

**Name: PIUS SETH KWOFIE**

**Index Number: 22243185**

**Course: CPEN 208 - Software Engineering Lab**

**Semester: 2nd Semester, 2024/2025 Academic Year**

### **Computer Engineering Department Management System using Next.js & PostgreSQL**

**Project Overview** This system is designed to streamline administrative operations within the Computer Engineering Department by offering separate registration and login portals for students and lecturers. The platform supports seamless data entry, validation, authentication, and provides a responsive dashboard interface for interaction.

### **Technologies Used**

- **Frontend:** React with Next.js 14
- **Backend:** Node.js API routes (App Router in Next.js)
- **Database:** PostgreSQL
- **Styling:** Inline CSS and external CSS modules
- **Version Control:** Git & GitHub

### **Features**

- **Separate registration and login pages for Students and Lecturers**
- **UI/UX designed with clean, professional forms and dashboard**
- **Database schema using custom IDs (e.g., student\_id, lecturer\_id)**
- **Secure password input and client-side validation**
- **API routes connected to PostgreSQL for data storage and retrieval**
- **Responsive layout and form controls**

### **Database Schema Description**

**Students Table:**

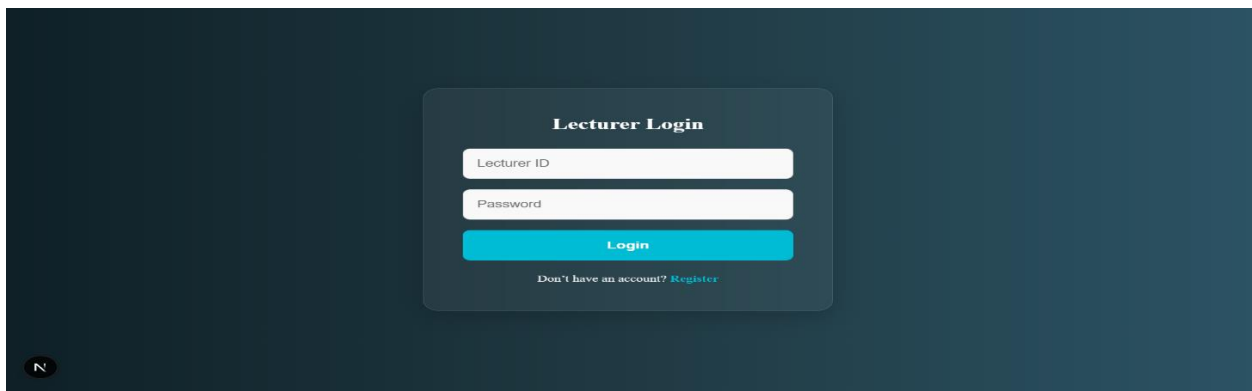
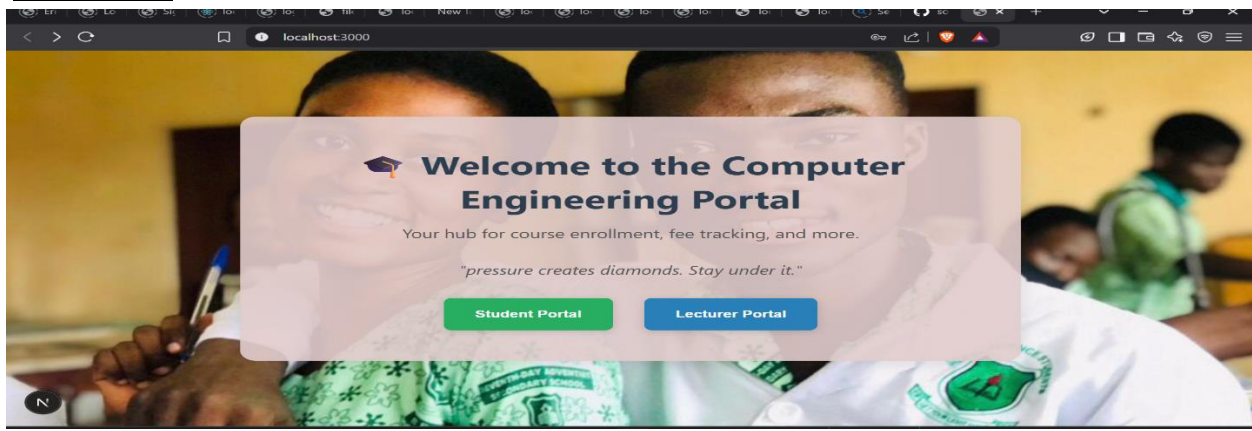
- **student\_id (PK)**
- **first\_name**
- **last\_name**
- **email**

- password
- phone
- address
- date\_of\_birth
- gender

#### Lecturers Table:

- lecturer\_id (PK)
- first\_name
- last\_name
- email
- password
- department

#### Screenshots



Lecturer Registration

First Name

Last Name

Lecturer ID

Email

Password

Department

Register

Already registered? [Login here](#)

Student Login

Student ID

Password

Login

Don't have an account? [Register](#)

Lecturer Login

Lecturer ID

Password

Login

Don't have an account? [Register](#)

### Sample API Request and Response

POST /api/student/login

```
{  
  "student_id": "STU123",  
  "password": "securePass"  
}
```

Response

```
{  
  "student": {  
    "student_id": "STU123",  
    "first_name": "John",  
    "last_name": "Doe"  
  }  
}
```

### Challenges and Lessons Learned

- Designing separate flows for lecturers and students taught us how to organize scalable component folders in Next.js.
- Handling PostgreSQL connections securely using environment variables was essential.
- Debugging issues with UI responsiveness and CSS specificity improved frontend confidence.

Conclusion, this project provided hands-on experience in building a real-world full-stack application. I learned how to integrate frontend forms with backend APIs and a relational database while maintaining clean and professional design.

### GitHub Repository

[https://github.com/Amgbo/software\\_eng\\_ass](https://github.com/Amgbo/software_eng_ass)