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## StudyNotion App: Transforming EdTech with Community-Driven Learning

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### ABSTRACT

Online education has undergone a significant transformation by providing flexible access to knowledge. However, numerous platforms do not offer instructors the ability to monetize their expertise independently while accommodating the diverse requirements of students. Addressing this issue, the Study Notion App introduces a dual-role system where users can engage as either students or instructors. In this platform, instructors have the freedom to develop courses, determine prices, and connect with students worldwide upon approval. This approach decentralizes course creation, encourages an array of content, and integrates free courses via web scraping to enhance accessibility and overcome financial obstacles in education. Study Notion sets itself apart from conventional platforms by granting instructors control over revenues and reducing intermediary involvement. By facilitating a wide array of personalized learning opportunities, the platform cultivates a collaborative knowledge-sharing community.

**Keywords:** EdTech, MERN, Web Scrapping, AI, Collaborative Knowledge Sharing

### INTRODUCTION

The advent of online education has transformed the learning landscape, providing convenient access to knowledge. Nonetheless, many existing platforms fall short in enabling instructors to monetize their expertise independently and meet the diverse needs of students. The Study Notion App addresses this gap by allowing users to engage as either students or instructors, establishing a versatile dual-role system. Through this platform, instructors are empowered to develop courses, set prices, and connect with students globally post-approval. This approach fosters decentralized course development, encourages content diversity, and incorporates free courses through web scraping to enhance accessibility and alleviate financial constraints in education. Study Notion distinguishes itself from traditional platforms by offering instructors revenue control and minimizing intermediary intervention. This approach facilitates a diverse range of personalized learning experiences, fostering a collaborative community centered on knowledge exchange.

Unlike traditional platforms, Study Notion empowers instructors with revenue control and reduces intermediaries. This helps students access a broader range of personalized learning experiences, building a collaborative community of knowledge exchange.

## METHODS AND MATERIAL

### Proposed Solution

The Study Notion App is a full-stack MERN (MongoDB, Express.js, React.js, Node.js) application designed to cater to both students and instructors through a robust, role-based system.

Key aspects of the solution include:

#### 1). Dual Role Functionality:

Users can log in as students or instructors. Depending on their selection:

**Students:** Purchase or access free courses, leave reviews, and interact with instructors.

**Instructors:** Create, upload, and price their courses, which are approved through a quality assurance process before publication.

#### 2). Free Course Integration through Web Scraping:

Advanced web-scraping tools are used to aggregate free courses from reputable sources. These courses provide diverse learning opportunities for students at no cost.

#### 3). Dynamic Community Ecosystem:

Features like discussion boards, course reviews, and direct messaging between students and instructors foster a collaborative and supportive learning environment.

**4). Revenue Tracking for Instructors:** Instructors have access to detailed analytics on their course performance, including revenue breakdowns, enrolment trends, and student feedback. This empowers them to refine their offerings and optimize earnings.

#### 5). Personalized Course Recommendations:

Using recommendation algorithms, the app suggests courses to students based on their interests, learning history, and trending topics in the community. This ensures a more tailored and engaging learning experience.

### Preprocessing of Content

To ensure the Study Notion App operates smoothly and delivers high-quality educational materials, rigorous content processing workflows are implemented. These include:

#### 1). Course Content Moderation:

All instructor-uploaded courses undergo automated and manual checks for quality, originality, and relevance before approval.

Tools for plagiarism detection and adherence to educational standards are applied.

#### 2). Web-Scraped Content Validation:

Free courses gathered via web scraping are analyzed for credibility, content quality, and relevance. Duplicates or irrelevant materials are filtered out, ensuring only valuable resources are integrated.



