Prashant Gupta-Madan Mohan Malaviya University of Technology–Node.js

Setup Instructions

1. Prerequisites

- Node.js (v16 or above recommended)
- PostgreSQL installed and running
- npm or yarn package manager
- Git (optional, for cloning repo)

2. Clone the repository (if applicable)

- git clone https://github.com/your-repo/user-access-management.git
  cd user-access-management

3. Install dependencies

- npm install

4. Configure environment variables

- Create a .env file in the root folder with the following variables:

- PORT=3000

  DB_HOST=localhost
  DB_PORT=5432
  DB_USERNAME=db_username
  DB_PASSWORD=db_password
  DB_NAME=user_access_db

  JWT_SECRET=jwt_secret_key
  CLIENT_ORIGIN=http://localhost:5173

5. Setup the database

- Create the database manually or via psql:

  CREATE DATABASE user_access_db;
  Run TypeORM migrations to create tables:

  npx typeorm migration:run

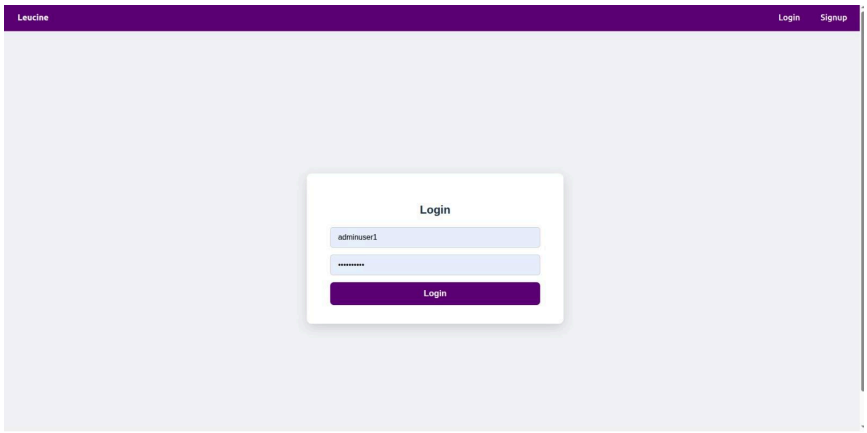
6. Start the backend server

- npm run dev

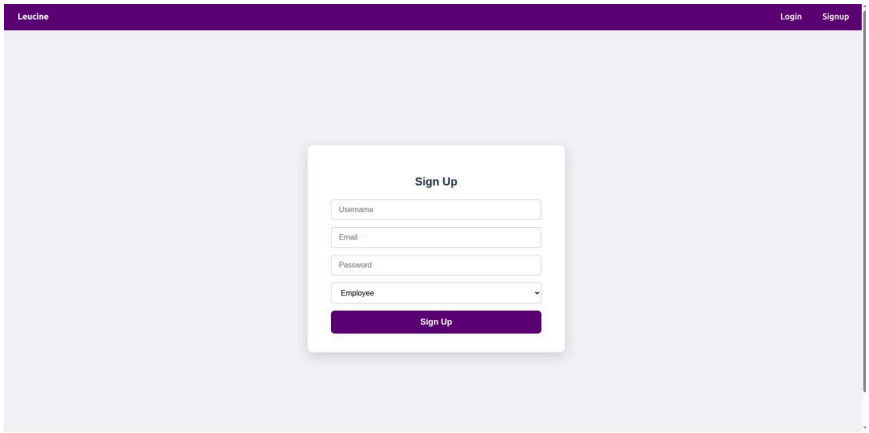
  Server will start on http://localhost:3000 by default.

