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TITLE PAGE

- **Problem Statement ID – 25103**
- **Problem Statement Title – ERP-based Integrated Student Management system**
- **Theme - Smart Automation**
- **PS Category- Software**
- **Team ID-**
- **Team Name (Registered on portal)-Idea Squad**

Idea Squad

SimpleStudent ERP: Low-Cost College Solution

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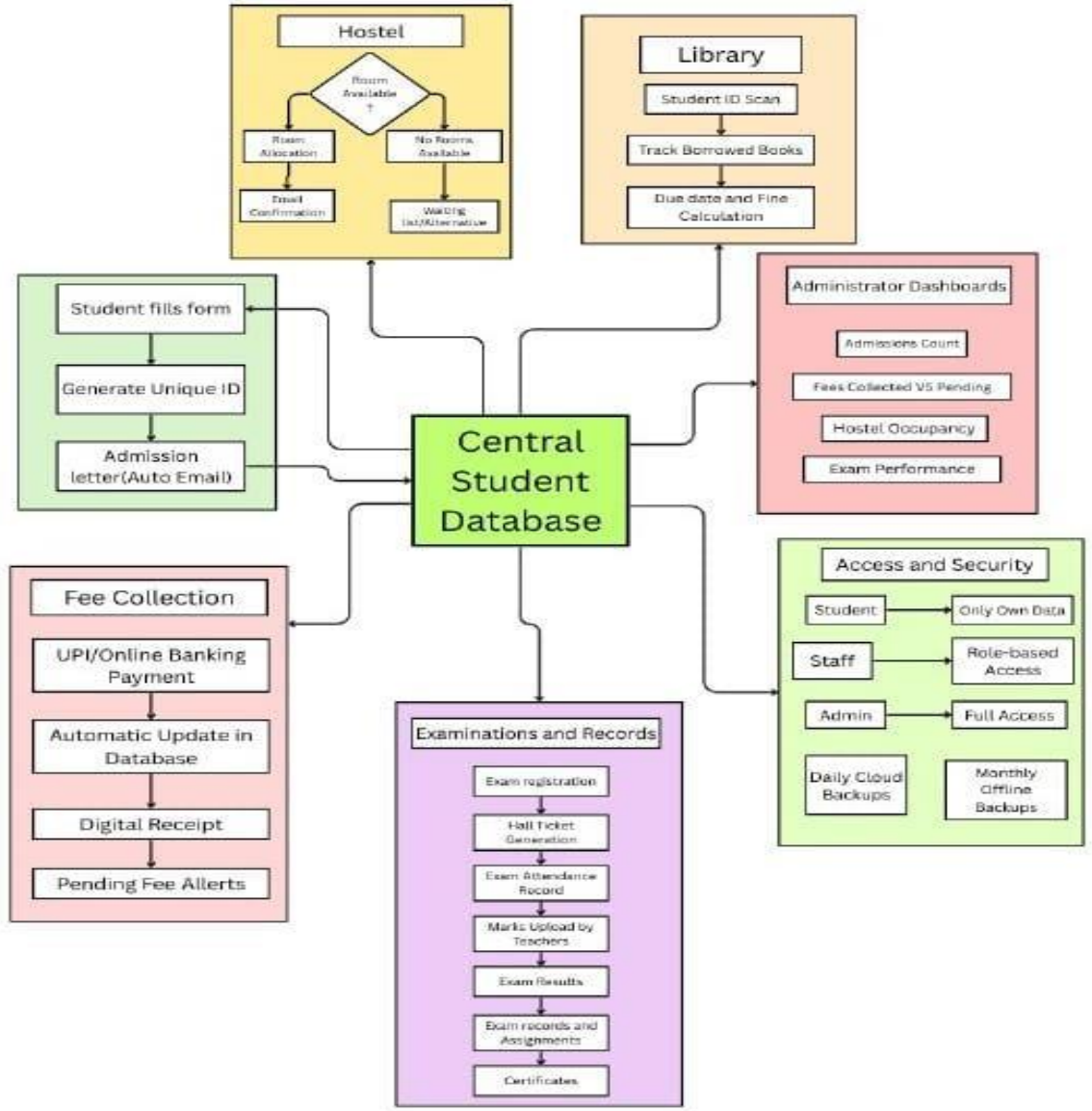
❖Proposed Solution

