Internship at Nedient Technology

Internship Report

Submitted for the partial fulfillment of the degree of

Bachelor of Technology

In

Computer Science & Engineering

Submitted By

Sagar Shukla

0901CD211045

UNDER THE SUPERVISION AND GUIDANCE OF

Dr. Rahul Dubey

Assistant Professor

Department of Computer Science & Engineering

MADHAV INSTITUTE OF TECHNOLOGY & SCIENCE, GWALIOR (M.P.), INDIA
माधव प्रौद्योगिकी एवं विज्ञान संस्थान, ग्वालियर (म.प्र.), भारत
(Deemed to be University)
NAAC ACCREDITED WITH A++ GRADE

January-May 2025

DECLARATION BY THE CANDIDATE

I hereby declare that the work entitled INTERNSHIP AT NEDIENT TECHNOLOGY is my own work, conducted under the supervision of **Miss Bhumala Bhelave**, Senior Python Developer, during the session 15 Dec 2024 - 15 April 2025. The report submitted by me is a record of bonafide work carried out by me.

I further declare that the work reported in this report has not been submitted and will not be submitted, either in part or in full, for the award of any other degree or diploma in this institute or any other institute or university.

Sagar Shukla

0901CD211045

Date: 21/05/2025
Place: Gwalior

This is to certify that the above statement made by the candidates is correct to the best of my knowledge and belief.

Guided By:

Dr. Rahul Dubey
Assistant Professor
Department of Computer Science & Engineering
MITS, Gwalior

Departmental Project Coordinator

21/05/25

Dr. Kuldeep Narayan Tripathi
Assistant Professor
Department of Computer Science & Engineering
MITS, Gwalior

Approved by HoD

Dr. Manish Dixit
Professor & HOD
Department of CSE
MITS, Gwalior

Dr. Manish Dixit
Professor & Head
Department of Computer Science & Enigineering
MITS, Gwalior

ABSTRACT

This internship at **Nedient Technology**, beginning **15th December 2024,** provided me with the opportunity to work on a live industry project titled **Online Learning Platform with Adaptive Learning Features**. The goal was to design a web-based platform that offers a personalized and effective educational experience to users.

The application was developed using Python with Flask framework and featured modules for user authentication, course management, and adaptive learning suggestions based on user progress. Integration of YouTube videos as learning resources made the platform versatile and accessible. I also created an admin panel to manage users and courses efficiently.

Through this project, I gained valuable experience in **full-stack web development**, **database integration , user session management**, and **deployment practices**. The adaptive learning component demonstrated my ability to apply logic for real-time content recommendation based on user behavior.

This internship not only enhanced my technical skills but also provided a meaningful contribution to the education sector by delivering a scalable and user-friendly learning solution.

ACKNOWLEDGEMENT

The full semester project has proved to be pivotal to my career. I am thankful to my institute, **Madhav Institute of Technology and Science** to allow me to continue my disciplinary/interdisciplinary project as a curriculum requirement, under the provisions of the Flexible Curriculum Scheme, approved by the Academic Council of the institute. I extend my gratitude to the Vice Chancellor of the institute, **Dr. R. K. Pandit** and Dean, Faculty of Engineering & Technology, **Dr. Manjaree Pandit** for this.

I would sincerely like to thank my department, **Department of Computer Science and Engineering, for allowing me to explore this project.** I humbly thank Dr. **Manish Dixit**, Professor and friend, Department of Computer Science and Engineering, for his continued support during the course of this engagement, which eased the process and formalities involved.

I am sincerely thankful to my faculty mentors. I am grateful to the guidance of **Dr. Rahul Dubey**, Assistant Professor, Computer Science, for his continued support and guidance throughout the project. I am also very thankful to the faculty and staff of the department.

Sagar Shukla

0901CD211045

Nedient Technology Pvt. Ltd. (CIN-U72900MH2021PTC368030)

Date: 13/06/2025

CERTIFICATE

This is to certify that **Mr. Sagar Shukla**, a student of **Computer Science and Design** from **Madhav Institute of Technology & Science**, successfully completed his internship as a **Python Developer Intern** at **Nedient Technology Pvt. Ltd.** from **January 13, 2025, to June 13, 2025**.

During this period, he demonstrated exceptional technical skills and a strong commitment to his responsibilities, which included:

- Designing, developing, and maintaining Python-based applications.
- Implementing and integrating RESTful APIs and managing database operations.
- Utilizing frameworks like **Django** and **Flask** to develop scalable applications.
- Debugging and troubleshooting software issues to ensure smooth performance.
- Collaborating effectively with the development team to meet project goals.

Mr. Sagar Shukla consistently displayed dedication, teamwork, and professionalism in all his assignments. His contributions were valuable to our projects, and his proactive approach toward problem-solving was highly commendable.

We wish him all the best in his future endeavors and highly recommend him for roles related to Python development or similar domains.

Best regards,

NEDIENT TECHNOLOGY PRIVATE LIMITED NAGPUR

Rahul Ramteke
Director
Nedient Technology Pvt. Ltd.
Nagpur

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CHAPTER 1: INTRODUCTION

The internship was undertaken at **Nedient Technology Pvt. Ltd.**, a company focused on providing innovative software solutions to clients across various sectors. The internship spanned from **15th December 2024 to 15th April 2025**, and was part of the academic requirements for the **Bachelor of Technology in Computer Science & Design** at **Madhav Institute of Technology & Science (MITS), Gwalior**.

