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Electronic Hasta La Vista (e-HLV): Student Assessment System for Finishing School

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Abstract

The Electronic Hasta La Vista (e-HLV) Student Assessment System is developed to streamline the assessment process for students, educators, and coordinators in higher education institutions, particularly Universiti Teknologi MARA (UiTM). This system addresses inefficiencies in the current manual processes, such as time-consuming data handling, errors in mark entry, and delays in feedback. The system incorporates features like secure login, automated grading, real-time feedback, and report generation to improve assessment management. The Prototyping methodology is employed, involving iterative development to refine the system based on user feedback. The implementation of the e-HLV System for a web-based platform is done using Visual Studio Code. Based on the results of the testing phase the system proves effective in automating the marking process, reducing errors, and enhancing overall efficiency for both students and educators.

1. Introduction

The *Hasta La Vista* (HLV) module is a component of the Industrial Training Program introduced by higher education institutions such as Universiti Teknologi MARA (UiTM) to prepare students for the workplace[1]. It aims to equip students with both technical knowledge and soft skills before they graduate. The HLV module contributes 10% to the overall industrial training assessment and is structured around three key activities: mock interviews, self-reflective documentation, and mentoring sessions. Through mock interviews, students simulate real job interview scenarios to build confidence and communication skills. The self-reflective documentation requires students to create a video explaining what they did not understand or struggled with during their learning process, encouraging them to reflect on their own progress and identify areas for improvement throughout the training. Meanwhile, the mentoring component provides students with guidance and industry insights from academic or professional mentors. Together, these activities help students develop their personal and professional abilities, making them more job-ready upon graduation.

Currently, the process of recording and managing marks for the HLV module is still done manually in many institutions. Educators typically use paper-based forms or spreadsheets, which often leads to several issues such as human error, data loss, slow processing, and delayed feedback. This manual system also increases the workload for educators, reducing the time available for teaching and student engagement. As a result, students may miss out on timely performance updates, and administrators may struggle to generate accurate performance reports. To address these challenges, this project proposes the development of the Electronic Hasta La Vista (e-HLV*)* Student Assessment System a web-based platform specifically designed to manage the HLV module more effectively. Through this system, educators can record and manage marks efficiently, while students receive timely feedback on their performance. Key features of the e-HLV system include real-time mark entry, automated data

validation, secure data storage, and instant performance reporting to support a more streamlined, accurate, and responsive assessment process.

The final product of this project will be a web-based platform called the *e-HLV Student Assessment System*, designed to support both educators and academic administrators in managing the *Hasta La Vista* module. The system features a user-friendly interface developed using HTML, CSS, and JavaScript, and will undergo thorough testing to ensure it meets user requirements for functionality, usability, and performance. With the implementation of the e-HLV Student Assessment System, educators can focus more on teaching rather than administrative tasks, students will receive accurate and timely feedback on their performance, and administrators will be able to monitor academic progress more effectively. Ultimately, the system will streamline the assessment process, minimize manual errors, and enhance the overall management of student development in the Industrial Training Program.

The remainder of the paper divided into 5 sections. Section 2 is about the related work with a literature review. Section 3 outlines the methodology including system requirement, system analysis and system design. Section 4 presents the results and discussion. Section 5 tells about the conclusion of the project.

2. Related Work

An assessment system in education is a tool used by schools and universities to track student learning[2]. It helps educators collect, organize and analyze student performance data. In the past, marks were recorded on paper or spreadsheets, leading to errors, lost data, and delays in feedback. Today, many institutions use digital systems that automate the assessment process[3]. These systems allow educators to enter marks, validate data and generate reports quickly. Some also track attendance and participation. This saves time for educators, provides students with fast and accurate feedback, and ensures fairness and consistency by keeping all data in one place.

Performance management in education focuses on monitoring and improving student progress beyond just recording grades[4]. It ensures students achieve their learning goals and gain the skills needed for their future careers. A good system provides real-time tools like dashboards and charts to track grades, attendance and participation[5]. It is helping identify areas where students need extra support. For example, struggling students can receive additional coaching, or schools can adjust teaching methods for better outcomes. By aligning student goals with the institution's mission, performance management helps students build valuable knowledge and skills while making education more effective for both students and teachers.

Next, this section focus on existing systems similar to the proposed e-HLV Student Assessment System. The goal is to analyze the features and functionality of current systems and compare them to the proposed e-HLV system. Three comparable systems were selected UTM eLearning, UTHM Author System, and UiTM uFuture. The comparison between these existing systems and the e-HLV system is presented in Table 1. All three existing systems and the proposed e-HLV system support online platforms. The proposed e-HLV system includes features such as automated grading, real-time reporting, and a centralized platform for managing assessments, which are lacking in some of the existing systems. Unlike UTM eLearning and UTHM Author, the e-HLV system provides mentoring and self-assessment modules to enhance student learning. It also focuses on industrial training by including mock interviews and real-time feedback features, which are absent in UiTM uFuture. Additionally, the proposed system introduces a user-friendly interface and customizable modules designed to meet the unique needs of both students and educators. This comparison highlights the advanced and specialized features of the e-HLV system, setting it apart from existing systems.

Table 1 *Comparison between the existing application and the proposed application*

System/Features	**UTM eLearning**[6]	**UTHM Author**[7]	**UiTM uFuture**[8]	**e-HLV System**
Real-Time Reporting	Limited	None	Yes	Yes
Customization for Modules	No	Limited	Limited	High
Mentoring and Self-Assessment	No	No	No	Yes
Focus on Industrial	No	No	No	Yes
Ease of Use	Moderate	High	Moderate	High

Table *1* *Comparison between the existing application and the proposed application (cont)*

System/Features	UTM eLearning[6]	UTHM Author[7]	UiTM uFuture[8]	e-HLV System
Support for Group Activities	No	Yes	Yes	Yes
Report Export (Exel,PDF)	No	No	Yes	Yes

3. Methodology

The planning phase is the first step in starting the development of the e-hlv Student Assessment System. The planning phase marked the beginning of the project, during which the challenges of the current system, such as grading delays and manual errors, were identified. A detailed project proposal was prepared, outlining the objectives, scope, and features of the system. Additionally, a Gantt chart was created to organize the timeline and ensure systematic progress.

In the Analysis phase, a comprehensive study of existing systems was conducted to identify strengths and limitations that could inform the development of the e-HLV Student Assessment System. Interviews with lecturers were carried out to gather detailed user requirements and understand functional needs from an academic perspective. Based on the data collected, system modelling tools such as flowcharts, context diagrams, data flow diagrams (DFD), and an Entity Relationship Diagram (ERD) were developed to visually represent the system's processes, data flow, and database structure.

Next, in the design phase, a prototype user interface was developed using wireframes created with Draw.io. The focus was on creating a user-friendly interface to enhance usability and efficiency. These design elements served as a foundation for the subsequent development phase.

The implementation phase involved coding the system using tools such as Visual Studio Code and XAMPP. The front-end was developed using HTML, CSS, and JavaScript, while the back-end utilized PHP. The database was integrated through PhpMyAdmin, and system functionalities were implemented as per the finalized design.

In the testing phase, functionality testing was carried out to ensure all features and modules worked as intended. User evaluations were also conducted to assess usability and gather feedback. The testing process remains ongoing to incorporate user feedback and ensure the system meets all requirements. Figure 1 shows the Prototyping Model.

