

Name : Jenil Vaghasiya

Enroll. No. : 92310133012

## Deployment and Operations

### **Project Title : Ignite Perfume Web Application**

#### **1. Deployment Process**

##### **Platform Selection**

To put the Ignite Perfume program into action, I chose Vercel as the place to host it. Here's why:

Simple to put in place: Vercel works right with GitHub and lets you constantly update with every change you make.

Can handle more: It takes care of serverless tasks and worldwide CDN storage on its own, so it runs faster.

Free option available: Works well for school projects and small projects.

The database behind the scenes was put on MongoDB Atlas, a service that takes care of cloud databases. It makes sure things are reliable, easy to grow, and can be reached from anywhere without needing to set up servers yourself.

## Deployment Steps

### 1. Frontend Hosting

- The project was pushed to a GitHub repository.
- Connected GitHub repo with Vercel.
- Configured build settings (npm install, npm run build).
- Deployed automatically with each new commit (CI/CD).

### 2. Backend Database Setup

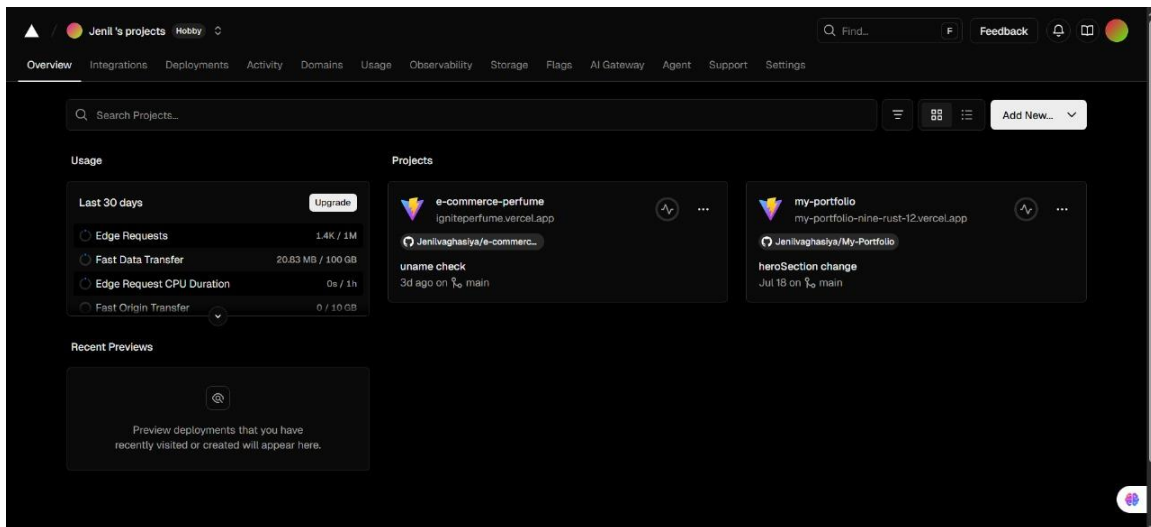
- Created a MongoDB Atlas cluster.
- Whitelisted IP addresses to allow secure access.
- Added connection URI in .env file hosted on Vercel (e.g., MONGODB\_URI).