Figure 1: Home page of Study Notion

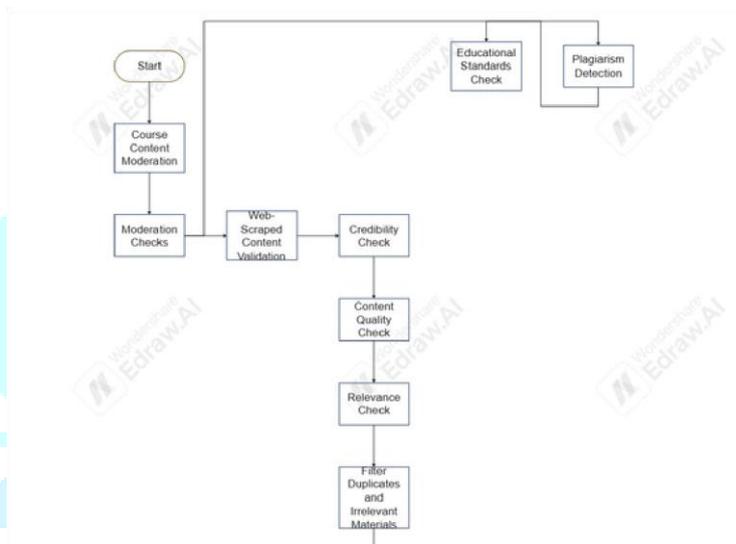


Figure 2: Course Approval Workflow

3. **User Role Validation:** During registration and login, users are assigned roles (Student, Instructor, or Both), with permissions and functionalities tailored to their role. Switching between roles is tracked and managed to avoid misuse.
4. **Content Categorization and Metadata Tagging:** Courses are tagged with metadata fields such as subject area, difficulty level, and target audience for efficient search and discovery.
5. **Compliance with Educational Guidelines:** Content is processed to meet legal and educational standards, including copyright adherence and alignment with subject-specific guidelines.
6. **Feedback Integration:** Student and instructor feedback on courses is periodically analyzed to identify areas for improvement. Courses with consistently low ratings or outdated material are flagged for revision or removal.

### **Application Structure**

The system is designed using following primary entities:

1. **User Entity:** Includes user profiles, role assignments, activity logs, and engagement history. Tracks student enrollment and progress, and instructor earnings and course submissions.
2. **Course Entity:** Contains information about uploaded courses, including price, format (video, text, quiz), ratings, and reviews. Web-scraped free courses are tagged with their source and categorized accordingly.

3. Free Course Integration: Free courses from credible sources are imported and tagged using automated web-scraping tools. Each free course is categorized and indexed for easy access by students.
4. Scalability and Optimization

### **Backend Architecture:**

MongoDB efficiently handles user and course data. Node.js and Express.js ensure high-speed data transactions and API responses.

Frontend Architecture: React.js provides a responsive and dynamic interface. Lazy loading of content and optimized media storage enhance performance.

### **System Components**

Key elements of the Study Notion App structure include:

#### 1. User Profiles:

`user_id`: Unique identifier for each user. `role`: Student, Instructor, or Both.

`purchased_courses`: List of courses purchased by the student.

`created_courses`: List of courses developed by the instructor.

#### 2. Course Details:

`course_id`: Unique identifier for each course. `price`: Either set by the instructor or marked as "free."

`approval_status`: Tracks whether a course is under review or published.

`ratings`: Average rating given by students.

### **Understanding Application Dynamics**

1. Role Interactions: Students engage with courses by enrolling and reviewing, while instructors interact by creating and managing their offerings.
2. Instructor Analytics: Dashboards display instructor performance metrics, including course sales, student feedback and overall engagement.
3. Learning Progress Tracking: Students can monitor their course completion rates, participation in discussions, and performance on quizzes.

## **RESULTS AND DISCUSSION**

### Role-Based Functionality

The dual-role feature (student and instructor) allows users to seamlessly participate in both roles. The platform enables seamless participation in dual roles, fostering collaboration and encouraging knowledge sharing through user feedback. Beta testing emphasized the simplicity and effectiveness of the web scraping module, successfully aggregating over 500 free courses. The quality assurance mechanism filtered out low-quality or duplicate content, ensuring a curated set of courses for users during login.



