FRESHBASKET: SCALABLE E-COMMERCE PLATFORM USING FLASK ON AWS EC2 AND RDS

AWS PROJECT PRESENTATION

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PROBLEM STATEMENT

The demand for fresh fruits and vegetables through online platforms has been rising, but many existing e-commerce systems face challenges in scalability, efficient data management, and seamless user experience during high traffic periods. Small to medium-scale businesses often struggle with adopting cloud-native solutions due to complexity and cost, resulting in poor performance, downtime, and dissatisfied users. There is a need for a scalable, reliable, and cost-effective e-commerce platform that ensures high availability, efficient operations, and an intuitive user experience for both customers and administrators.

OBJECTIVES

The primary objectives of this project are as follows:

- Develop a scalable e-commerce platform for fresh produce using Flask for the backend.
- Deploy the application on AWS EC2 for high availability and scalability.
- Use Amazon RDS for efficient and secure database management.
- Demonstrate the benefits of cloud-native architecture for handling dynamic traffic and operational demands.

TECHNOLOGIES USED

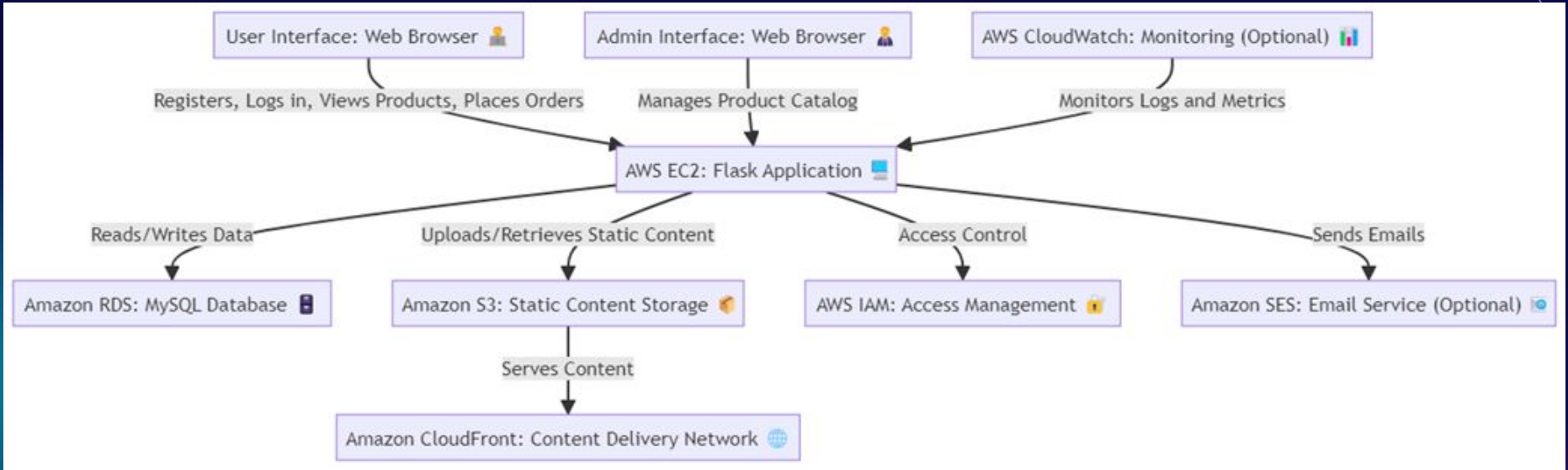
- **Flask**: Lightweight backend web framework for managing user sessions, catalog data, and order processes.
- **AWS EC2**: Scalable cloud-based virtual server for hosting the platform.
- **Amazon RDS**: Managed database service for storing and retrieving product and user data efficiently.
- **MySQL Workbench**: Tool for database design, querying, and management.

MODULES

The FreshBasket platform is composed of the following modules:

- **User Authentication**: Enables user registration and login for secure access.
- **Product Catalog Management**: Displays available fruits and vegetables, along with prices and details.
- **Shopping Cart**: Allows users to add, update, and remove items from their cart.
- **Order Processing**: Handles checkout operations, including order confirmation and payment integration.
- **Admin Dashboard**: For managing inventory, tracking orders, and updating product details.

