Development of a Secure and Efficient Online Fee-Connect System for Educational Institutions

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Abstract - : In today's advanced age, manual charge installment frameworks are progressively getting to be out of date due to wasteful aspects and security concerns. This paper presents the plan and execution of a Web Charge Installment Framework custom-made for instructive educate. The framework permits understudies to pay their expenses carefully through UPI-based stages such as Google Pay and PhonePe, advertising real-time installment following and robotized receipt era. Built utilizing progresses like React.js, Node.js, and MongoDB, the system overhauls client inclusion, reduces human botch, and ensures secure trade managing with. The wander focuses to bridge the cleft between understudies and the organization by streamlining the total cost to collection handle.

Key Words: Fee-Connect, Educational ERP, Fee Management, UPI Integration, React.js, Secure Transactions

1. INTRODUCTION

Instructive educate in India proceed to depend on obsolete expense collection strategies that are time-consuming and inclined to mistakes. With the developing drift of computerized change, there's a squeezing require for a user-friendly, secure, and proficient online charge installment stage. This paper talks about the improvement of a Web Expense Installment Framework outlined to supplant conventional strategies with a more dependable and available advanced arrangement. The proposed system supports a UPI-based installments and joins the highlights like understudy assertion, installment history, and the trade affirmation.

The proposed framework is made utilizing cutting-edge web technologies—React.js for the frontend, Node.js with Express for the backend, and MongoDB for information capacity. Accentuation is put on security, ease of utilize, and adaptability. This course of movement is particularly germane insides the post-pandemic time, where contactless operations have wrapped up up a require rather than a consolation. The extraordinary objective is to the advance organization adequacy though overhauling the client association for the understudies and a staff.

2. PROBLEM STATEMENT

In today's world various educator teach, the cost of collection handle remains manual, time-consuming, and slanted to the human botch. Understudies are regularly required to stand in long lines, make physical installments, and hold up for regulatory preparing to get receipts. Also, following charge history, paying diverse sorts of expenses (such as exam, lodging, or late expenses), and getting installment affirmations may be a lumbering encounter. On the organization side, supervising understudy installments, designating cost structures, asserting trades, and sending upgrades incorporates over the best printed fabric and coordination, extending the chance of miscommunication and delays.

There's a squeezing require for a centralized, secure, and user-friendly advanced platform that computerizes the whole expense administration lifecycle. Such a framework needs to be permit understudies to pay their costs online, download official receipts right truant, and track installment history. At the same time, chiefs need to have the capacity to dole out costs to understudies, certify installments, and send cautions or overhauls capably. This venture points to address these challenges by creating a Web Expense Interface Entry that upgrades straightforwardness, diminishes regulatory workload, and gives a consistent computerized installment encounter for both understudies and college staff.

3. OBJECTIVES

i. To develop a secure and user-friendly web-based platform that enables college students to pay their academic and miscellaneous fees online without visiting the college office physically.

ii. To provide functionality for students to download official fee receipts immediately after successful payments for their personal and academic records.

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iii. To implement a fee history tracking feature that allows students to view and manage their previous transactions in a structured and transparent manner.

iv. To enable administrators to assign fee structures to individual students or batches and manage different types of fees such as tuition, exam, hostel, and late fees.

v. To form an admin dashboard that gives a real-time get to to installment affirmations, understudy records, and charge status overhauls.

vi. To integrate automated alerts or notifications for students regarding upcoming due dates, successful payments, or pending dues via email or dashboard messages.

vii. To decrease the printed material and streamline the authoritative workflows by digitizing the complete expense administration framework inside the institution.

4. LITERATURE REVIEW

i. Sharma et al. (2020) investigated the integration of advanced instalment frameworks in instructive educate and highlighted the proficiency advancements in expense administration through online stages. Their think is almost emphasized the portion of mechanization in the decreasing manual botches and moving to the forward trade speed.

ii. Kumar and Verma (2019) studied the effectiveness of UPI-based payments in Indian colleges. They found that understudies favored flexible portion apps like Google Pay and PhonePe due to their ease of utilize, minute portion confirmation, and openness of progressed receipts.

iii. Patil and Joshi (2021) developed an online student fee management system using PHP and MySQL. Their inquire nearly cantered on unraveling conclusive errands and sketched out how web moves can lessen the time and exertion included in manual fetched taking care of.

iv. Rao et al. (2018) emphasized the require for secure information administration in online instalment entrances. Their work proposed actualizing role-based get to and encryption procedures to ensure touchy understudy monetary information from unauthorized get to.

v. Mehta (2022) conducted a case study on digital transformation in higher education and found that institutions adopting online fee portals reported improved transparency, reduced paperwork, and better student satisfaction.

