MINI PROJECT REPORT

On

PERSONALIZED LEARNING PLATFORM USING ARTIFICIAL INTELLIGENCE

Submitted in partial fulfilment for the award of degree

of

Master of Computer Applications

By

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DEPARTMENT OF COMPUTER APPLICATIONS

MANGALAM COLLEGE OF ENGINEERING, ETTUMANOOR

(Affiliated to APJ Abdul Kalam Technological University)

NOVEMBER 2024

VISION

To become a centre of excellence in computer applications,competent in the global ecosystem with technical knowledge,innovation with a sense of social commitment.

MISSION

- To serve with state of the art education,foster advanced research and cultivate innovation in the field of computer applications.
- To prepare learners with knowledge skills and critical thinking to excel in the technological landscape and contribute positively to society.

Program Educational Objectives

- PEO I :Graduates will possess a solid foundation and in-depth understanding of computer applications and will be equipped to analyze real-world problems, design and create innovative solutions, and effectively manage and maintain these solutions in their professional careers.
- PEO II: Graduates will acquire technological advancements through continued education, lifelong learning and research, thereby making meaningful contributions to the field of computing.
- PEO III: Graduates will cultivate team spirit, leadership, communication skills, ethics, and social values, enabling them to apply their understanding of the societal impacts of computer applications effectively.

Program Specific Outcomes

- **PSO I**: Apply advanced technologies through innovations to enhance the efficiency of design development.

- **PSO II**: Apply the principles of computing to analyze, design and implement sustainable solutions for real world challenges.

MANGALAM COLLEGE OF ENGINEERING, ETTUMANOOR
DEPARTMENT OF COMPUTER APPLICAATIONS
NOVEMBER 2024

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CERTIFICATE

This is to certify that the Project titled *"Personalized Learning Platform using Artificial Intelligence (LearnLab)"* is the bonafide record of the work done by **ABHIRAM A K (MLM23MCA-2001**)of Master of Computer Applications towards the partial fulfilment of the requirement for the award of the **DEGREE OF MASTER OF COMPUTER APPLICATIONS by APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY**, during the academic year 2024-25.

Internal Examiner

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ABSTRACT

Personalized Learning Platform using Artificial Intelligence (LearnLab) is a web-based system designed to deliver tailored learning experiences to students, enhancing their educational journey by offering personalized study material recommendations. The platform leverages artificial intelligence to analyze each student's learning behavior, preferences, and performance data to generate customized content that aligns with their academic needs.

The system comprises three main modules: **Admin**, **Teacher**, and **Student**.

The **Admin** is responsible for managing the platform, overseeing the system's operations, and viewing analytical data such as student progress and AI-generated insights. **Teachers** can upload educational content, monitor students' performance, and provide personalized feedback based on AI-driven suggestions. **Students**, the core users of the platform, receive study recommendations in real-time, track their progress, and access tailored materials that help them improve their learning outcomes.

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LIST OF ABBREVIATIONS

- **AI - Artificial Intelligence**

- **CSS – Cascading Style Sheets**

- **DFD - Data Flow Diagram**

- **HTML - Hypertext Markup Language**

- **PHP - Hypertext Preprocessor (formerly Personal Home Page)**

- **ML - Machine Learning**

- **NLP - Natural Language Processing**

- **IDE - Integrated Development Environment**

- **SQL - Structured Query Language**

- **UML - Unified Modeling Language**

- **UI - User Interface**

- **PLP - Personalized Learning Platform**

1. INTRODUCTION

1.1 Background

In today's world, education plays a crucial role in shaping the future of individuals and society. However, traditional education systems often fall short in addressing the individual needs of students. The lack of personalized attention, rigid learning structures, and a one-size-fits-all approach hinder many students from achieving their full potential. With the rapid advancements in technology, particularly in artificial intelligence (AI), there is a growing opportunity to enhance education by providing personalized learning experiences.

AI-powered platforms have the potential to analyze students' learning behaviors, adapt to their needs, and offer customized learning paths that cater to individual strengths and weaknesses. These platforms can significantly improve learning outcomes, engage students more effectively, and reduce the workload on educators by automating certain tasks, such as content recommendations and performance tracking.

1.2 Introduction

The **Personalized Learning Platform using Artificial Intelligence** addresses these challenges by offering an AI-driven educational system that tailors learning experiences to each student. The platform provides real-time recommendations of study materials, personalized feedback, and insights based on the student's learning patterns and progress. Teachers can track students' performance, upload educational content, and use AI-generated insights to guide students more effectively.

The system consists of three main modules: Admin, Teacher, and Student. The **Admin** oversees the entire system, managing users and accessing AI-powered analytics. **Teachers** can upload materials, monitor student progress, and provide feedback with the help of AI. **Students** interact with the platform to receive personalized study recommendations, track their learning progress, and access real-time feedback on their performance.

This system leverages machine learning algorithms to predict student performance and tailor educational content based on individual needs. It provides an innovative solution to the challenges faced by students and teachers in traditional educational settings.

1.3 Problem Statement

Education is often hindered by the inability to provide personalized learning experiences for each student. In traditional classrooms, teachers find it challenging to track every student's progress and offer tailored feedback. The lack of personalized attention results in students not receiving the necessary support to address their learning gaps. Furthermore, existing online education platforms provide generalized content without adapting to individual learning needs, leading to reduced engagement and suboptimal outcomes.

Teachers are burdened with manually tracking student performance, and students lack the resources to receive real-time feedback that can help them improve. There is a need for a solution

that automates content delivery based on individual learning patterns and provides personalized recommendations in real-time to enhance the overall learning experience.

1.4 Motivation

Addressing Student Challenges: Many students struggle to stay engaged and achieve their full potential due to the lack of personalized learning experiences. This project aims to provide a digital platform that helps students overcome these challenges by offering tailored study materials and real-time feedback based on their progress and performance.

Leveraging AI to Improve Education: Inspired by the increasing use of AI in various industries, this project applies AI technologies to education. The platform utilizes machine learning algorithms to analyze student data and provide personalized recommendations, improving the learning process and helping students achieve better outcomes.

Supporting Teachers: Teachers often struggle with the manual process of tracking each student's performance and providing individualized feedback. This platform automates these tasks, allowing teachers to focus on guiding students and improving their educational journey.

Promoting Real-Time Learning: Traditional education often lacks real-time solutions to address students' immediate learning needs. By offering real-time study recommendations and feedback, this project ensures that students receive timely assistance and guidance throughout their learning process.

Boosting Educational Efficiency: The platform is designed to increase the efficiency of the learning process by reducing manual tasks for teachers and providing students with personalized content. This automation leads to improved learning outcomes and reduced workload for educators.

Encouraging the Adoption of AI in Education: As artificial intelligence (AI) reshapes industries worldwide, this project seeks to harness AI's transformative potential within the educational sector. Through an intuitive, AI-powered platform, it provides students and educators with a digital solution that simplifies learning and teaching, making advanced educational tools accessible to all. This approach supports a shift toward a more modern, interactive, and adaptive learning environment, where students benefit from personalized content recommendations and real-time feedback tailored to their unique needs and abilities. Educators can also access AI-driven insights into student progress and challenges, enabling them to focus on areas where students need the most support.

1.5 Scope

The *Personalized Learning Platform using Artificial Intelligence* has significant potential for future growth, designed to remain adaptable as new technologies and user needs emerge. Several promising areas for enhancement include:

Mobile_Application_Development:
Introducing an Android application would allow students and teachers to access the platform from their mobile devices, offering a flexible, on-the-go learning experience. This mobile app could include features such as push notifications for assignment deadlines, direct chat support with teachers, and offline access to study materials, ensuring seamless connectivity and engagement.

Blockchain_Integration_for_Secure_Data_Management:
Integrating blockchain technology could enhance data security and transparency by creating a decentralized structure for data storage. This would protect student records, assessments, and learning data with robust encryption, allowing for verifiable and tamper-resistant data. Blockchain could also facilitate digital certificates for course completions, providing secure, lifelong academic credentials.

Advanced_AI_and_Natural_Language_Processing_(NLP):
Utilizing sophisticated AI algorithms, particularly NLP, could improve user interactions and content recommendations. NLP could enable students to ask questions in natural language and receive context-aware responses, making the AI assistant feel more conversational and intuitive. Enhanced machine learning models could further tailor content recommendations based on students' evolving needs and learning habits.

AI-Driven_Product_and_Content_Recommendations:
Expanding the recommendation system, AI could analyze students' previous interactions, quiz performance, and learning progress to suggest materials most suited to their needs. This could include recommending practice problems, articles, videos, or external resources that target specific areas for improvement, creating a uniquely tailored learning path for each student.

SEO_Optimization_for_Increased_Accessibility:
Implementing SEO (Search Engine Optimization) practices is essential for maximizing the platform's reach and ensuring that valuable educational resources are easily accessible to a wide audience. By optimizing keywords that align with commonly searched terms in education and e-learning, the platform can effectively target users who seek personalized learning solutions. Strategic placement of relevant keywords across titles, descriptions, and headings helps search engines recognize and rank the platform's content higher in search results, making it more visible to potential users.

2. LITERATURE REVIEW

Automation in Education

The introduction of automation into education systems has the potential to significantly enhance learning outcomes and reduce the workload on teachers. According to Wulfraat et al. (2018), automated systems in education can provide personalized feedback, track student progress, and facilitate real-time adjustments to learning paths, which is critical for delivering a tailored learning experience [1]. In line with these advancements, the Personalized Learning Platform using Artificial Intelligence integrates automation to analyze student data and provide personalized study recommendations, enabling more efficient and effective learning. The use of automation in education has been further explored by Zhang et al. (2020), who emphasized the importance of real-time data analysis to enhance the learning experience. Similar to automated systems in other industries, the Personalized Learning Platform uses machine learning algorithms to monitor student performance and offer real-time feedback, aligning with the trend of data-driven personalized education [1].

Virtual Assistants in Education

Virtual assistants have gained popularity in education for their ability to provide students with instant access to information and personalized guidance. Patel et al. (2021) demonstrated that virtual assistants can offer tailored recommendations based on students' performance and engagement data, significantly improving learning outcomes [2]. The Personalized Learning Platform incorporates a virtual assistant that interacts with students, answering their questions and providing study materials based on their needs. This virtual assistant thus serves as a reliable, always-accessible learning resource, helping students overcome scheduling barriers and issues. In resource-limited environments, where teacher access may be restricted, virtual assistants play a critical role in maintaining student engagement. The platform's AI-driven assistant ensures students always have access to support, fostering a continuous learning experience without constant teacher intervention [2].

Sentiment Analysis in Education

Sentiment analysis is a valuable tool for understanding user feedback across various domains, including education. Liu (2012) highlighted its role in assessing user satisfaction and identifying areas for improvement [3]. In the Personalized Learning Platform, sentiment analysis is applied to gather insights from students' feedback on study materials and course recommendations, enabling educators and administrators to monitor engagement and satisfaction and continuously improve the platforms performance according to the students interaction to the AI. By analyzing student responses and interactions, the platform provides data on which areas need enhancement, thus improving the learning experience and ensuring responsiveness to students' needs [3]

Machine Learning for Personalized Learning

Machine learning algorithms are central to delivering personalized learning experiences. Sharma et al. (2020) demonstrated that machine learning models could predict student performance based on historical data, allowing educators to adjust teaching methods to suit individual learning styles [4]. The Personalized Learning Platform uses machine learning to analyze students' learning behaviors, quiz results, and study material interactions, creating customized study paths for each student and the platform analysis the student behaviour to the platform. This application of machine learning ensures that the platform offers the right content at the right time, helping students overcome learning challenges and achieve better outcomes. As Sun et al. (2021) highlighted, advanced algorithms can accurately predict student performance, enabling more effective interventions and support strategies [4].

Real-Time Feedback and Communication

Real-time communication and feedback are essential components of an effective learning platform. Sharma and Padhy (2019) emphasized the importance of real-time feedback in improving student engagement and performance [5]. The Personalized Learning Platform provides real-time feedback through its AI-powered assistant, enabling students to receive immediate responses and track their progress in real time and this make the system more reliable and useful. Additionally, teachers receive real-time insights into student performance, allowing them to intervene when necessary and offer timely guidance. This feature fosters a more dynamic and responsive learning environment, ensuring that students remain on track and motivated [5].