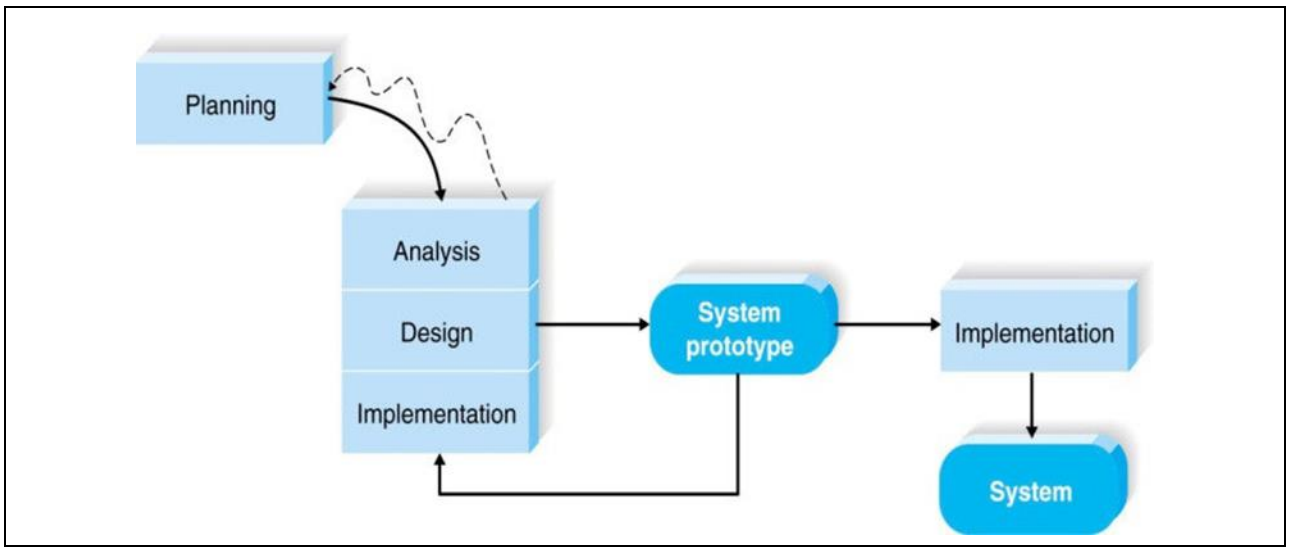

Fig 1 *Prototyping Model*[9]

3.1 System Development Workflow

Table 2 illustrates the detailed system development workflow for each phase of the proposed system. It outlines the specific activities involved in each phase, where each activity's output is clearly identified as a direct result of the tasks completed in that phase. This comprehensive overview ensures that every step in the development

process is carefully mapped out highlighting the progression from one phase to the next and demonstrating how the outputs of earlier phases contribute to the overall system development.

Table 2 *Workflow development for e-hlv Student Assessment System*

Phase	Activities	Output
Planning	1. Propose the e-HLV Student Assessment System project. 2. Prepare project work plan with Gantt Chart. 3. Determine problem statement, objective, project scope.	1. Gantt Chart. 2. Project proposal detailing system objectives, scope and other that.
Analysis	1. Gather user requirement form educator. 2. Define hardware and software requirement for the e-HLV system 3. Illustrate flowchart, context diagram, Data Flow Diagram and Entity Relationship Diagram(ERD).	1. Hardware and software requirement. 2. Flowchart, context diagram and Data Flow Diagram. 3. Entity Relationship Diagram (ERD).
.Design	1. Design process system and database system for each user role. 2. Crate wireframe for the e-HLV System interfaces.	1. Wireframe for all major screens. 2. Interface Design.
Implementation	1. Implement the code for system functionalities. 2. Develop a functional prototype of the e-HLV Student Assessment System.	1. Functional system prototype.
Testing	1. Perform functional and system testing. 2. Conduct User Acceptance Testing (UAT). 3. Identify bugs and areas for improvement.	1. Test cases. 2. Repair the bugs.

3.2 System Requirements

Functional requirements define the specific functions and features of the e-HLV Student Assessment System to help users complete their tasks effectively. These requirements as shown in Table 3 and 4 ensure the system addresses the needs of students, lecturers, and coordinators involved in the assessment process.

Table 3 *functional requirement for the developed application*

Function	**Functionality**	**User**
Upload assessment	Allow educator to create assessment for the student	Educator
Submit assessment	Allow students to upload self-reflective documentation and assessments for evaluation.	Student
Download resources	Provide access to download templates, guidelines, and relevant materials for assessments.	Student
Post Announcements	Allow coordinators to post notices, reminders, or updates visible to all users.	Educator

Table 3 *functional requirement for the developed application (cont)*

Function	Functionality	User
Register	Allow coordinator to register for student and add new educator by insert the information details	coordinator
Generate Reports	Allow lecturers and coordinators to generate detailed reports on student performance and module progress.	Educator, Coordinators
Update profile	Change information of their details	Student and educator
Login	Allow users to login using their matric number or staff ID and password	Student, Educator and Coordinator
Secure Logout	Ensure users can safely log out of the system after completing their tasks.	All Users

Non-functional requirements outline the quality attributes and constraints of the e-HLV Student Assessment System, ensuring it is reliable, secure, and user-friendly. These requirements as shown in Table 4 focus on operational, performance, security, and usability aspects of the system.

Table 4 *non-functional requirement for the developed application*

Requirement	Functionality
Operational	The system must be accessible through standard web browsers like Google Chrome, Mozilla Firefox, and Edge.
Performance	The system response time is relatively short
Security	Users must log in with a valid ID and password. All sensitive data, including student grades, must be encrypted.
Usability	The interface must be intuitive and easy to navigate for all users, minimizing the need for extensive training.
Scalability	The system must handle a large number of simultaneous users without performance degradation.

3.3 System Analysis

The system flowchart illustrates the step-by-step processes within the e-HLV system, from the initial user login to the generation of performance reports. The flowchart is essential for visualizing the logical sequence of operations, ensuring a smooth workflow and identifying any potential bottlenecks in the system. Appendix A show illustrates the system flowchart for the e-HLV system.

A Context Diagram is a high-level diagram showing the system, its boundaries, and interactions with external entities. It highlights the inputs, outputs, and data flow between the system and its environment. Figure 2 below shows the Context Diagram for the e-HLV system. The central system interacts with three primary external entities of educators, administrators, and students. It highlights the input and output flows. This diagram simplifies the understanding of the system's environment and its interactions.

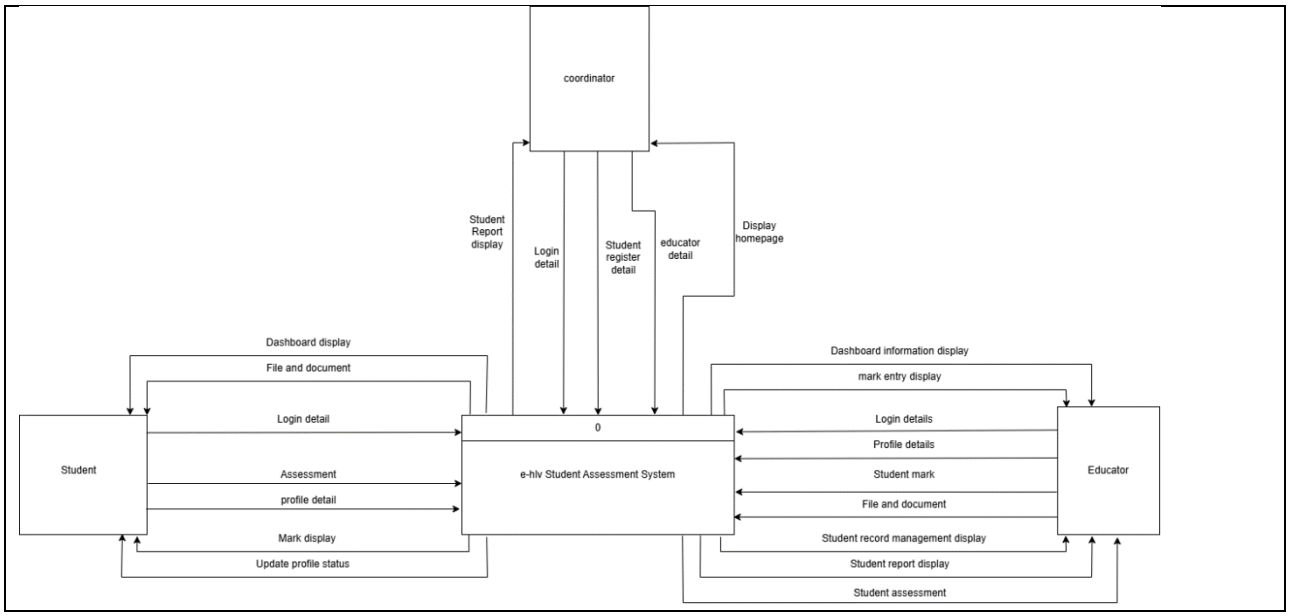

Fig 2 *Context Diagram for e-Hlv Student Assessment System*

Figure 3 shows the Data Flow Diagram (DFD) level 0 of the e-HLV Student Assessment System. In the DFD level 0, the diagram refers to the data flow between entities, four modules and database in the system. There are four database and three entities in DFD level 0.

