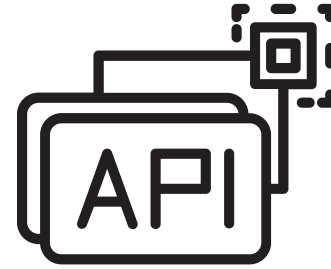




# Virtual Tour



## Ennejma Ezzahra Palace

A 360° Virtual Tour Experience

PROFESSOR: Dr.MONTASSAR  
BEN MESSAOUD

Dhia Eddine Zouari  
Senior BA/IT

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Why the need for virtual  
tours

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## System Architecture

Overview of the API  
Architecture

## UML

Visual Representation of  
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## API Design

How every API  
Component works

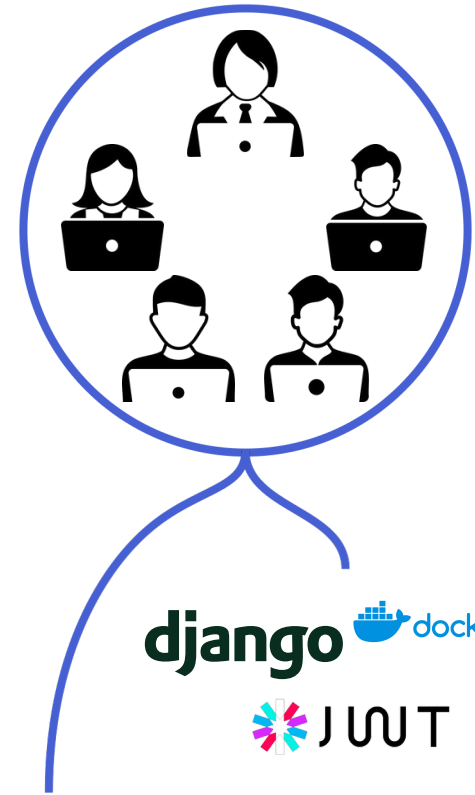
## Security measures

How the user experience  
is secured

# 8 00 Million \$

lost annually by Tourists in Tunisia due to  
[mismatched expectations](#) from social  
media content

**Solution:** The Virtual Tour API, powered by a mapping service and a robust backend framework, enables users to explore **Ennejma Ezzahra Palace** through an interactive 360° experience.



Google Maps APIs



Swagger.