The main objective of this internship was to design and develop **an Online Learning Platform using Python and Flask**. This platform aimed to enhance the e-learning experience by allowing users to register, enroll in courses, watch learning videos, and track their learning progress through a personalized dashboard.

Throughout the internship, the following major modules and functionalities were developed:

- **User authentication** (registration, login, session management),
- **Course management** (adding/removing/viewing courses),
- **Video integration** (embedding YouTube videos for learning),
- **Adaptive learning features** (personalized course recommendations based on user activity),
- **Admin dashboard** (course and user management),
- **Feedback and rating system** for courses,
- **Frontend UI/UX enhancements** ensuring mobile responsiveness and easy navigation,
- **Deployment** of the web application on **Heroku** for public demonstration.

The internship provided valuable hands-on experience with **full-stack web development**, including backend development using Flask, frontend design with HTML/CSS/JavaScript, database management with SQLAlchemy, and live deployment practices. It also offered practical exposure to agile workflows, code versioning using Git, peer code reviews, and documentation.

This chapter introduces the background and goal of the internship, setting the stage for the detailed technical discussions and learning outcomes described in the subsequent chapters.

CHAPTER 2: LITERATURE SURVEY

In the modern educational landscape, online learning platforms have revolutionized the way knowledge is shared and consumed. With the growing need for flexible, accessible, and personalized education, the development of web-based learning solutions has gained tremendous significance. Technologies such as **Python**, **Flask**, **SQLAlchemy**, and **HTML/CSS** provide developers with powerful tools to build efficient and scalable online learning platforms.

The project **"An Online Learning Platform using Python and Flask"** was aimed at creating a dynamic and user-friendly environment where users can access courses, watch educational videos, and track their learning progress. The choice of technology stack and development methodologies was influenced by a detailed study of existing trends and practices in web development and e-learning systems.

2.1 Online Learning Platforms and Their Importance

Online learning platforms such as **Coursera**, **Udemy**, and **edX** have demonstrated the effectiveness of digital education by offering flexible course structures, multimedia content, and personalized learning pathways. These platforms have highlighted critical features required for a successful learning system:

- **User authentication and personalized dashboards**,
- **Course management systems** (creation, enrollment, tracking),
- **Integration of multimedia content** (especially videos),
- **Feedback and review systems**,
- **Mobile-responsive and intuitive user interfaces**.

The project attempted to incorporate these essential elements, customized for a more targeted and simplified user base.

2.2 Technology Selection

The project heavily relied on open-source technologies known for their simplicity, robustness, and community support:

- **Python**: A high-level programming language known for rapid development and clean syntax, making backend development efficient and scalable.
- **Flask**: A lightweight web framework for Python, ideal for building simple to moderately complex web applications with flexibility and minimal overhead.
- **SQLAlchemy**: An Object Relational Mapper (ORM) for Python, facilitating smooth database operations without writing raw SQL queries.
- **HTML/CSS and JavaScript**: Used for creating an interactive and responsive frontend interface, essential for a good user experience.

These tools enabled rapid development, easy maintenance, and seamless deployment of the application.

2.3 Flask Framework in Web Application Development

Flask is a microframework that provides essential tools for web development without enforcing a strict project structure. Its key features include:

- **Routing and URL management**,
- **Template rendering using Jinja2**,
- **Session and cookie management**,
- **Integration with databases through ORM like SQLAlchemy**,
- **Support for extensions like Flask-Login, Flask-WTF for enhanced features**.

Given its lightweight nature, Flask was an excellent choice for this project, ensuring a smooth learning curve and rapid prototyping.

2.4 Adaptive Learning and Course Recommendation

Modern e-learning platforms are increasingly utilizing **adaptive learning** techniques to enhance user engagement. Adaptive learning tracks user behavior (such as course completions, video watches, quiz results) and recommends content tailored to individual learning needs.

In this project, a basic recommendation system was implemented based on the courses a user interacted with, aiming to personalize the dashboard experience and suggest relevant learning material.

2.5 Deployment Practices

Deploying web applications on platforms like **Heroku** enables developers to make their projects accessible to a broader audience. Heroku supports Python and Flask applications natively and offers easy database integration, scalability, and SSL security, making it an ideal platform for project deployment and demonstration.

The project was deployed on **Heroku**, allowing real-time demonstrations and testing across devices.

Summary

The literature survey provided the foundation for the design and implementation of the online learning platform. A combination of proven methodologies from established e-learning systems and modern open-source technologies allowed the project to deliver an efficient, scalable, and user-friendly web application.

CHAPTER 3: WORK DONE

Throughout the internship at **Nedient Technology Pvt. Ltd.**, I was actively involved in the end-to-end development of an **Online Learning Platform using Python and Flask**. The project was divided into several milestones to ensure systematic development, testing, and deployment.