AI-Driven Recommendations

AI-driven recommendation systems are integral to personalized learning platforms. According to Bandyopadhyay et al. (2022), integrating student data into AI models enables accurate recommendations that improve learning outcomes [6]. The Personalized Learning Platform analyzes students' interactions with study materials to recommend relevant resources based on their performance and preferences and this will improve the quality of content that providing. This recommendation system not only enhances student engagement by providing tailored content but also supports teachers by automating content recommendations, making the platform more efficient and effective in delivering educational material [6].

3. PROPOSED SYSTEM

The **Personalized Learning Platform using Artificial Intelligence** is designed to revolutionize the learning experience by providing customized educational content and real-time feedback tailored to each student's unique learning style. With the support of AI-driven analysis, the platform helps students improve their learning outcomes by offering personalized study recommendations, tracking their progress, and providing actionable insights.

Key Features of the Proposed System:

1. **Personalized_Study_Recommendations**:
   The system analyzes students' past performance, quiz results, and interactions with study materials to recommend relevant and personalized content. By utilizing machine learning algorithms, the platform adapts to the student's learning pace and preferences, ensuring that they receive study materials best suited to their academic needs.

2. **Real-Time_Feedback**:
   Students no longer need to wait for manual feedback from their teachers. The AI-powered platform provides real-time feedback on quizzes, assignments, and other learning activities. This helps students identify areas for improvement immediately, allowing for quick adjustments in their learning strategy.

3. **AI-Driven_Content_Customization**:
   The platform uses advanced algorithms to deliver custom content based on students' performance and preferences. By analyzing data from quizzes, assessments, and study habits, the system suggests relevant study materials that align with each student's learning path.

4. **Teacher_Assistance**:
   Teachers can use the platform to monitor student performance, view AI-generated insights, and upload personalized study materials. The system reduces the burden on teachers by automating routine tasks such as grading quizzes, analyzing student data, and providing tailored feedback. This allows educators to focus more on guiding and mentoring students.

5. **Admin_Module**:
   The **Admin** oversees the overall functioning of the system, managing users, handling data, and monitoring system analytics. The admin can also view insights generated by AI on student progress and overall platform usage, helping to improve system performance and address any issues promptly.

6. **Real-Time_Communication_and_Assistance**:
   The platform includes a virtual assistant that interacts with students, providing them with real-time responses to their academic queries. This feature ensures that students can receive help 24/7, even when teachers are not available. The virtual assistant guides students by answering questions, suggesting study materials, and providing feedback on learning progress.

7. **Progress_Tracking_and_Analytics**:
   The system tracks each student's progress over time and generates insights on their performance. Students can visualize their learning journey through progress reports, which highlight areas where they excel and where they need improvement. These analytics help students stay on track and motivate them to achieve their learning goals.

8. **Motivation_for_Digital_Adoption_in_Education**:
   This system encourages the adoption of AI-driven education technologies by making it easier for students and teachers to embrace digital learning. The platform offers a seamless, user-friendly interface that promotes the integration of personalized learning experiences into traditional educational environments.

Benefits of the Proposed System:

- **Enhanced_Learning_Outcomes**:
  The personalized study recommendations and real-time feedback help students improve their understanding of the subjects they study, leading to better academic performance.

- **Time_and_Effort_Savings_for_Teachers**:
  Teachers benefit from AI-generated insights, reduced workload through automated grading and feedback, and enhanced visibility into student progress.

- **Continuous_Learning_and_Support**:
  The virtual assistant and real-time feedback mechanisms ensure that students have access to learning resources and assistance whenever needed, promoting continuous learning without interruptions.

- **Scalability_and_Flexibility**:
  The system is designed to be scalable and flexible, allowing for future enhancements such as mobile application integration, blockchain for secure data handling, and advanced AI features like natural language processing for better interaction.

This system acts as a transformative tool for both students and teachers, fundamentally changing how learning and teaching happen. For students, it provides a personalized learning journey, analyzing their progress and understanding to suggest tailored study materials and feedback. This approach helps students focus on areas that need improvement while building on their strengths, resulting in a more effective and engaging learning experience.

For teachers, the platform provides automated insights and recommendations on each student's performance, allowing them to identify which students may require additional support or challenge. This data-driven approach enables teachers to offer focused, individualized guidance in their chat interactions with students, eliminating the need for extensive manual tracking. Automating tasks such as tracking progress lets teachers devote more time to meaningful, personalized communication and support through the chat feature

4. METHODOLOGY

4.1 Feasibility Study

Feasibility refers to the practicality and viability of a project, assessing whether it can be successfully executed within the given constraints. A feasibility study is conducted to evaluate the various factors involved in developing the **Personalized Learning Platform using Artificial Intelligence**, such as resource availability, estimated development costs, potential benefits after deployment, and ongoing maintenance expenses. The primary goal of this study is to determine if the proposed solution can meet the system's requirements and deliver value to students, teachers, and educational institutions.

4.2 Economic Feasibility

Economic feasibility involves assessing the financial viability of the project by evaluating whether the platform can generate sufficient benefits compared to its costs. The **Personalized Learning Platform** is cost-effective, utilizing open-source technologies such as **PHP**, **MySQL**, **Python AI libraries**, and **HTML/CSS/JavaScript** for development. The system eliminates the need for paper-based resources, reducing operational costs and errors associated with manual processes. Additionally, the platform's scalability ensures that future expansions, such as mobile app development or blockchain integration, can be achieved with minimal additional costs.

The platform's ability to automate routine tasks like grading, content recommendations, and performance tracking further reduces the time and effort teachers spend on administrative tasks, resulting in a high return on investment for educational institutions.

4.3 Technical Feasibility

Technical feasibility evaluates the resources, technologies, and skills required to successfully implement the system. The **Personalized Learning Platform** is built using widely available web technologies, including **HTML**, **CSS**, **JavaScript**, **PHP**, and **MySQL** for the backend, along with **Python** for AI-driven recommendations. These technologies are freely available, and the skills required to develop and maintain the system are manageable for a typical software development team.

The platform is designed to be fully web-based, ensuring compatibility across multiple devices and operating systems. The availability of cloud-based hosting options ensures that the platform can be deployed and maintained at a low cost, without the need for specialized hardware. Additionally, the system's modular design allows for easy integration of future enhancements such as AI advancements and mobile compatibility.

4.4 Behavioral Feasibility

Behavioral feasibility ensures that the Personalized Learning Platform meets user needs by providing an intuitive, engaging experience with AI-driven insights, real-time feedback, and easy navigation, promoting broad adoption across all users

5. SYSTEM ARCHITECTURE

Hardware Specifications

- **Processor**: Intel i3 or above

- **RAM**: 4 GB or higher

- **Hard Disk**: 256 GB storage capacity or more

These hardware specifications ensure that the platform can handle the demands of AI-driven functionalities and provide a smooth user experience for both students and teachers.

Software Specifications

The system utilizes a range of software technologies to create a seamless, dynamic, and interactive learning environment:

- **Frontend Technologies**:

  o **HTML**: For structuring the content and layout of the platform.

  o **CSS**: For styling the user interface, ensuring a visually appealing and responsive design.

  o **JavaScript**: For adding interactivity to the platform, enabling dynamic content updates and improved user engagement.

- **Backend Technologies**:

  o **PHP**: The backend language used to manage server-side operations and handle requests from the client-side.

  o **MySQL**: The database management system used to store and retrieve data related to student profiles, study materials, performance metrics, and AI-generated recommendations.

Client Environment

The **Personalized Learning Platform** is designed to be accessible on a variety of devices, but the recommended client specifications for optimal performance include:

- **Operating System**: Windows 10 and above (or equivalent macOS/Linux distributions)

- **Browser**: The platform is compatible with modern web browsers such as Google Chrome, Mozilla Firefox, Microsoft Edge, and Safari.

These software and hardware specifications ensure that the system can handle real-time interactions, process AI algorithms efficiently, and deliver personalized learning experiences to students.

6. MODULES

1. Admin

The Admin module holds overall control of the Personalized Learning Platform. The admin manages user accounts, uploads learning materials, and monitors student performance across the platform. Key responsibilities of the admin include:

Managing Users: Admins can add or remove teachers and students from the system. They also send login credentials to newly registered users via email.

Content Management: Admins upload study materials, quizzes, and other resources onto the platform. They can also update or remove outdated content as needed.

System Monitoring: Admins can view detailed analytics on student engagement, progress, and performance through AI-driven insights.

Sentiment Analysis: By utilizing sentiment analysis, the admin can gauge student feedback on learning materials, enabling continuous improvements to the platform.
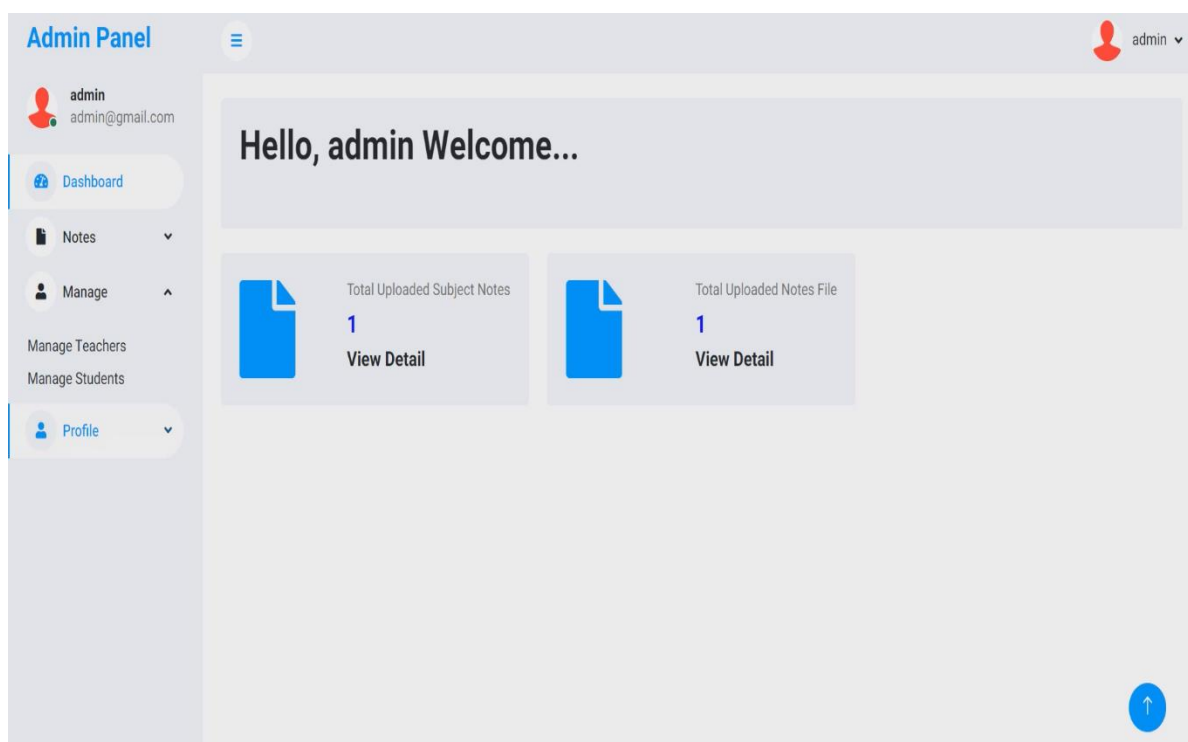
Fig – 6.1 Admin Page

2. Teacher

Teachers play a key role in managing content and interacting with students. The Teacher module allows instructors to:

Upload Learning Materials: Teachers can upload assignments, quizzes, and reading materials for students. They also have the option to update or modify existing content.

Track Student Progress: Teachers can monitor individual student performance using AI-generated insights, which help them identify students who may need additional support or personalized feedback.

Provide Feedback: Teachers can give personalized feedback to students based on the AI-driven analysis of their learning behaviors and quiz results.