ARCHITECTURE



CONCEPTS

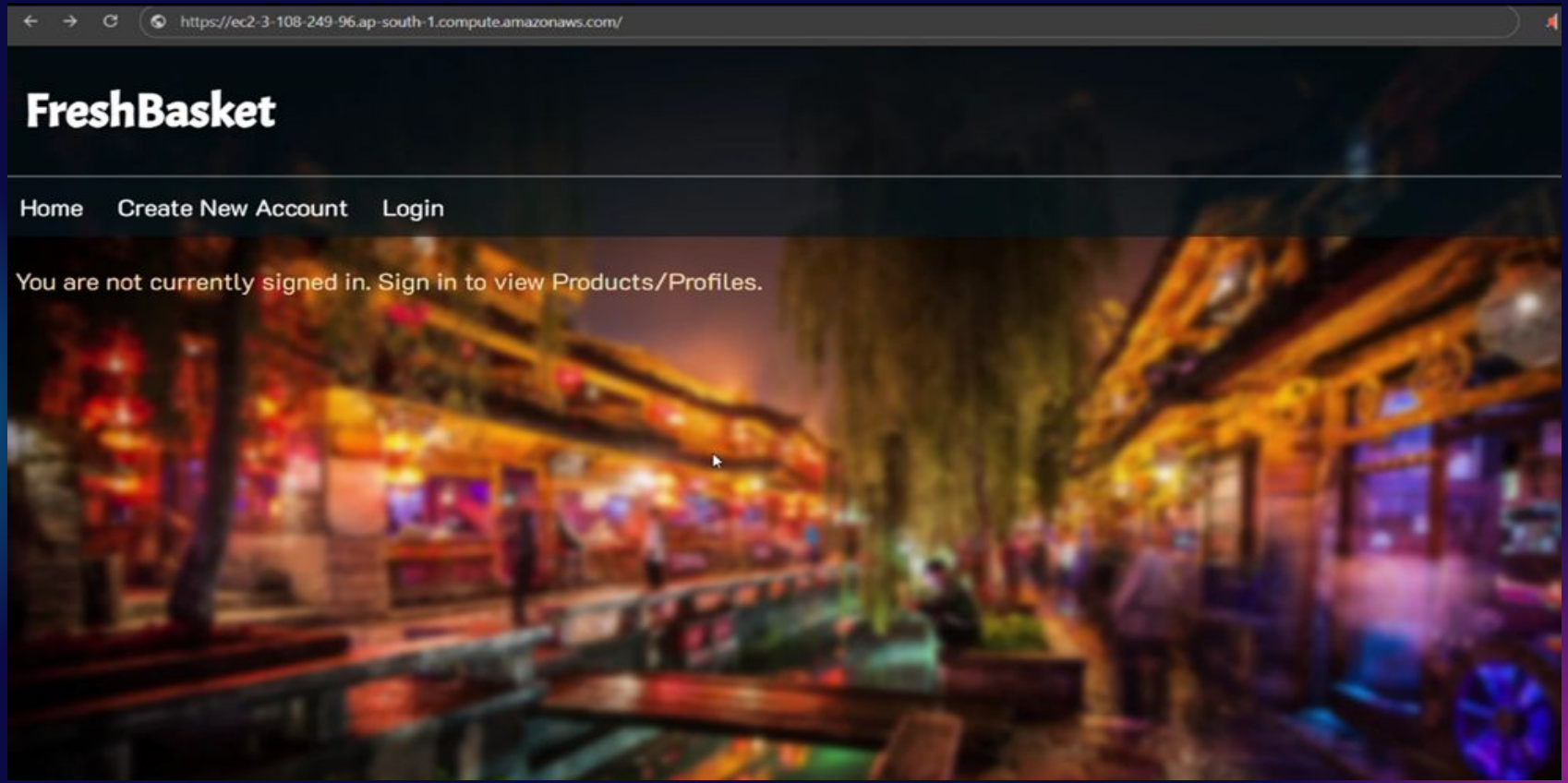
- **Scalable Web Architecture**: Designed to handle increasing traffic with minimal performance impact.
- **Cloud-Native Deployment**: Utilizing AWS services like EC2 and RDS ensures reliability and flexibility.
- **Database Integration**: MySQL Workbench supports efficient data management and query execution.
- **Backend Efficiency**: Flask's lightweight nature enables fast response times and seamless operations.