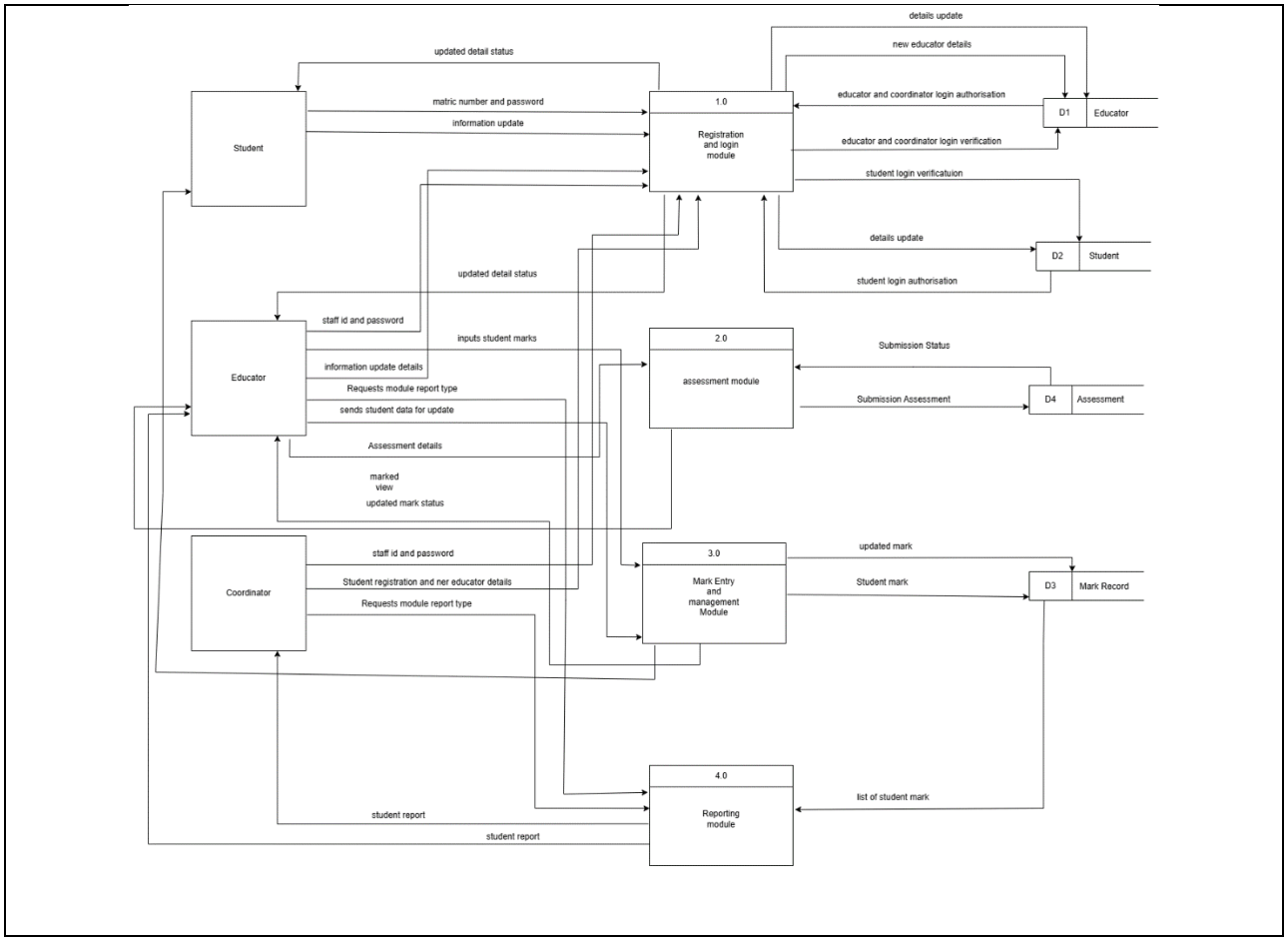

Fig 3 *Data Flow Diagram (DFD) level 0 of the e-HLV Student Assessment System*

Figure 4 below presents the ERD for the e-HLV system. It visually outlines the entities, attributes and relationships by providing a comprehensive overview of how the database is structured to support system functionality.

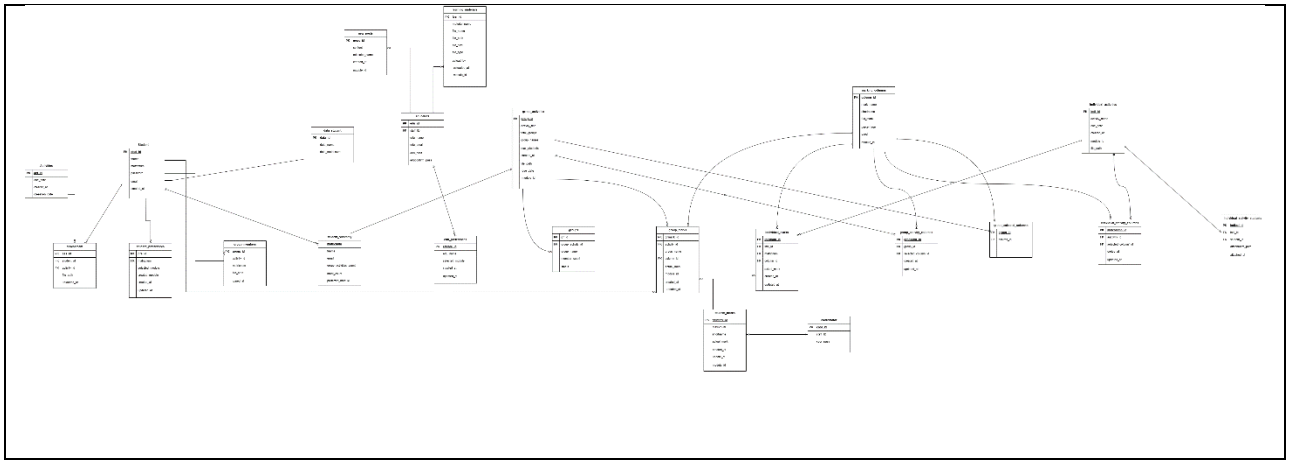

Fig 4 *Entity Relationship Diagram for e-HLV Student Assessment System*

3.4 System Design

A wireframe is a visual representation or blueprint of a user interface (UI) for a website, application, or software. It serves as a guide to show the layout and structure of the design elements on each page or screen without the distraction of design details such as colors, images, or typography. Figure 5 show the wireframe of the login interface for the proposed system which educator and coordinator need to insert Staff ID and password to login while student need to insert matric number and password. Figure 6 show the dashboard page for student which has a news, individual assessment, group assessments and mark. Figure 7 show the dashboard page for the educator.