View Analytics: Teachers can access detailed reports on student performance, including areas of strength and weakness, to adjust their teaching strategies accordingly.
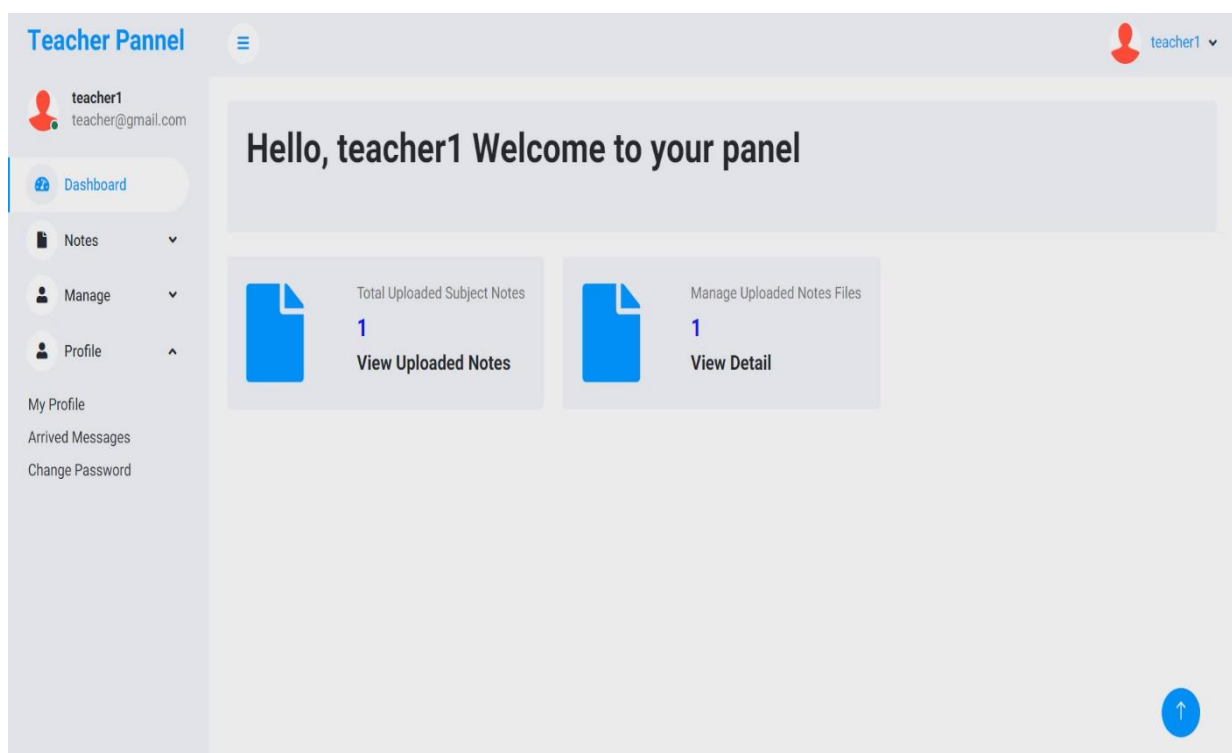
Fig – 6.2 Teacher Page

3. Student

The Student module is designed to provide personalized learning experiences to users based on their academic performance and learning behavior. Students can:

Personalized Study Recommendations: Based on student interactions with the platform and their quiz results, the system recommends relevant study materials to help them improve in specific areas.

Track Learning Progress: Students can view their learning history, quiz scores, and progress reports, allowing them to track their academic growth over time.

Real-Time Feedback: The platform provides students with real-time feedback on assignments and quizzes, helping them adjust their learning strategies quickly.

Interactive Learning: Students can interact with AI-driven virtual assistants that offer guidance, answer questions, and suggest study resources tailored to their needs.
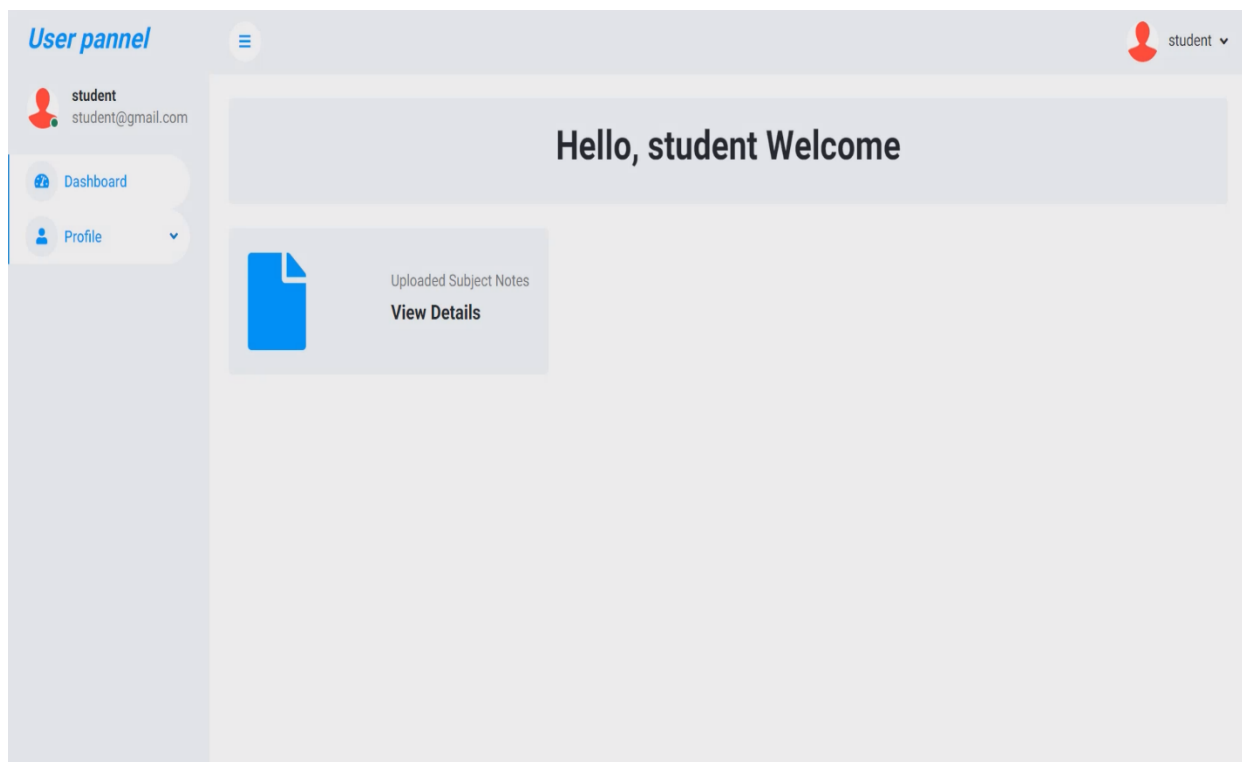
Fig - 6.3 Student Page

4. AI Module

In addition to managing user interactions, the platform includes an Admin-AI module, which powers the personalized learning experience through artificial intelligence. This module:

AI-Driven Recommendations: Uses machine learning algorithms to recommend study materials based on student performance and learning patterns.

Data Analysis: Analyzes student behaviors such as study patterns, material usage, and quiz scores to provide teachers and admins with actionable insights.

Continuous Learning: The AI learns and adapts over time, improving its recommendations based on accumulated data from students.
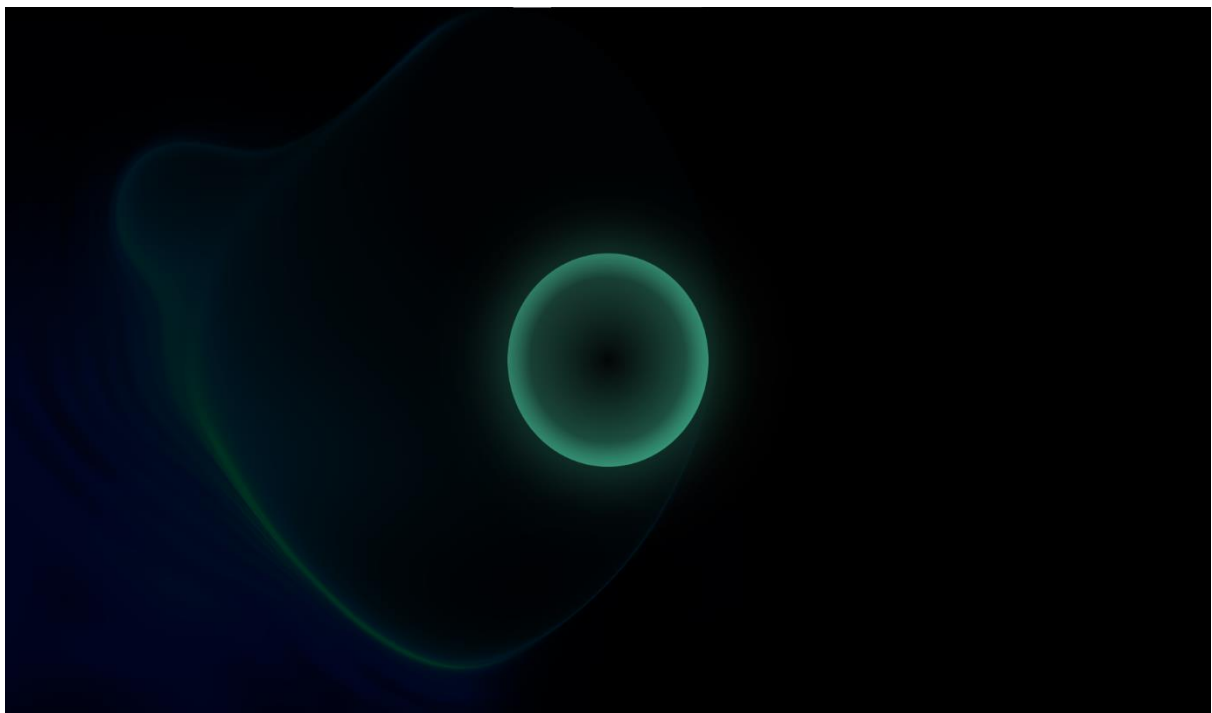
Fig – 6.4 AI Page

7. DIAGRAMS

Introduction

The design phase is an essential part of any system development process, where creative and structured methodologies are employed to define the architecture and workflows of the system. A well-executed design ensures the system's effectiveness, efficiency, and ability to meet its intended objectives. In software engineering, system design plays a crucial role by outlining the architectural components necessary to realize the physical implementation of the software.

For the **Personalized Learning Platform using Artificial Intelligence**, the design process focused on maximizing performance, accuracy, and user experience. The following diagrams illustrate the structural and functional aspects of the system, including data flow, user interactions, and system components. Each diagram offers a detailed view of how different modules interact with one another, contributing to the overall functionality of the platform.

7.1 DFD DIAGRAM

A Data Flow Diagram (DFD) is a graphical tool that represents the flow of data within a system, focusing on how data moves through processes, data stores, and external entities rather than on the technical implementation. DFDs are commonly used to visualize how inputs are transformed into outputs, providing a high-level overview of the system's functional flow. They help in understanding the interactions between various components and the data exchange between them, making them useful for system analysis and design.

Key Components of a DFD Diagram:

- Processes:
  Processes represent the transformation or manipulation of data within the system. Each process has a specific function that receives input data, performs some operation, and outputs processed data. In DFDs, processes are typically depicted as circles or rectangles with rounded edges and are named according to the action they perform.

- Data   Flows:
  Data flows indicate the movement of data between processes, data stores, and external entities. Arrows represent the direction of data flow, showing how information travels through the system. Each data flow is labeled to specify the type of data being transferred, ensuring clarity on the nature of the data exchange.

- Data   Stores:
  Data stores are repositories where data is held for later use, representing where the system temporarily or permanently stores information. These are usually represented as open-ended rectangles. Data stores allow for the modeling of read and write operations, showing how data is saved and retrieved by processes.

- External_Entities:
  External entities are sources or destinations of data outside the system boundaries. They represent people, systems, or organizations that interact with the system but are not part of it. These entities are represented as squares and provide inputs to processes or receive outputs from them.