PostgreSQL

# API architecture

## Frontend

displays

- The 360° virtual tour
- User login pop-up
- Feedback section

## Backend

handle API requests

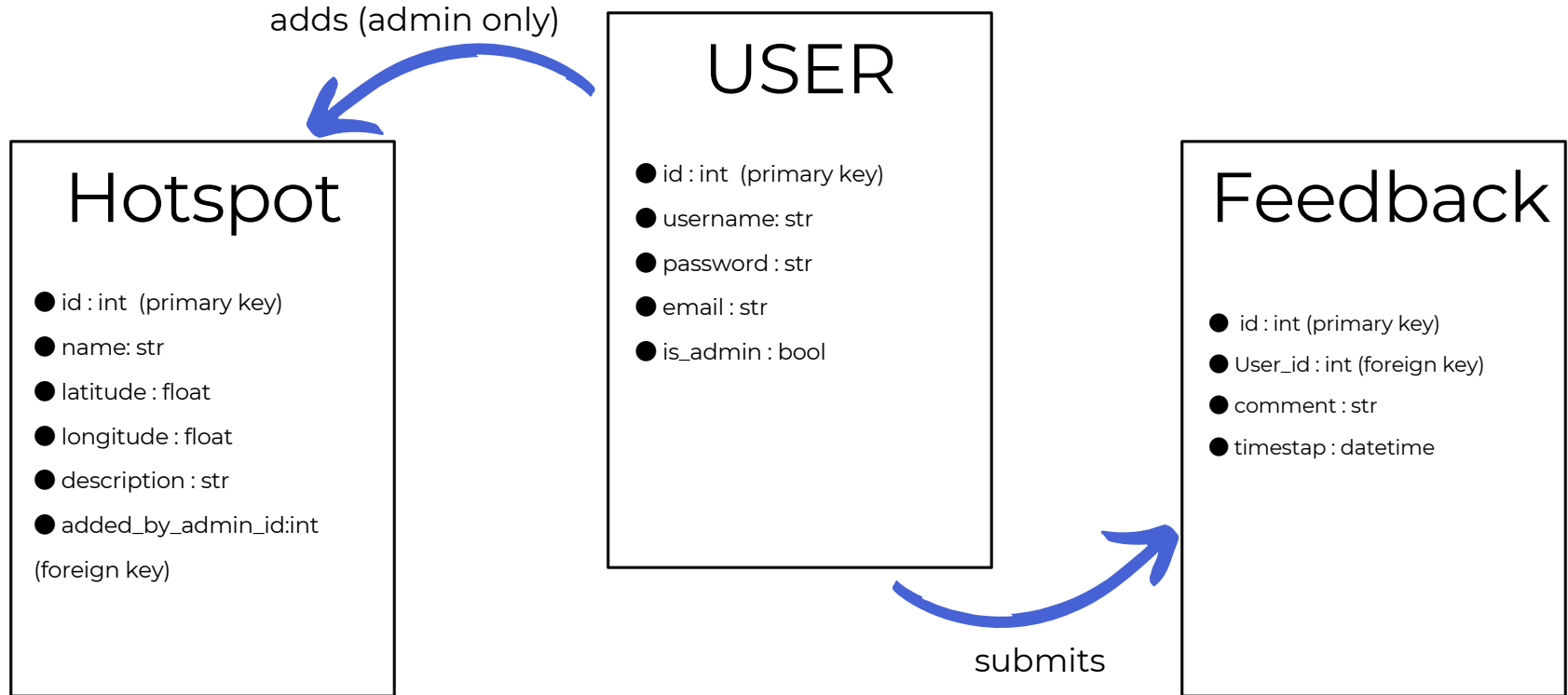
- Authentication
- Tour data
- Feedback

## Database

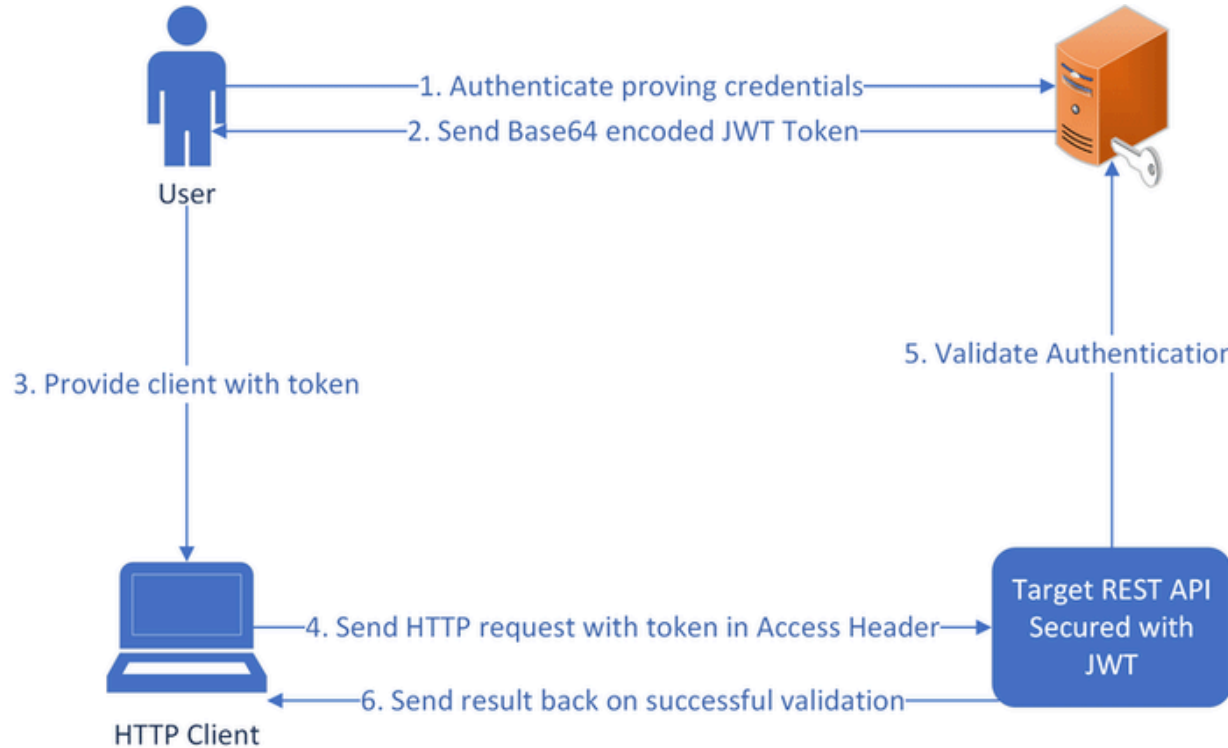
Stores

- Hotspots data (with details)
- User identifiers
- User feedback

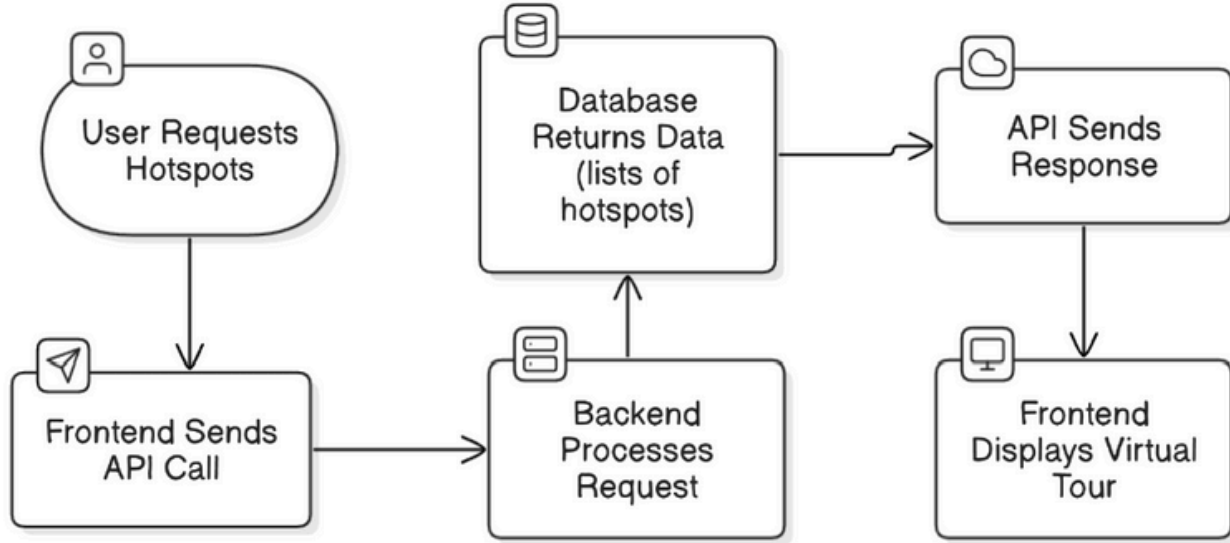
# UML Diagram - API Component Breakdown



# Authentication API - security with JWT

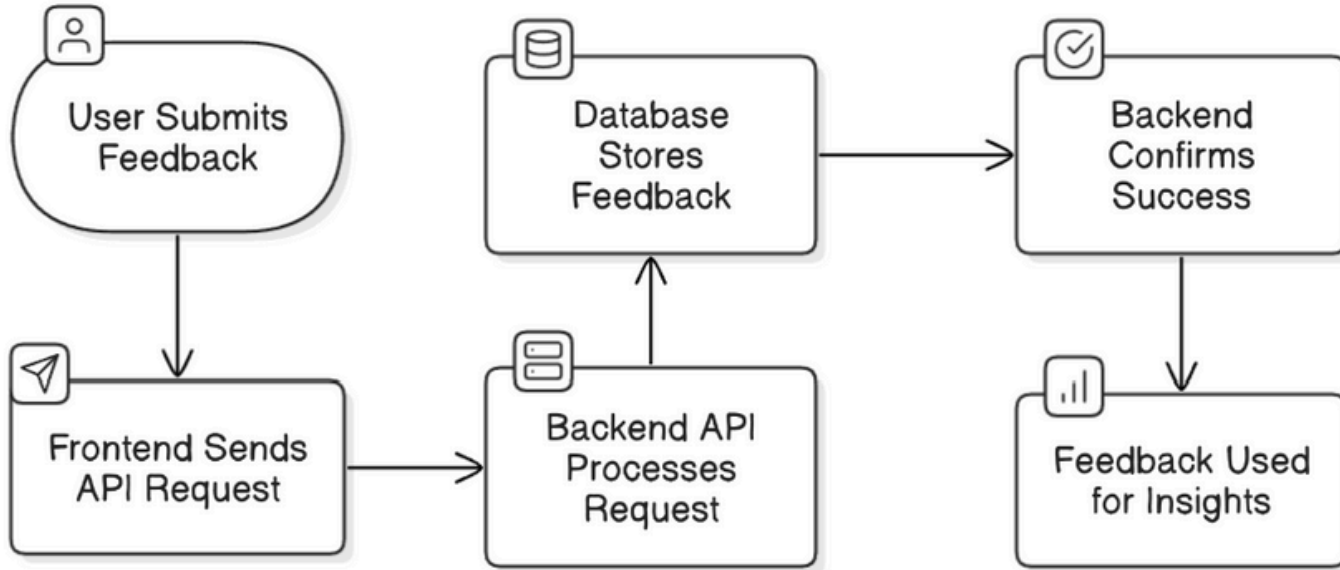


# Tour API - fetching virtual Hotspots





# Feedback API - User Engagement



Deployment  
Strategy

Next future step