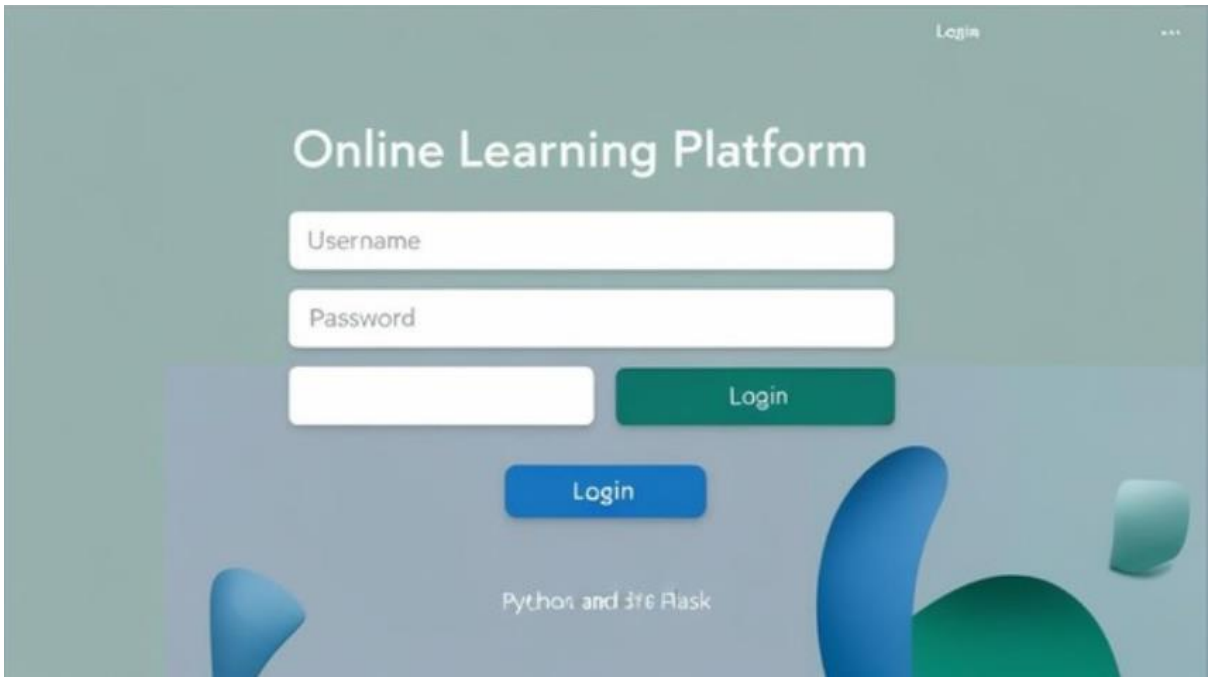
Below is a detailed breakdown of the tasks completed during the internship:

3.1 Project Planning and Requirement Analysis

- Understood the objectives of the online learning platform: to allow users to register, enroll in courses, and consume educational video content.
- Defined the overall application flow: **User Authentication → Course Dashboard → Course Enrollment → Video Learning → Feedback**.
- Identified the key modules to be developed: user management, course management, video integration, adaptive learning, and admin control.

3.2 Backend Development (Python + Flask)

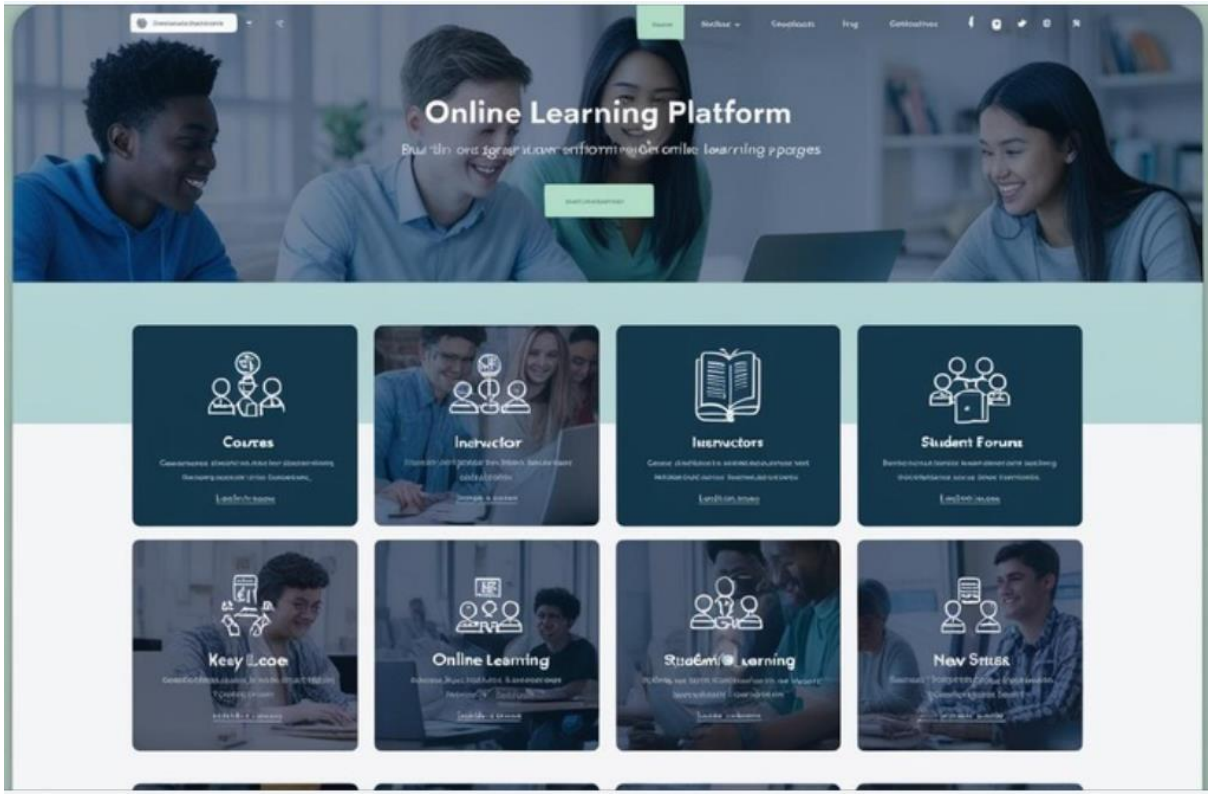
- Set up the development environment using **Flask**, **virtualenv**, and **SQLAlchemy ORM**.
- Designed and implemented **database schemas** for users, courses, enrollments, and feedback.
- Created secure **user authentication** features including:
    - User Registration
    - Login and Logout
    - Password security with hashing