Components of a DFD Diagram:

a)Context_Diagram(Level-0-DFD):
The context diagram is the highest level of the DFD, providing a single-process representation of the entire system. It shows all external entities interacting with the system and provides an overview of data exchange between these entities and the central process, giving a broad perspective of the system's environment.

b)Level-1-DFD:
Level 1 DFD breaks down the main process from the context diagram into sub-processes, showing a more detailed flow of data within the system. It includes multiple processes and data flows, offering a more in-depth look at the functions of the system and how data is processed internally.

7.1.1 DFD (Level – 0)
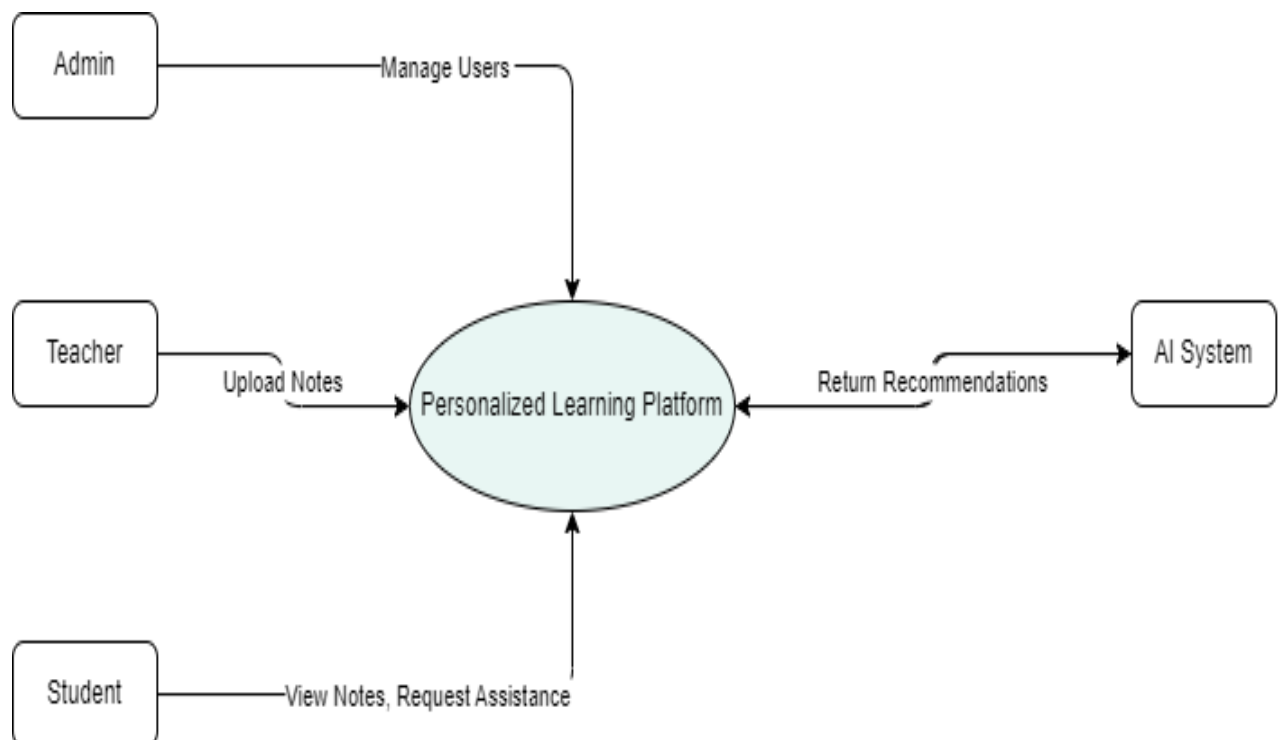
Fig – 7.1.1 - DFD (Level – 0)

7.1.2 DFD (Level – 1)
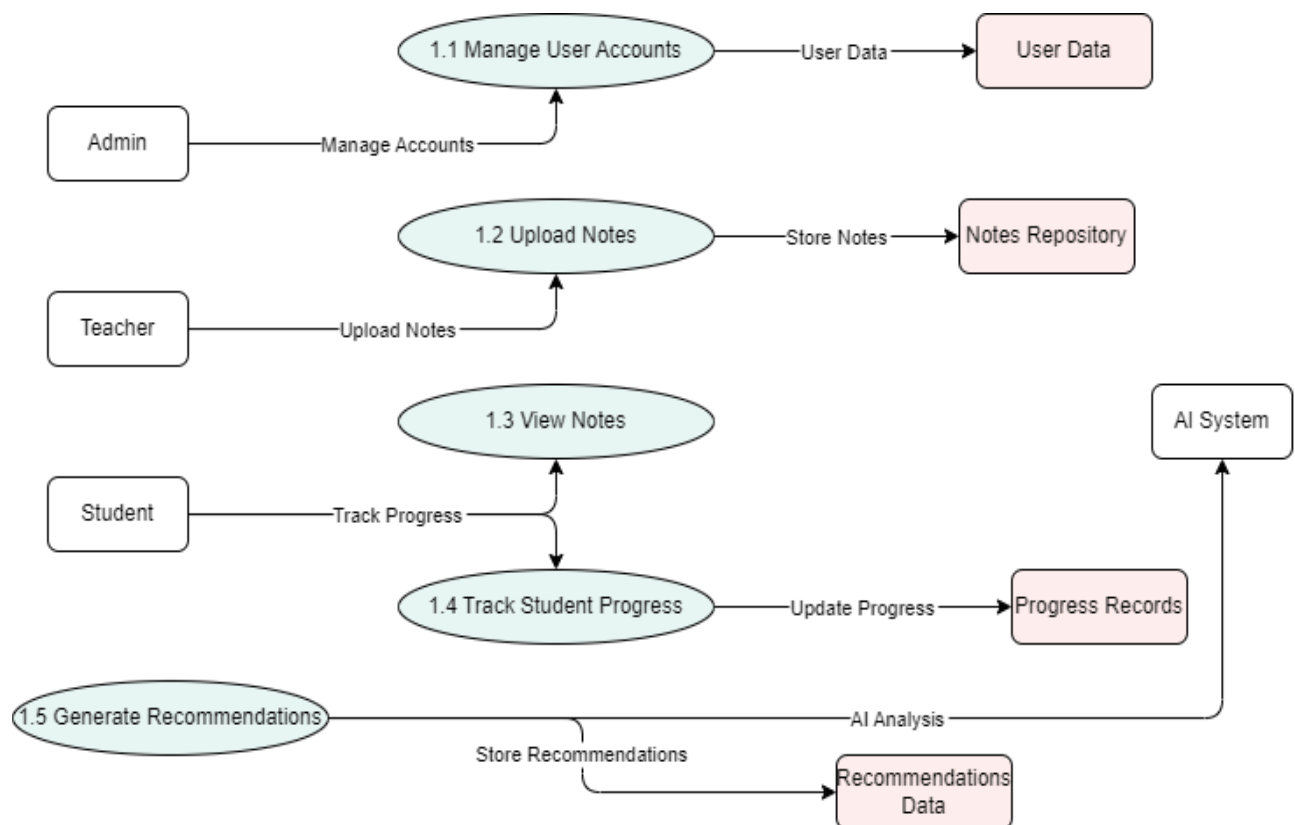
Fig – 7.1.2 - DFD (Level – 1)

7.2 ACTIVITY DIAGRAM

The UML **Activity Diagram** is a graphical tool used to represent the flow of control in a system, focusing on the dynamic aspects rather than implementation specifics. It visually models both sequential and concurrent activities, showcasing how tasks are executed in a particular workflow. The diagram effectively represents the transitions between different actions or states within a system, highlighting conditions, decisions, and branching points.

Key components of the activity diagram include:

- **Actions**: Individual tasks or operations.

- **Decision nodes**: Points where the flow can diverge based on certain conditions.

- **Forks and Joins**: These allow for parallel or concurrent flows to be modeled, showing how activities can split into multiple paths or merge back together.

- **Start and End**: Denotes the initiation and termination of the workflow.

Teacher/Admin Interaction

Teacher/Admin Uploads Course Materials

Monitor Student Progress

Start: Student Logs into Platform

Access Personalized Study Materials

Track Learning Progress

Does Student Have Doubts?

Yes

No

Student Clicks on AI Voice Assistant

Continue Learning

AI Assistant Provides Voice Response

End: Learning Session Complete

Student Clears Doubts and Resumes Learning

Fig – 7.2 Activity Diagram

Components of an Activity Diagram

In an activity diagram, several components work together to represent the control flow and system behavior effectively. These components are essential in modeling the dynamic aspect of the system:

a)Activities

An **activity** represents a unit of behavior or a set of actions. Each activity is a collection of nodes connected by edges, indicating the flow of control. Activities often represent high-level processes that consist of smaller, discrete actions or tasks performed sequentially or concurrently.

b)Activity_Partition(Swim_Lane)

The **swim lane** is a mechanism for grouping related activities into distinct columns or rows within the diagram. It helps to indicate the ownership or responsibility of each activity by an actor, department, or system. Swim lanes can be either vertical or horizontal and provide modularity and clarity, especially when modeling complex workflows.

c)Forks

Fork nodes facilitate the concurrent execution of multiple activities. A fork has one inward edge and multiple outward edges, effectively splitting the flow into parallel processes. This is useful for representing decisions where multiple paths can be taken simultaneously.

d)Join_Nodes

A **join node** merges multiple concurrent flows back into a single flow. It is the opposite of a fork and performs a logical AND operation on all incoming edges, ensuring that all concurrent processes are completed before the flow continues along the single outgoing edge. Join nodes help synchronize parallel activities in the system.

7.3 CLASS DIAGRAM

The **Class Diagram** is a static representation of the system, illustrating the types of objects, their properties, methods, and relationships within the application. A class diagram captures the blueprint of a system by describing its structure in terms of classes and their interactions. This diagram not only aids in visualizing and documenting system architecture but also plays a critical role in building executable code by outlining the system's foundational elements.

A **class** is composed of its objects, and classes can inherit attributes and behaviors from other classes. The diagram encapsulates various elements such as attributes, functions, and relationships that provide an overview of how the system behaves. These components are placed into separate compartments for clarity, allowing developers to easily navigate and interact with the structure.

Since class diagrams represent classes, interfaces, associations, collaborations, and constraints, they are categorized as structural diagrams.

Components of a Class Diagram

The class diagram consists of three primary sections:

Upper Section: This section contains the name of the class. A class represents a blueprint for similar objects that share common relationships, attributes, operations, and behaviors. The class name is always positioned at the top.

Middle Section: This section contains the attributes (variables) of the class, which describe the qualities or properties of the class. Attributes represent the data stored in the class, and each class can have multiple attributes with unique types.

Lower Section: The lower section includes the methods or operations that define the behavior of the class. Each method is typically listed in a single line. The methods show how a class interacts with the data it contains and how it provides functionality.

Relationships in Class Diagrams

In UML, relationships between classes are fundamental for modeling the structure and behavior of a system, helping to understand how different parts interact and depend on each other. Class diagrams primarily include three main types of relationships, each serving a distinct purpose:

Dependency:
A dependency is a weak, one-directional relationship between classes where one class relies on or uses another to perform a certain task. This relationship is often temporary and may exist only during a specific operation. Changes to the class it depends on may impact the dependent class. Dependency usually indicates a "uses" or "relies on" connection, like when one class calls a method from another to fulfill its responsibilities.

Generalization_(Inheritance):
Generalization represents an inheritance relationship, where a child class (subclass) inherits properties and methods from a parent class (superclass). It defines an "is-a" relationship, meaning the subclass is a specialized version of the superclass. For instance, a "Vehicle" class may be generalized into subclasses like "Car" and "Bike," which inherit general attributes but also have specific features. This relationship enhances code reusability, as common features are maintained in the superclass.