vi. Singh and Rathi (2020) proposed an compelling, adaptable cloud-based course of movement for the college ERP that included a number of online gotten modules. Their discoveries highlighted how cloud foundation upgraded adaptability, information reinforcement, and farther openness for both understudies and chairmen.

vii. Desai et al. (2017) inspected challenges stood up to in ordinary charge collection techniques and endorsed progressed choices. Their work pointed out issues such as long lines, human goof, and miscommunication, which are effectively tended to by online systems.

viii. Khandelwal (2021) examined a client conduct and appropriation patterns of the online expense entries in zone like urban colleges. The investigate found that the victory of such frameworks depends intensely on natural UI/UX plan and legitimate specialized bolster.

ix. Ali and Qureshi (2020) inspected the part of advanced receipts in instructive fund administration They concluded that downloadable receipts and computerized history taking after made a distinction both understudies and staff keep up organized cash related records.

x. Rajput and Kulkarni (2019) outlined an Android-based expense installment application and famous expanded understudy engagement and speedier charge accommodation rates, particularly when portable notices and updates were actualized.

5. TECHNOLOGY USED

5.1 FRONTEND TECHNOLOGIES

5.1.1 HTML5:
HTML labels are utilized interior Respond components (by means of JSX) to characterize the structure of web pages.

5.1.2 CSS3:
CSS is utilized to form your interface outwardly engaging. It styles the format, textual styles, buttons, and dispersing.

5.1.3 React.js:
Respond is the center of the frontend system utilized to create the reusable Client Interface components to create UI engaging.

5.2 BACKEND TECHNOLOGIES

5.2.1 Node.js:
Node.js may be a runtime environment that lets you run JavaScript on the server side (not reasonable inside the browser).
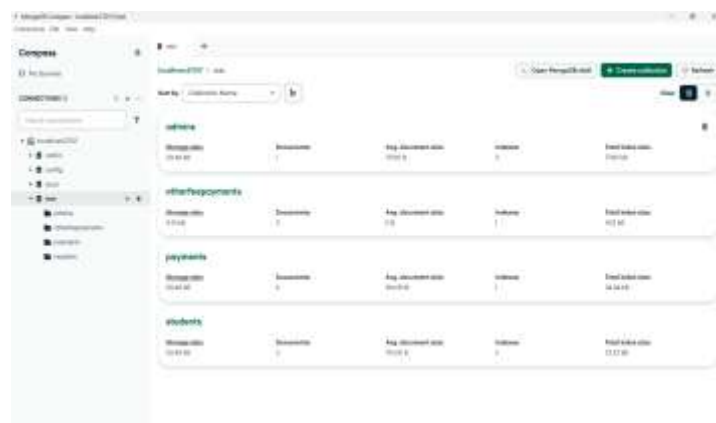
5.2.2 Express.js:

Express.js may well be a backend web framework built on best of Node.js. It unravels coordinating and HTTP inquire managing with.

5.3 DATABASE TECHNOLOGY

5.3.1 MongoDB:

MongoDB could be a NoSQL archive database that stores information in adaptable, JSON-like archives.
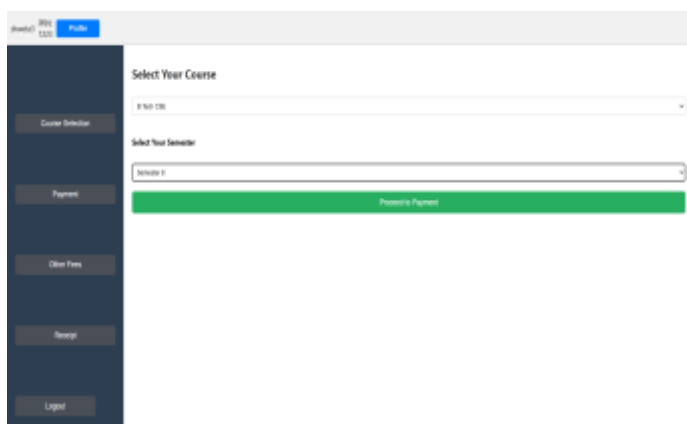
6. RESULTS

6.1 Frontend

6.1.1 Home Page

6.1.2 Student Dashboard

6.1.3 Admin Dashboard

6.2 Database

7. CONCLUSION

The change of the Online Cost Interface Passage has tended to some essential challenges gone up against by educator teach in directing understudy installments. By moving from manual forms to a secure, web-based framework, the entry upgrades comfort for understudies and diminishes the authoritative burden on college staff. Understudies can by and by pay their costs carefully, see exchange history, and download official receipts at any time, guaranteeing straightforwardness and ease of get to. Directors advantage from the capacity to dole out expenses, affirm installments, and send opportune notices, all from a centralized dashboard.

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