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TABI3A

Tunisian API for Biodiversity, Intelligence & Awareness

TUNIS BUSINESS SCHOOL
UNIVERSITY OF TUNIS

Overview

Table Of Content

Introduction

Tunisia is rich in nature… but what about digital structure ?

Overview of the Platform

Tunisia has national parks, endemic species, and protected ecosystems

Yet information is

scattered

unstructured

not reusable by applications

Vision and Goals

Turn Tunisia’s natural heritage into structured digital knowledge.

Core Problem

- No centralized digital backend for Tunisian natural parks
- No standardized API for:
  - parks
  - species
  - locations
  - eco-tourism activities
- Existing global APIs ≠ adapted to Tunisia
- Missed opportunity for:
  - sustainable tourism

environmental awareness

What is TABI3A ?

An API for Biodiversity, Intelligence and Awareness

Definition

a RESTful backend API dedicated to the valorization of Tunisia’s natural parks as part of the country’s environmental and cultural heritage.

Core Features

Management of data related to Tunisian natural parks, Documentation of fauna and flora within parks, Identification of endangered species, Eco-tourism recommendation logic

Market Focus

treat Tunisian nature as heritage that must be documented, preserved, and transmitted digitally

What Sets It Apart ?

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- **Local focus on Tunisian ecosystems**
- **Backend-only clarity and simplicity**
- **Biodiversity + conservation awareness**
- **Eco-tourism guided by environmental rules**

Technologies & Features

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Backend Development

- FastAPI RESTful API
- JWT Authentication & Role-Based Access
- REST Endpoints (GET / POST / PUT / DELETE)
- Insomnia API Testing
- Swagger (OpenAPI) Documentation
- External Weather API Integration

Database Management

- SQLite Relational Database
- Database Schema Creation (Users, Parks, Species, Locations, Recommendations)
- SQLAlchemy ORM
- One-to-One & Many-to-Many Relationships
- Secure Data Persistence & Integrity

Other Features

- Docker Containerization
- Secure Password Hashing
- Git Version Control
- Modular & Scalable Architecture
- Ready for Future Extensions (Web / Mobile / GIS)

Technologies & Features

Users Access

VISITOR

Can register, log in, and view public information about parks and species.
Has read-only access to general endpoints (parks, species, recommendations).
Cannot create, modify, or delete any data.

