Fatima as a developer at Cele-Sync Technologies, you have been assigned the responsibility of developing an API named "Everything Mzansi." This API is designed to store information about important aspects in South Africa. External developers and enterprises will utilize this API within their systems. For the trial run, you are tasked with ensuring that the API can store the following information:

List of schools in south Africa:

Information about each school should include.
- School Name
- Province
- District
- City/Place
- School Postal Address
- Current Matric Pass Rate
- School Picture/logo

Developers are required to subscribe to gain access to the API, and they must pay a monthly fee of R150 to keep their subscription active. Access to the API will not be granted if the payment fails. To utilize the system, developers need to register and subscribe, after which they will receive a token for API access. It's important to note that the token has a one-month expiration period, and developers will be notified via email as the end of the month approaches to renew their subscription.

Features

User Authentication and Authorization:

Allow developers to register and authenticate themselves to obtain API access.

Implement token-based authentication to ensure secure access.

Subscription Management:

Provide a subscription management system where developers can subscribe to the API by paying a monthly fee.

Implement payment processing and ensure that access is granted only when the payment is successful.

Payment Gateway Integration:

Integrate a payment gateway to handle subscription payments securely.

Support multiple payment methods for developer convenience.

Token Generation and Expiry:

Generate unique API tokens for each subscribed developer upon successful registration and subscription.

Set token expiration to one month and send email notifications when tokens are about to expire.

Usage Monitoring and Analytics:

Track and monitor API usage for each developer.

Provide analytics and usage reports to help developers understand their API usage patterns.

Documentation:

Create comprehensive documentation for the API, including endpoints, request/response formats, and any specific requirements.

Rate Limiting:

Implement rate limiting to control the number of API requests developers can make within a specified time frame, preventing abuse.

Error Handling and Logging:

Implement robust error handling to provide meaningful error messages to developers.

Log API requests and responses for troubleshooting and auditing purposes.

User Profile Management:

Allow developers to manage their profiles, update contact information, and modify subscription details.

Email Notifications:

Send confirmation emails upon successful registration and subscription.

Send renewal reminders as the end of the subscription month approaches.

Admin Dashboard:

Provide an administrative dashboard to monitor overall system health, manage user accounts, and view usage statistics.

Versioning:

Implement versioning for the API to ensure backward compatibility as you make updates and improvements.

How the system works:

Developer logs on the web application and register.

Request for API key/token

Upon have the token have access to the system.

On the web interface it is showed how to use the API.

Sync pty have an ADMIN who can upload schools via uploading a spreadsheet with list of schools' information and the information about school is processed and added to the API. The admin can delete and edit schools. A developer who hasn't logged in to the system for a month will be sent a notice email telling them their account will be deleted.

The Payment Gateway must be Payfast, Stripe or Paypal.

Tech stack

- Springboot
- MYSQL
- Angular

Project Management

Every Friday, Fatima needs to push the code to GitHub for review and gather feedback on Saturday morning. Fatima is responsible for designing and developing the system, while Nonelela is responsible for guidance and does not contribute to the code.