GESTURES IMPLEMENTED

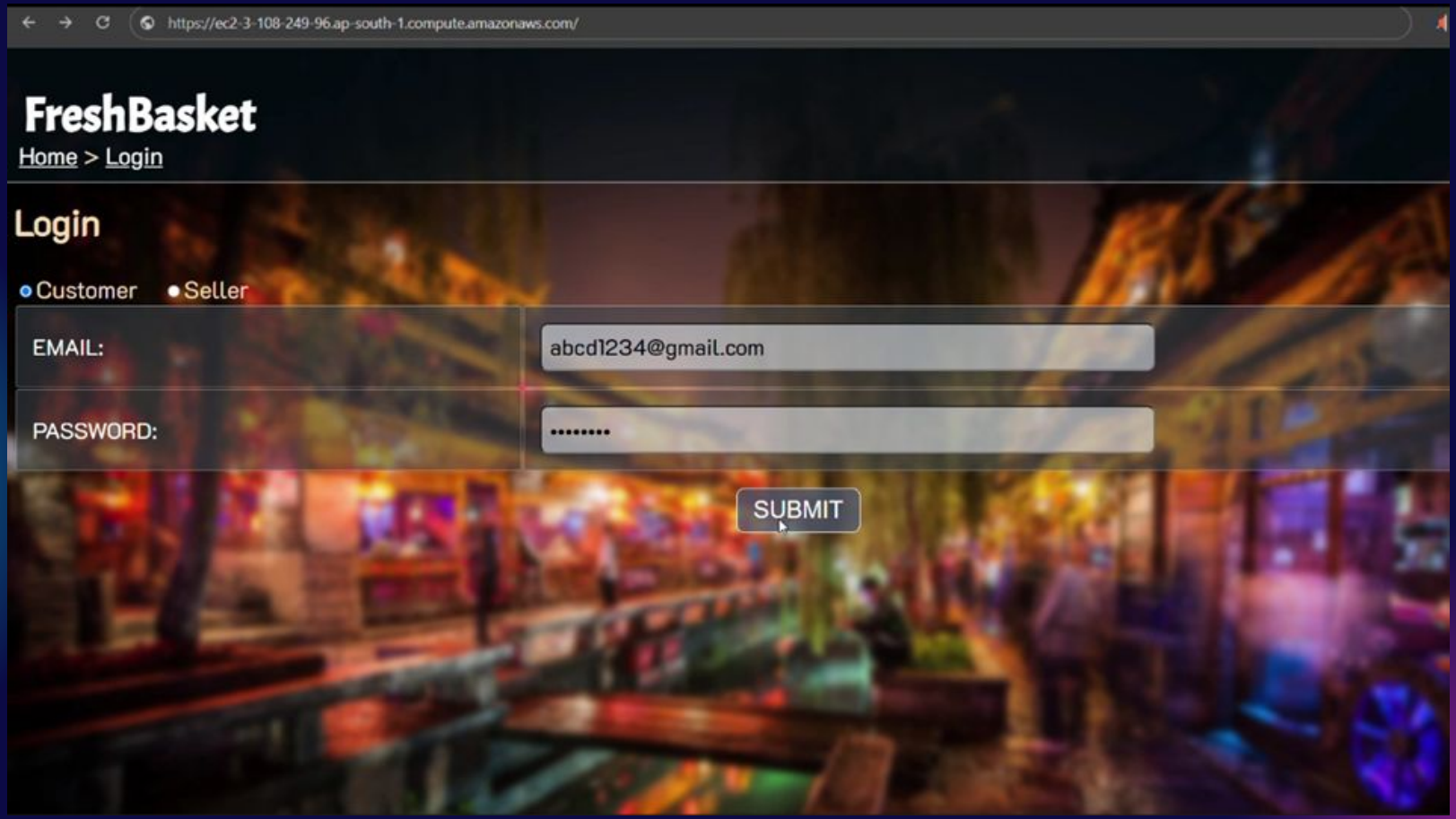
- **Responsive Navigation**: User-friendly design with intuitive menus and buttons.
- **Real-Time Cart Updates**: Changes in the shopping cart reflect instantly on the user interface.
- **Dynamic Search and Filtering**: Allows users to quickly find products using keywords or categories.
- **Order Confirmation Feedback**: Displays order status and details after successful checkout.