- Developed API routes for:
    - Course addition/removal
    - Enrolling and unenrolling users in courses
    - Storing and retrieving course feedback and ratings

3.3 Frontend Development (HTML/CSS/JavaScript)

- Designed the **Login** and **Registration** pages with responsive UI elements.
- Built a **User Dashboard** where enrolled courses and progress were displayed.
- Integrated **YouTube video support**, allowing users to view course videos directly on the platform.
- Enhanced the UI/UX using:
    - Navigation bars
    - Flash messages
    - Mobile responsiveness for different device sizes



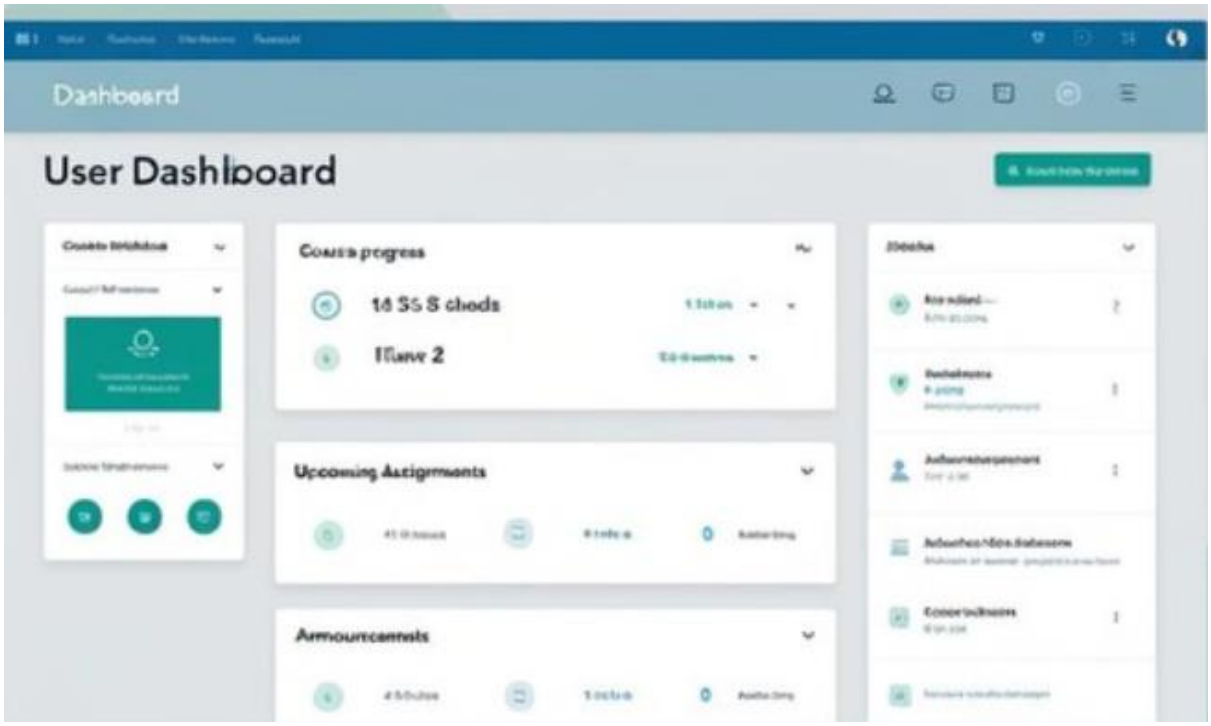
3.4 Adaptive Learning and Recommendation System

- Implemented a **basic adaptive learning system** that tracks user activity.
- Recommended courses based on the learning behavior and interaction history of the user.
- Added filters based on course difficulty level and category.

3.5 Admin Panel Development

- Developed a secure **Admin Login** module.
- Built features for **admin control** including:
    - Adding new courses
    - Removing outdated courses
    - Viewing and managing user details

- Monitoring course feedback and ratings



3.6 Testing and Bug Fixing

- Conducted **module-wise testing** for all major functionalities.
- Performed **peer testing** sessions to gather feedback and fix UI/UX issues.
- Validated all forms and protected routes to ensure **session management** and **security**.

3.7 Deployment and Documentation

- Deployed the application to **Heroku**, ensuring it was accessible externally for demonstration and evaluation.
- Prepared **README** documentation explaining project setup, features, and usage instructions.
- Created a **demo video** showcasing the key functionalities of the platform.

Summary

The project progressed from the initial setup phase to a fully functional **Online Learning Platform** deployed online. It incorporated critical features such as user authentication, course management, video integration, adaptive learning, and a complete admin panel, providing a real-world learning experience in full-stack web development.

CHAPTER 4: OUTCOMES GAINED

Chapter 4: Outcomes Gained

The internship at **Nedient Technology Pvt. Ltd.** provided a highly enriching and transformative learning experience. By working on the development of an **Online Learning Platform using Python and Flask**, I gained valuable technical expertise, professional skills, and real-world insights into web application development.