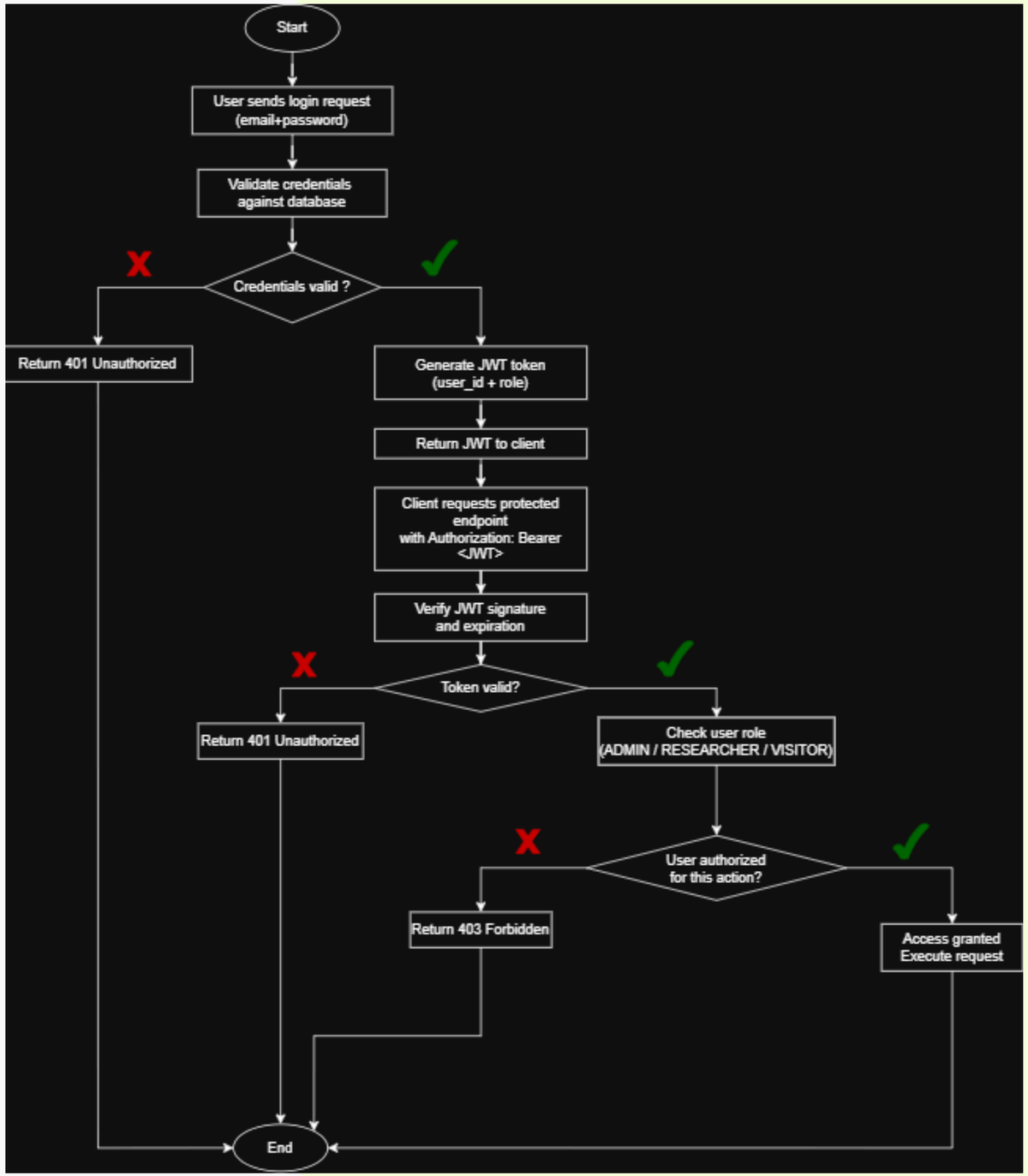
RESEARCHER

Can access all visitor functionalities.
Can create and update species data related to fauna and flora.
Contributes to biodiversity documentation but cannot manage users or parks.