Fig 5 *Login page*

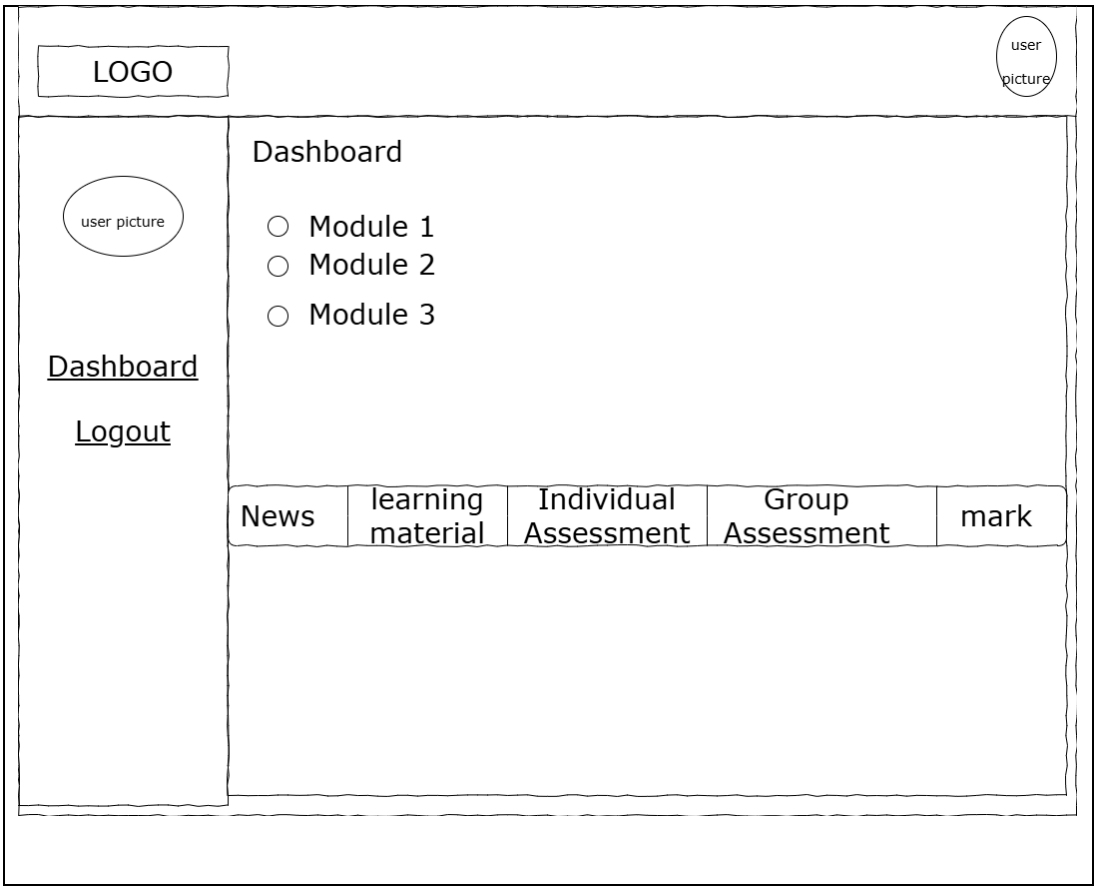

Fig 6 *Dashboard page for student*

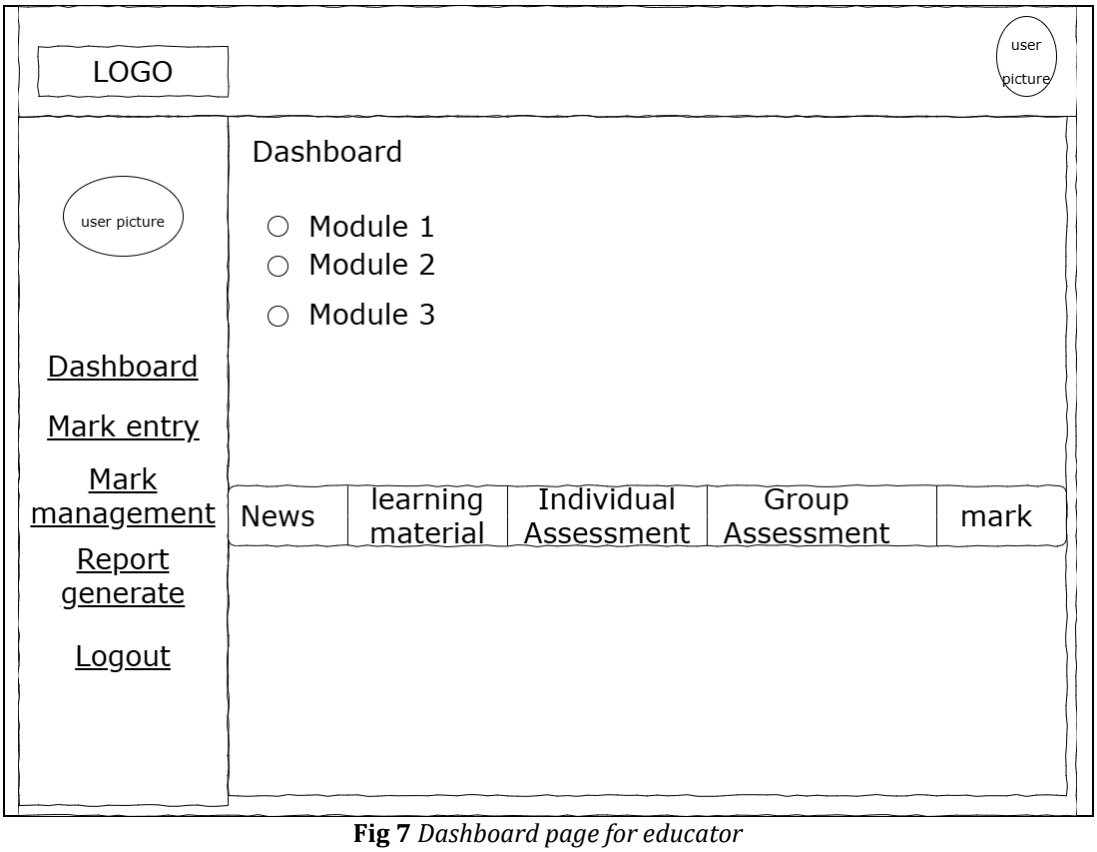

Fig 7 *Dashboard page for educator*

4. Result and Analysis

This chapter describes the system implementation process and the system testing for the E-hlv system.

4.1 Registration and Login Module

The Registration and Login Module of the e-HLV System consists of four key screens designed to facilitate user management. Figure 8 and 9 shown login page for educator and coordinator using staff ID and password. Figure 10 Shown login page for student using matric number and password. Finally, figure 11 shown the student registration screen allows new students to sign up by entering their full name, matric number, password, confirming their password, and providing an email address. Together, these screens enable the system to handle user login, registration, and account recovery, ensuring a streamlined process for different types of users

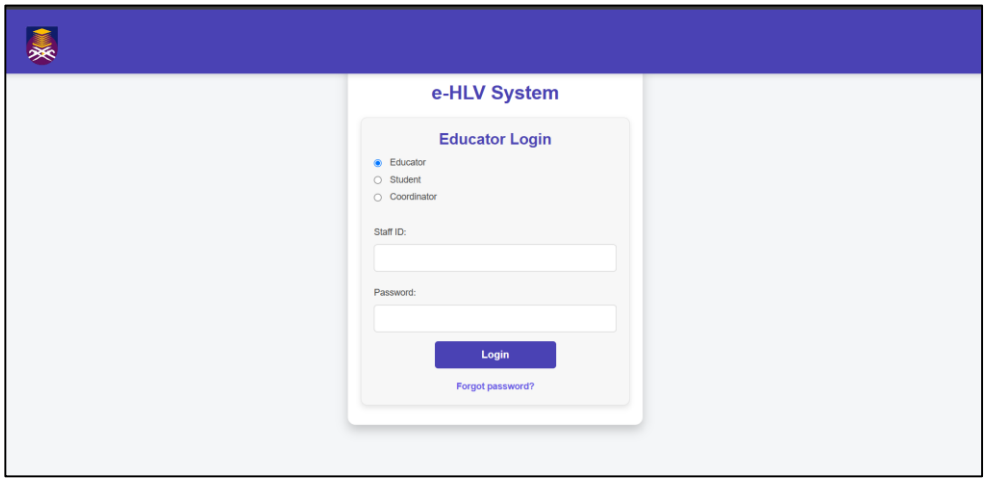

Fig 8 *Login page for Educator*

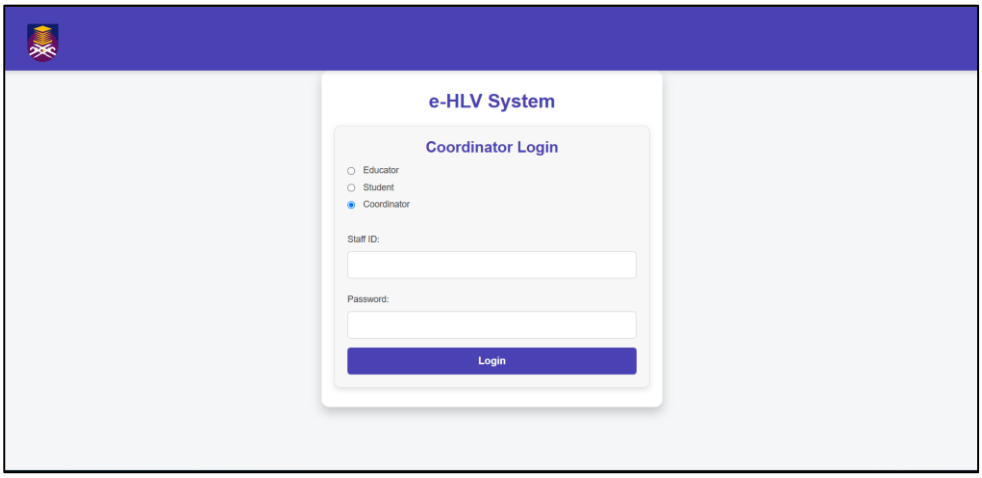

Fig 9 *Login page for Coordinator*

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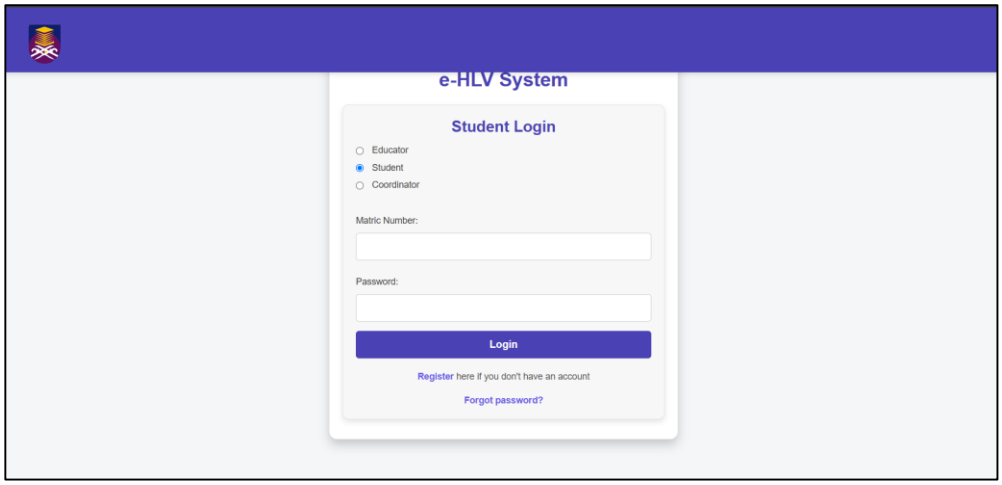

Fig 10 *Login page for Student*

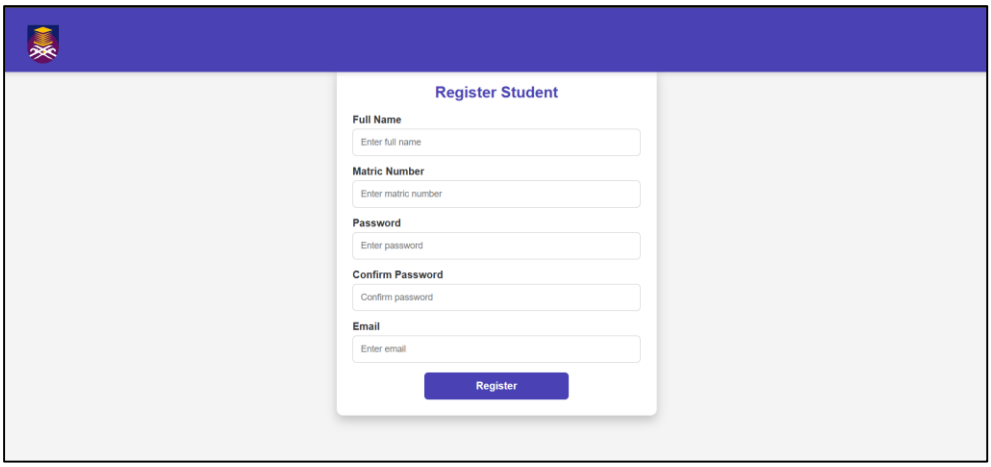

Fig 11 *Register page for student*

4.2 Assessment Module

The Assessment Module of the e-HLV System provides educators with the ability to create and manage individual and group activities for students. Figure 12 and 13 shown educators to create individual and group activities. This module helps educators easily manage assessments and track activities for students. The user interface is designed to be simple and intuitive, allowing for seamless creation and organization of assignments.

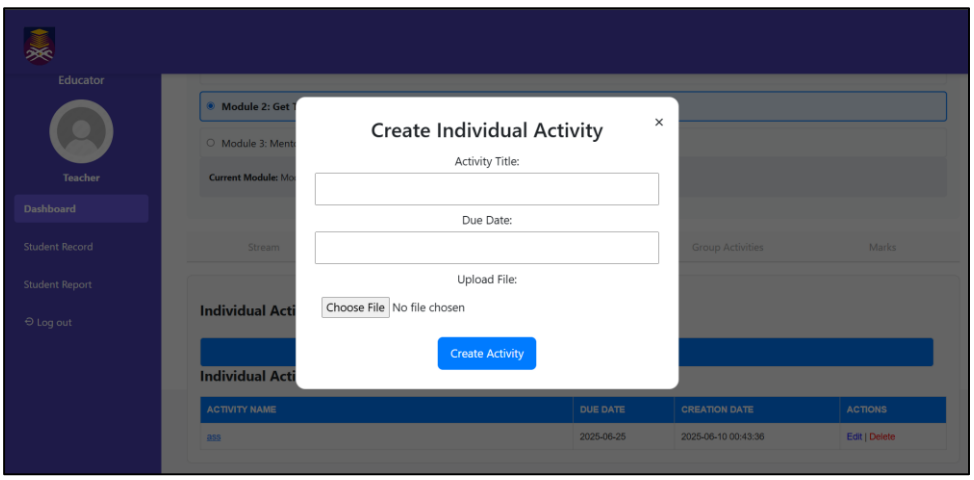

Fig 12 *Form to create individual activity*

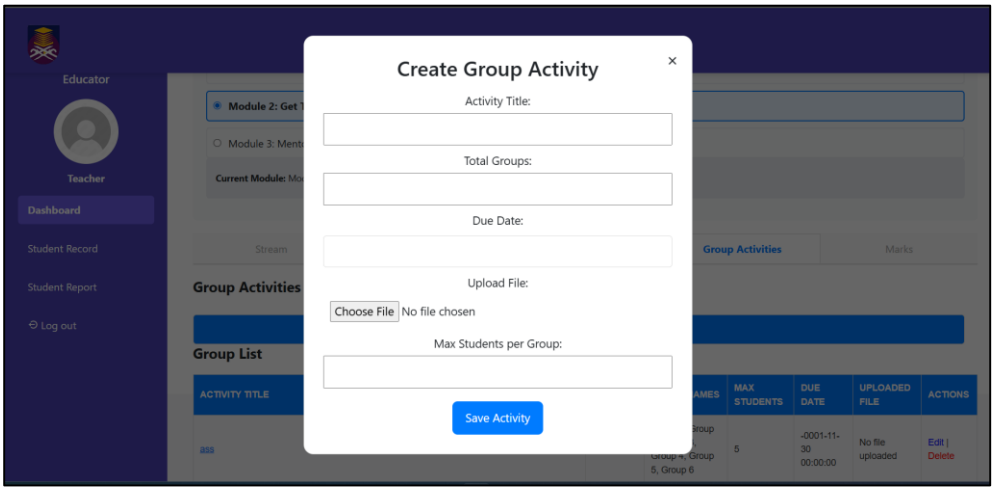

Fig 13 *Form to create group activity*

4.3 Mark Entry and Management

The Mark Entry and Management Module of the e-HLV System allows educators to easily enter and manage marks. Figure 14 shown the form to key-in mark for group. When entering marks for group, each group member have a same mark. Once the marks are entered, they are saved and can be viewed in the mark tab. This module enhances the user experience by offering a straightforward method for mark entry and management.

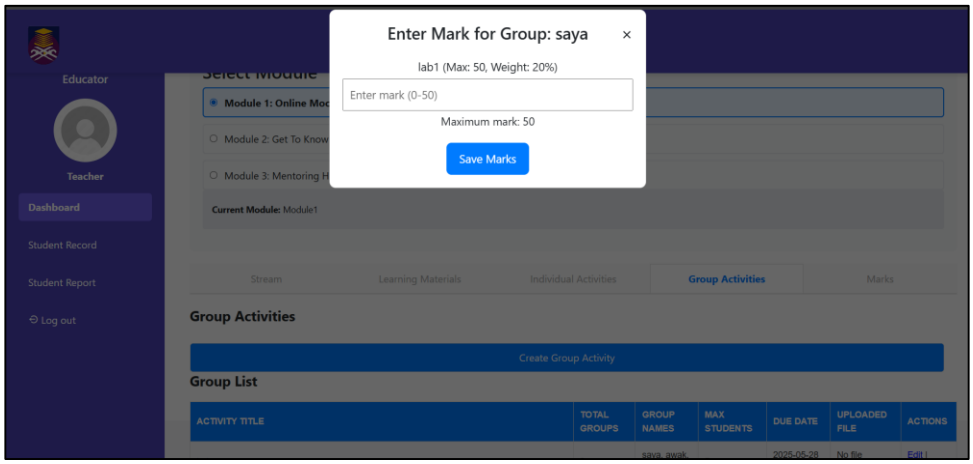

Fig 14 *Form to key-in mark*

4.4 Reporting Module

The Reporting Module of the e-HLV System provides educators with the ability to generate detailed reports on student performance. Figure 15 shown educators can select a specific module. The system then displays the report with relevant data, including student names, matric numbers, and marks for each assessment component. These components are weighted according to their respective percentages. Educators can then export the report to Excel or print it directly providing flexibility in how they manage and share student performance data shown at the figure 16. This module enhances the ability to track and analyze student progress in a structured manner.

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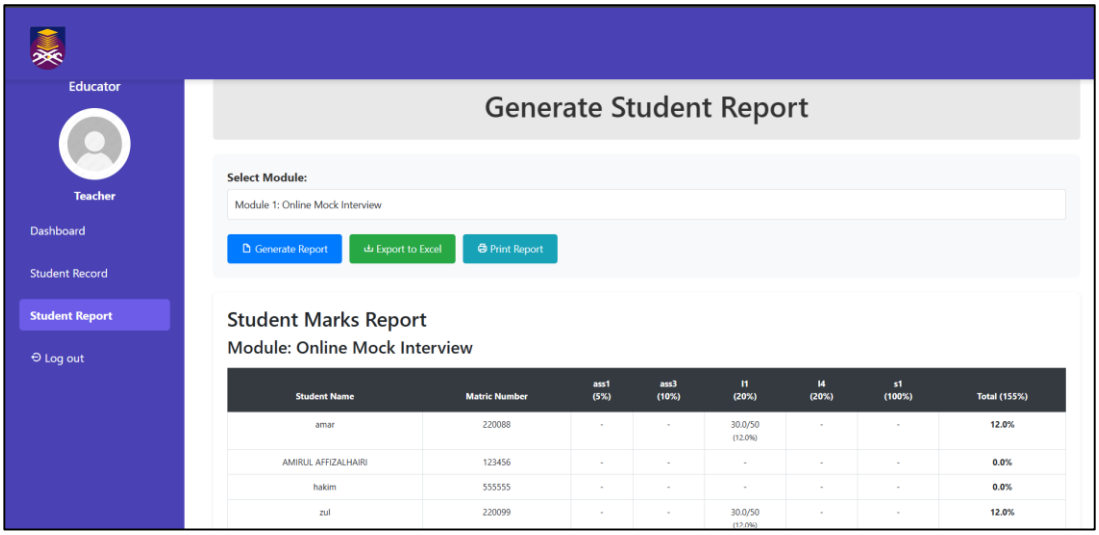

Fig 15 *Generate Student Report page*

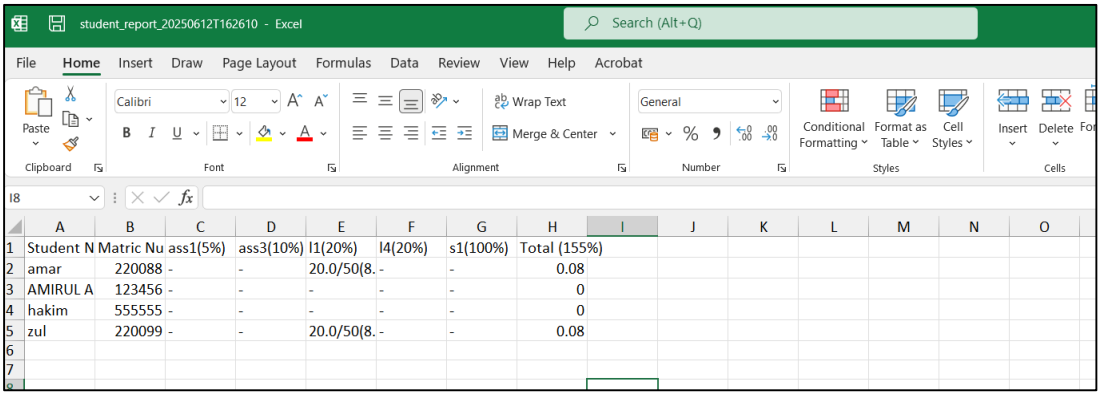

Fig 16 *excel file after generated*

4.5 Testing

Before release, the system must be thoroughly tested to ensure it is bug-free and meets all specified criteria. This testing procedure ensures optimal system performance. A system was evaluated using a comprehensive test plan and a user acceptability test (UAT).

4.5.1 Functional Testing Plan

A functional testing plan outlines the strategy and steps to verify that a web-base performs its intended functions correctly. Table 5 – 8 shows the test plan for each module of the e-hlv system.