The outcomes of this internship are categorized below:

4.1 Technical Outcomes

- **Full-Stack Web Development:**
  Acquired practical experience in backend development using **Flask** and **SQLAlchemy**, and frontend development using **HTML, CSS, and JavaScript**.
- **User Authentication and Security:**
  Implemented secure user registration, login/logout features with password hashing and session management.
- **Database Management:**
  Designed relational database schemas and performed CRUD operations using **SQLAlchemy ORM**, ensuring seamless backend integration.
- **Video Integration:**
  Successfully integrated external video content (YouTube links) into the learning platform, allowing users to access video-based courses directly.
- **Adaptive Learning System:**
  Developed a basic recommendation system that personalized course suggestions based on user activity and interaction.
- **Admin Dashboard:**
  Created an admin panel for course and user management, providing administrative control over the platform's content and users.
- **Deployment:**
  Deployed the web application on **Heroku**, learning about cloud hosting, environment setup, and managing deployment pipelines.

4.2 Professional Outcomes

- **Project Planning and Execution:**
  Learned to break down a large project into smaller, manageable modules and deliver them systematically within the set timeframe.
- **Problem-Solving Skills:**
  Enhanced logical thinking and debugging abilities by solving real-world issues related to backend connectivity, UI responsiveness, and deployment errors.
- **Version Control (Git):**
  Practiced effective code management, versioning, and collaboration using Git and GitHub, following professional software development practices.
- **Time Management and Deadlines:**
  Developed discipline in setting weekly goals, tracking progress, and meeting deadlines consistently.
- **Communication and Collaboration:**
  Improved communication skills through regular interactions with mentors, team members, and through feedback sessions.
- **Adaptability and Learning:**
  Learned new frameworks and libraries on the go, adapting to changing requirements and integrating feedback efficiently.

Summary

The internship not only strengthened my technical foundation in full-stack web development but also helped me evolve as a disciplined, collaborative, and solution-oriented individual.
It provided a strong stepping stone for future professional endeavors in the field of software development and technology innovation.

CHAPTER 5: SKILLS GAINED

During the course of my internship at Nedient Technology Pvt. Ltd., I had the opportunity to acquire and refine a wide range of technical and soft skills.
Working on the Online Learning Platform using Python and Flask enabled me to build a strong foundation that will be instrumental for my future career as a software developer.

The skills gained are classified into two categories:

5.1 **Technical Skills Acquired**

- **Python Programming:**
  Strengthened my understanding of Python syntax, libraries, and application development practices.
- **Web Development with Flask:**
  Gained hands-on experience in building backend services, handling routes, sessions, database operations, and server-side rendering using Flask.
- **Database Design and Management (SQLAlchemy):**
  Learned to design relational databases, map models using ORM (Object Relational Mapping), and perform CRUD operations efficiently.
- **Frontend Development (HTML, CSS, JavaScript):**
  Developed responsive and interactive web pages, improving the user experience through better design and interactivity.
- **User Authentication and Session Management:**
  Implemented secure login, registration, and logout functionalities using hashing algorithms and session tracking.
- **Deployment on Cloud (Heroku):**
  Gained knowledge of deploying Flask-based applications on cloud platforms, managing environment variables, and handling deployment errors.

- **Adaptive Learning and Recommendation Systems:**
  Implemented a basic course recommendation feature based on user behavior and engagement patterns.
- **Version Control (Git and GitHub):**
  Practiced using Git for tracking changes, branching, merging code, and maintaining clean project repositories.

5.2 **Soft Skills Acquired**

- Project Planning and Management:
  Developed the ability to divide large tasks into smaller milestones, plan work systematically, and track progress.
- Problem Solving and Debugging:
  Sharpened analytical skills by troubleshooting backend bugs, deployment issues, and UI/UX inconsistencies.
- Communication Skills:
  Enhanced both written and verbal communication by preparing documentation, giving project demos, and participating in feedback sessions.
- Time Management:
  Learned to prioritize tasks effectively and meet tight deadlines while maintaining the quality of deliverables.
- Adaptability and Learning Agility:
  Quickly adapted to new frameworks, tools, and best practices, demonstrating a continuous learning mindset.
- Collaboration and Teamwork:
  Worked in coordination with mentors and team members, participating in code reviews and peer testing activities.

Summary

The technical expertise and soft skills gained during the internship have prepared me to take on more complex development projects in the future.
The experience provided a holistic development journey — covering coding, deployment, collaboration, and real-world problem-solving.

CHAPTER 6: SOCIAL RELEVANCE

• Empowered a local business by digitizing its operations, enabling it to serve a broader customer base and transition from traditional sales to a mobile-first e-commerce model.

• Promoted digital inclusivity by designing an intuitive and responsive mobile application accessible to users with varying technical proficiency.

• Streamlined the shopping and order management process, reducing manual work and improving customer convenience through digital payments and real-time order updates.

• Showcased Make-in-India capabilities by developing a complete mobile commerce solution tailored for Indian consumers and businesses.

• Personally, the internship provided valuable experience in Android app development, client collaboration, problem-solving, and real-world implementation of software engineering principles.

CHAPTER 7: CONCLUSION

The internship at **Nedient Technology Pvt. Ltd.** was a significant step in my academic and professional journey.
By contributing to the development of an **Online Learning Platform using Python and Flask**, I gained practical knowledge in web development, backend architecture, UI/UX design, and project deployment.