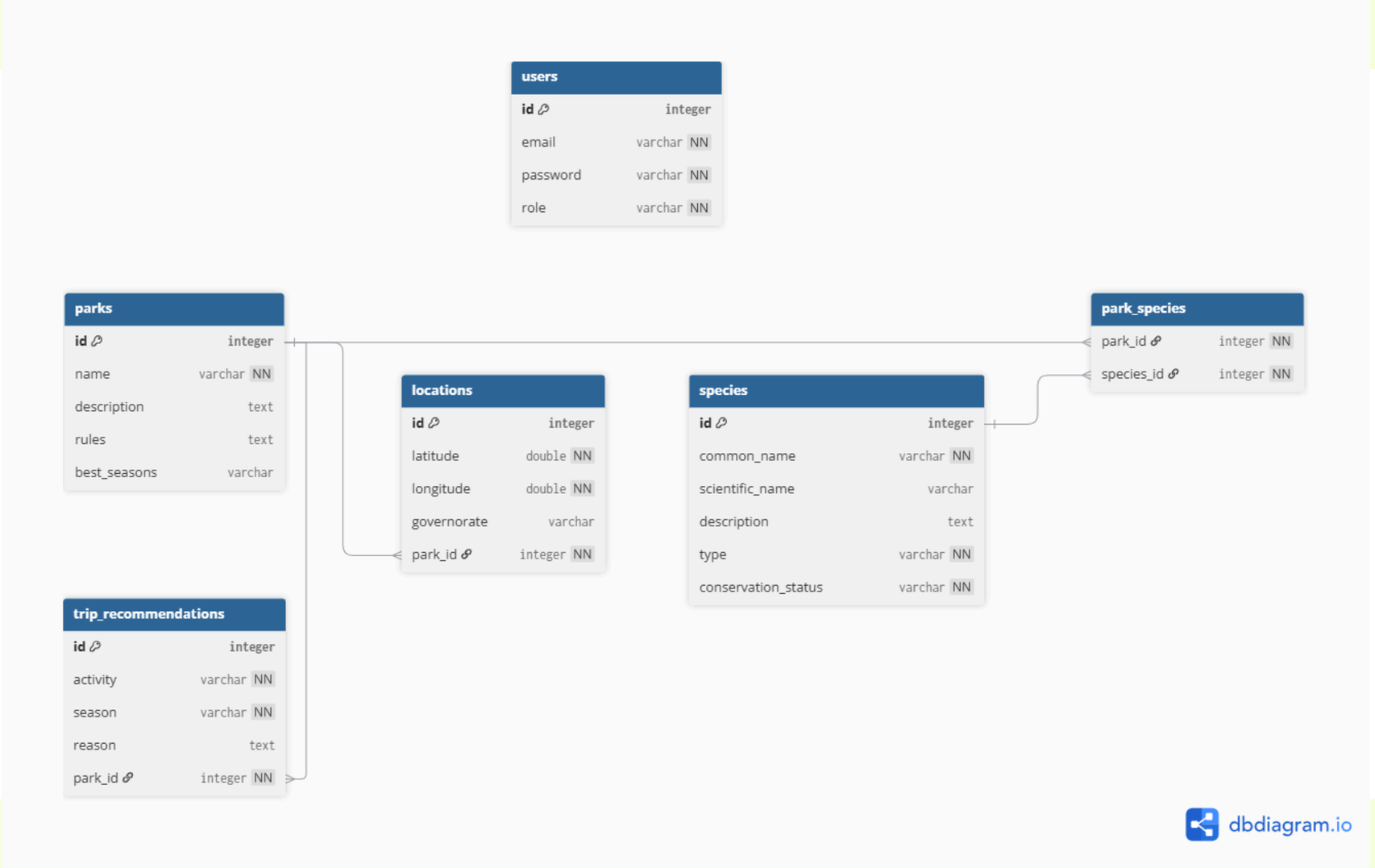
ADMIN

Can access all visitor functionalities.
Can create and update species data related to fauna and flora.
Contributes to biodiversity documentation but cannot manage users or parks.

