

Notes App – Full Stack Project Report

1. Introduction

The Notes App is a full stack web application built using Next.js (frontend), FastAPI (backend), and MySQL (database). The application allows users to register, log in, and securely create, edit, view, and delete personal notes with JWT authentication. The entire application is Dockerized for seamless deployment.

2. Features

User Signup & Login using JWT authentication

Create, update, delete, and view notes

Protected API routes

Persistent login using Zustand

React Query for data fetching

Responsive UI with Tailwind CSS

Dockerized frontend, backend, and MySQL database

3. Tech Stack

Frontend: Next.js 16, React 19, TailwindCSS 4, Axios, Zustand, React Query

Backend: FastAPI, SQLAlchemy, PyMySQL, JWT (python-jose)

Database: MySQL

Deployment: Docker & Docker Compose

4. System Architecture

The system follows a client-server architecture:

Frontend communicates to backend via REST API.

Backend validates JWT, handles CRUD operations, and interacts with MySQL.

Docker Compose orchestrates all services.

5. API Endpoints

Authentication

POST /api/v1/auth/signup – Create new user

POST /api/v1/auth/signin – Login and receive JWT

GET /api/v1/auth/me – Get authenticated user info

Notes

POST /api/v1/notes – Create note

GET /api/v1/notes – Get all notes

GET /api/v1/notes/{id} – Get a specific note

PUT /api/v1/notes/{id} – Update note

DELETE /api/v1/notes/{id} – Delete note

6. Docker Setup

The project uses a docker-compose.yml with three services

notes_frontend – Next.js app on port 3000

notes_backend – FastAPI app on port 8000 notes_mysql – MySQL database on port 3310

7. Environment Variables

The .env file includes database credentials and JWT config:

SECRET_KEY=yoursecretkey

```
DATABASE_URL="mysql+pymysql://notesuser:notespass@db:3306/notesdb"
```

```
ALGORITHM="HS256"
```

```
ACCESS_TOKEN_EXPIRE_MINUTES=60
```

8. How to Run the Project

Install Docker Desktop

Open terminal in project root folder

Run: **docker-compose up --build**

Frontend starts at <http://localhost:3000>

Backend starts at <http://localhost:8000>

9. Signup & Signin API Testing (Postman)

The screenshot shows a Postman collection interface. A specific POST request to <http://127.0.0.1:8000/api/v1/auth/signup> is selected. The request body contains the following JSON payload:

```
1 {
2   "user_name": "sam",
3   "user_email": "sam@example.com",
4   "password": "StrongPass123"
5 }
```

The response status is 201 Created, with a response body containing:

```
1 {
2   "message": "User created",
3   "user_id": "7d8eacf8-025d-4e34-a3ff-ba3c8875a7ec"
4 }
```

The screenshot shows the Postman interface with a successful API call. The URL is `http://127.0.0.1:8000/api/v1/auth/signin`. The request method is `POST`, and the body contains the following JSON:

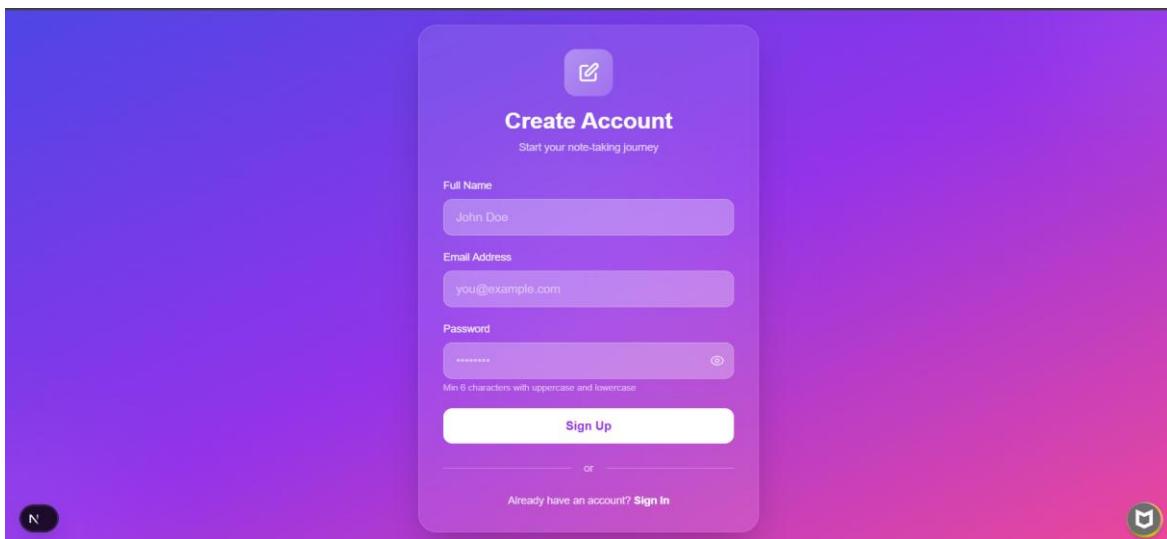
```
1 "user_email": "sushanth@example.com",
2 "password": "StrongPass123"
```

The response status is `200 OK`, time is `247 ms`, and size is `386 B`. The response body is a JSON object containing an access token and a token type:

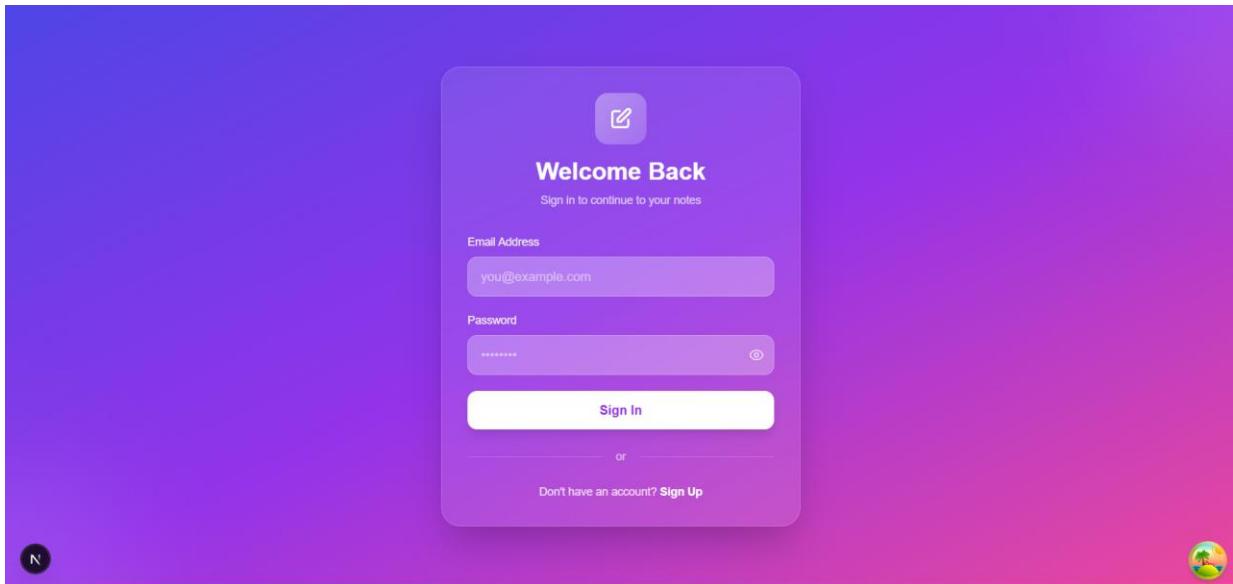
```
1 "access_token": "eyJhbGciOiJIUzI1NiIsInR5cCI6IkpXVCJ9.
2 eyJpc3MiOiJsb2dpbiIsInN1Y2xvb2dyIjoiMjI1MmIxN2YxYzc2IiwidXNlIjoiL2FpbCI6InN1c2hhbnRoOGV4YW1wbGUuY29tIiwiZXhwIjoxNzYzMjM1N
3 TA0fq_zARKVVNcoyOaca6J4p4owb1zs8L2wz-5S7BZ3xh08",
4 "token_type": "bearer"
```

