A Bank of Syllabus Resources Using HTML

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Abstract

The traditional methods of managing syllabus materials in educational institutions often lead to inefficiencies, security risks, and difficulty in access. To address these challenges, this project introduces an innovative platform called **"A Bank of Syllabus Resources."** This system is built to provide a secure, role-based access model, ensuring that users interact with content according to their assigned privileges.

Security is a top priority, with OTP-based authentication enhancing protection during login and registration. Additionally, the platform streamlines content approval, making it easier for administrators to oversee and verify educational resources. The system is developed using **Flask, MySQL, and Python**, ensuring reliability and scalability.

Through this platform, students can conveniently browse and download syllabus-related materials, teachers can contribute resources, and administrators can efficiently manage content approvals. This paper elaborates on the platform's structure, functionality, and effectiveness based on testing results. The findings indicate that the system significantly enhances the management and distribution of educational resources, making it a highly practical tool for academic institutions.

1. Introduction

Organizing and sharing syllabus resources in educational institutions is often cumbersome. Traditional methods, such as handing out physical copies or relying on unstructured digital folders, frequently lead to disorganization, security concerns, and restricted access. As schools transition towards digital solutions, it is crucial to adopt a system that prioritizes **security, efficiency, and ease of use[1-28]**.

This project presents **"A Bank of Syllabus Resources,"** a web-based platform specifically designed to simplify syllabus management for students, educators, and administrative staff. The system ensures **role-based access control**, where each user group has tailored

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permissions, reducing unauthorized access risks. Furthermore, **OTP-based authentication** enhances account security, preventing unauthorized logins.

Built using **Flask (backend), MySQL (database), and HTML/CSS/JavaScript (frontend)**, the platform offers a **scalable** and **user-friendly** experience. The key objectives of this system are:

1. Establishing a **centralized** hub for syllabus resources
2. Implementing **OTP authentication** for enhanced security
3. Streamlining content approval with an efficient **workflow**
4. Evaluating the platform's usability and effectiveness

2. Literature Survey

Many existing educational resource management systems lack **key functionalities**, such as **strong security protocols, scalability, and role-based access control**. Some platforms focus on digital repositories but **fail to implement secure user authentication**. Others offer access control mechanisms but lack **a structured content approval process**, leading to inconsistencies in resource quality.

Additionally, conventional file-sharing platforms struggle with **handling large datasets securely**, often failing to prevent **unauthorized access**. Research indicates that such inefficiencies hinder the **adoption of digital educational tools**.

To address these gaps, our project integrates:

1. **OTP-based authentication** for secure logins
2. **Role-based access control** to define user permissions
3. **A structured content approval workflow**, ensuring verified resources for students

By leveraging **Flask and MySQL**, we have developed a system that is **scalable, secure, and user-centric**.

1 Web-Based Carrier Portal for Efficient Study – 2024

2 E-learning service provided at school level - 2019

3 A methodology for E-Quiz Content Production for E-learning - 2011

3. System Design and Architecture

The **Bank of Syllabus Resources** platform consists of three fundamental components:

1. **Frontend** – Built with HTML, CSS, and JavaScript, ensuring a seamless user experience.

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2. **Backend** – Developed using Flask, handling authentication, file uploads, and data processing.
3. **Database** – Managed through MySQL, storing user data, uploaded resources, and access logs.

Key Functionalities:

1. **User Authentication**: Uses OTP verification during sign-up to enhance security.
2. **Role-Based Access Control**: Users are categorized into **students, faculty, and administrators**, each with specific permissions.
3. **File Management**: Faculty members upload syllabus materials, pending admin approval before students can access them.
4. **Activity Logs**: The system records user activities, including logins, uploads, and downloads, for auditing.

4. Implementation

The platform was developed using:

1. **Flask** (backend)
2. **MySQL** (database)
3. **HTML, CSS, JavaScript** (frontend)

Core Features:

1. **OTP Generation and Verification**: Using the pyotp library, OTPs are sent via email using smtplib.
2. **File Storage and Retrieval**: Uploaded files are stored securely in designated server folders, with database records for easy access.
3. **User Roles and Permissions**: Stored in the users table to ensure access control.
4. **Database Structure**:
    a. users table: Manages user information and roles.
    b. resources table: Stores uploaded syllabus materials.
    c. activity_logs table: Tracks platform interactions.

5. Conclusion

This paper introduces an effective solution for organizing educational resources: **"A Bank of Syllabus Resources."** The system focuses on **security**, **efficiency**, and **user-friendliness**, addressing the shortcomings of outdated resource management methods. By incorporating **OTP-based authentication**, **role-based access**, and **content approval workflows**, the platform ensures a secure and streamlined experience.

The project demonstrates the **potential for scalability**, with future enhancements including:

1. **Mobile app integration** for increased accessibility

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2. **AI-powered recommendations** for resource suggestions
3. **A refined UI/UX** to improve user interaction

This platform is a **promising step forward** in revolutionizing syllabus resource management within educational institutions.

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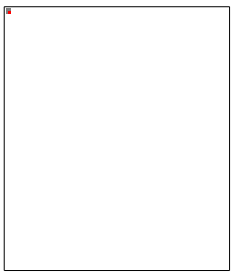
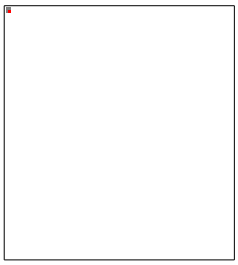


I'm A.Abhinaya. I am currently in my 7th semester of Computer Science in the Bachelor's Degree at Balaji Institute of Technology and Science. My research interest is done based on **"A Bank of Syllabus Resources"**



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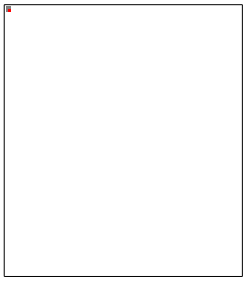

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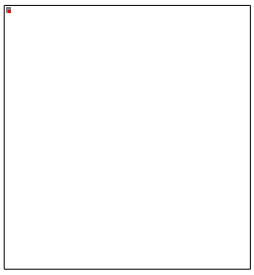

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