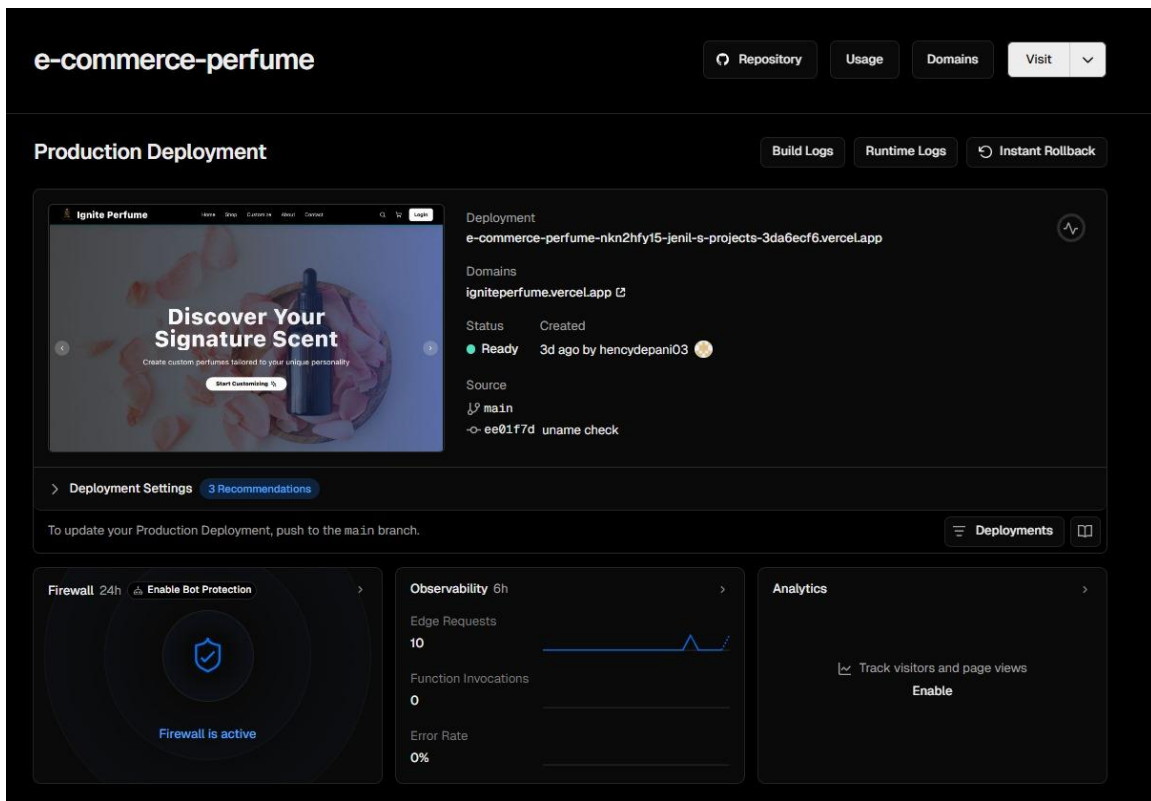
### 3. Domain Configuration

- By default, Vercel provides a live deployment URL:  
<https://igniteperfume.vercel.app/>.
- The project can later be configured with a custom domain for branding.

### 4. Evidence of Live Deployment

- Website accessible worldwide: [Ignite Perfume Live Link](https://igniteperfume.vercel.app/).
- Screenshot :





## 2. Monitoring Strategy

To ensure the application runs smoothly, monitoring mechanisms were set up:

### Tools Used

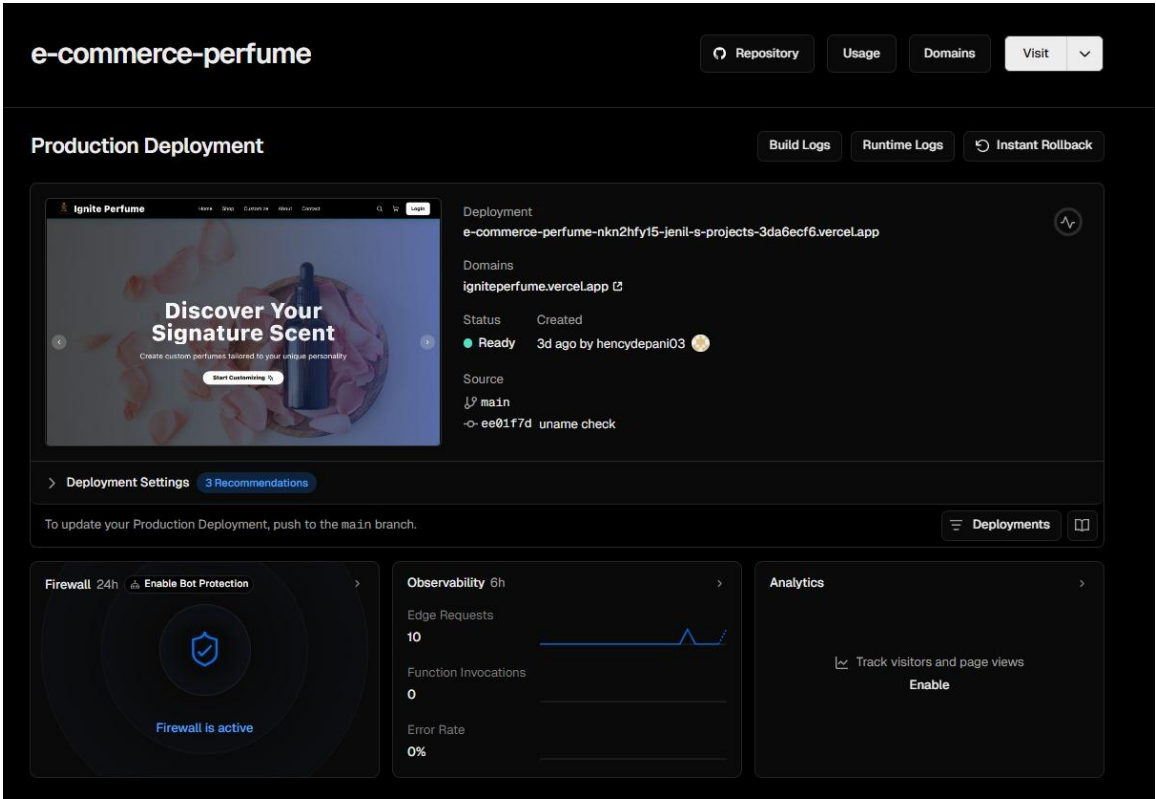
- Vercel Analytics: For tracking performance (load times, geographic distribution, traffic).
- MongoDB Atlas Monitoring: For checking query performance, database size, and uptime.