Association:
Association represents a structural, often bi-directional relationship where classes or objects are connected to work together. It is a long-lasting connection that may represent real-world interactions. Associations can have multiplicity indicators, which define how many instances of each class participate in the relationship. For example, a "Teacher" class may have an association with a "Student" class, indicating the number of students a teacher can teach (e.g., one-to-many or many-to-many). Associations can be further classified as aggregation or composition:

Aggregation: A form of association where one class is part of another but can exist independently. It represents a "has-a" relationship, such as a "Library" class having "Books" that can exist outside the library.

Composition: In a *stronger association*, known as **composition**, one class is an integral part of another and cannot exist independently of it. This type of relationship is depicted as a "contains-a" connection, where the dependent class (the part) relies on the existence of the main class (the whole) to have any meaning or function. In composition, if the main (container) class is destroyed, then all of its associated part classes are also destroyed, emphasizing their tightly coupled nature.
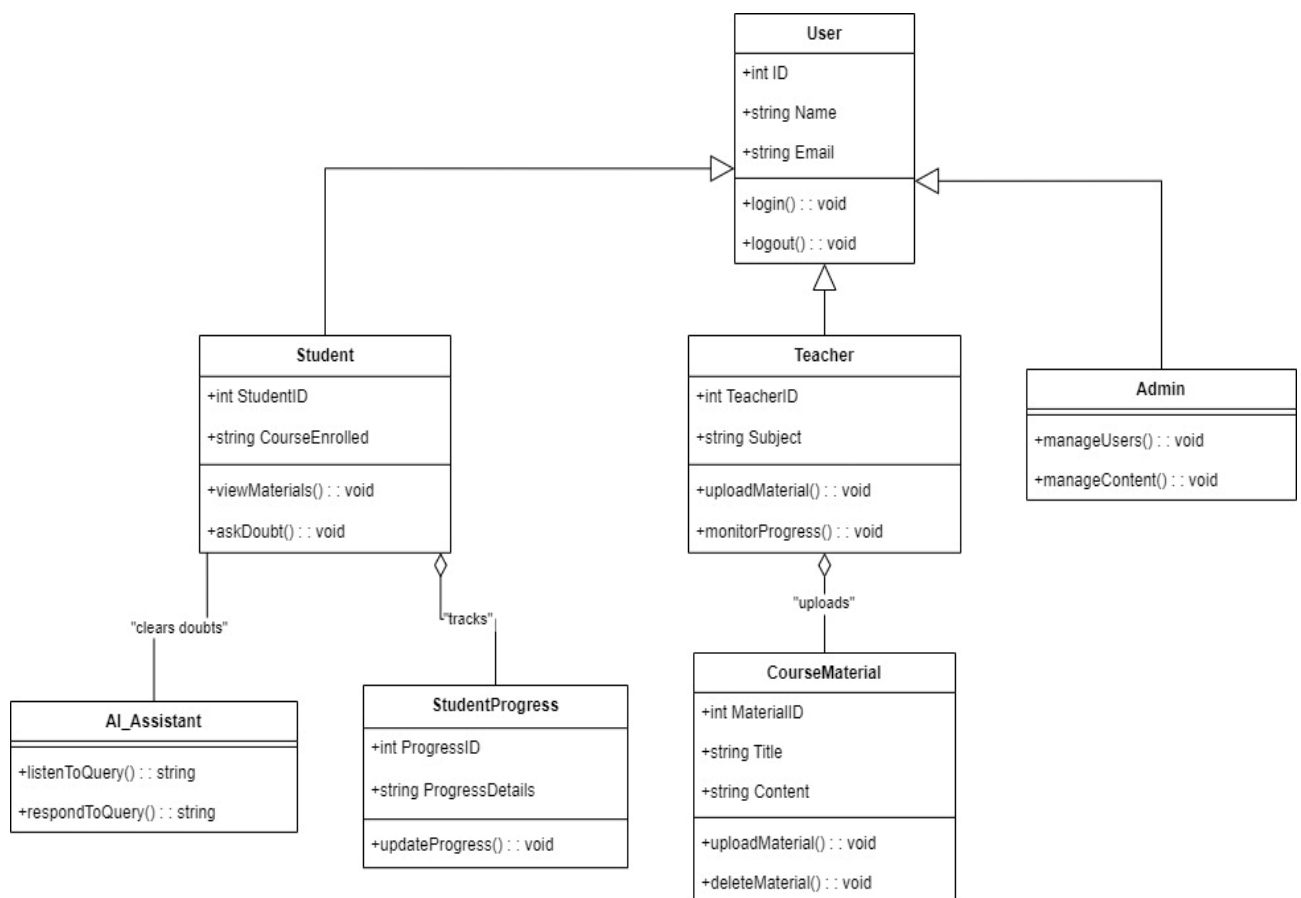
Fig – 7.3 Class Diagram

7.4 USE CASE DIAGRAM

A Use Case Diagram provides a high-level view of how different components and users (actors) interact with a system, making it a key tool in system analysis and requirements gathering. It helps stakeholders understand the roles, actions, and interactions involved, offering insights into what the system does and how users will engage with its functionality. By visually mapping out these interactions, use case diagrams clarify system boundaries, user roles, and the relationships between different actions, making complex systems easier to understand and design.

Components of a Use Case Diagram:

1. **System_Boundary**
   The system boundary defines the scope of the system by separating it from external entities and actors. It serves as a container for all internal system components, indicating what is within the system's domain and what is external. This boundary helps stakeholders understand the limits of the system, focusing attention on internal components while visually distinguishing them from external elements.

2. **Actors**
   Actors are individuals, external systems, or entities that interact with the system, fulfilling specific roles that define their relationship with the system. Each actor symbolizes a different role, such as a user, an administrator, or another system that integrates with the primary system. Actors can be human users, like a "Customer," or other systems, like a "Payment Gateway," showing how external entities connect with internal processes.

3. **Use_Cases**
   Use cases represent specific actions or functions the system performs in response to an interaction with an actor. Each use case defines a distinct goal or outcome that an actor can achieve, such as "Place Order" or "Log In." They highlight the system's functions from the user's perspective, documenting the different ways users can interact with the system to meet their needs. Use cases form the core requirements, guiding the design of the system's features.

4. **Relationships**
   Relationships in use case diagrams connect actors to use cases and link different use cases together to illustrate interactions and dependencies. These relationships help clarify which actors perform specific tasks and how various functions are interconnected within the system. Types of relationships include:

Association: Connects an actor to a use case, indicating that the actor interacts with that function.

Include: An **include relationship** in a use case diagram represents a required or mandatory functionality that is part of another, larger use case. This relationship is used when a particular action is necessary for completing the main process and must be executed each time the primary use case is performed. By separating this required functionality as an "included" use case, the model becomes more modular, allowing for reusable actions across multiple use cases and enhancing clarity in complex systems.

Extend: An **extend relationship** in a use case diagram represents an optional or conditional functionality that supplements a primary use case without being essential to its execution. This relationship is used when additional steps or features can be selectively included based on specific conditions or user choices. The "extend" relationship helps clarify how and when extra functionality is available, enhancing the system's flexibility while keeping the core use case straightforward and focused.

Generalization: In a **generalization relationship**, hierarchy is established between actors or use cases, where one actor or use case inherits or specializes the characteristics and behaviors of another. This relationship is valuable for modeling roles or functionalities that share common traits but differ in certain specifics. Generalization helps in organizing roles and responsibilities by grouping shared functionalities in a "parent" actor or use case, while more specific or additional capabilities are defined in "child" actors or use cases. the "Admin" inherits all capabilities of a "User" and a "Moderator" while also having unique permissions not available to the other roles. This indicates that the admin not only performs basic user actions, such as viewing and interacting with content, but can also moderate discussions like a moderator and perform higher-level administrative tasks, such as managing system settings or user accounts. By using generalization, we capture the "is-a" relationship, where an Admin is both a User and a Moderator with extended privileges.
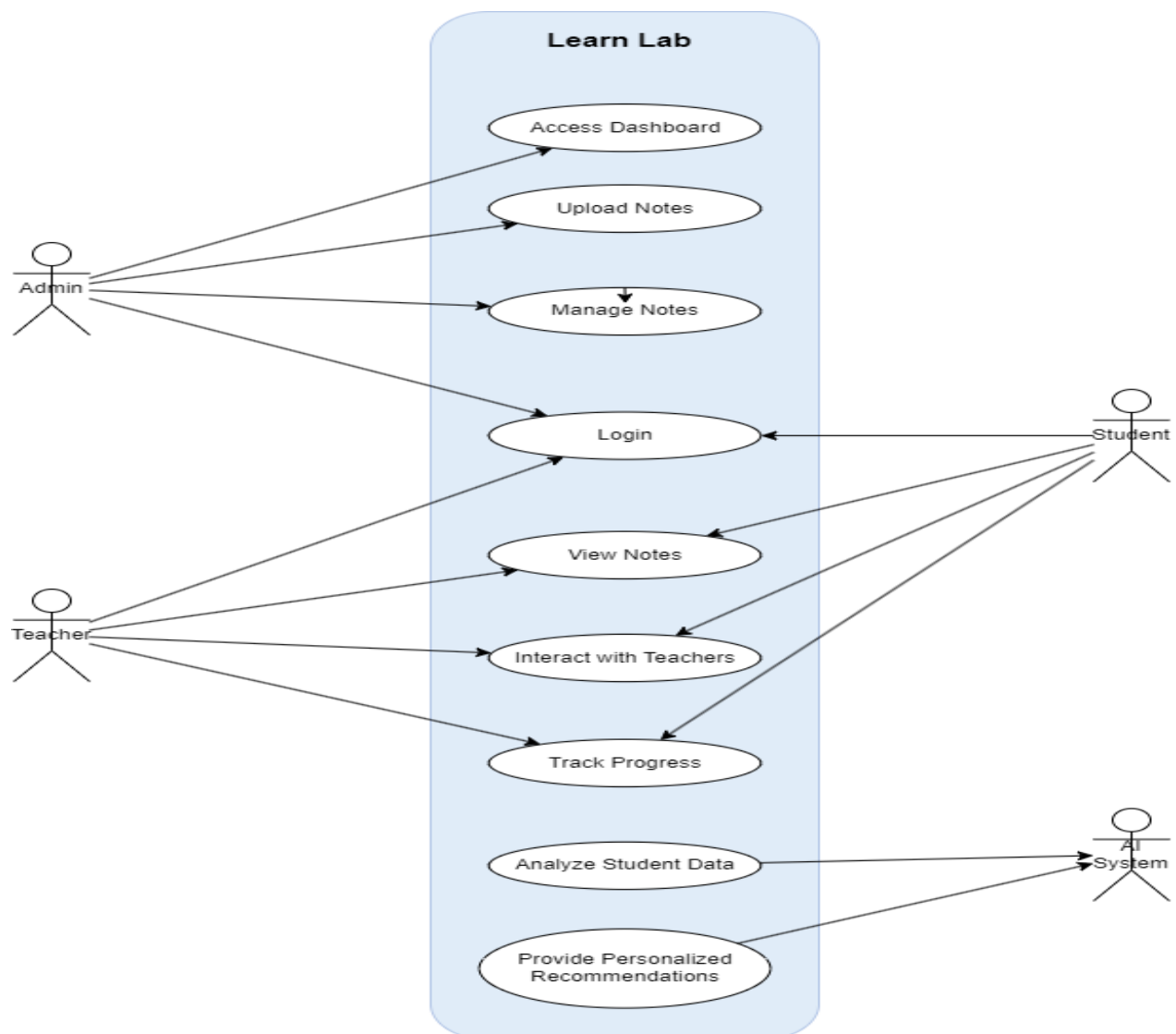

Fig – 7.4 Usecase Diagram

8. TESTING

Introduction

Software testing is a crucial process used to determine whether the software operates according to its specified requirements. It serves to verify and validate that the system meets both the functional and performance expectations. The primary goal of testing is to ensure that the software functions as intended, detecting any defects or issues before deployment. There are three key approaches to testing:

- **Testing for correctness**: Ensures the software produces the correct output for given inputs.

- **Testing for implementation efficiency**: Assesses whether the software implementation is optimized and efficient.

- **Testing for computational complexity**: Ensures the software handles complex tasks within acceptable time and resource constraints.