7. Frontend setup:-

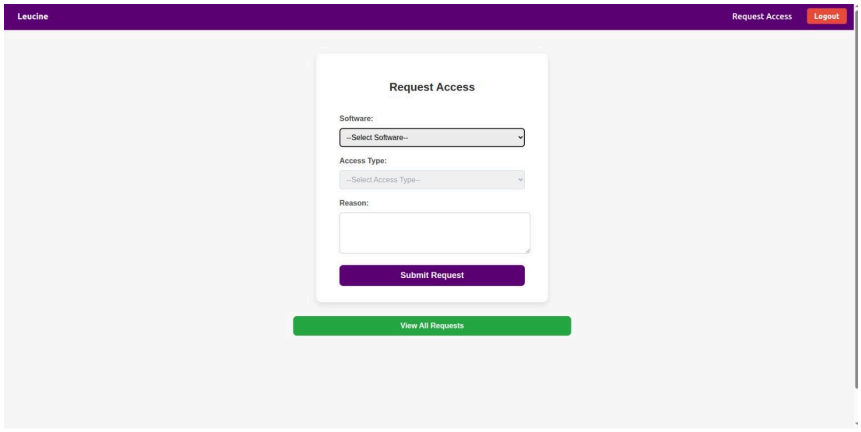
Login page-



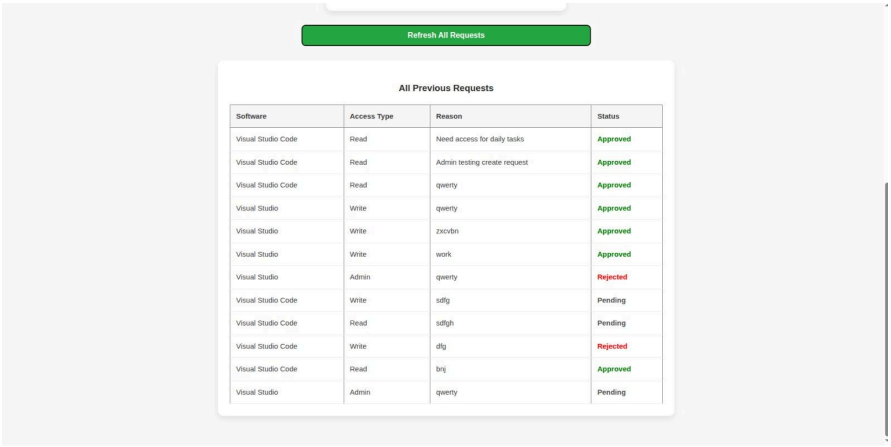
Signup page-



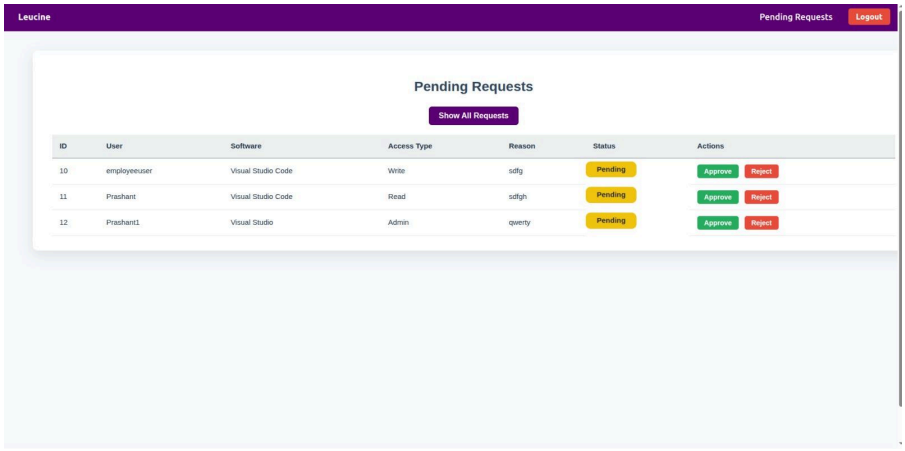
Request Access-



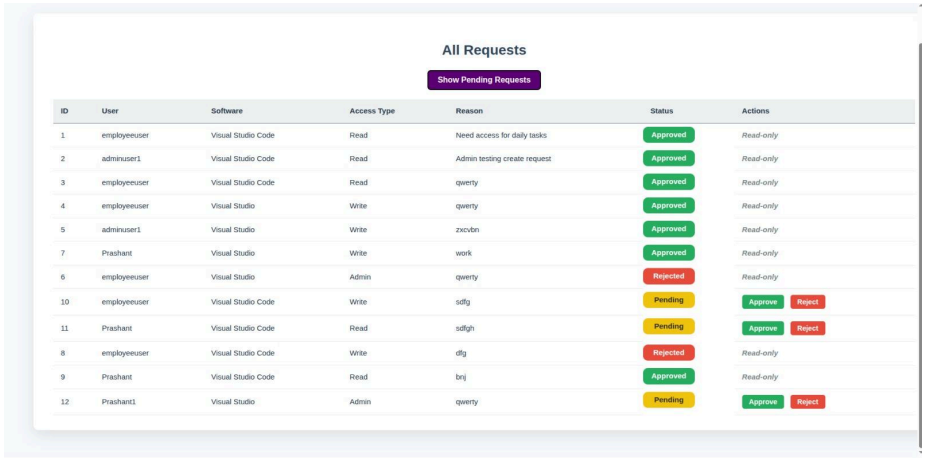
Review All Previous Request-



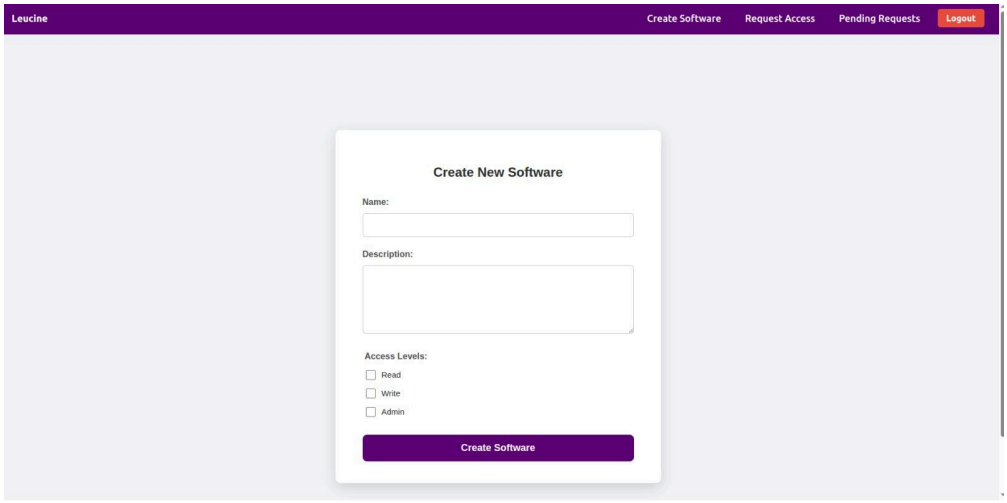
Pending Request page-



All Request-



Create Software page-



API Documentation

- Base URL
  http://localhost:3000/api

1. Auth Endpoints

Method	Endpoint	Description	Request Body	Response
POST	/auth/signup	Register new user	{ username, password }	{ message, userId }
POST	/auth/login	Login and get JWT	{ username, password }	{ token, role, username }

2. Software Endpoints (Admin only)

Method	Endpoint	Description	Request Body	Response
POST	/software	Create new software	{ name, description, accessLevels: [ ] }	{ message, softwareId }
GET	/software	List all software	None	[{ id, name, description, accessLevels }]

3. Access Requests (Employee & Manager)

Method	Endpoint	Description	Request Body	Response
POST	/requests	Submit new access request	{ softwareId, accessType, reason }	{ message, requestId }

GET	/requests	Get all requests (Manager)	None	[{ id, user, software, accessType, reason, status }]
PATCH	/requests/:id	Approve or reject request	{ status: 'Approved'	'Rejected' }

4. User Role Handling

- JWT token returned from login contains the user role.
- Middleware protects routes based on role:
    - Employees can create requests.
    - Managers can approve/reject.
