

IT5106 - Software Development Project

Project Proposal - 2025

(Submission deadline: 24th November 2025)

Candidate Details

Index No: 2334212

Name of candidate:

..... Hansaka Kaveesh Wijesinghe

Contact Numbers: 0710448366

Email: Hansakakaveesh2@gmail.com

Supervisor/Advisor Details

	Supervisor 1 (IT Related)	Supervisor 2 (Optional)
Name	Chamara Madhushanka	
Designation	Web Development Specialist, Senior Software Engineer - Full stack	
Workplace address	Serendib Systems No 356, Denzil Kobbekaduwa Road Battaramulla, Sri Lanka	
Academic/ professional/ qualifications and memberships	MSc in Information Systems with Computing (Dublin Business SchoolDublin Business School), MSc in IT(Cardiff Metropolitan UniversityCardiff Metropolitan University), Bachelor of Information Technology (BIT) - 2nd Class (UCSC)	
Work experience	Senior Software Engineer - Full stack (1 Year) Software Engineer (Full- stack) (2 Years)	
Email:	nlc.madhushanka@gmail.com	
Phone number/s	0710193314	

Note: Any deviation of the final project from the project described in this proposal should be explained by the candidate in the final Project Report.

Project Details

1. Title of Project:

- Virtual Learning Environment System (SynapZ)

2. Name and address of client (ONLY if applicable):

.....
.....
.....
.....

3. Brief Introduction:

- The Virtual Learning Environment System (SynapZ) is an innovative online education platform designed to enhance digital learning experiences for students and teachers. The system allows users to access course materials, participate in discussions, attempt quizzes, submit assignments, and view progress reports through an interactive web interface.
- SynapZ aims to simplify online learning management by integrating features such as student dashboards, teacher content uploads, and real-time communication tools. The platform is developed using **React** for the frontend, **Laravel (PHP)** for the backend, and **MySQL** as the database. The system also includes role-based access for students, teachers, and administrators to ensure secure and organized functionality.

4. Motivation for project:

- The motivation behind developing SynapZ originates from the growing need for effective, affordable, and accessible online education platforms. Traditional classroom setups have limitations in reaching geographically dispersed learners and providing flexible learning opportunities.
- During and after the pandemic, many institutions struggled to manage online learning due to fragmented tools and lack of user-friendly systems. SynapZ seeks to address this gap by providing a unified platform that simplifies course management, improves communication, and enhances the overall learning experience for students and educators alike.

5. Project Objectives

- To design and develop an interactive and user-friendly web-based learning management system.
- To provide students and teachers with separate dashboards for managing courses and study materials.
- To implement secure authentication and role-based access for different users.
- To enable teachers to upload, edit, and manage course content efficiently.
- To allow students to view, download, and interact with learning materials and attempt quizzes.
- To support administrators in managing users, courses, and reports.
- To ensure system reliability, scalability, and ease of maintenance.

6. Scope of proposed project:

- ❖ The SynapZ system will cover functionalities for three main user roles — **students, teachers, and administrators.**
 - **Student Features:** Registration, login, view courses, download materials, attempt quizzes, submit assignments, and track progress.
 - **Teacher Features:** Upload and manage learning materials, create quizzes, view student submissions, and communicate with students.
 - **Admin Features:** Manage user accounts, approve teacher registrations, monitor system activity, and generate reports.

The system will be accessible via web browsers and optimized for desktop and mobile devices.

7. Critical functionalities for project:

- ❖ **User Authentication & Security**
 - Secure user registration (students, teachers, admins).
 - Secure login with password hashing.
 - Role-based access control (RBAC).
 - Session management & logout.
 - Input validation & SQL injection prevention.
- ❖ **Role-Based Dashboards**
 - **Student Dashboard** – enrollments, materials, quizzes, progress.
 - **Teacher Dashboard** – upload materials, create quizzes, manage students.
 - **Admin Dashboard** – manage users, courses, reports, system settings.

❖ Course & Material Management

- Teachers upload study materials (PDF, videos, notes).
- Organize materials by course → topic → subtopic.
- Edit and delete existing materials.
- Students download or view materials.

❖ Quiz & Assignment Management

- Teachers create quizzes (MCQ/short answer).
- Assignment upload by teachers.
- Students submit answers/assignments.
- Auto-grading for MCQs.
- Score storage & result display.

❖ Communication & Notifications

- In-app notifications (new materials, quizzes, announcements).
- Teacher → student messaging or announcements.