1. **One Central Student Database**:All **student information** (**admission**, **payments**, **hostel**, **exams**)is stored in one **online sheet/ database**. All modules update this same data, so **no data is repeated or lost**.
2. **Admission Workflow**:Students fill an **online form**. Their information goes directly into the **central database** and each student gets a **unique ID**. Admission letters are automatically created and emailed.
3. **Automated Fee Collection**:Payments are made online through UPI or banking. As soon as **payment is confirmed**, the student's **record updates** and a **digital receipt is sent automatically**. **Pending payments** show on a **live dashboard**.
4. **Hostel and Library Integration**:Hostel applications update room availability in real time. **Full rooms** are removed from options to **avoid overbooking**. The library uses the same student ID to track borrowed books. Both **show current status** on dashboards.
5. **Examinations and Records**:**Exam registration** links to the database. Teachers **upload marks** directly. The system creates transcripts and **certificates automatically** using templates.
6. **Administrator Dashboards**:**Live dashboards** show total admissions, fees collected vs pending, hostel occupancy, and exam performance. This helps leaders see everything immediately and **make decisions fast**.
7. **Access and Security**:**Students** see only their **own data**. **Staff** see only what they **need for their role**. **Admins** have **full access**. **Daily cloud backups** and monthly offline backups **protect data from loss**.



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TECHNICAL APPROACH

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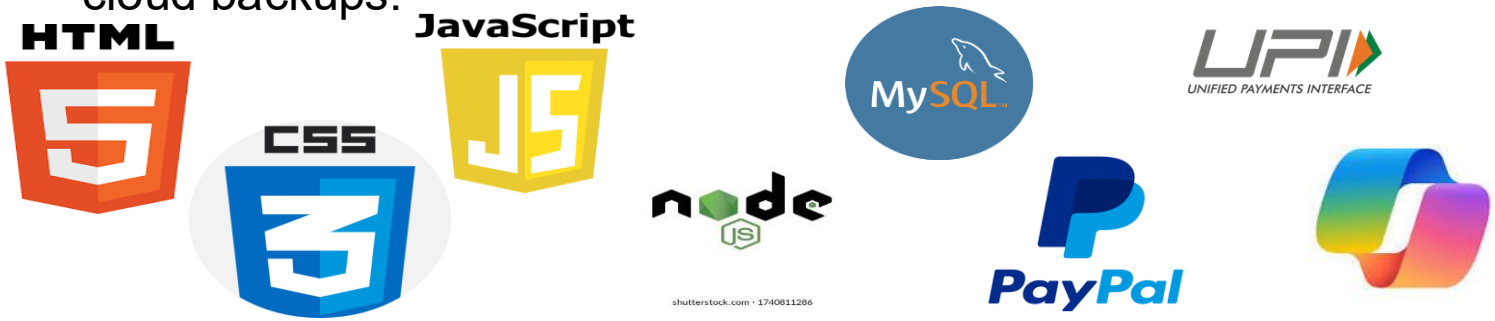
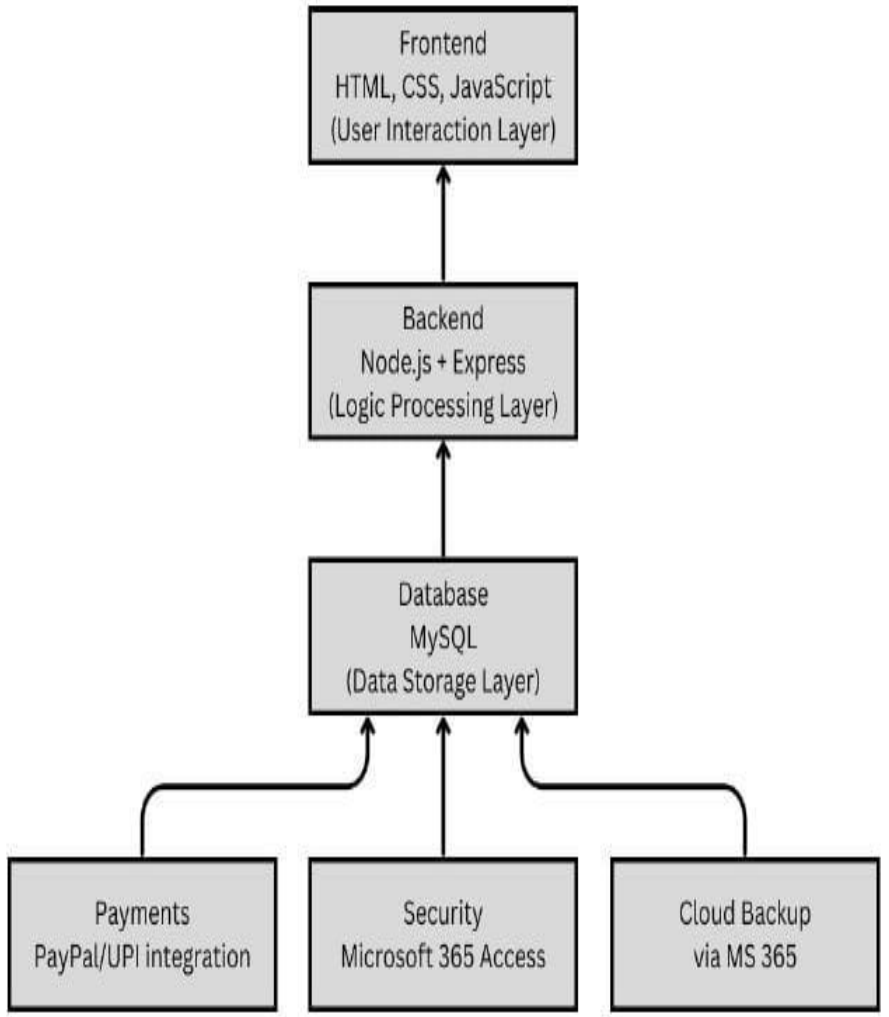
Technology Stack Overview