Table 5 *Test Plan for Registration and Login Module*

Function	Roles	Test Case	Expected Result	Actual Result
Register	Student	Register with an matric number not have in student register this program	Error message.” Matric Number not found in the records!"	Pass

Table 5 *Test Plan for Registration and Login Module (cont)*

Function	Roles	Test Case	Expected Result	Actual Result
	Student	Register with a password that does not meet requirements.	An appropriate alert message appears based on the password issue	Pass
	Student	Register with matric number same as student data register this program	Alert display success message and redirection to login page	Pass
Login	Educator Administrator	Enter an invalid staffID or password	An error message, "Incorrect staffID and password!" is shown	Pass
	Student	Enter an invalid matric number or password	An error message, "Incorrect matric number and password!" is shown	Pass
	Educator Administrator	Login with the correct staffID and password	Successfully login and redirect to educator or administrator dashboard page	Pass
	Student	Login with the correct matric number and password	Successfully login and redirect to student dashboard page	Pass`
Forgot Password	Educator Student	Click "Forgot password?", enter a valid email, and submit the form	"Password reset email sent!".	Pass

Table 6 *Test Plan for Assessment Submission Module*

Function	Roles	Test Case	Expected Result	Actual Result
Create Assessment	Educator	Create a assessment activity	Successfully create assessment	Pass
Submit Assessment	Student	Upload valid assessment file	"Submission successful	Pass
	Student	Submit without upload the file	Alert display "please upload your assessment"	Pass
Review Assessment	Educator	View list of submitted assessments	List of assessments appears	Pass

Table 7 *Test Plan for Mark Management Module*

Function	Roles	Test Case	Expected Result	Actual Result
Create Assessment	Educator	Create a assessment activity	Successfully create assessment	Pass
Submit Assessment	Student	Upload valid assessment file	"Submission successful	Pass
	Student	Submit without upload the file	Alert display "please upload your assessment"	Pass
Review Assessment	Educator	View list of submitted assessments	List of assessments appears	Pass

Table 8 *Test Plan for Report Generation Module*

Function	Roles	Test Case	Expected Result	Actual Result
Generate Report	Educator	Select a module and generate report	Report displays student marks and details	Pass
	Coordinator	Generate all-module performance report	Full system-wide report is displayed	Pass
Export Report	Educator	Export generated report	File downloaded or opened in viewer	Pass

5. Conclusion

The Electronic Hasta La Vista (e-HLV) Student Assessment System has been successfully developed as a web-based platform to support educators and academic administrators in managing assessments for the Hasta La Vista module. The system integrates key features such as real-time mark entry, automated validation, secure data storage, and instant performance reporting, which collectively improve the accuracy, efficiency, and reliability of the assessment process. By streamlining mark management, the system reduces educators' workload, ensures timely feedback to students, and enhances overall academic performance tracking.

However, despite fulfilling its primary objectives, the system still presents a few limitations. Firstly, as a web-based system, it requires a stable internet connection, which may limit its accessibility in areas with poor connectivity. Secondly, students without access to smartphones or computers may face difficulties in receiving timely updates or checking their marks. Thirdly, the system is currently optimized for desktop use only, which may be inconvenient for educators or administrators who prefer to access the platform via mobile devices.

To address these limitations, several improvements are recommended for future development. The system could be enhanced with mobile-responsive design or rebuilt using a cross-platform framework to support access on both desktop and mobile devices. Additionally, limited offline functionality may be considered to reduce internet dependency, and schools could provide access points for students who lack personal devices to ensure inclusivity. These enhancements will help to make the e-HLV system more user-friendly, accessible, and effective in supporting the assessment and development of students within the Hasta La Vista module.

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Conflict of Interest

Authors declare that there is no conflict of interests regarding the publication of the paper.

Author Contribution

This journal requires that all authors take public responsibility for the content of the work submitted for review. The contributions of all authors must be described in the following manner:

The authors confirm contribution to the paper as follows: ***study conception and design****: Amirul Affizalhairi Bin Che Adnan, Hanayanti Binti Hafit****; data collection****: Amirul Affizalhairi Bin Che Adnan;* ***analysis and interpretation of results****: Amirul Affizalhairi Bin Che Adnan;* ***draft manuscript preparation****: Amirul Affizalhairi Bin Che Adnan, Hanayanti Binti Hafit. All authors reviewed the results and approved the final version of the manuscript.*

