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# Software Engineering Project Plan

Metropolia University of Applied Sciences
Information and communication technologies
Software Engineering
Software Project
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# 1 Project Overview

## 1.1 Project Title

Online Flashcards

## 1.2 Problem Summary

The Online Flashcards project offers a modern solution to the challenges students face when organizing and retaining knowledge using traditional note-taking methods.

## 1.3 Intended Audience/Users

The Online Flashcards project offers a simple and effective learning tool for both students and educators.

## 1.4 Main Features/Components

- User Authentication: Registration, Login.
- Flashcard Management: Create, Edit, and Delete flashcards.
- Teacher Features:
    - Classroom Management: Create, Edit
    - Upload and Assign flashcard sets to classes.
- Different mode for Student:
    - Study
    - Quiz
- Track Learning Progress and View Statistics.

# 2 Project Objectives

Aiming to support effective knowledge revision, the project is developed with the following key features:

- Develop a functional flashcard system that allows students to create, edit, and delete their own flashcards and quizzes.
- Provide teachers with tools to upload, edit, and delete subject-based flashcard sets, create classes, and assign study tasks to students.
- Implement progress-tracking and analysis features to help learners monitor their study performance through visual statistics.
- Data for users, flashcards, and class information is stored with MariaDB.
- Deliver a user-friendly interface built with JavaFX.

# 3 Scope and Deliverables

## 3.1 In Scope

- The functions of the students
    - Register an account and login
    - Manage flashcards and quizzes include creating, editing, and deleting
    - View assigned sets
    - Study sessions
    - Track progress
    - View statistics.
- The functions of the teachers:
    - Register an account and login
    - Manage flashcard sets that include uploading, editing and deleting, creating classes
    - Manage classes that include creating classes and assigning students
    - Track students' progress
    - View statistics.
- Storage users, classes, and flashcards by MariaDB
- Develop user interface with JavaFX

### 3.2 Out of Scope

- Create flashcards with AI
- Chat box for users

### 3.3 Deliverables

- Online Flashcards web application

## 4 Project Timeline

### 4.1 Sprint 1 (13.01.2026 – 26.01.2026)

- Create Product Vision, Project Plan and Product Backlog.
- Setup Project environment.
- Design UI and initial database architecture.

### 4.2 Sprint 2 (27.01.2026 – 09.02.2026)

- Implementing the database
- Initiating the user interface development:
    - User authentication: Registration, Login
    - Flashcard management: Create, Edit, Delete
    - Classroom management: Create, Edit
    - Flashcard Sets management: Upload, Assign to Classroom
- Integrating essential development tools such as unit testing, Maven dependencies, and code coverage reporting

### 4.3 Sprint 3 (10.02.2026 – 02.03.2026)

- Extend functional prototype:
    - Implement different mode for student:
        - Study
        - Quiz
    - Track progress

    - View statistics
- Integrate Jenkins for CI/CD
- Enhancing automated testing with code coverage and preparing for a functional review.

4.4 Sprint 4 (03.03.2026 – 09.03.2026)

- Finalize the Product Functionality.
- Integration Testing.
- User Acceptance Testing.
- Prepare documentation and presentation.

# 5 Resource Allocation

5.1 Team Members and Roles

5.1.1 Sprint 1

- Scrum Master: Ngoc Nguyen
- Full-stack developers: Hoang Vu, Nhut Vo, Thanh Nguyen

5.1.2 Sprint 2

- Scrum Master: Hoang Vu
- Full-stack developers: Nhut Vo, Thanh Nguyen, Ngoc Nguyen

5.1.3 Sprint 3

- Scrum Master: Thanh Nguyen
- Full-stack developers: Nhut Vo, Ngoc Nguyen, Hoang Vu

5.1.4 Sprint 4

- Scrum Master: Nhut Vo
- Full-stack developers: Ngoc Nguyen, Hoang Vu, Thanh Nguyen

## 5.2 Task breakdown

| Sprint | Task | Description | Dependencies | Assignment |
|---|---|---|---|---|
| 1 | 1.1 | Create Product Vision | | Nhut Vo |
| | 1.2 | Create Product Plan | | Ngoc Nguyen, Thanh Nguyen |
| | 1.3 | Setup Project Management Tools | | Ngoc Nguyen |
| | 1.4 | Create Product Backlog | | Nhut Vo |
| | 1.5 | Prepare Topic Presentation | | Hoang Vu, Nhut Vo, Thanh Nguyen, Ngoc Nguyen |
| | 1.6 | Design Application UI | 1.4 | Ngoc Nguyen |
| | 1.7 | Design Database Architecture | 1.4 | Thanh Nguyen |
| 2 | 2.1 | Implement Database | 1.7 | Ngoc Nguyen |
| | 2.2 | User authentication | 1.6, 2.1 | Thanh |
| | 2.3 | Flashcard management | 1.6, 2.1 | Hoang Vu |
| | 2.4 | Classroom management | 1.6, 2.1 | Nhut Vo |
| | 2.5 | Flashcard Sets management | 1.6, 2.1 | Ngoc Nguyen |
| 3 | 3.1 | Study Mode | 2.2, 2.3 | Thanh Nguyen |
| | 3.2 | Quiz Mode | 2.2, 2.3 | Nhut Vo |
| | 3.3 | Track progress | 3.1, 3.2 | Hoang Vo |
| | 3.4 | View statistics | 3.1, 3.2 | Ngoc Nguyen |
| 4 | 4.1 | Integration Testing | 3 | Ngoc Nguyen, Thanh Nguyen, Nhut Vo, Hoang Vu |
| | 4.2 | User Acceptance Testing | 3 | |
| | 4.3 | Documentation | 3 | |
| | 4.4 | Presentation | 3 | |

## 5.3 Software, Hardware, and Tools

- IDEA: IntelliJ IDEA
- Database: MariaDB
- Programming language: Java

# 6 Risk Management

| Description | Likelihood | Impact | Mitigation Strategies |
|---|---|---|---|
| Team coordination issues | Medium | High | Schedule daily, weekly meetings and use task management tools (Trello) |
| Technical Risks:<br>- New technology<br>- Lack experience<br>- Integration Issue | High | High | Research, study documentation and tutorials. Raise concerns as soon as posible.<br>Perform continuous integration and integration testing. |
| Time Constraints | High | High | Clear sprint backlog for planning. Monitor progress daily through daily scrum |

# 7 Testing and Quality Assurance

7.1 Testing Strategy

- Unit Testing: Validate individual components of the system, such as functions and classes.
- Integration Testing: Confirm that different modules work together seamlessly.
- User Acceptance Testing (UAT): Gather and evaluate feedback from students and teachers to ensure the solution meets user needs.

7.2 Success Criteria

- All features operate as intended.
- No critical issues are present in key workflows.

- An average feedback score of at least 4.5 out of 5 from students and teachers is achieved.

# 8 Documentation and Reporting

## 8.1 Documentation

- User manual: Step-by-step instructions for students and teachers on how to use the application.
- Technical documentation: Detailed system architecture, database schema, and Javadoc.

## 8.2 Reporting

- Daily Stand-ups: 10-minute daily meetings to review progress, discuss blockers, and outline plans for the day.
- Weekly Updates: Share progress updates through weekly meetings.
- Sprint Reviews: Conduct reviews at the end of each sprint to showcase completed features and collect feedback.
- Sprint Retrospectives: Hold retrospectives after each sprint to evaluate what worked well, identify improvement areas, and refine processes.
- Progress Tracking: Use Trello to monitor tasks and maintain transparency throughout each sprint.
- Project Presentation: Conduct at the end of Software Engineer Project 1 course.