1. **Frontend**(User Interaction Layer): Core technologies include **HTML, CSS, JavaScript** for creating responsive and interactive user interfaces
2. **Backend**(Logic Processing Layer): Uses **Node.js** with the **Express framework** to handle server-side logic, API endpoints, and business processes.
3. **Database**(Data Storage Layer): Employs **MySQL** for secure, regional data storage and efficient data management.
4. **Payments and Transactions**: **PayPal/UPI integration** to securely collect fees online and generate digital receipts.
5. **Security and Access Control**: **Microsoft 365 permissions** to provide role-based access,ensure secure logins, and maintain cloud backups.





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FEASIBILITY AND VIABILITY

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Feasibility:

- **Low-Cost ERP Alternative:** Built with **common cloud tools** instead of expensive software, making it **affordable** for public colleges.
- **Modular & Scalable:** Colleges can start small (admissions/fees) and expand to hostel, library, exams without system overhaul.
- **Real-Time Transparency:** **Live dashboards** give administrators **instant insights** for faster decision-making.

Viability:

- **Cost-Effective for Public Colleges:** Runs on **free/low-cost** cloud tools, making it sustainable for institutions with limited budgets.
- **Replicable Across Institutions:** Once developed, the same framework can be **deployed in other colleges** with minimal setup.
- **Flexible Growth:** **New modules** (transport, placements, alumni, etc.) can be added later without rebuilding the whole system.

Challenges:

- **Data Privacy & Security Risks:** **Protecting** sensitive student and financial information is critical.
- **Integration Complexity:** Combining admissions, fees, hostel, exams, and library into **one smooth system** is challenging.
- **Scalability Limits of Free Tools:** Platforms like Google Sheets may struggle as student **data grows large.**

Solutions:

- Ensures **security** with role-based access, multi-factor login, encryption, and **regular backups**.
- Simplifies integration using APIs with a **unique student ID** and modular design.
- Plans **scalability** by starting with sheets, archiving old data, and later migrating to cloud databases.

Future Developments:

- **AI & Predictive Analytics:** **Smart assistant** for student queries + performance and dropout prediction to help institutions act early.
- **IoT & Smart Campus:** **Biometric** for hostel, library, and attendance with **real-time tracking and security**.