OUTPUT SCREENSHOTS

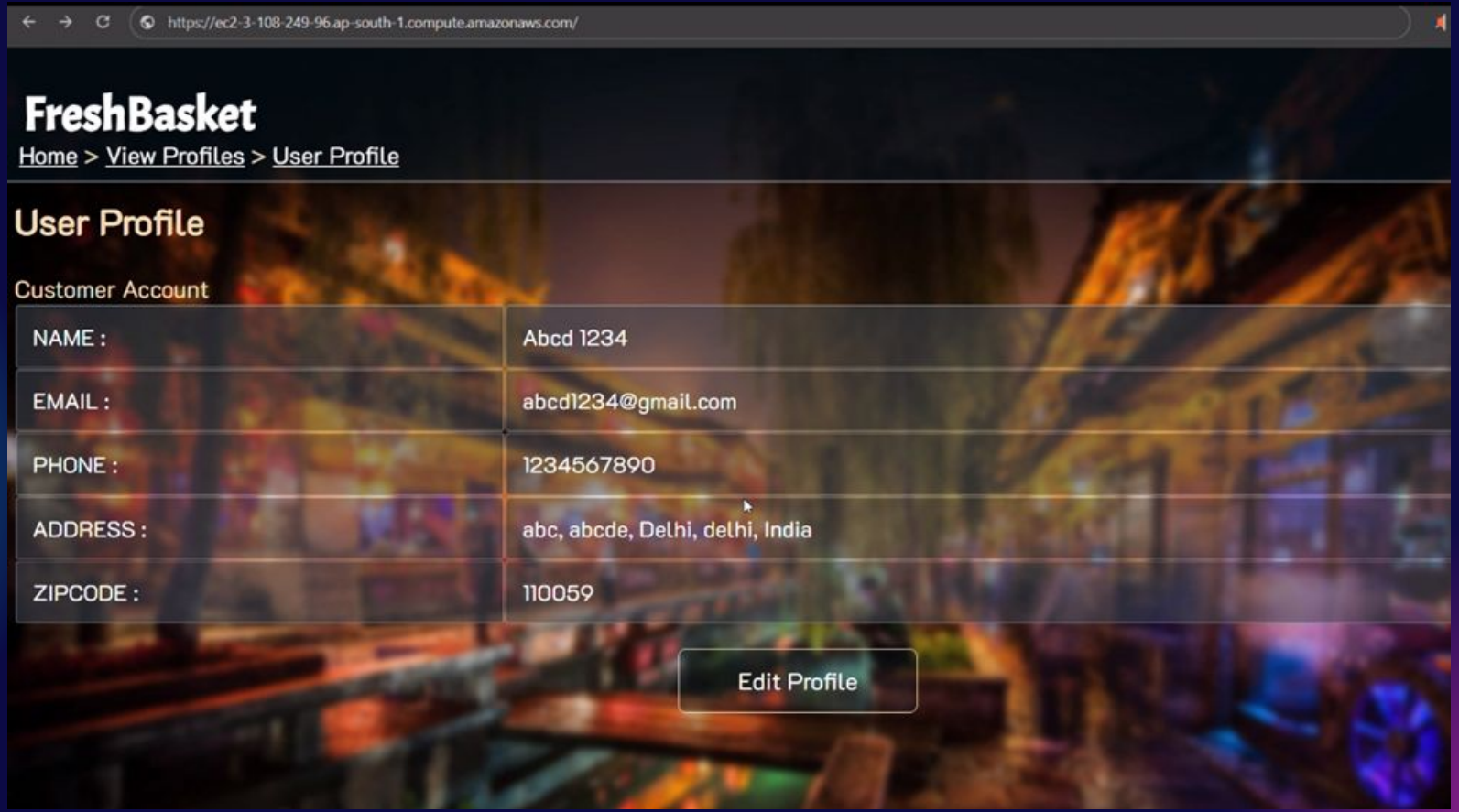
Home Page



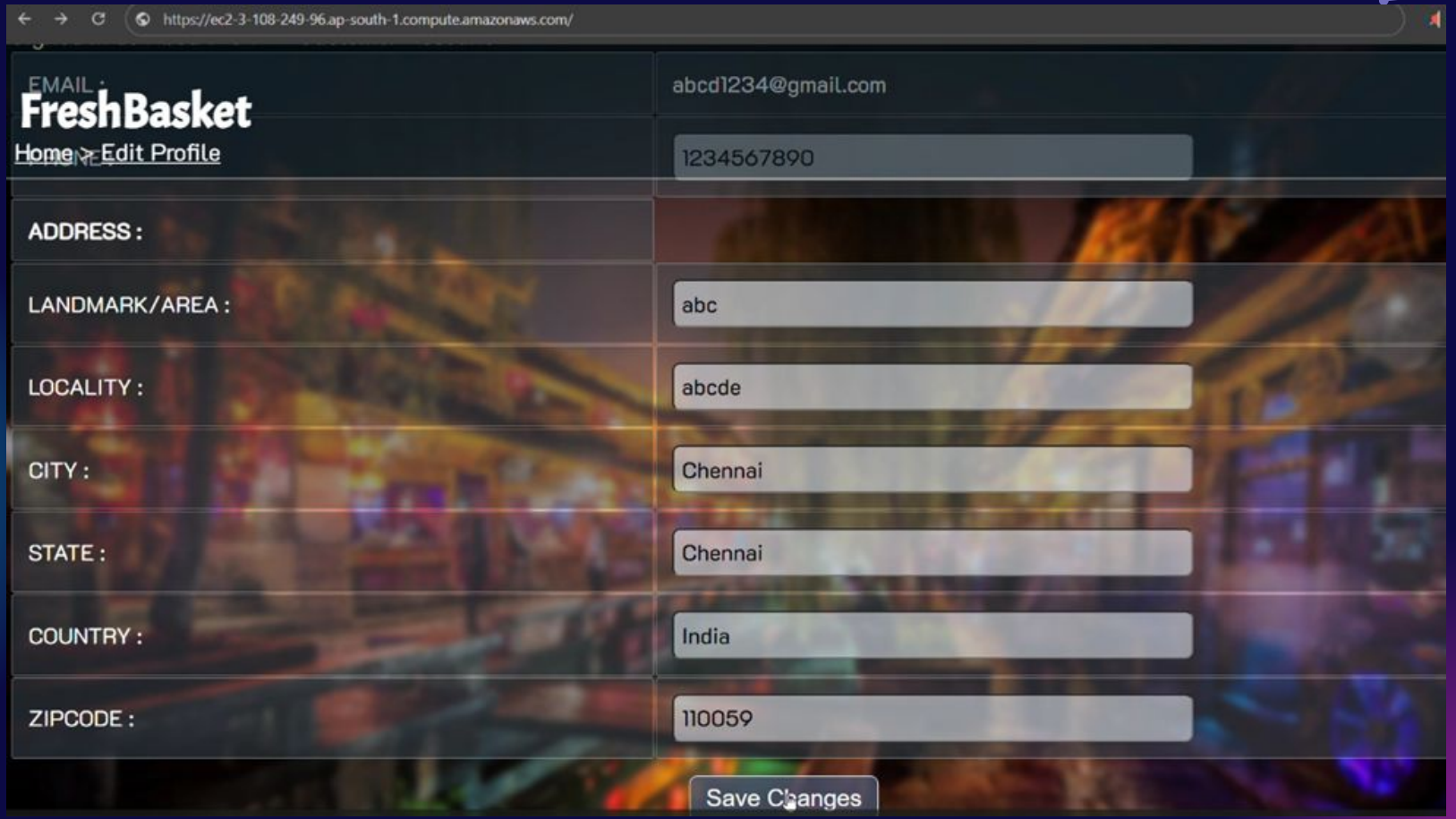
Login Page


https://ec2-3-108-249-96.ap-south-1.compute.amazonaws.com/
FreshBasket
Home > Login
Login
Customer
Seller
EMAIL:
abcd1234@gmail.com
PASSWORD:
SUBMIT

