**CPEN 208 Software Engineering Project Report**

**Introduction**

This project is a student information system developed as part of the CPEN 208 Software Engineering course. It includes a PostgreSQL database, a Next.js 14 web application frontend, API integration, and a styled interface using Tailwind CSS. Users can register, log in, and view outstanding fees pulled from the database.

**Database Design**

The PostgreSQL database includes the following:- Tables for students, courses, fees, lecturers, assistants, enrollments, and assignments- A function called get\_outstanding\_fees() that returns students who owe fees in JSON format A SQL backup file named project1sql.sql is included for restoring the database.

**Web Application**

The frontend is built using Next.js 14 with App Router. Main features include:- Register Page (with fake login storage using localStorage)- Login Page- Dashboard Page: Displays outstanding fees from the PostgreSQL database via an API- Homepage with navigation- Tailwind CSS for styling all pages The application is interactive and responsive using modern JavaScript and React features.

4. Technologies Used- Next.js 14- React 18- PostgreSQL 15+ CPEN 208 Software Engineering Project Report- Tailwind CSS 3- Node.js + npm- pg library for DB connections

**Running the Project**

To run this project locally:

1. Create a PostgreSQL database (e.g., cpen208db)

2. Import the file project1sql.sql into pgAdmin or using psql

3. Copy env.txt and rename it to .env

4. Run the following terminal commands: npm install npm run dev

5. Visit http://localhost:3000 in your browser

**.env File Example**

This project includes a file named env.txt. Rename it to .env before running the project. Example content of the .env file: DATABASE\_URL=postgresql://postgres:yourpassword@localhost:5432/cpen208db

**Conclusion**

This project demonstrates full-stack software engineering concepts including frontend/backend integration, RESTful APIs, database querying, and project structure with modern frameworks. It is ready for deployment, demo, or further feature additions such as authentication or fee payment tracking