10.Frontend User Interface

10.1 User Signup Page



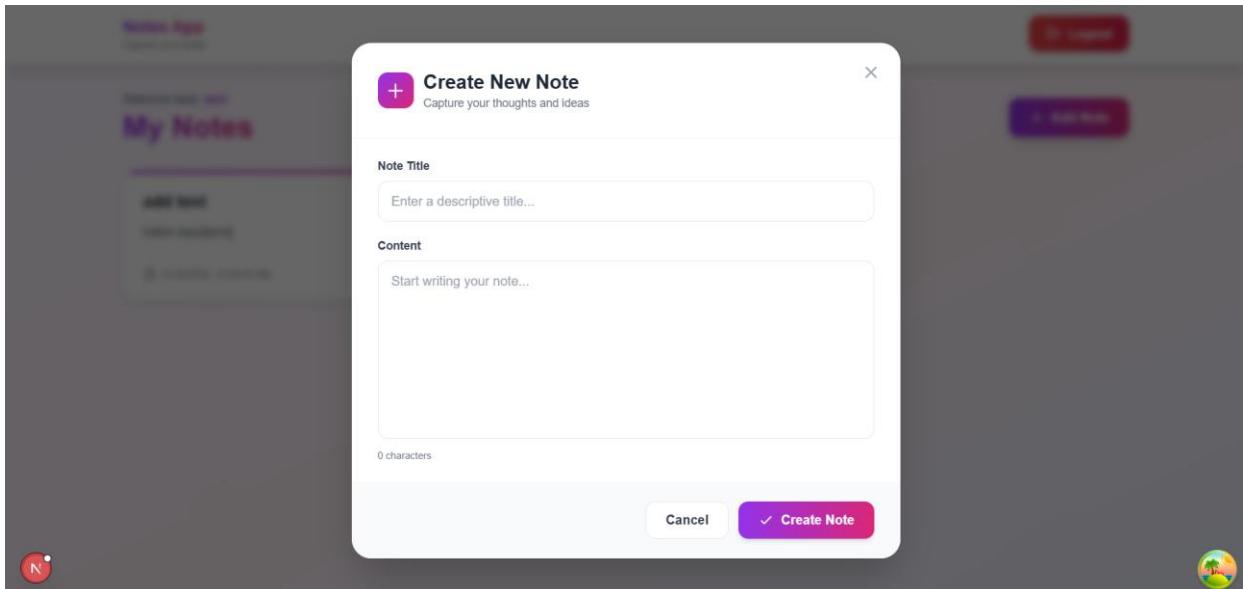
10.2 User Signin Page



10.3 Notes Dashboard

A screenshot of the application's main dashboard. The top navigation bar is white with a thin gray border. On the left is the "Notes App" logo with the tagline "Capture your ideas". On the right is a red "Logout" button with a white outline. The main content area has a light gray background. At the top left, it says "Welcome back, sam". In the top right, there is a purple button with a white plus sign and the text "+ Add Note". The central part of the screen is titled "My Notes" in large, bold, purple font. Below the title is a list of notes. The first note is a white card with a thin gray border. It contains the title "add test", the content "hellon wjaqdjwndj", and the timestamp "11/15/2025, 11:05:47 AM". To the right of the note is a small green circular icon with a white dot. The bottom right corner of the note card features a small circular profile picture of a person with short brown hair. The bottom left corner of the note card features a small circular icon with a white letter "N".

10.4 Add New Note Modal



10.5 View / Edit Note Modal

