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|  | **Al-Aqsa University** |
| **Faculty of Computers and Information Technology** |
| **Applied Information Technology Department** |

# GradTrack: A Smart Web Platform for Efficient Graduation Project Management

**A graduation project submitted in partial fulfillment of the requirements for the degree of Bachelor of Applied Information Technology**

**By**

|  |  |
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**May,2025**

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# DECLARATION

I hereby declare that this project report is based on my original work except for citations and quotations which have been duly acknowledged. I also declare that it has not been previously and concurrently submitted for any other degree or award at University Al-Aqsa of Faculty of Computers and Information Technology or other institutions.

# APPROVAL FOR SUBMISSION

I certify that this project report entitled “GradTrack: A Smart Web Platform for Efficient Graduation Project Management” was prepared by NADA SHAHEEN and SAJA ABU-SHOAIB has met the required standard for submission in partial fulfilment of the requirements for the award of Bachelor of Applied information technology at University Al-Aqsa of Faculty of Computers and Information Technology.

# Dedication

I dedicate this project to my dear family, whose constant support and encouragement have been the foundation of my journey. To my parents, for their sacrifices and unwavering trust in me, even in the darkest of circumstances. To my friends and mentors, who have guided and supported me every step of the way. A special dedication goes to my project partner, Saja Abu Shaib, for her cooperation and dedication throughout this journey. I also dedicate this work to the martyrs and people of Gaza, who have demonstrated unparalleled resilience and courage. Your sacrifices inspire me to persevere.

# ACKNOWLEDGEMENTS

To my university, Al-Aqsa University, and my college, the College of Computers and Information Technology And my distinguished department is the Department of Applied Information Technology.

And I don't forget to dedicate this project to all the doctors Teaching assistants at the Faculty of Computers and Information Technology at Al-Aqsa University To all my teachers at all levels of education throughout my academic career. To all my loyal friends, whom I always find help and support in adversity and prosperity. To everyone who supported me and helped me and spared no effort to help me at any time to everyone who contributed to the achievement of this modest work, I dedicate this modest work. Asking God Almighty to guide us and to you all the best.

In addition, I would also like to express my gratitude to my loving parent who had helped and given me encouragement.

# GradTrack: A Smart Web Platform for Efficient Graduation Project Management

# ABSTRACT

GradTrack is a smart web-based platform developed to transform the management of graduation projects in academic institutions. It addresses persistent challenges such as inefficient communication, disorganized tracking, and lack of timely feedback by offering a centralized and structured system.

The platform empowers students to submit deliverables, monitor progress across all project phases, and communicate effectively with supervisors. Simultaneously, supervisors can evaluate submissions, provide structured feedback, and schedule meetings—all through an intuitive dashboard. By streamlining communication and task tracking, GradTrack enhances collaboration, ensures deadlines are met, and reduces the likelihood of errors or delays.

The system fosters transparency, academic discipline, and a smoother graduation process that supports academic excellence. Initially developed for Al-Aqsa University, GradTrack is scalable and can be adapted by other institutions seeking a reliable, modern solution for managing graduation projects efficiently.

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# CHAPTER 1

**INTRODUCTION**

## Background

Graduation projects are a critical component of academic programs, shaping students' professional and research skills. However, managing these projects poses significant challenges for both students and supervisors. Traditional project management methods often lead to communication breakdowns, inefficient tracking of progress, and delays in receiving structured feedback. The lack of a centralized system results in scattered communications, missed deadlines, and difficulty in monitoring project stages.

To overcome these challenges, GradTrack introduces a smart web-based solution designed to optimize project workflows, enhance collaboration, and ensure seamless supervision throughout the project lifecycle. The platform integrates real-time tracking, document sharing, automated reminders, and scheduling meetings to enhance efficiency and transparency throughout the project lifecycle.

## Problem Statement

Many academic institutions struggle with managing graduation projects due to several key issues:

Ineffective tracking of project stages and deadlines.

* Lack of a centralized system for document storage and collaboration.
* Poor communication between students and supervisors.
* Limited visibility into project progress and feedback.
* Supervisors often struggle with managing multiple projects simultaneously due to the lack of a centralized tracking system.