This project enabled me to:

- Translate theoretical concepts into working software,
- Solve real-world technical challenges,
- Understand user-centric design and behavior-driven learning,
- Collaborate effectively in a professional environment,
- Deliver a complete software product from scratch.

Beyond the technical realm, the experience helped shape my mindset as a developer — to think critically, work iteratively, and always consider the broader impact of technology on users and society.

The lessons, skills, and confidence acquired during this internship will undoubtedly serve as a strong foundation for future endeavors in the tech industry, especially in the field of web development and educational technology.

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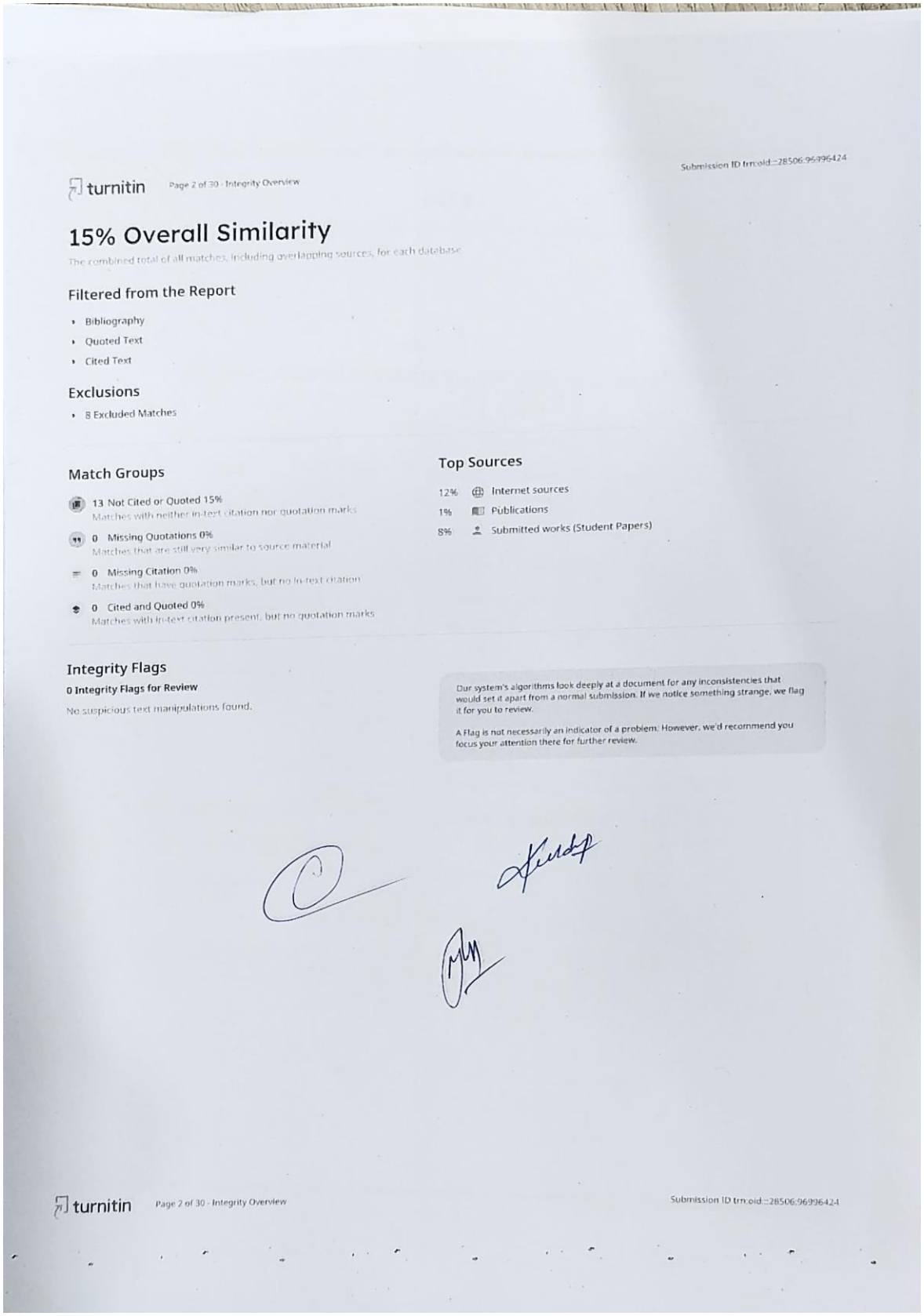

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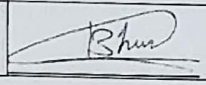
MPR