Deploying  
on a cloud  
platform

AWS or AZURE

WHY Docker?

-For Environment consistency  
, scalability, isolation and  
portability

Building  
Docker  
containers

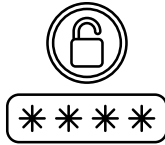
Local builds  
and tests

# Security Measures



## JWT

JWT authentication generates a token at login, which the server verifies in each request to control access.



## Password Hashing

User passwords are encrypted before storage, preventing unauthorized access even if the database is compromised.



## Token Expiry & Refresh

JWT tokens have a limited lifespan, requiring renewal to enhance security and prevent unauthorized sessions.

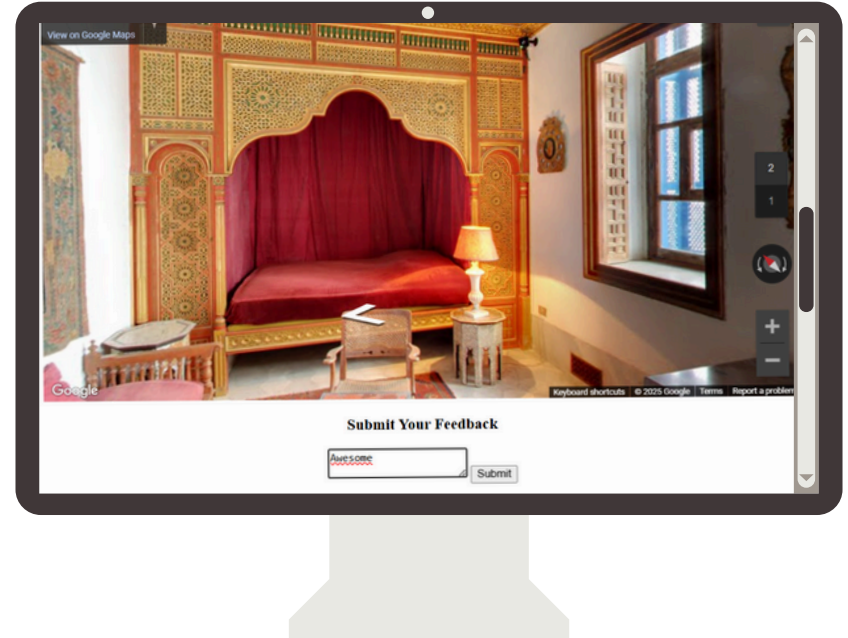


## CORS Configuration

Restricts API access to trusted origins, preventing malicious requests from unauthorized sources.

# User-experience consist of 3 elements

- 1 **Login:** enters the valid registered credentials
- 2 **Enjoy the Virtual-Tour:** explore the inside beauty of Ennejma Ezzahra Palace and interacts with Hotspots.
- 3 **Submits Feedback:** writing a constructive opinion to help improve the overall experience.



# Thank You for your attention



[dhiazoueri7@gmail.com](mailto:dhiazoueri7@gmail.com)



[www.ennejmavirtual.tn](http://www.ennejmavirtual.tn)



Gomaps.  
pro-API



Dhia Eddine  
Zouari