These challenges often lead to frustration, delays and suboptimal academic performance. GradTrack aims to solve these issues by introducing a smart, web-based solution that enhances accessibility, organization and accountability.

## Aim and Objectives

* + 1. **1.3.1 Aim**

The aim for the project develop a smart and centralized web-based system (GradTrack) that streamlines the management of graduation projects by enhancing communication, ensuring organized tracking, and enabling structured feedback between students and supervisors.

* A fully operational web platform with an intuitive user experience.
* Deadline reminders and stages tracking to enhance accountability.
* Secure and centralized document storage for streamlined access to project files.
* Enhanced communication tools, such as comments and replies and notification systems, to improve collaboration.
* Comprehensive analytics for project performance assessment.

## 1.3.2 Objectives

**General Objective**

To optimize the graduation project management process by improving communication, project tracking, and structured feedback mechanisms.

**Specific Objectives**

* Enhance Collaboration: Facilitating structured and direct communication between students and supervisors through seamless comments and replies and efficient feedback exchange.
* Improve Project Tracking: Enable students to monitor stages, see scheduled meetings, and submit deliverables on time.
* Centralized Documentation: Offer a secure, web-based repository for storing and sharing project files.
* Structured Feedback Mechanism: Ensure supervisors can provide timely and organized feedback for continuous improvement.

## Scope

The platform offers a comprehensive set of tools for tracking project progress, managing deadlines, submitting required documents, and facilitating communication. However, its effectiveness is contingent on several factors, including internet availability and user adaptation to the platform's features, which may necessitate an initial learning phase.

## Significance of the Project/Research

GradTrack is designed to revolutionize the graduation project experience by ensuring seamless collaboration, real-time tracking, and structured supervision. By replacing outdated manual processes with a smart, digital solution, GradTrack empowers both students and supervisors, ensuring that projects meet high academic standards while reducing administrative workload.

## Organization of Thesis

The organization of the thesis are as follow:

1. Chapter 1: Introduction

In this section will briefly discuss the background, problem statement, aim, objectives, scopes, and significance of this project.

1. Chapter 2: Literature Review

The literature review critically examines existing research relevant to AI in design, customization options in the fashion industry, user-friendly interfaces, and ethical considerations in AI applications. This chapter identifies gaps in the current knowledge and establishes the theoretical foundation for the research.

1. Chapter 3: Methodology

This section will go through the methodology used for developing this project, as well as the activities that will be conducted at each stage of the methodology applied. Moreover, this section will also focus on the software and hardware technologies of the project.

1. Chapter 4: Implementation of Design

This section will discuss the proposed use case diagram and sequence diagram of the system and explain the core function of this project. The proposed user interface will also discuss in this chapter.

1. Chapter 5: Conclusion

This section will conclude all the works and information from Chapters 1 to 4 in this project. The expected achievements in FYP 2 are also described in this chapter.

# CHAPTER 2

**LITERATURE REVIEW**

## Introduction

Previous studies are a key component of scientific research, providing a foundation of knowledge and references for understanding the issues tackled by the current study. These studies review relevant research, analyzing their findings and methodologies:

## Foreign Literature Reviews:

* + 1. **"Graduation Project Online Management System - ALHOSN University Case Study"**

The research paper discusses the challenges faced by students, supervisors, and graduation project committee members in managing graduation projects within the university. These projects pose a significant challenge for students due to their complexity in management and tracking deadlines. Supervisors require a more efficient way to track students' progress, while graduation committees need a system that allows them to monitor all processes. [1]

Based on these challenges, the study aims to develop an electronic management system that enhances the ability of students, supervisors, and committee members to manage graduation projects by organizing tasks and deadlines precisely. [1]

The study employed a methodology that combines case studies and personal interviews with students and supervisors from Alhosn and Zayed Universities. The case study was applied to graduation projects in the College of Engineering at Alhosn University and the College of Information Technology at Zayed University. Additionally, surveys and experiments were conducted to complement the analysis. Personal interviews, both formal and informal, were held with students and supervisors over two months. [1]

**Research Findings:**

The researchers concluded that graduation projects are crucial to students' academic life, but they represent a challenge for everyone involved in managing them. The study confirmed that the developed system helps improve online project management by organizing tasks, tracking progress, and documenting project-related processes. [1]

**Analysis of Strengths in this Research:**

1. A comprehensive approach to addressing the problem of graduation project management, which helps to understand the core challenges.
2. A clear explanation of the functional and non-functional system requirements, contributing to the development of solutions that align with students' and supervisors' needs.
3. The use of modern technologies and tools such as UML, Microsoft Office Project, and Visual Paradigm, which enhances the effectiveness of the system's design and implementation.
4. Direct interaction with students and faculty at Alhosn and Zayed Universities, reflecting the practical application of the research.
5. Facilitating interaction between supervisors and students by sharing resources and defining tasks.

**Analysis of Weaknesses in this Research :**

1. The study is limited to two universities, reducing the generalizability of the results to other academic institutions.
2. There is insufficient detail on how the system was tested or its effectiveness was evaluated, making it difficult to determine the system's success in meeting user needs.
3. The paper lacks a detailed explanation of how the tools used were practically integrated into the system.
4. There is a strong focus on the positive aspects without addressing the challenges or issues the development team might face when implementing and using the system by supervisors and students.

**Proposed Solutions in the Research:**

1. The system provides a unified interface for organizing tasks and setting deadlines, making it easier to track project phases accurately.
2. Students can enter tasks and deadlines, allowing supervisors to monitor project progress and provide necessary guidance.
3. The system allows for the exchange of feedback and messages between students and supervisors, improving communication and coordination in project management.
4. The system can manage multiple projects simultaneously using advanced technologies like Java and JSP, ensuring high compatibility with browsers and ease of maintenance.

**Key Gaps:**

1. The research is limited to only two universities, reducing the ability to generalize the results to other academic institutions that may have different organizational structures or requirements.
2. The research lacks clear experimental results from real-world system implementation, such as performance tests or user satisfaction evaluations.
3. There is a lack of comparative analysis with similar graduation project management systems, making it difficult to assess how advanced or effective the developed system is compared to existing solutions.
4. The cost and return on investment were not analyzed, as the financial aspects of system development were not addressed.

## "Towards a process management life-cycle model for graduation projects in computer engineering"

The research article discusses a model for managing the life cycle of graduation projects in computer engineering. The model aims to improve project management through a structured framework that includes defined stages such as proposal preparation, evaluation, and output monitoring. It consists of multiple phases spanning 14 weeks, requiring students to submit proposals, develop project-related documents, and undergo periodic evaluations. The model also includes final assessments by faculty members, contributing to the overall quality of projects.[2]

This model is designed to enhance students' technical communication skills, such as writing and presenting, by incorporating literature reviews and technical report writing in the early stages of the project. Additionally, it integrates teaching methods and continuous improvements to achieve better outcomes in graduation projects.[2]

The study employed a methodology that follows an iterative and incremental approach to managing graduation projects in computer engineering. This methodology aims to continuously improve project implementation by providing early and ongoing feedback.[2]

**Research Findings:**

The findings indicate that applying this model led to a significant improvement in students' ability to develop projects, highlighting the importance of systematic project management in engineering education.[2]

**Analysis of Strengths in this Research:**

1. The study presents a comprehensive model for managing graduation projects, making the process easier to understand for both students and instructors.
2. The model enhances students’ planning, execution, and documentation skills.
3. It has been implemented over two academic years, providing real-world data on its effectiveness in an actual educational environment.
4. The model encourages active student participation in the learning process, fostering collaboration and teamwork.
5. It develops students’ communication skills through project presentations and reports.
6. The model provides a continuous assessment mechanism, helping students improve their performance in real time rather than waiting until the end of the project.
7. Faculty members can offer ongoing academic guidance to help students overcome challenges during project implementation.
8. The model promotes creative thinking and innovation in problem-solving, enhancing students’ ability to develop new solutions.