❖ Progress Tracking & Reporting

- Student progress dashboard.
- Quiz/assignment scores tracking.
- Course completion tracking.
- Admin can view overall reports.
- Downloadable progress reports (PDF if required).

❖ Course Enrollment

- Students can enroll in available courses.
- Admin can assign/approve courses.

❖ **Responsive UI/UX**

- Mobile-friendly design (Tailwind CSS).
- Easy navigation for each role.
- Accessibility support.

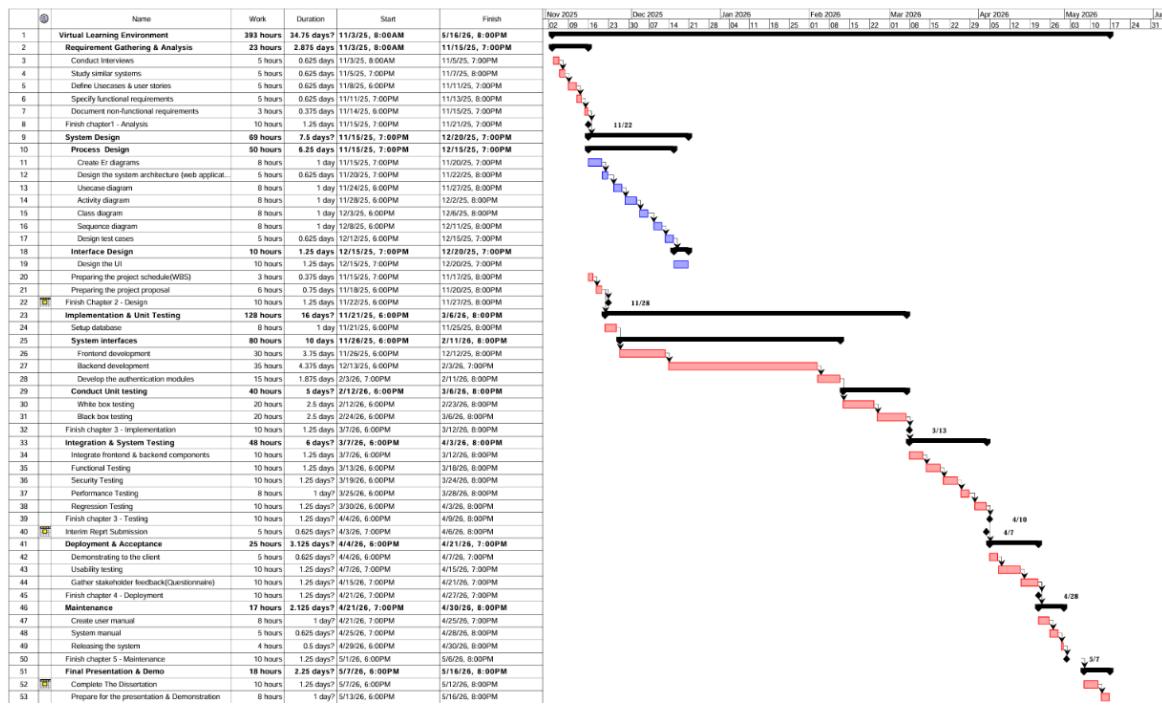
❖ **System Management (Admin Only)**

- Manage users (add/update/delete).
- Manage courses & categories.
- View system analytics.

8. Itemized list of deliverables of the system:

- Fully functional web application of SynapZ.
- User manuals and documentation.
- Source code and database files.
- Installation and deployment guide.
- Final project report and testing documentation.
- Presentation slides and demonstration video.

9. A project plan using Gantt chart (include the work involved in system development as well as writing the Final Project Report):



10. Resource requirements for project (e.g., hardware, software,...):

Hardware:

Personal computer or laptop (Intel i5 or higher, 8GB RAM, 500GB storage).

Software:

Laravel Framework, React (Frontend), PHP 8.0 or later (Backend), MySQL Database,

Visual Studio Code / XAMPP / WAMP Server, Tailwind CSS for styling, GitHub for version control, Browser (Google Chrome or Firefox).

11. Proposed way of self-evaluating the success of your system:

The success of the SynapZ system will be evaluated through:

- Functional testing to ensure all core modules work correctly.
- Usability testing with real users (students and teachers) for feedback.
- Performance and security testing to ensure system reliability.
- Comparison with existing e-learning systems for feature completeness.
- Client and user satisfaction surveys.
- Achievement of all stated objectives within the given timeframe.