Test Plan

A test plan outlines the series of steps taken during various testing phases. It acts as a guide for developers and testers to ensure that all components of the system are tested comprehensively. In this project, the testing process involves both developers and independent testers to mitigate bias. The following levels of testing are applied:

- **Unit Testing**

- **Integration Testing**

- **Validation (System) Testing**

- **Output Testing (User Acceptance Testing)**

- **Automation Testing**

Unit Testing

Unit testing focuses on verifying the smallest components of the software, typically individual functions or modules. In the **Personalized Learning Platform**, this involves testing the functionality of the **Admin**, **Teacher**, and **Student** modules. Each module is tested for proper data handling, performance under boundary conditions, and error handling.

- **White-box Testing**: This method is used to check the internal workings of the system, ensuring that each component processes data correctly.

- **Boundary Testing**: Ensures that the system behaves correctly at the edge of its operational limits.

Integration Testing

Integration testing involves systematically combining the modules that have been unit-tested and checking how they interact with one another. In this project, the integration of the **Admin**, **Teacher**, and **Student** modules with the AI recommendation system is tested to identify issues in data flow, communication, and user interactions.

- **Interface Testing**: Ensures that the modules correctly transfer data between one another, and any differences in the structures are resolved.

- **Top-Down Approach**: Gradually integrates modules and tests for any mismatches between them.

Validation Testing (System Testing)

System testing, also known as **Black-box Testing**, verifies that the complete system meets all functional requirements. For the **Personalized Learning Platform**, this includes testing user authentication, data processing for personalized recommendations, and real-time feedback. The platform is tested against the specified functional requirements to detect errors such as:

- Missing or incorrect functionalities.

- Interface and data access issues.

- Performance errors related to AI-driven recommendations.

Output Testing (User Acceptance Testing)

User acceptance testing (UAT) ensures that the platform meets the needs and expectations of its users. In this stage, the platform is tested from the user's perspective, ensuring that:

- **Input Screens**: Are intuitive and user-friendly.

- **Output Screens**: Provide clear and actionable information based on student performance and teacher feedback.

Test data is prepared based on real-world scenarios, and the system is tested against this data to ensure proper functionality.

Automation Testing

This project utilizes automation testing tools to create scripted test cases for UI interactions and data flows. Automated testing is especially beneficial for running repetitive test cases across different environments, ensuring consistent performance and functionality.

- **UI Automation**: Automated scripts are used to verify the user interface's behavior, including the responsiveness of the **Admin**, **Teacher**, and **Student** modules.

- **Cross-platform Testing**: Ensures that the platform functions correctly across different devices and operating systems.

9. ADVANTAGES & DISADVANTAGES

Advantages

- **Time Efficiency**: The platform reduces the time spent on manual tasks, such as tracking student performance and providing personalized feedback, by automating these processes with AI.

- **Personalized Learning**: Students receive tailored study materials and real-time feedback based on their performance, improving their learning outcomes.

- **24/7 Availability**: The AI-driven virtual assistant provides real-time support and answers to students' academic queries at any time.

- **Improved Teacher Efficiency**: Teachers can focus more on guiding students as the platform automates routine tasks such as grading and progress tracking.

- **Scalable and Flexible**: The platform can be easily scaled to accommodate future features like mobile integration, advanced AI models, and blockchain for secure data handling.

- **Progress Tracking**: Both students and teachers can monitor academic progress over time, helping identify strengths and areas for improvement.

- **Accessible Anytime**: The platform's web-based structure ensures that students can access learning materials from anywhere, using any device.

Disadvantages

- **Initial Learning Curve**: Some users, especially those unfamiliar with digital platforms, may face challenges in adapting to the system initially.

- **Dependence on Internet Connectivity**: The platform requires a stable internet connection, which may be a limitation in areas with poor connectivity.

- **Limited Personal Interaction**: While the AI virtual assistant provides real-time responses, some students may still prefer face-to-face interactions for deeper academic support.

- **Potential Technical Glitches**: Like any web-based platform, there may be occasional technical issues or downtimes that could affect the user experience.

- **AI Limitations**: The effectiveness of AI recommendations relies on the quality of data provided by students and teachers. If data is insufficient or inaccurate, the recommendations may not be as effective.

10. RESULTS AND CONCLUSIONS

Results :

The analysis demonstrates that the **Personalized Learning Platform using Artificial Intelligence** effectively meets the needs of students, teachers, and administrators. The system provides a comprehensive and user-friendly solution for personalized learning, significantly improving the overall educational experience. Key results include:

- **Enhanced Learning Experience**: The AI-driven platform provides personalized study recommendations and real-time feedback, helping students improve their learning outcomes by addressing individual learning needs.

- **Efficient Teacher Support**: Teachers benefit from AI-generated insights, reducing the time spent on administrative tasks and allowing them to focus on providing personalized guidance to students.

- **Real-Time Data Processing**: The platform's ability to process student performance data in real-time ensures that both students and teachers have immediate access to critical information, allowing for timely interventions and improvements.

- **Scalability**: The system is scalable and can accommodate additional features and modules, such as mobile app integration and more advanced AI models, making it adaptable for future needs.

The platform was tested with sample data, and the results met all functional and performance requirements. The system performed efficiently, handling user interactions and data processing with ease, and providing accurate and relevant recommendations based on student performance.

Conclusions :

The **Personalized Learning Platform using Artificial Intelligence** is an effective, efficient, and scalable solution that addresses the limitations of traditional education systems by providing tailored learning experiences to students. The platform simplifies the process of personalized education by automating tasks such as content recommendations, performance tracking, and feedback generation, benefiting both students and teachers.

While this platform does not claim to be an ideal solution for all educational settings, it successfully meets its primary goals by providing personalized learning support, improving educational efficiency, and enhancing student engagement. Future enhancements, such as mobile integration and the use of advanced AI technologies, could further improve the system's capabilities and extend its reach.

In conclusion, the **Personalized Learning Platform** represents a significant advancement in personalized education, and its ability to evolve with the needs of users makes it a valuable tool for modern education.

11. APPENDICES

Code :

Index1.php

```
<!doctype html>
<html class="no-js" lang="zxx">
 <head>
  <title>Mangalam College of Engineering | MCA Notes Sharing System</title>
  <!-- CSS here -->
  <link rel="stylesheet" href="assets/css/bootstrap.min.css">
  <link rel="stylesheet" href="assets/css/owl.carousel.min.css">
  <link rel="stylesheet" href="assets/css/slicknav.css">
  <link rel="stylesheet" href="assets/css/flaticon.css">
  <link rel="stylesheet" href="assets/css/progressbar_barfiller.css">
  <link rel="stylesheet" href="assets/css/gijgo.css">
  <link rel="stylesheet" href="assets/css/animate.min.css">
  <link rel="stylesheet" href="assets/css/animated-headline.css">
  <link rel="stylesheet" href="assets/css/magnific-popup.css">
  <link rel="stylesheet" href="assets/css/fontawesome-all.min.css">
  <link rel="stylesheet" href="assets/css/themify-icons.css">
  <link rel="stylesheet" href="assets/css/slick.css">
  <link rel="stylesheet" href="assets/css/nice-select.css">
  <link rel="stylesheet" href="assets/css/style2.css">
 </head>
 <body> <?php
  // Enable error reporting
  ini_set('display_errors', 1);
  ini_set('display_startup_errors', 1);
  error_reporting(E_ALL);
```

```
include_once('includes/header.php');

?> <main>

  <!--? slider Area Start-->

  <section class="slider-area ">

    <div class="slider-active">

      <!-- Single Slider -->

      <div class="single-slider slider-height d-flex align-items-center">

        <div class="container">

          <div class="row">

            <div class="col-xl-6 col-lg-7 col-md-12">

              <div class="hero__caption">

                <h1 data-animation="fadeInLeft" data-delay="0.2s">MCA Notes Sharing Platform</h1>

                <p data-animation="fadeInLeft" data-delay="0.4s">Access and Share Notes for MCA Courses</p>

                <a href="https://techworldthink.github.io/MCA/" class="btn hero-btn" data-animation="fadeInLeft" data-delay="0.7s">For more</a>

              </div>

            </div>

          </div>

        </div>

      </div>

    </div>

  </section>

  <!--? Services Area -->

  <div class="services-area" style="background-color:#DC6DFF;">

    <div class="container">

      <div class="row justify-content-sm-center">

        <div class="col-lg-4 col-md-6 col-sm-8">

          <div class="single-services mb-30" style="width: 350px; height: 200px;">
```

```
        <div class="features-icon">

          <img src="assets/img/icon/icon1.svg" alt="">

        </div>

        <div class="features-caption">

          <h3>Extensive Course Material</h3>

          <p>Access a wide range of notes and resources for all MCA subjects.</p>

        </div>

      </div>

    </div>

    <div class="col-lg-4 col-md-6 col-sm-8">

      <div class="single-services mb-30" style="width: 350px; height: 200px;">

        <div class="features-icon">

          <img src="assets/img/icon/icon2.svg" alt="">

        </div>

        <div class="features-caption">

          <h3>Expert Guidance</h3>

          <p>Collaborate with instructors and fellow students for enhanced learning.</p>

        </div>

      </div>

    </div>

    <div class="col-lg-4 col-md-6 col-sm-8">

      <div class="single-services mb-30" style="width: 350px; height: 200px;">

        <div class="features-icon">

          <img src="assets/img/icon/icon3.svg" alt="">

        </div>

        <div class="features-caption">

          <h3>Life-long Learning</h3>

          <p>Join a community that promotes continuous learning and sharing.</p>

        </div>
```

```
        </div>

      </div>

    </div>

  </div>

  </div>

</main>

<!-- JS here -->

<script src="./assets/js/vendor/modernizr-3.5.0.min.js"></script>

<!-- Jquery, Popper, Bootstrap -->

<script src="./assets/js/vendor/jquery-1.12.4.min.js"></script>

<script src="./assets/js/popper.min.js"></script>

<script src="./assets/js/bootstrap.min.js"></script>

<!-- Jquery Mobile Menu -->

<script src="./assets/js/jquery.slicknav.min.js"></script>

<!-- Jquery Slick , Owl-Carousel Plugins -->

<script src="./assets/js/owl.carousel.min.js"></script>

<script src="./assets/js/slick.min.js"></script>

<!-- One Page, Animated-HeadLin -->

<script src="./assets/js/wow.min.js"></script>

<script src="./assets/js/animated.headline.js"></script>

<script src="./assets/js/jquery.magnific-popup.js"></script>

<!-- Date Picker -->

<script src="./assets/js/gijgo.min.js"></script>

<!-- Nice-select, sticky -->

<script src="./assets/js/jquery.nice-select.min.js"></script>

<script src="./assets/js/jquery.sticky.js"></script>

<!-- Progress -->

<script src="./assets/js/jquery.barfiller.js"></script>

<!-- counter , waypoint,Hover Direction -->
```

```
    <script src="./assets/js/jquery.counterup.min.js"></script>

    <script src="./assets/js/waypoints.min.js"></script>

    <script src="./assets/js/jquery.countdown.min.js"></script>

    <script src="./assets/js/hover-direction-snake.min.js"></script>

    <!-- contact js -->

    <script src="./assets/js/contact.js"></script>

    <script src="./assets/js/jquery.form.js"></script>

    <script src="./assets/js/jquery.validate.min.js"></script>

    <script src="./assets/js/mail-script.js"></script>

    <script src="./assets/js/jquery.ajaxchimp.min.js"></script>

    <!-- Jquery Plugins, main Jquery -->

    <script src="./assets/js/plugins.js"></script>

    <script src="./assets/js/main.js"></script>

  </body>

</html>
```