**Analysis of Weaknesses in this Research:**

1. The study relies on students' opinions, which may introduce bias in the results.
2. Implementing the model may be challenging due to differences in curricula or available resources across educational institutions.
3. Some students may struggle to adapt to the model, especially those with varying skill levels.
4. Additional training is required for instructors to effectively apply the model, which may demand extra resources.
5. Rapid technological advancements can impact project execution, requiring continuous updates to the model.
6. The model’s effectiveness may be limited in certain disciplines, restricting its applicability to other fields.
7. Students may face difficulties in documenting every step of the project accurately, potentially affecting the quality of final reports.

**Proposed Solutions in this Research:**

1. Developing a clear project life cycle management model with well-defined steps for each phase, making it easier to track progress and deadlines.
2. Setting specific deadlines for each project phase to ensure students adhere to the schedule.
3. Implementing periodic evaluations of project stages, allowing students and supervisors to review progress and provide timely feedback.
4. Organizing regular meetings between students and supervisors to discuss project progress, enhance communication, and offer immediate feedback.

**Key Gaps:**

1. The model may not be suitable for all students or projects, leading to variations in results.
2. The study does not sufficiently address the impact of external factors such as academic pressure or personal circumstances on student performance.
3. Evaluating project quality objectively can be challenging, especially if assessment criteria are unclear or inconsistent.
4. The study does not focus enough on how time management affects student performance.

## Arabic Literature Reviews:

* + 1. **" An Electronic System for Managing Graduation Projects at the Faculty of Administrative Sciences and Information Systems at Palestine Polytechnic University"**

This study discusses technological advancements and their impact on education, emphasizing the importance of integrating technology to facilitate both educational and administrative processes, particularly in managing graduation projects. The research focuses on developing an electronic system at the Faculty of Administrative Sciences and Information Systems at Palestine Polytechnic University to automate administrative procedures related to graduation projects.[3]

The study aims to build an electronic system that reduces reliance on paper-based processes and simplifies project management by minimizing the effort and time required from both students and supervisors. It also assists students in selecting suitable project ideas, facilitates communication between students and supervisors through customized notifications and alerts, and enhances coordination by scheduling meetings and discussions. Additionally, the system improves workflow within the university in line with digital transformation efforts.[3]

The methodology follows the **System Development Life Cycle (SDLC)**, which includes several phases: planning, system analysis, design, system preparation, testing, and maintenance. Data collection was conducted through previous studies, as well as interviews with faculty members, supervisors, and students to ensure the development of a comprehensive system that meets the needs of all users.[3]

**Research Findings:**

The researchers concluded that the graduation project management system successfully achieved its objectives by automating project management, saving time and effort, and facilitating communication between students and supervisors through notifications and alerts.  
Additionally, the system assisted supervisors in monitoring projects and provided easy access at any time, along with essential electronic resources.[3]

**Analysis of Strengths in this Research:**

1. Facilitates communication between students and supervisors through an electronic system.
2. Comprehensive management of graduation projects, including evaluations, tasks, and resources, providing a clear overview.
3. Organizes information using tables and visual representations, making it easier to understand the system and its components.
4. Enhances efficiency by speeding up administrative procedures and reducing time consumption, leading to improved work performance.
5. Allows flexible access to information anytime and anywhere, making it easier for students and supervisors to follow up on projects.
6. Provides periodic performance evaluations with instant feedback to enhance project quality.
7. Encourages collaboration between students and supervisors by facilitating idea and feedback exchange, which improves project quality.
8. Offers multiple electronic resources, enabling students to access the necessary information and references for their projects.

**Analysis of Weaknesses in this Research :**

1. Complete reliance on technology may disrupt workflow in case of technical issues.
2. Using social media as a communication tool may lead to student distractions..
3. Security risks associated with open-source educational platforms, such as downloading harmful files.
4. High system development costs, which may pose a financial burden on the project budget.
5. Requires additional training for users, which may take time and affect project timelines.
6. Dependence on an electronic system may reduce face-to-face interaction between students and supervisors.
7. Some students may struggle to adapt to the new system, especially those who prefer traditional methods.
8. External factors such as internet outages or technical failures may impact the system’s effectiveness and workflow.