### Key Performance Indicators (KPIs)

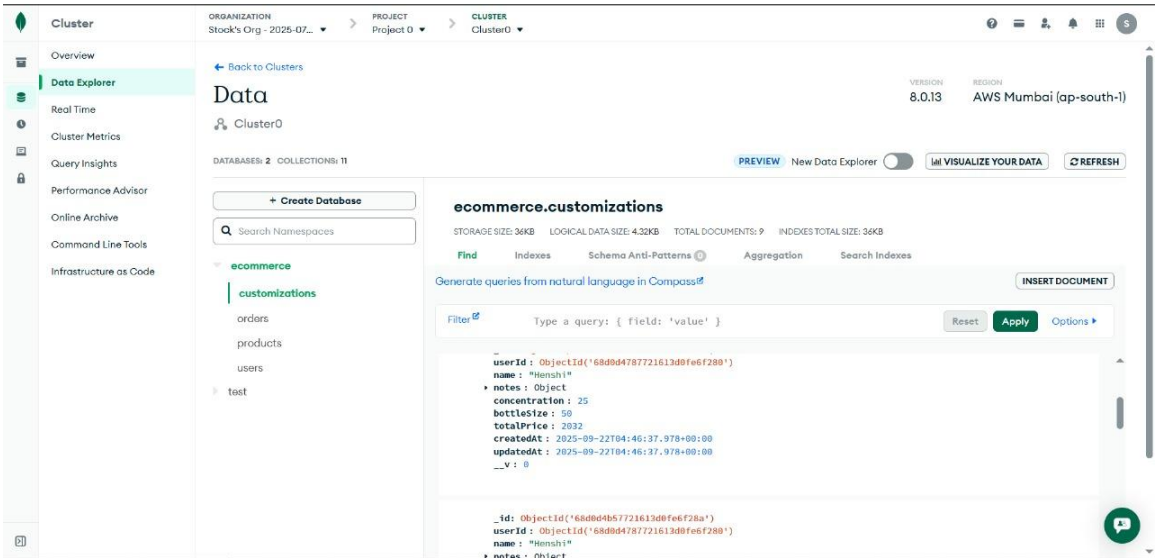
1. Response Time – Average page load under 2 seconds, monitored via Vercel Analytics.
2. Database Health – Query performance and active connections monitored via MongoDB Atlas.

Evidence

- Screenshot placeholder: Monitoring dashboard from Vercel.



- Screenshot placeholder: MongoDB Atlas metrics (CPU usage, query time).



### 3. Maintenance Plan

A sustainable project requires long-term care. The following plan ensures Ignite Perfume remains reliable and secure:

#### Regular Updates

- **Weekly:** Review error logs from Vercel and MongoDB.
- **Monthly:** Update project dependencies (npm audit fix) to remove security vulnerabilities.
- **Quarterly:** Add new features or improve UI/UX based on user feedback.

#### Backups

- **Database:** Automatic daily backups enabled on MongoDB Atlas.
- **Code:** Version-controlled on GitHub with rollback option.

#### Scalability Planning

- If traffic grows, upgrade MongoDB Atlas tier for higher storage and connections.
- Use Vercel Pro plan for advanced scaling and team collaboration.

#### Security Measures

- Environment variables stored securely in Vercel.
- HTTPS enabled by default with SSL certificate.
- Plan for regular **penetration testing** to check vulnerabilities.

### 4. Challenges Faced

During deployment and operations, the following challenges were faced:

- **Database Connectivity:** Initially faced connection errors when deploying due to missing whitelist IP in MongoDB Atlas. Resolved by adding Vercel's dynamic IP ranges.

- **Environment Variable Handling:** Faced issues in exposing MONGODB\_URI correctly. Solved by securely adding it to Vercel's environment settings.
- **Performance Optimization:** On first build, product images slowed down page load. This was resolved by enabling Vercel's **Image Optimization** feature (lazy loading, compression).

## 5. Conclusion

The Ignite Perfume project has been successfully deployed to a live environment, monitored for performance, and secured with a clear maintenance plan. This ensures it is not only an academic project but also a practical, sustainable solution in the ICT domain.