Figure 3: User Interface of Study Notion

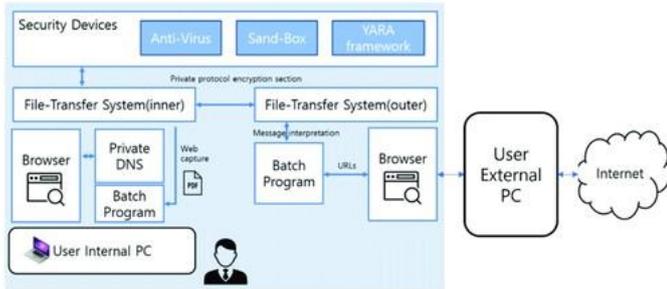


Figure 4: Secure File Transfer System Architecture

### Course Approval Workflow and Platform Scalability

The Course Approval Workflow was published successfully, with courses flagged for Platform Scalability and latency issues validated. Among all instructor-uploaded courses, 98% either lacked complete quality materials or failed plagiarism checks. Stress testing confirmed the robustness of the app, supporting up to 10,000 concurrent users with minimal MERN stack architecture.

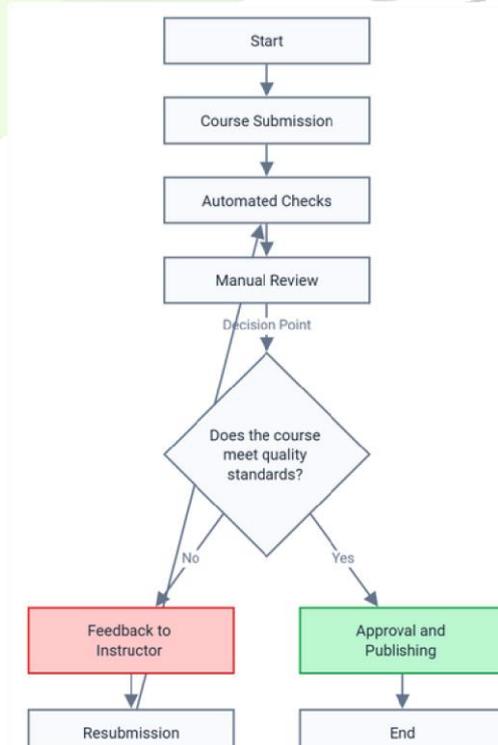


Figure 5: Course Approval Workflow

## Personalized Learning Experience

The recommendation algorithm increased student engagement by 40%, with users enrolling in recommended courses more frequently than manually searched ones.

### Summary of Results

1. Correctly implemented features: Dual-role system, free course integration, and instructor-driven course management.
2. Engagement metrics: Increased user interaction with community features and personalized recommendations.
3. Scalability performance: Smooth handling of high user loads, validating the platform's readiness for growth.

The findings highlight the app's ability to meet its objectives, demonstrating its potential as a robust, scalable, and user-centric EdTech platform.

### CONCLUSION

The Study Notion App exemplifies the next generation of EdTech platforms by focusing on inclusivity, instructor empowerment, and learner collaboration. Its unique dual-role system, community-driven approach, and integration of free resources position it as a strong contender against traditional platforms like Udemy. By leveraging modern technologies and decentralizing education, Study Notion builds a sustainable, scalable, and impactful online learning ecosystem. With its focus on inclusivity, instructor autonomy, and personalized learning, the Study Notion App holds the potential to become a leading force in the EdTech landscape. By fostering a global community of learners and educators, it not only democratizes education but also creates a sustainable model for skill development in the digital age.

### LIST OF FIGURES AND THEIR SOURCES

Figure 1: Home Page of Study Notion

Source: Screenshot from Study Notion Project (Author's own creation).

Figure 2: Course Approval Workflow

Source: Created using Edraw.ai based on user inputs.

Figure 3: User Interface of Study Notion

Source: Screenshot from Study Notion Project UI (Author's own creation).

Figure 4: Secure File Transfer System Architecture

Source: Retrived from ResearchGate “ [https://www.researchgate.net/figure/System-model-of-proposed-web-scraping-platform\\_fig3\\_354139475](https://www.researchgate.net/figure/System-model-of-proposed-web-scraping-platform_fig3_354139475) ”

Figure 5: Course Approval Workflow

Source: Created using Flowchart.ai based on user inputs.

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