**Proposed Solutions in this Research:**

1. The system provides a centralized platform for storing all graduation project documents, ensuring easy access and sharing between students and supervisors.
2. It includes monitoring dashboards that offer students and supervisors a clear view of project progress, helping to track completed and remaining phases.
3. The system provides notifications and alerts for students and supervisors regarding deadlines, ensuring project progress and student compliance with timelines.
4. It allows periodic assessments of student and supervisor performance, contributing to academic performance improvement.
5. The system includes task management features, enabling students and supervisors to define and assign tasks, thereby enhancing work organization and efficiency.
6. 6.Assigns different user permissions, making it easier for supervisors to manage multiple projects without conflicts or duplication of work.

**Key Gaps:**

1. Lack of a clear mechanism to track project phases, making it difficult for students and supervisors to monitor progress.
2. Absence of an immediate feedback system, affecting students' ability to improve their performance in real-time.
3. The system’s functional requirements do not cover all user needs, leaving some critical aspects of project management unaddressed.
4. Weak security and privacy measures, posing risks to sensitive data.
5. Lack of integration with other university systems, leading to data duplication and difficulty in information exchange.
6. Difficulty in managing time across multiple projects for supervisors, affecting the quality of supervision.

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| **Aspect** | **Study 1: ALHOSN University** | **Study 2: Life-cycle Model** | **Study 3: Palestine Polytechnic University** |
| **Goal** | Develop an electronic system to manage and track graduation projects efficiently. | Create a structured life-cycle model for managing computer engineering graduation projects. | Build an electronic system to automate and digitize graduation project management. |
| **Key Features** | - Task and deadline management  - Supervisor-student interaction- Used  - UML, MS Project, Visual Paradigm  - Personal interviews for needs analysis | - Structured project phases (14 weeks)  - Periodic evaluations  - Focus on communication skills  - Active feedback loop | - Task automation- Notifications & alerts- Access to digital resources  - SDLC methodology  - Flexible access anytime |
| **Weaknesses** | - Limited to 2 universities  - Poor evaluation methodology  - Weak tool integration explanation  - Lacks real-world feedback results | - May not suit all institutions  - Biased student feedback  - Requires instructor training  - Limited adaptability across disciplines | - Tech dependency issues  - Security risks- High development/training cost  - May reduce personal interaction |
| **Gaps** | - No ROI/cost analysis  - No comparison to other systems  - Weak testing data  - Limited scalability | - No focus on time management  - Incomplete evaluation criteria  - No external factor analysis  - Poor performance benchmarking | - No real-time feedback  - Lacks full user requirement coverage  - Weak integration with university systems  - Time management challenges for supervisors |

Table 2.1 : Comparative Summary of Graduation Project Management Studies

## Theoretical Framework for GradTrack:

## Constructivist Learning Theory (Piaget & Vygotsky, 1978)

* + 1. This theory emphasizes active learning through collaboration and interaction.
    2. GradTrack enhances student-supervisor collaboration, allowing students to engage in meaningful learning experiences through structured feedback and project tracking.

## Systems Theory (Ludwig von Bertalanffy, 1968):

* + - 1. Views GradTrack as an integrated system where different components (students, supervisors, documents, and deadlines) interact to achieve efficient project management.
      2. A well-structured system improves workflow efficiency, communication, and organization.

## Agile Project Management Methodology:

1. Agile methodology promotes iterative development, flexibility, and continuous feedback.

2. GradTrack follows Agile principles by enabling real-time updates, automated tracking, and streamlined communication, ensuring adaptability in project management.

## Technology Acceptance Model (TAM) (Davis, 1989):

1. This model explains how users adopt new technology based on perceived usefulness and ease of use.

2. GradTrack's intuitive UI/UX design, structured feedback mechanisms, and automation features are designed to encourage adoption among students and supervisors.

# CHAPTER 3

**METHODOLOGY**

## Introduction

This section outlines the methodology adopted in the development of the GradTrack platform. After careful evaluation of various development methodologies, we determined that the Agile methodology is the most suitable approach for this project. Agile emphasizes flexibility, iterative progress, and close collaboration—qualities that align well with the dynamic nature of the GradTrack platform and its need for continuous interaction between team members and academic supervisors.