Notes.php

```php
<?php

session_start();

include('user/includes/dbconnection.php');


// Check if the user is logged in, if not redirect to login page

if (!isset($_SESSION['ocasuid']) || strlen($_SESSION['ocasuid']) == 0) {

    header('location:logout.php');

}


// Get role of the logged-in user (admin/teacher)

$role = $_SESSION['role'];
```

```php
// Pagination setup
if (isset($_GET['pageno'])) {

    $pageno = $_GET['pageno'];

} else {

    $pageno = 1;

}


$no_of_records_per_page = 10;

$offset = ($pageno - 1) * $no_of_records_per_page;


// Get the total number of notes

$ret = "SELECT ID FROM tblnotes";

$query1 = $dbh->prepare($ret);

$query1->execute();

$total_rows = $query1->rowCount();

$total_pages = ceil($total_rows / $no_of_records_per_page);


// Fetch notes and user details

$sql = "SELECT tblnotes.*, tbluser.FullName, tbluser.Role

    FROM tblnotes

    JOIN tbluser ON tblnotes.UserID = tbluser.ID

    LIMIT $offset, $no_of_records_per_page";

$query = $dbh->prepare($sql);

$query->execute();

$results = $query->fetchAll(PDO::FETCH_OBJ);


?>
<!doctype html>

<html lang="zxx">
```

```
<head>
  <title>Online Notes Sharing System | Notes</title>
  <!-- CSS links -->
  <link rel="stylesheet" href="assets/css/bootstrap.min.css">
  <link rel="stylesheet" href="assets/css/style2.css">
</head>
<body>
  <!-- Include the header --> <?php include_once('includes/header-notes.php'); ?>
  <!-- Main content area -->
  <main>
    <section class="slider-area slider-area2">
      <div class="slider-active">
        <div class="single-slider slider-height2">
          <div class="container">
            <div class="row">
              <div class="col-xl-8 col-lg-11 col-md-12">
                <div class="hero__caption hero__caption2">
                  <h1>Our Notes</h1>
                  <nav aria-label="breadcrumb">
                    <ol class="breadcrumb">
                      <li class="breadcrumb-item">
                        <a href="index.php">Home</a>
                      </li>
                      <li class="breadcrumb-item active" aria-current="page">Notes</li>
                    </ol>
                  </nav>
                </div>
              </div>
            </div>
```

```html
        </div>

      </div>

    </div>

  </section>

  <div class="courses-area section-padding40">

   <div class="container">

     <div class="row justify-content-center">

       <div class="col-xl-7 col-lg-8">

         <div class="section-tittle text-center mb-55">

           <h2>Our Featured Notes</h2>

         </div>

       </div>

     </div>

     <div class="row"> <?php

        if ($query->rowCount() > 0) {

          foreach ($results as $row) {

        ?> <div class="col-lg-6">

        <div class="properties properties2 mb-30">

         <div class="properties__card">

          <div class="properties__caption">

            <p> <?php echo htmlentities($row->Subject); ?> </p>

            <h3> <?php echo htmlentities($row->NotesTitle); ?> by ( <?php echo
htmlentities($row->FullName); ?>) </h3>

            <p> <?php echo htmlentities($row->NotesDecription); ?> </p>

            <!-- Files Display with Download Option -->

            <div class="properties__footer d-flex justify-content-between align-items-   cen-
ter">

              <table border="1">

                <tr>

                  <th width="200">
```

```
          <strong>File 1</strong>

        </th>

        <td colspan="3" style="text-align: center;">

         <a href="

              <?php echo ($row->Role == 'admin') ? 'admin/folder1/' :
'teacher/folder1/'; ?>

              <?php echo $row->File1; ?>" target="_blank" class="btn btn-pri-
mary">Download File </a>

         </td>

       </tr>

       <!-- File 2 --> <?php if ($row->File2 == "") { ?> <tr>

        <th width="200">

          <strong>File 2</strong>

        </th>

        <td colspan="3" style="text-align: center;">

          <strong style="color: red">File not available</strong>

        </td>

       </tr> <?php } else { ?> <tr>

        <th width="200">

          <strong>File 2</strong>

        </th>

        <td colspan="3" style="text-align: center;">

         <a href="
  <?php echo ($row->Role == 'admin') ? 'admin/folder2/' : 'teacher/folder2/'; ?>
  <?php echo $row->File2; ?>" target="_blank" class="btn btn-primary">Download File </a>

         </td>

       </tr> <?php } ?>

       <!-- File 3 --> <?php if ($row->File3 == "") { ?> <tr>
```

```
                    <th width="200">

                      <strong>File 3</strong>

                    </th>

                    <td colspan="3" style="text-align: center;">

                      <strong style="color: red">File not available</strong>

                    </td>

                  </tr> <?php } else { ?> <tr>

                    <th width="200">

                      <strong>File 3</strong>

                    </th>

                    <td colspan="3" style="text-align: center;">

                      <a href="

                            <?php echo ($row->Role == 'admin') ? 'admin/folder3/' :
'teacher/folder3/'; ?>

                            <?php echo $row->File3; ?>" target="_blank" class="btn btn-pri-
mary">Download File </a>

                    </td>

                  </tr> <?php } ?>

                  <!-- File 4 --> <?php if ($row->File4 == "") { ?> <tr>

                    <th width="200">

                      <strong>File 4</strong>

                    </th>

                    <td colspan="3" style="text-align: center;">

                      <strong style="color: red">File not available</strong>

                    </td>

                  </tr> <?php } else { ?> <tr>

                    <th width="200">

                      <strong>File 4</strong>
```

```
            </th>
            <td colspan="3" style="text-align: center;">
             <a href="
```

```php
<?php echo ($row->Role == 'admin') ? 'admin/folder4/' :
'teacher/folder4/'; ?>
```

```php
<?php echo $row->File4; ?>" target="_blank" class="btn btn-pri-
mary">Download File </a>
```

```
            </td>
          </tr> <?php } ?>
         </table>
        </div>
       </div>
      </div>
     </div>
    </div> <?php } } else { echo '
```

```
                                        <p>No notes found.</p>'; } ?> </div>
```

```
    <!-- Pagination -->
    <div align="left">
     <ul class="pagination">
      <li>
       <a href="?pageno=1">
        <strong>First</strong>
       </a>
      </li>
      <li class="
```

```php
                                        <?php if ($pageno <= 1) { echo
'disabled'; } ?>">
```

```
       <a href="
```

```php
    <?php if ($pageno > 1) { echo "?pageno=" . ($pageno - 1); } ?>">
```

```
          <strong>Prev</strong>

        </a>

      </li>

      <li class="

    <?php if ($pageno >= $total_pages) { echo 'disabled'; } ?>">

        <a href="

    <?php if ($pageno < $total_pages) { echo "?pageno=" . ($pageno + 1); } ?>">

          <strong>Next</strong>

        </a>

      </li>

      <li>

        <a href="?pageno=

    <?php echo $total_pages; ?>">

          <strong>Last</strong>

        </a>

      </li>

    </ul>

  </div>

  </div>

  </div>

  </main>

  <!-- Include the footer --> <?php include_once('includes/footer.php'); ?>

  <!-- JS scripts -->

  <script src="assets/js/vendor/jquery-1.12.4.min.js"></script>

  <script src="assets/js/bootstrap.min.js"></script>

  <script src="assets/js/main.js"></script>

 </body>

</html>
```

Test_db.php

```php
<?php
include('admin/includes/dbconnection.php'); // Include the PDO connection

// Test if the connection is successful
if ($dbh) {
    echo "Database connection successful!";
} else {
    echo "Database connection failed!";
}

// Close the connection (optional, PDO will handle it automatically)
$dbh = null;
?>
```

Admin_dashboard.php

```php
<?php
session_start();
error_reporting(E_ALL);
ini_set('display_errors', 1);
include('../includes/dbconnection.php');

// Check if the admin is logged in
if (!isset($_SESSION['ocasuid']) || $_SESSION['role'] !== 'admin') {
    header('location:logout.php');
    exit();
}
```

```
else {

?>

<!DOCTYPE html>

<html lang="en">

 <head>

  <title>Admin Panel</title>

  <!-- Google Web Fonts -->

  <link rel="preconnect" href="https://fonts.googleapis.com">

  <link rel="preconnect" href="https://fonts.gstatic.com" crossorigin>

  <link href="https://fonts.googleapis.com/css2?family=Heebo:wght@400;500;600;700&display=swap" rel="stylesheet">

  <!-- Icon Font Stylesheet -->

  <link href="https://cdnjs.cloudflare.com/ajax/libs/font-awesome/5.10.0/css/all.min.css" rel="stylesheet">

  <link href="https://cdn.jsdelivr.net/npm/bootstrap-icons@1.4.1/font/bootstrap-icons.css" rel="stylesheet">

  <!-- Libraries Stylesheet -->

  <link href="lib/owlcarousel/assets/owl.carousel.min.css" rel="stylesheet">

  <link href="lib/tempusdominus/css/tempusdominus-bootstrap-4.min.css" rel="stylesheet" />

  <!-- Customized Bootstrap Stylesheet -->

  <link href="css/bootstrap.min.css" rel="stylesheet">

  <!-- Template Stylesheet -->

  <link href="css/style.css" rel="stylesheet">

 </head>

 <body>

  <div class="container-fluid position-relative bg-white d-flex p-0"> <?php include_once('includes/sidebar.php');?>

    <!-- Content Start -->

    <div class="content"> <?php include_once('includes/header.php');?>

      <!-- Recent Sales Start -->
```

```
    <div class="container-fluid pt-4 px-4">

      <div class="bg-light text-center rounded p-4">

        <div class="d-flex align-items-center justify-content-between mb-4"> <?php
$uid=$_SESSION['ocasuid'];

$sql="SELECT * from  tbluser where ID=:uid";

$query = $dbh -> prepare($sql);

$query->bindParam(':uid',$uid,PDO::PARAM_STR);

$query->execute();

$results=$query->fetchAll(PDO::FETCH_OBJ);

$cnt=1;

if($query->rowCount() > 0)

{

foreach($results as $row)

{          ?> <h1>Hello , <?php  echo $row->FullName;?> <span></span>

       </h1> <?php $cnt=$cnt+1;}} ?> </div>

      </div>

    </div>

    <!-- Recent Sales End -->

    <div class="container-fluid pt-4 px-4">

      <div class="row g-8">

        <div class="col-sm-6 col-xl-4">

        <div class="bg-light rounded d-flex align-items-center justify-content-between p-4">

          <i class="fa fa-file fa-6x text-primary"></i>

          <div class="ms-3">

            <p class="mb-2">Total Uploaded Subject Notes</p> <?php

                 $uid=$_SESSION['ocasuid'];

$sql1 ="SELECT * from  tblnotes where UserID=:uid";

$query1 = $dbh -> prepare($sql1);

$query1->bindParam(':uid',$uid,PDO::PARAM_STR);
```

```php
$query1->execute();

$results1=$query1->fetchAll(PDO::FETCH_OBJ);

$totnotes=$query1->rowCount();

?> <h4 style="color: blue"> <?php echo htmlentities($totnotes);?> </h4>

        <a href="../notes.php">

          <h5>View Detail</h5>

        </a>

      </div>

    </div>

  </div>

  <div class="col-sm-6 col-xl-4">

    <div class="bg-light rounded d-flex align-items-center justify-content-between p-4">

      <i class="fa fa-file fa-6x text-primary"></i>

      <div class="ms-3">

        <p class="mb-2">Total Uploaded Notes File</p> <?php

            $uid=$_SESSION['ocasuid'];

$sql1 ="SELECT

COUNT(IF(File1!= '',0,NULL)) as file,

COUNT(IF(File2!= '',0,NULL)) as file2,

COUNT(IF(File3!= '',0,NULL)) as file3,

COUNT(IF(File4!= '',0,NULL)) as file4

from  tblnotes where UserID=:uid";

$query1 = $dbh -> prepare($sql1);

$query1->bindParam(':uid',$uid,PDO::PARAM_STR);

$query1->execute();

$results1=$query1->fetchAll(PDO::FETCH_OBJ);

foreach($results1 as $rows)

{
```

```php
    $totalfiles=$rows->file+$rows->file2+$rows->file3+$rows->file4;

}

?> <h4 style="color: blue"> <?php echo htmlentities($totalfiles);?> </h4>

            <a href="manage-notes.php">

              <h5>View Detail</h5>

            </a>

          </div>

        </div>

      </div>

    </div>

    </div> <?php include_once('includes/footer.php');?>

  </div>

   <!-- Content End --> <?php include_once('includes/back-totop.php');?>

  </div>

  <!-- JavaScript Libraries -->

  <script src="https://code.jquery.com/jquery-3.4.1.min.js"></script>

  <script src="https://cdn.jsdelivr.net/npm/bootstrap@5.0.0/dist/js/bootstrap.bun-
dle.min.js"></script>

  <script src="lib/chart/chart.min.js"></script>

  <script src="lib/easing/easing.min.js"></script>

  <script src="lib/waypoints/waypoints.min.js"></script>

  <script src="lib/owlcarousel/owl.carousel.min.js"></script>

  <script src="lib/tempusdominus/js/moment.min.js"></script>

  <script src="lib/tempusdominus/js/moment-timezone.min.js"></script>

  <script src="lib/tempusdominus/js/tempusdominus-bootstrap-4.min.js"></script>

  <!-- Template Javascript -->

  <script src="js/main.js"></script>

 </body>

</html> <?php } ?>
```