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Appendix A

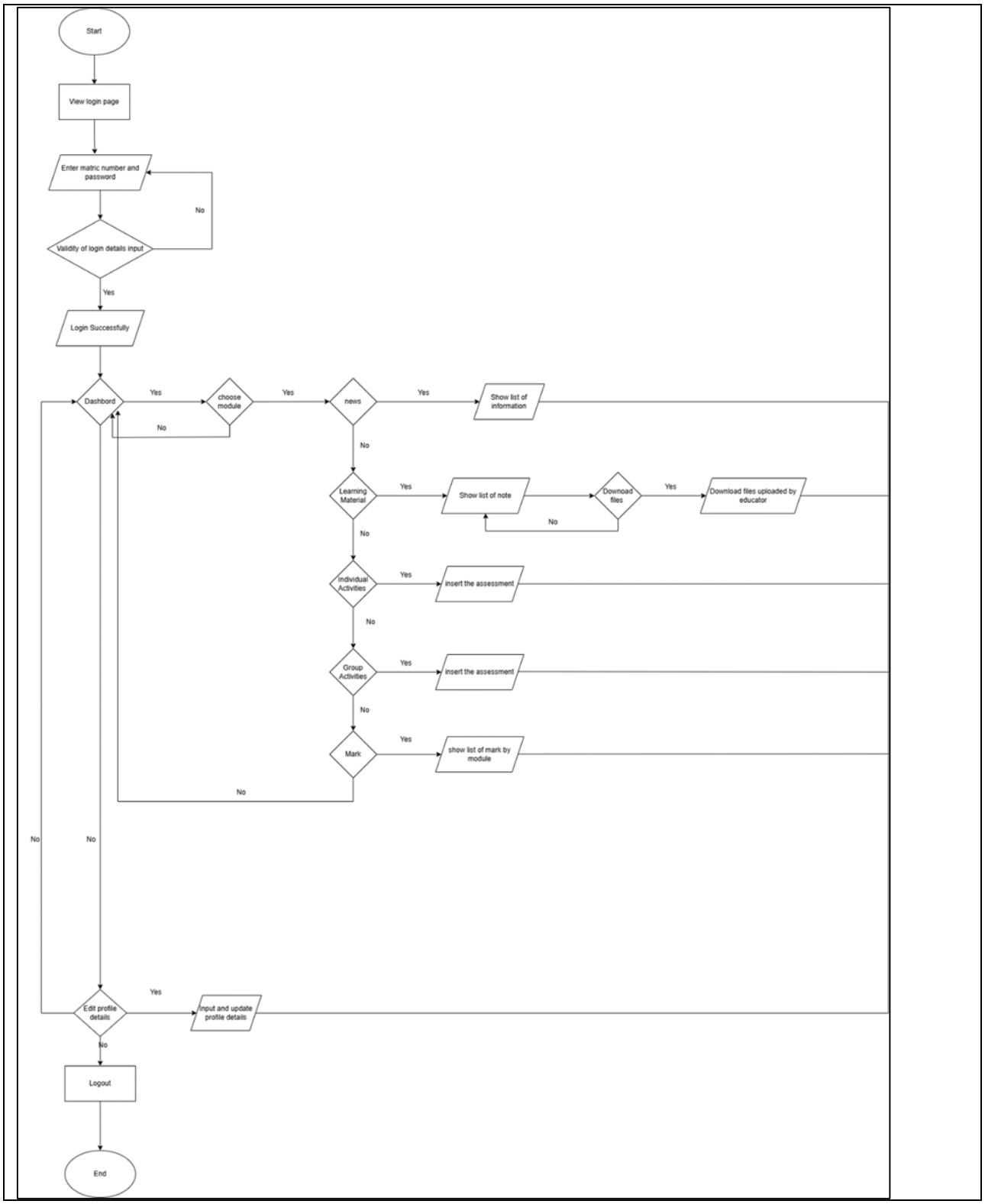

Figure A.1: Flowchart for student

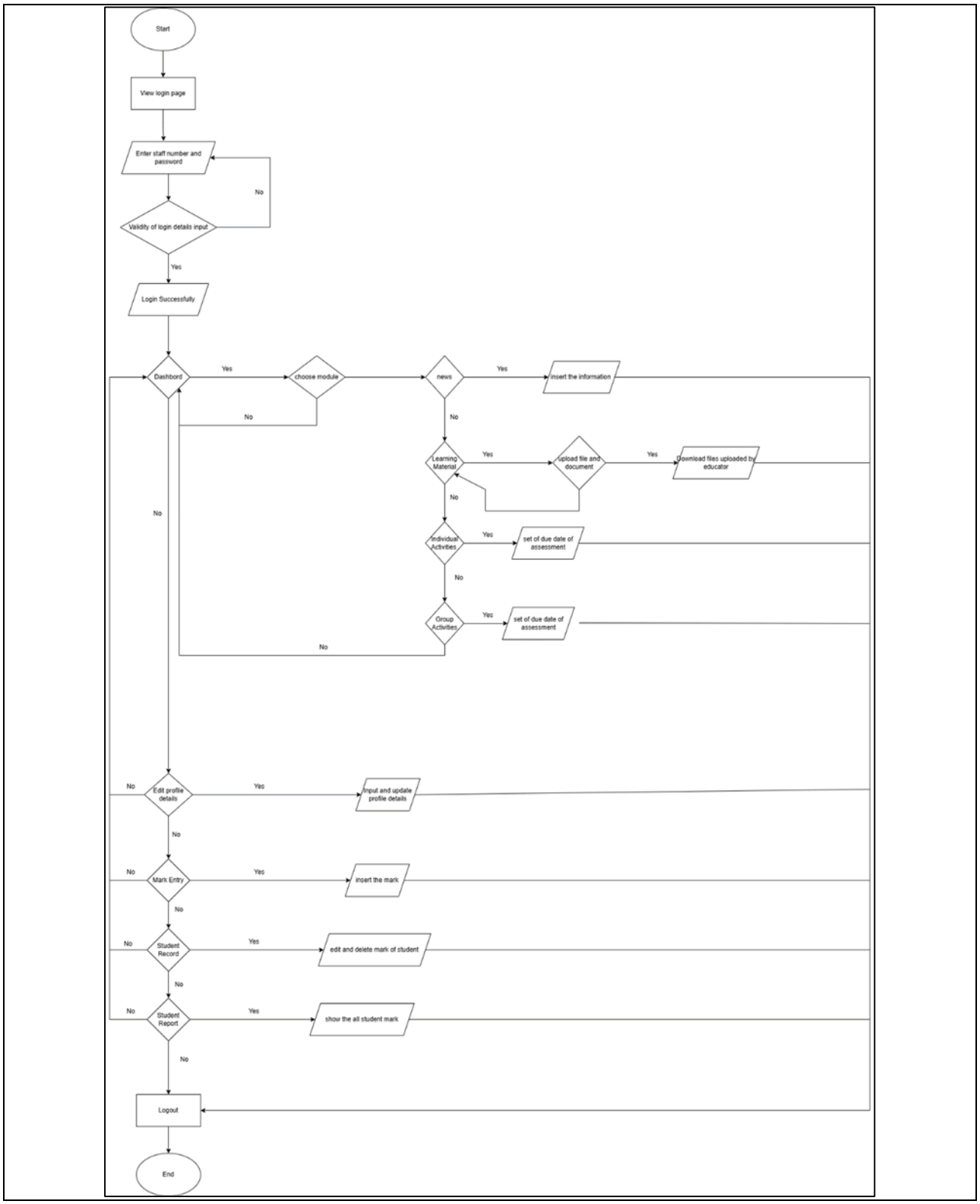

Figure A.2: Flowchart for educator

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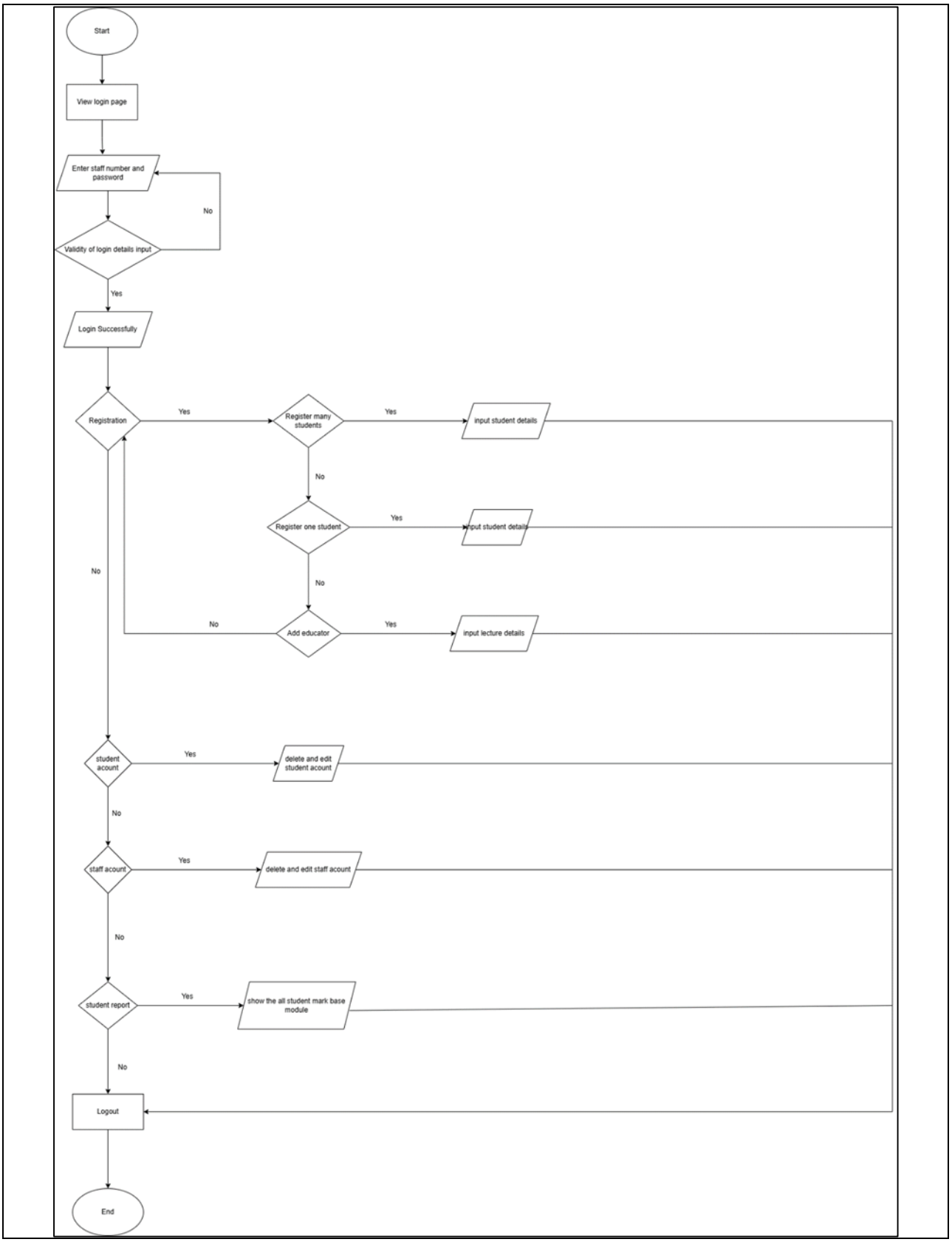

Figure A.3: Flowchart for coordinator