Given the project's dynamic requirements and the importance of maintaining open communication among stakeholders, Agile enabled the development team to work in short, structured sprints, deliver functional software incrementally, and respond efficiently to evolving needs. This iterative approach ensured that new features could be integrated based on ongoing feedback, fostering a responsive and user-centered development process.

One of the key advantages of using the Agile methodology in the GradTrack project was its ability to support continuous collaboration and adaptability. The nature of GradTrack required ongoing coordination between students, developers, and academic supervisors, and Agile’s structure of regular stand-ups, sprint planning, and review meetings created a productive environment for constant feedback and shared understanding. This allowed the team to make quick adjustments based on user or supervisor input.

During the development of the GradTrack platform, the team faced several challenges, including evolving feature requirements and time constraints. Traditional development approaches would have made it difficult to accommodate last-minute changes, such as adding a new module for scheduling meetings or customizing feedback mechanisms. However, the Agile methodology proved instrumental in overcoming these obstacles. Through short, focused sprints and continuous feedback loops, the team was able to adapt quickly to changes, reprioritize tasks, and deliver updates without disrupting overall progress. This flexibility ensured that the platform remained aligned with user expectations while keeping the development process structured and efficient.

## Agile Sprint Cycle Methodology

The Sprint-based Agile methodology is a structured and iterative development approach that divides the project lifecycle into short, fixed-length cycles known as sprints—typically lasting 1 to 2 weeks. This method aligns perfectly with the needs of the GradTrack project, where continuous feedback and evolving requirements are essential.

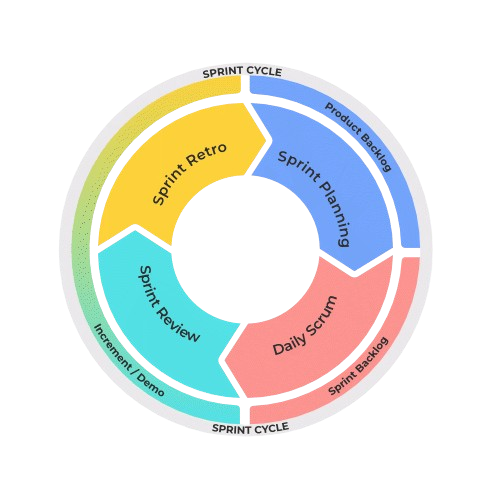


Figure 3.1 Agile Sprint Cycle

Sprint-based Agile methodology may be split into a total of seven primary phases according to Figure 3.1. Product Backlog, Sprint Planning, Sprint Execution,Daily Scrum, Sprint Review, Sprint Retrospective and Increment are the seven primary phases. The Sprint-based Agile methodology focuses on iterative development, where each sprint aims to deliver a functional part of the system. This approach emphasizes quick progress, early feedback, and continuous integration of code. It allows developers to write cleaner and more maintainable code by focusing on small, manageable features per sprint. The time-boxed nature of sprints improves **time management**, ensures **faster delivery**, and helps track progress accurately. It also minimizes the risk of major delays by detecting and solving issues early in the development cycle.

## Phase 1: Product Backlog

The Product Backlog is a prioritized list of all features, enhancements, bug fixes, and technical tasks that need to be completed in the project. It evolves as the project progresses and more requirements emerge.

In GradTrack the product backlog included all required features such as Project progress tracking, Document submission modules, Student–supervisor messaging and Meeting scheduling system.

## Phase 2: Sprint Planning

Sprint Planning is a meeting held before the start of each sprint to define what will be delivered and how the team will achieve it. Tasks are selected from the product backlog based on priority and team capacity.

In GradTrackBefore each sprint, the team select the most important tasks (e.g., building the login system, setting up the database, designing the dashboard) and divided them among members. Tasks were chosen based on academic deadlines and supervisor feedback.

## Phase 3: Sprint Execution

During Sprint Execution, the development team works on the tasks defined during sprint planning. This phase includes coding, designing, and integrating features.