Teacher_dashboard.php

```php
<?php
session_start();
error_reporting(E_ALL);
ini_set('display_errors', 1);
include('../includes/dbconnection.php');


// Check if the teacher is logged in
if (!isset($_SESSION['ocasuid']) || $_SESSION['role'] !== 'teacher') {
    header('location:teacher_logout.php');
    exit();
}
else {
?>
<!DOCTYPE html>
<html lang="en">
  <head>
    <title>Teacher Dashboard</title>
    <!-- Google Web Fonts -->
    <link rel="preconnect" href="https://fonts.googleapis.com">
    <link rel="preconnect" href="https://fonts.gstatic.com" crossorigin>
    <link href="https://fonts.googleapis.com/css2?family=Heebo:wght@400;500;600;700&display=swap" rel="stylesheet">
    <!-- Icon Font Stylesheet -->
    <link href="https://cdnjs.cloudflare.com/ajax/libs/font-awesome/5.10.0/css/all.min.css" rel="stylesheet">
    <link href="https://cdn.jsdelivr.net/npm/bootstrap-icons@1.4.1/font/bootstrap-icons.css" rel="stylesheet">
    <!-- Libraries Stylesheet -->
    <link href="lib/owlcarousel/assets/owl.carousel.min.css" rel="stylesheet">
```

```
    <link href="lib/tempusdominus/css/tempusdominus-bootstrap-4.min.css" rel="stylesheet"
/>

    <!-- Customized Bootstrap Stylesheet -->

    <link href="css/bootstrap.min.css" rel="stylesheet">

    <!-- Template Stylesheet -->

    <link href="css/style.css" rel="stylesheet">

  </head>

  <body>

    <div class="container-fluid position-relative bg-white d-flex p-0"> <?php in-
clude_once('includes/sidebar.php'); ?>

      <!-- Content Start -->

      <div class="content"> <?php include_once('includes/header.php'); ?>

        <!-- Recent Sales Start -->

        <div class="container-fluid pt-4 px-4">

          <div class="bg-light text-center rounded p-4">

            <div class="d-flex align-items-center justify-content-between mb-4"> <?php
$teacherid = $_SESSION['ocasuid'];

$sql = "SELECT * from tbluser where ID=:teacherid";

$query = $dbh->prepare($sql);

$query->bindParam(':teacherid', $teacherid, PDO::PARAM_STR);

$query->execute();

$results = $query->fetchAll(PDO::FETCH_OBJ);

$cnt = 1;

if($query->rowCount() > 0)

{

foreach($results as $row)

{          ?> <h1>Hello, <?php  echo $row->FullName;?> <span></span>

        </h1> <?php $cnt = $cnt + 1; } } ?> </div>

          </div>

        </div>
```

```
<!-- Recent Sales End -->

<!-- Teacher Dashboard Content -->

<div class="container-fluid pt-4 px-4">

  <div class="row g-8">

    <div class="col-sm-6 col-xl-4">

      <div class="bg-light rounded d-flex align-items-center justify-content-between p-4">

        <i class="fa fa-file fa-6x text-primary"></i>

        <div class="ms-3">

          <p class="mb-2">Total Uploaded Subject Notes</p> <?php

                $teacherid = $_SESSION['ocasuid'];

$sql1 = "SELECT * from tblnotes where UserID=:teacherid";

$query1 = $dbh->prepare($sql1);

$query1->bindParam(':teacherid', $teacherid, PDO::PARAM_STR);

$query1->execute();

$totnotes = $query1->rowCount();

?> <h4 style="color: blue"> <?php echo htmlentities($totnotes);?> </h4>

          <a href="../notes.php">

            <h5>View Uploaded Notes</h5>

          </a>

        </div>

      </div>

    </div>

    <div class="col-sm-6 col-xl-4">

      <div class="bg-light rounded d-flex align-items-center justify-content-between p-4">

        <i class="fa fa-file fa-6x text-primary"></i>

        <div class="ms-3">

          <p class="mb-2">Manage Uploaded Notes Files</p> <?php

$sql1 = "SELECT
```

```php
COUNT(IF(File1!= '',0,NULL)) as file,

COUNT(IF(File2!= '',0,NULL)) as file2,

COUNT(IF(File3!= '',0,NULL)) as file3,

COUNT(IF(File4!= '',0,NULL)) as file4

from tblnotes where UserID=:teacherid";

$query1 = $dbh->prepare($sql1);

$query1->bindParam(':teacherid', $teacherid, PDO::PARAM_STR);

$query1->execute();

$results1 = $query1->fetchAll(PDO::FETCH_OBJ);

foreach($results1 as $rows)

{

   $totalfiles = $rows->file + $rows->file2 + $rows->file3 + $rows->file4;

}

?> <h4 style="color: blue"> <?php echo htmlentities($totalfiles);?> </h4>

            <a href="manage-notes.php">

             <h5>View Detail</h5>

            </a>

          </div>

        </div>

       </div>

     </div>

    </div> <?php include_once('includes/footer.php'); ?>

   </div>

   <!-- Content End --> <?php include_once('includes/back-totop.php'); ?>

  </div>

  <!-- JavaScript Libraries -->

  <script src="https://code.jquery.com/jquery-3.4.1.min.js"></script>

  <script src="https://cdn.jsdelivr.net/npm/bootstrap@5.0.0/dist/js/bootstrap.bun-
dle.min.js"></script>
```

```
<script src="lib/chart/chart.min.js"></script>

<script src="lib/easing/easing.min.js"></script>

<script src="lib/waypoints/waypoints.min.js"></script>

<script src="lib/owlcarousel/owl.carousel.min.js"></script>

<script src="lib/tempusdominus/js/moment.min.js"></script>

<script src="lib/tempusdominus/js/moment-timezone.min.js"></script>

<script src="lib/tempusdominus/js/tempusdominus-bootstrap-4.min.js"></script>

<!-- Template Javascript -->

<script src="js/main.js"></script>

</body>
</html> <?php } ?>
```

Profile.php

```php
<?php
session_start();
error_reporting(0);
include('includes/dbconnection.php');
if (strlen($_SESSION['ocasuid']==0)) {
 header('location:logout.php');
 } else{
   if(isset($_POST['submit']))
 {
  $uid=$_SESSION['ocasuid'];


  $fname=$_POST['name'];
 $mobno=$_POST['mobilenumber'];
 $email=$_POST['email'];
 $sql="update tbluser set FullName=:name,MobileNumber=:mobilenumber,Email=:email
where ID=:uid";
```

```php
    $query = $dbh->prepare($sql);

    $query->bindParam(':name',$fname,PDO::PARAM_STR);

    $query->bindParam(':email',$email,PDO::PARAM_STR);


    $query->bindParam(':mobilenumber',$mobno,PDO::PARAM_STR);

    $query->bindParam(':uid',$uid,PDO::PARAM_STR);
$query->execute();


    echo '
<script>alert("Profile has been updated")</script>';



  }
  ?>
```

```html
<!DOCTYPE html>
<html lang="en">
  <head>
    <title>User Profile</title>
    <link rel="preconnect" href="https://fonts.googleapis.com">
    <link rel="preconnect" href="https://fonts.gstatic.com" crossorigin>
    <link href="https://fonts.googleapis.com/css2?family=Heebo:wght@400;500;600;700&display=swap" rel="stylesheet">
    <!-- Icon Font Stylesheet -->
    <link href="https://cdnjs.cloudflare.com/ajax/libs/font-awesome/5.10.0/css/all.min.css" rel="stylesheet">
    <link href="https://cdn.jsdelivr.net/npm/bootstrap-icons@1.4.1/font/bootstrap-icons.css" rel="stylesheet">
    <!-- Libraries Stylesheet -->
    <link href="lib/owlcarousel/assets/owl.carousel.min.css" rel="stylesheet">
```

```
    <link href="lib/tempusdominus/css/tempusdominus-bootstrap-4.min.css" rel="stylesheet"
/>

    <!-- Customized Bootstrap Stylesheet -->

    <link href="css/bootstrap.min.css" rel="stylesheet">

    <!-- Template Stylesheet -->

    <link href="css/style.css" rel="stylesheet">

  </head>

  <body>

    <div class="container-fluid position-relative bg-white d-flex p-0"> <?php in-
clude_once('includes/sidebar.php');?>

      <!-- Content Start -->

      <div class="content"> <?php include_once('includes/header.php');?>

        <!-- Form Start -->

        <div class="container-fluid pt-4 px-4">

          <div class="row g-4">

            <div class="col-sm-12 col-xl-6">

              <div class="bg-light rounded h-100 p-4">

                <h6 class="mb-4">User Profile</h6>

                <form method="post"> <?php

$uid=$_SESSION['ocasuid'];

$sql="SELECT * from tbluser where ID=:uid";

$query = $dbh -> prepare($sql);

$query->bindParam(':uid',$uid,PDO::PARAM_STR);

$query->execute();

$results=$query->fetchAll(PDO::FETCH_OBJ);

$cnt=1;

if($query->rowCount() > 0)

{

foreach($results as $row)

{           ?> <div class="mb-3">
```

```html
    <label for="exampleInputEmail1" class="form-label">Full Name</label>
  <input type="text" class="form-control" name="name" value="
 <?php  echo $row->FullName;?>" required='true'>
            </div>
            <div class="mb-3">
              <label for="exampleInputPassword1" class="form-label">Email</label>
              <input type="email" class="form-control" name="email" value="

            <?php  echo $row->Email;?>" required='true'>
            </div>
            <div class="mb-3">
              <label for="exampleInputPassword1" class="form-label">Contact Number</label>
              <input type="text" class="form-control" name="mobilenumber" value="


                                              <?php  echo $row->MobileNumber;?>" required='true' maxlength='10' readonly>
            </div>
            <div class="mb-3">
              <label for="exampleInputPassword1" class="form-label">Registration Date</label>
              <input type="text" class="form-control" id="email2" name="" value="


                                              <?php  echo $row->RegDate;?>" readonly="true">
            </div> <?php $cnt=$cnt+1;}} ?> <button type="submit" name="submit" class="btn btn-primary">Update</button>
        </form>
      </div>
    </div>
   </div>
   </div>
```

```
    <!-- Form End --> <?php include_once('includes/footer.php');?>

    </div>

    <!-- Content End --> <?php include_once('includes/back-totop.php');?>

    </div>

    <!-- JavaScript Libraries -->

    <script src="https://code.jquery.com/jquery-3.4.1.min.js"></script>

    <script src="https://cdn.jsdelivr.net/npm/bootstrap@5.0.0/dist/js/bootstrap.bun-
dle.min.js"></script>

    <script src="lib/chart/chart.min.js"></script>

    <script src="lib/easing/easing.min.js"></script>

    <script src="lib/waypoints/waypoints.min.js"></script>

    <script src="lib/owlcarousel/owl.carousel.min.js"></script>

    <script src="lib/tempusdominus/js/moment.min.js"></script>

    <script src="lib/tempusdominus/js/moment-timezone.min.js"></script>

    <script src="lib/tempusdominus/js/tempusdominus-bootstrap-4.min.js"></script>

    <!-- Template Javascript -->

    <script src="js/main.js"></script>

 </body>

</html> <?php } ?>
```

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