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IMPACT AND BENEFITS

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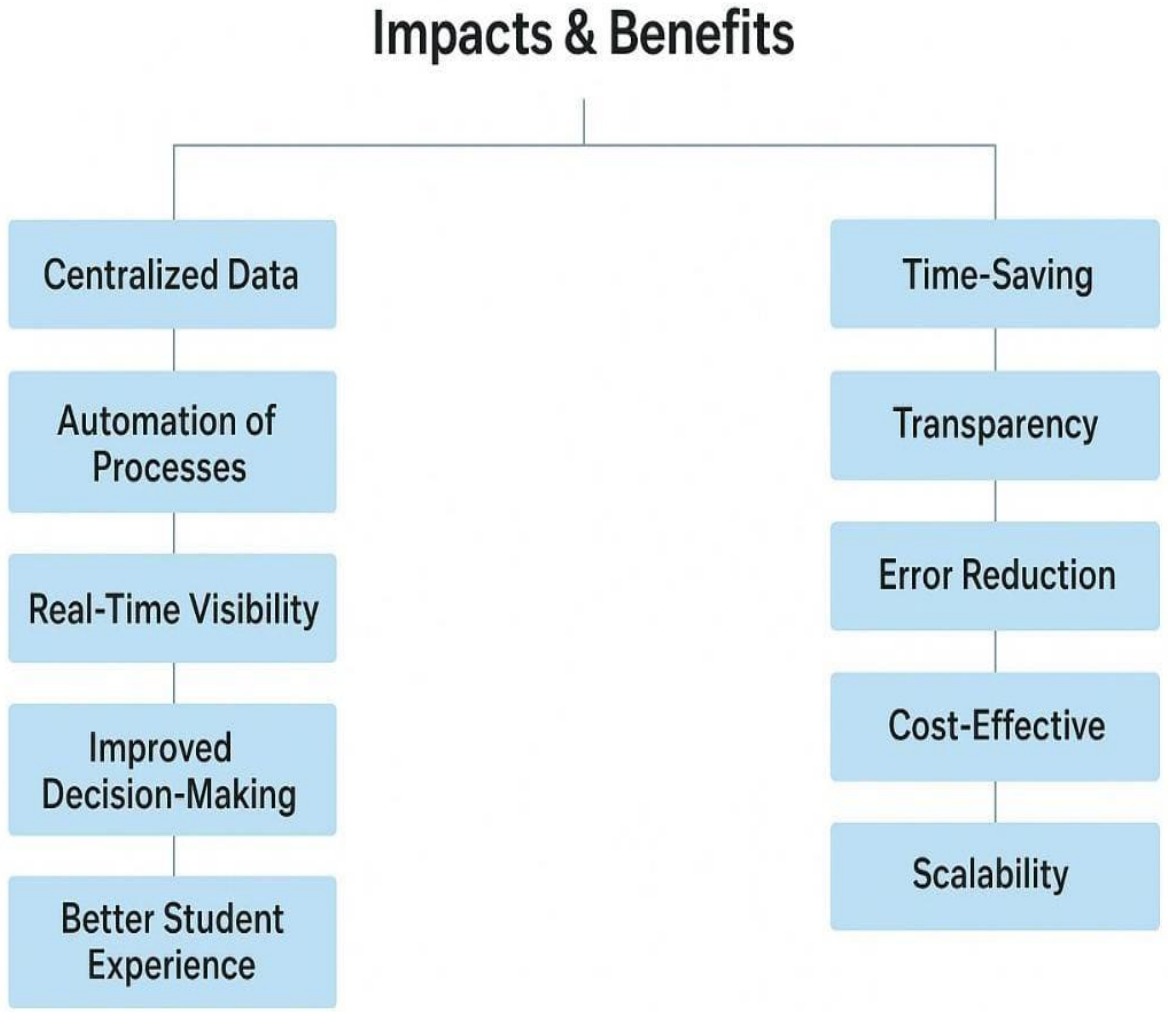
Impacts:

- **Centralized Data** – All student info stays in one place, reducing duplication and errors.
- **Automation of Processes** – Admissions, payments, exams, and records run with minimal manual work.
- **Real-Time Visibility** – Dashboards give instant insights into fees, hostel, and performance.
- **Improved Decision-Making** – Admins act faster with live data instead of delayed reports.
- **Better Student Experience** – One student ID handles everything → simpler and stress-free.