Each team member focused on their assigned tasks:

* The frontend developer-built interfaces using HTML, CSS, and JS.
* The backend developer worked with PHP to handle routing, data logic, and authentication.
* The team used GitHub to collaborate and track progress.

## Phase 4: Daily Scrum

Daily standups are short team meetings (10–15 minutes) where members share progress, plans for the day, and blockers.

In GradTrack the team held short sync-ups to discuss:

* What was completed the previous day
* What each member was working on
* Any issues like database errors or UI bugs.

## Phase 5: Daily Scrum

At the end of each sprint, the team presents what they completed. The goal is to showcase working features and collect feedback. In GradTrack the team demonstrated completed features to the academic supervisor. Feedback from this review helped identify improvements or changes for the next sprint.

**Examples:**

* Showcasing the login and registration pages.
* Presenting how students upload documents.
* Receiving feedback on dashboard usability.

## Phase 6: Sprint Retrospective

This internal meeting reflects on the sprint. The team discusses what went well, what didn’t, and what could be improved.

The team used retrospectives to assess team coordination, development speed, and any blockers that delayed delivery. Based on that, you improved communication and task distribution.

## Phase 7: Increment

The increment is the working product output at the end of each sprint. It should be functional and ready for potential deployment or further improvement.

Each sprint produced a usable module that was added to the main system. Over time, these increments built the entire GradTrack platform.

**Examples:**

* A working login system (Sprint 1)
* A functional student dashboard (Sprint 2)
* Document upload and supervisor review (Sprint 3)

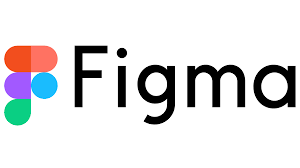
## Development Technology

This section will briefly explain the tools and technology required to complete this project. The section will be divided into two sub-sections, which are software(s), and hardware(s).

## Software Requirements

The main software components of the application are mentioned in this section with a brief explanation of each of them.

## Figma



3.2 Figma

Figma is a collaborative design tool used for creating UI/UX mockups and wireframes. Your team used it to design the interface of GradTrack before coding, ensuring a user-friendly experience.

## HTML (HyperText Markup Language)

## 

3.3 HTML

HTML is the standard markup language used to structure and display content on the web. In GradTrack, it was used to build the basic layout of all pages like login, dashboard, and submission forms.

## CSS (Cascading Style Sheets)

****

3.4 CSS

CSS is used to style and visually design web pages. In your project, CSS provided color schemes, spacing, and layout control to ensure a clean and responsive user interface.

## Bootstrap

## 

3.5 BootStrap

Bootstrap is a popular CSS framework that simplifies responsive web design. It helped your team create a consistent and mobile-friendly layout quickly using pre-built components like buttons, grids, and modals.

## JS (JavaScript )

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3.6 JS

JavaScript adds interactivity and dynamic behavior to web pages. It was used in GradTrack for actions like form validation, toggling interface elements, and enhancing user interaction without reloading the page.

## Laravel (PHP Framework)

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3.7 Laravel

Laravel is a modern PHP framework that simplifies backend development. It was used to build GradTrack’s server-side logic, handle user authentication, route requests, and manage the database using MVC architecture.

## MySQL

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3.8 MySQL

MySQL is a relational database system used to store and manage structured data. In GradTrack, it stored user accounts, project stages, submission data, supervisor feedback, and more.

## Hardware

* + - 1. **Development**

Table 3.1 Hardware specification

|  |  |
| --- | --- |
| Processor | 12th Gen Intel(R) Core(TM) i7-12700H |
| RAM | (16 GB) |
| |  | | --- | | Display |  |  | | --- | |  | | 13–15 inch Full HD (1920x1080) |
| Graphics | Integrated or basic dedicated GPU |
| Operating System | Windows 10 / 11 |
| Internet | Stable broadband connection |

## Testing

Chrome browser on a laptop and mobile phone will be used for the purpose of testing for this application as mentioned before that the application’s target is web browsers for instance the testing devices is going to be Victus and HP laptop and SAMSUNG Galaxy.