JAN – FEB

JAN – FEB

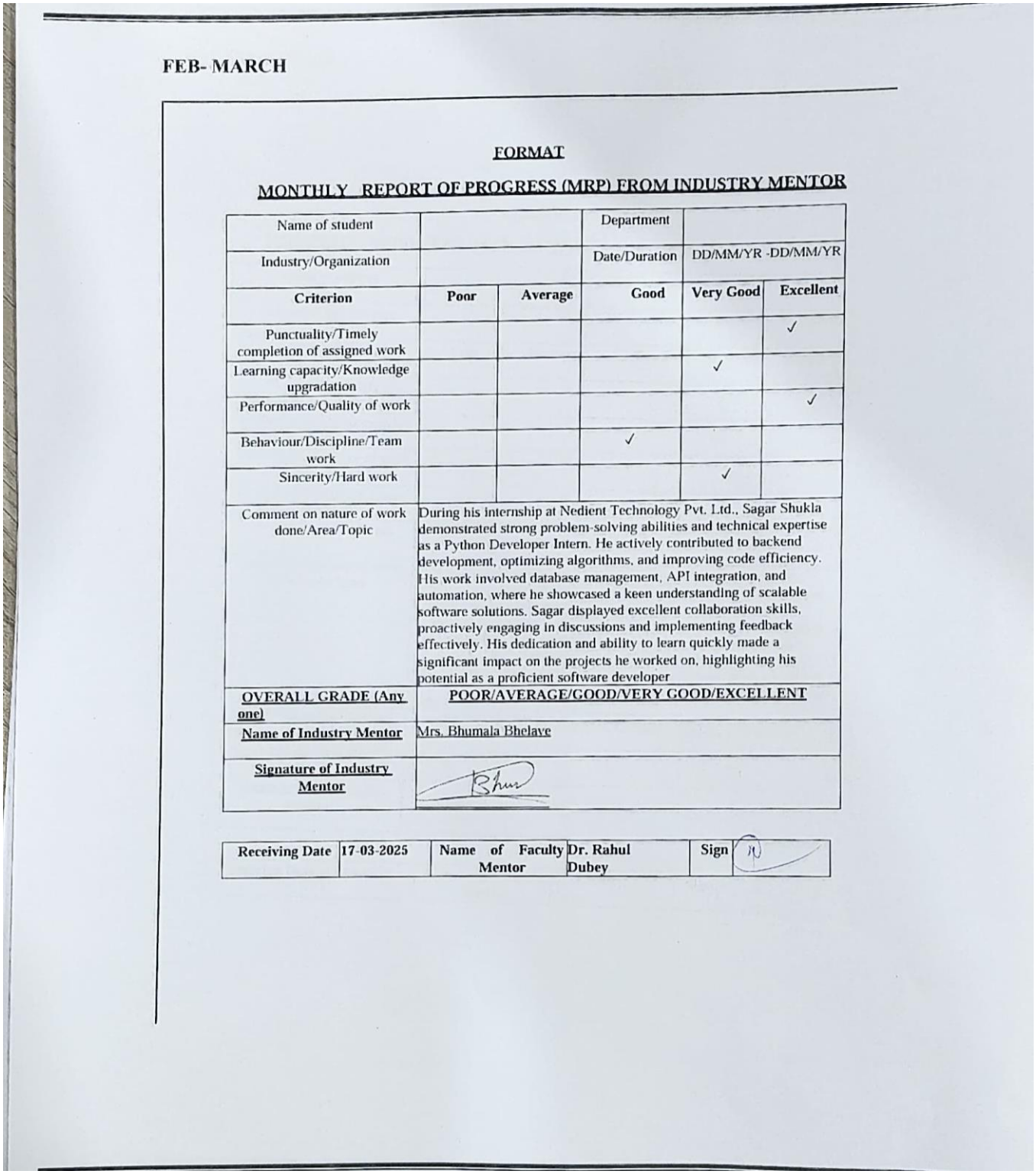
FORMAT

MONTHLY REPORT OF PROGRESS (MRP) FROM INDUSTRY MENTOR

Name of student			Department		
Industry/Organization			Date/Duration	DD/MM/YR -DD/MM/YR	
Criterion	**Poor**	**Average**	**Good**	**Very Good**	**Excellent**
Punctuality/Timely completion of assigned work				✓	
Learning capacity/Knowledge upgradation			✓		
Performance/Quality of work			✓		
Behaviour/Discipline/Team work			✓		
Sincerity/Hard work				✓	
Comment on nature of work done/Area/Topic	I have had the pleasure of mentoring Sagar Shukla during their internship at Nadient Technology Pvt. Ltd. . Throughout the internship period, Sagar Shukla has consistently demonstrated strong problem-solving skills, a high level of initiative, and a keen ability to collaborate effectively with team members. They approached tasks with a positive attitude, showing a willingness to learn and adapt quickly to new challenges. Their work on [specific project or task] was particularly impressive, as they applied both technical and critical thinking skills to achieve Django and Flask.				
OVERALL GRADE (Any one)	**POOR/AVERAGE/GOOD/VERY GOOD/EXCELLENT**				
Name of Industry Mentor	Mrs. Bhumala Bhelave				
Signature of Industry Mentor					

Receiving Date	**17-02-2025**	**Name of Faculty Mentor**	**Dr. Rahul Dubey**	**Sign**	