    - Admins can create software.

Headers

- For protected routes, include JWT token in headers:
  Authorization: Bearer <token>

Sample Request - Login

POST /api/auth/login
Content-Type: application/json

```
{
 "username": "prashant",
 "password": "prashant23"
}
```

Response:

```
{
 "token": "eyJhbGciOiJIUzI1NiIsInR...",
 "role": "Employee",
}
```

Sample Request - Submit Software Access Request

POST /api/requests
Authorization: Bearer <token>
Content-Type: application/json

```
{
 "softwareId": 1,
 "accessType": "Read",
 "reason": "Need access for project"}
```

Database Schema

Users table

```
CREATE TABLE "user" (
  id SERIAL PRIMARY KEY,
  username VARCHAR(255) UNIQUE NOT NULL,
  password VARCHAR(255) NOT NULL,
  role VARCHAR(20) NOT NULL CHECK (role IN ('Employee', 'Manager', 'Admin'))
);
```

Software table

```
CREATE TABLE software (
  id SERIAL PRIMARY KEY,
  name VARCHAR(255) NOT NULL,
  description TEXT NOT NULL,
  access_levels TEXT[] NOT NULL -- Array of strings e.g. ['Read', 'Write', 'Admin']
);
```

Requests table

```
CREATE TABLE request (
  id SERIAL PRIMARY KEY,
  user_id INTEGER NOT NULL REFERENCES "user"(id) ON DELETE CASCADE,
  software_id INTEGER NOT NULL REFERENCES software(id) ON DELETE CASCADE,
  access_type VARCHAR(20) NOT NULL CHECK (access_type IN ('Read', 'Write', 'Admin')),
  reason TEXT NOT NULL,
  status VARCHAR(20) NOT NULL CHECK (status IN ('Pending', 'Approved', 'Rejected'))
DEFAULT 'Pending'
);
```