Benefits:

- **Time-Saving** – Reduces queues and manual paperwork for both students and staff.
- **Error Reduction** – Automated updates minimize human mistakes in data entry.
- **Cost-Effective** – No need for expensive ERP systems; uses simple cloud tools.
- **Scalability** – Can be easily expanded to add new modules (placements, alumni, etc.).
- **User-Friendly** – One student ID simplifies everything from admission to graduation.



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RESEARCH AND REFERENCES

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References:

- Educational digital transformation:

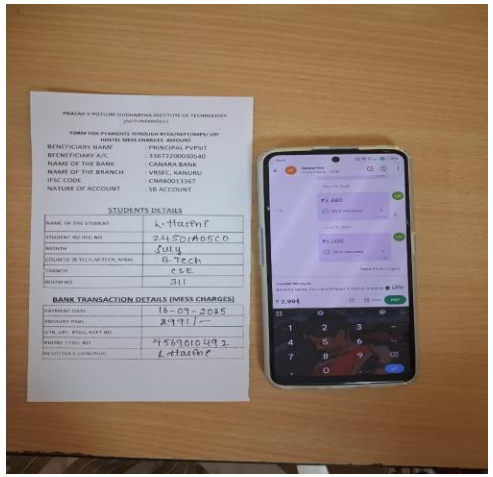
https://www.unesco.org/en/digital-education

- ERP systems in education:

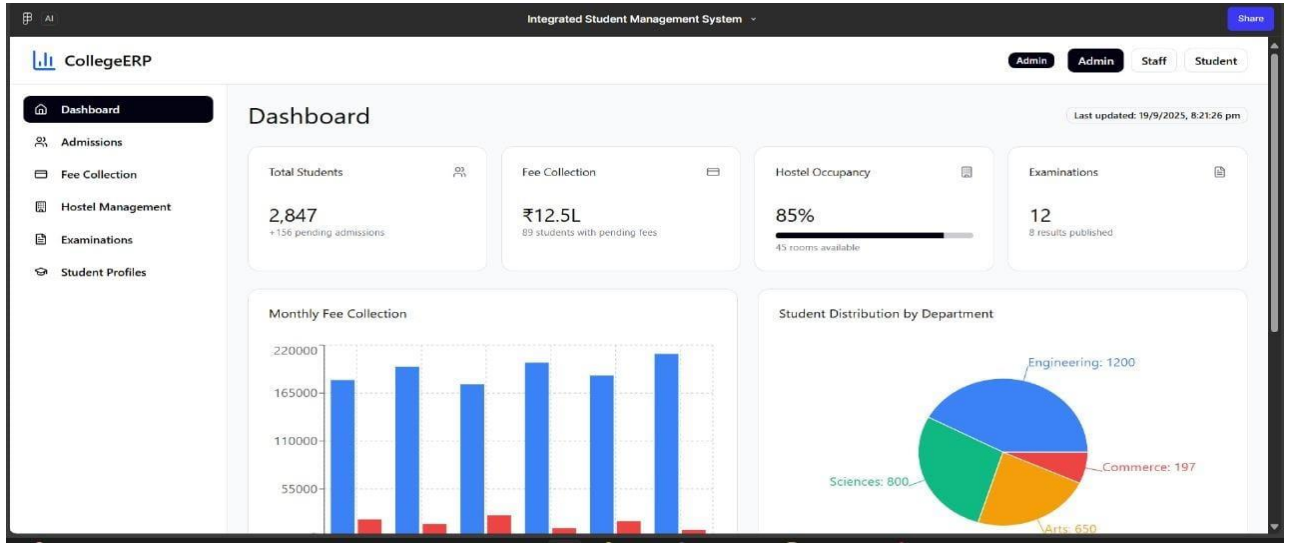
https://edutinker.com/

https://wpschoolpress.com/student-information-management-system/

Research:



Prototype:



Prototypelink:https://www.figma.com/make/w0Y8ugDLzDGr5KWjrZmtn0/Integrated-Student-Management-System?node-id=0-1&p=f&t=aNBwZ0cDJyzbNHcn-0&fullscreen=1

A short animated video describing our problem statement and solution: