	12/12/2025

2.4 Deliverables

No	Deliverables	Due Date

1	Report 5 - Test Documentation (This document)	14/12/2025
2	Report 5 - Test Cases (Excel File)	14/12/2025
3	Test Execution Reports (CSV/Excel)	14/12/2025
4	Bug Log / Defect List	14/12/2025

3. Test Cases

Detailed test cases are provided in the attached file: *Report5_Test Report.xlsx*. The test suite covers the following modules:

1. **Training Content & Curriculum Management:** Program, Course, Class, Section management.
2. **Trainee Enrollment & Learning Process:** Enrollment flow, "My Classes", learning materials.
3. **Simulation Integration:** Launching Sim client, syncing scores and results.
4. **Trainee Final Exam Module:** Theory and Simulation exams, grading logic.
5. **Dashboard Management:** Admin, Instructor, and Sim Manager analytics.

4. Test Reports

Summary of Test Execution (Source: Test Statistics.csv):

- **Total Test Cases:** 197
- **Passed:** 191
- **Failed:** 0
- **Pending/NA:** 6 (Skipped scenarios or future features)
- **Pass Rate:** ~96.95%

No	Module Name	Passed	Failed	Pending	N/A	Total TCs
1	*Training Content & Curriculum Management*	50	0	0	0	56

2	*Trainee Enrollment & Learning Process*	*73*	*0*	*0*	*0*	*73*
3	*Simulation Integration & Practice Session*	*9*	*0*	*0*	*0*	*9*
4	*Trainee Final Exam Module*	*36*	*0*	*0*	*0*	*36*
5	*Dashboard Management*	*23*	*0*	*0*	*0*	*23*
Total		*191*	*0*	*0*	*0*	*197*