FEB- MARCH



FEB- MARCH

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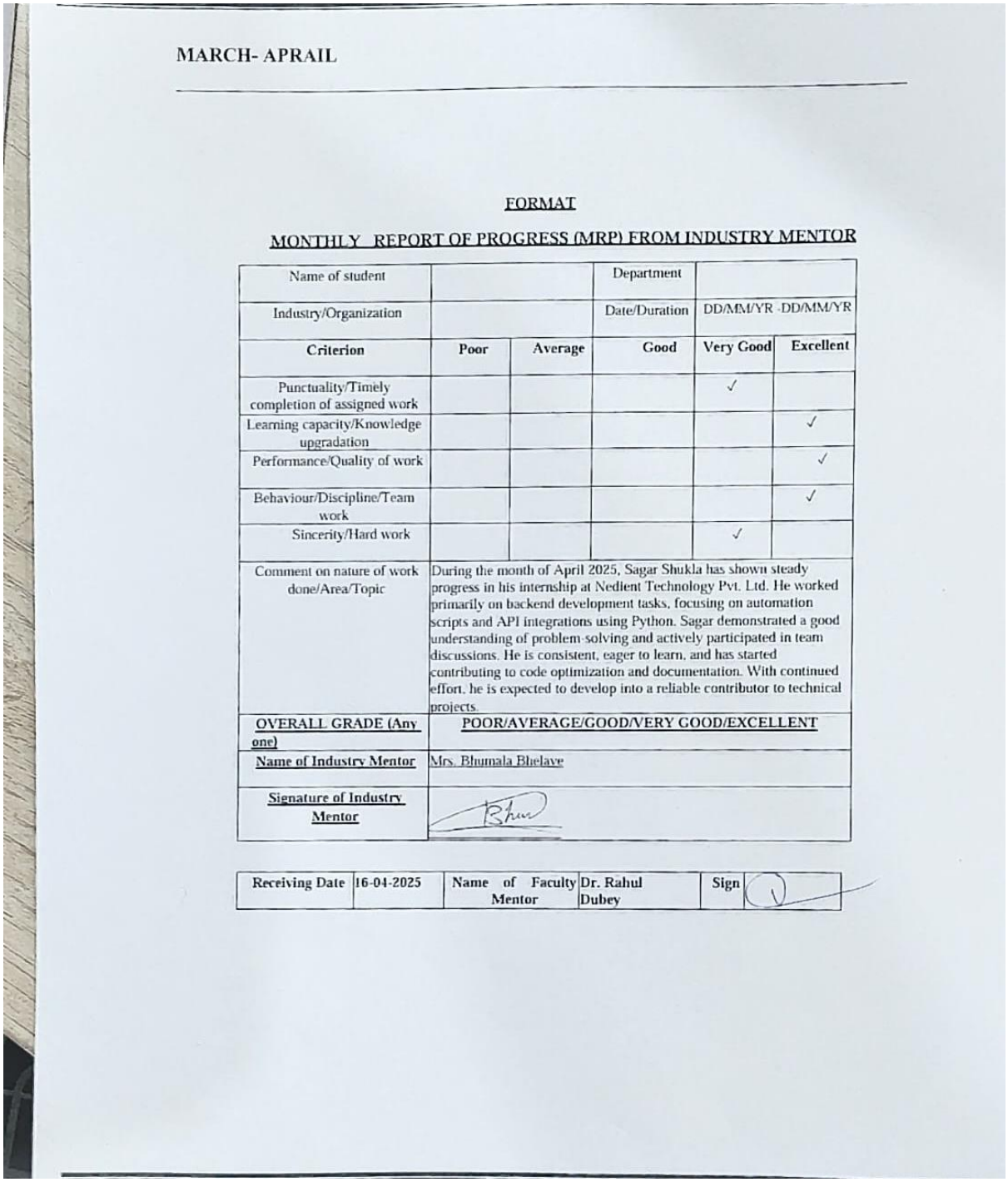
Criterion	**Poor**	**Average**	**Good**	**Very Good**	**Excellent**
Punctuality/Timely completion of assigned work					✓
Learning capacity/Knowledge upgradation				✓	
Performance/Quality of work					✓
Behaviour/Discipline/Team work			✓		
Sincerity/Hard work				✓	
Comment on nature of work done/Area/Topic	During his internship at Nedient Technology Pvt. Ltd., Sagar Shukla demonstrated strong problem-solving abilities and technical expertise as a Python Developer Intern. He actively contributed to backend development, optimizing algorithms, and improving code efficiency. His work involved database management, API integration, and automation, where he showcased a keen understanding of scalable software solutions. Sagar displayed excellent collaboration skills, proactively engaging in discussions and implementing feedback effectively. His dedication and ability to learn quickly made a significant impact on the projects he worked on, highlighting his potential as a proficient software developer				
OVERALL GRADE (Any one)	**POOR/AVERAGE/GOOD/VERY GOOD/EXCELLENT**				
Name of Industry Mentor	Mrs. Bhumala Bhelave				
Signature of Industry Mentor					

Receiving Date	17-03-2025	**Name of Faculty Mentor**	**Dr. Rahul Dubey**	**Sign**	

MARCH- APRAIL



MARCH- APRAIL

FORMAT

MONTHLY REPORT OF PROGRESS (MRP) FROM INDUSTRY MENTOR

Name of student			Department		
Industry/Organization			Date/Duration	DD/MM/YR -DD/MM/YR	
Criterion	**Poor**	**Average**	**Good**	**Very Good**	**Excellent**
Punctuality/Timely completion of assigned work				✓	
Learning capacity/Knowledge upgradation					✓
Performance/Quality of work					✓
Behaviour/Discipline/Team work					✓
Sincerity/Hard work				✓	
Comment on nature of work done/Area/Topic	During the month of April 2025, Sagar Shukla has shown steady progress in his internship at Nedient Technology Pvt. Ltd. He worked primarily on backend development tasks, focusing on automation scripts and API integrations using Python. Sagar demonstrated a good understanding of problem-solving and actively participated in team discussions. He is consistent, eager to learn, and has started contributing to code optimization and documentation. With continued effort, he is expected to develop into a reliable contributor to technical projects.				
OVERALL GRADE (Any one)	**POOR/AVERAGE/GOOD/VERY GOOD/EXCELLENT**				
Name of Industry Mentor	Mrs. Bhumala Bhelave				
Signature of Industry Mentor					

Receiving Date	16-04-2025	**Name of Faculty Mentor**	**Dr. Rahul Dubey**	**Sign**	