Authorization & Security

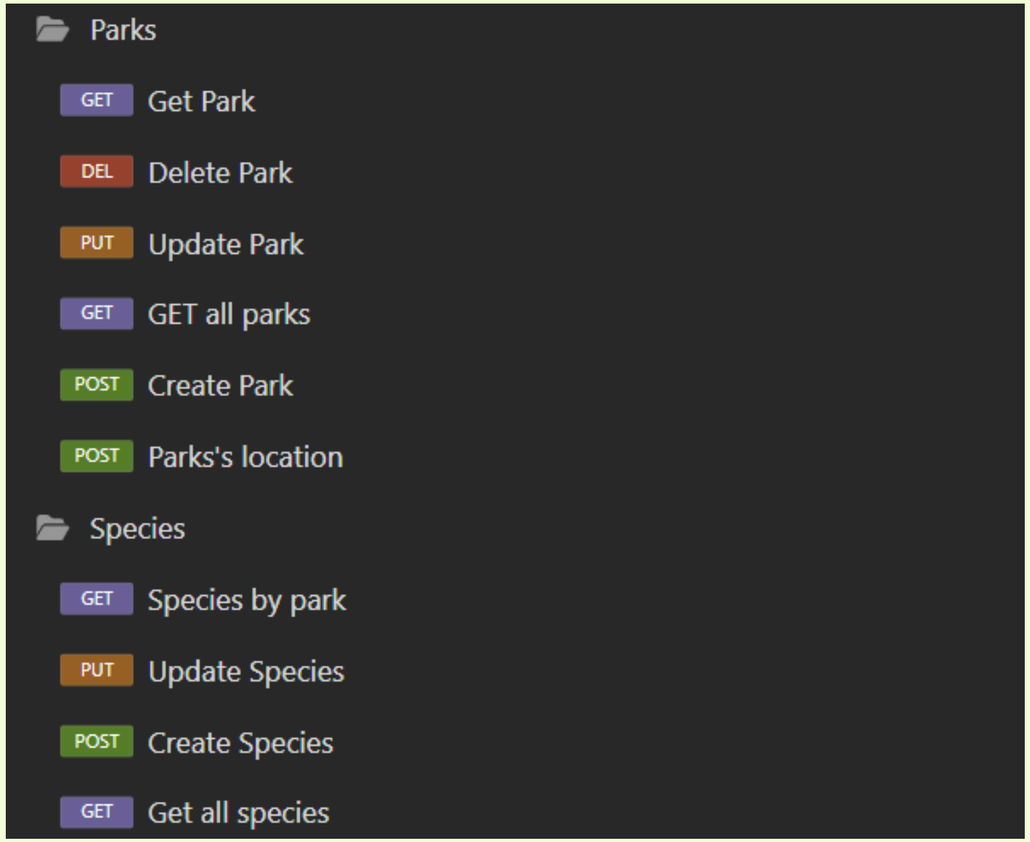


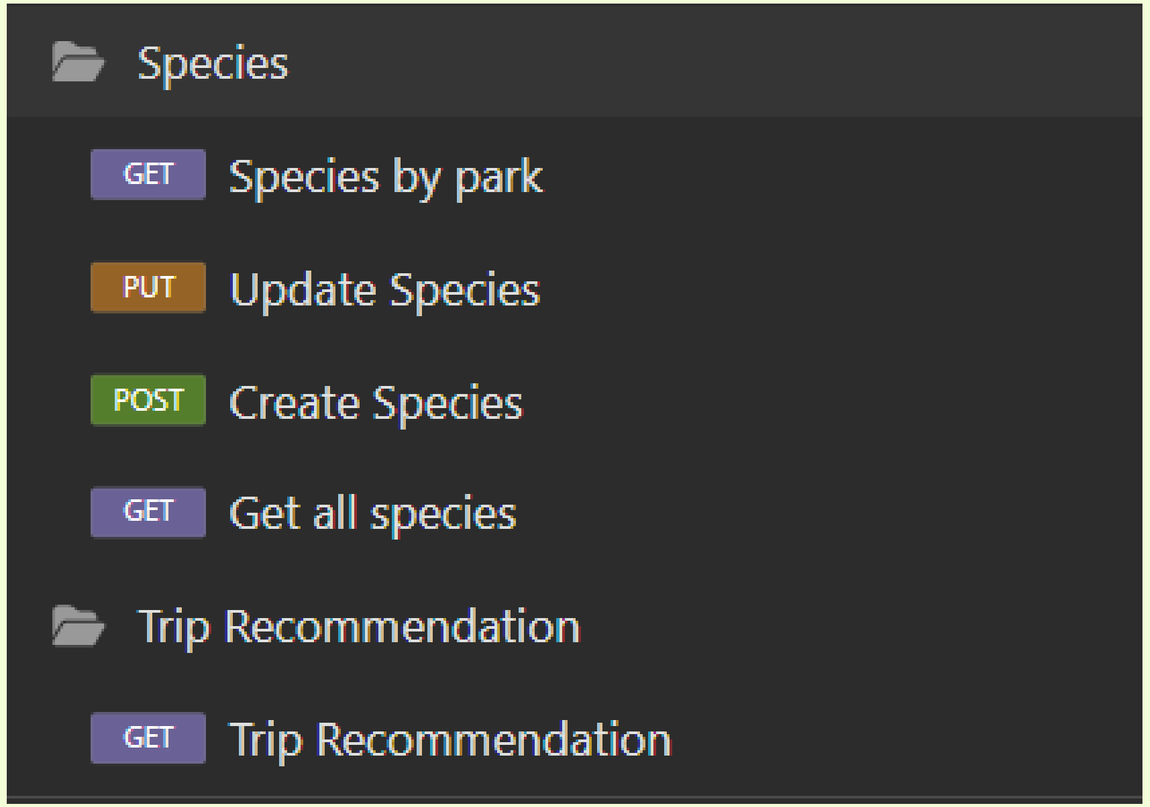
Database Structure



Technologies & Features

Endpoints





Future Enhancements

Towards a More Advanced Platform

Interactive maps and geographic visualization

Web or mobile frontend applications

Image recognition and AI-assisted biodiversity analysis

Advanced ecological analytics and predictive insights

Conclusion

Empowering the Future

TABI3A API addresses a real need for structuring and valorizing Tunisia’s natural heritage through a clear, robust, and reusable backend architecture. By centralizing data on natural parks, fauna, flora, and conservation rules, the system transforms fragmented environmental information into a coherent digital memory. Its modular design, secure role-based access, and eco-tourism recommendation logic ensure both technical reliability and environmental responsibility. Overall, TABI3A provides a solid foundation for future digital initiatives in biodiversity conservation and sustainable tourism, while remaining extensible for more advanced features in the long term.

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Thank you

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