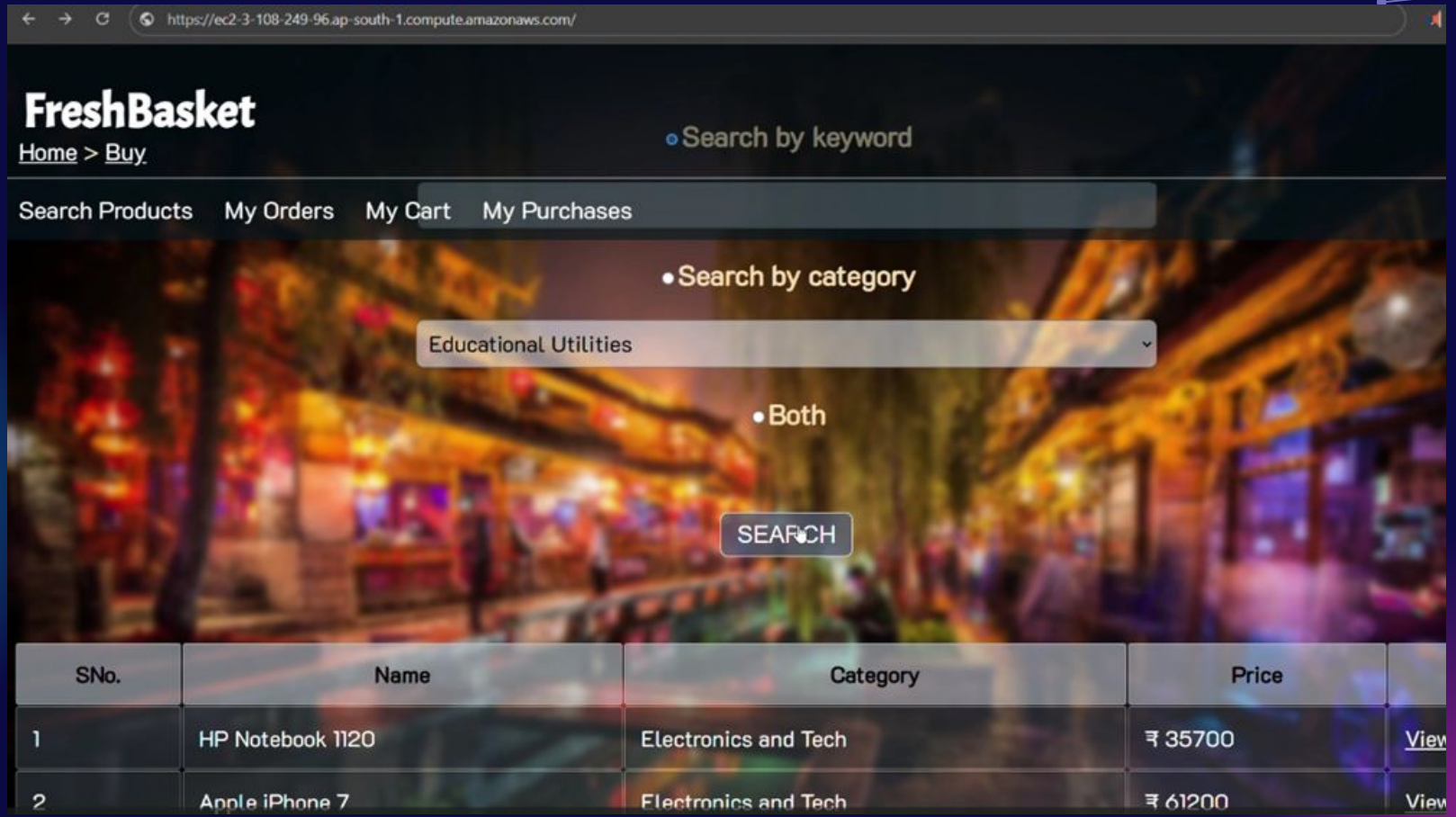
User Profile Page



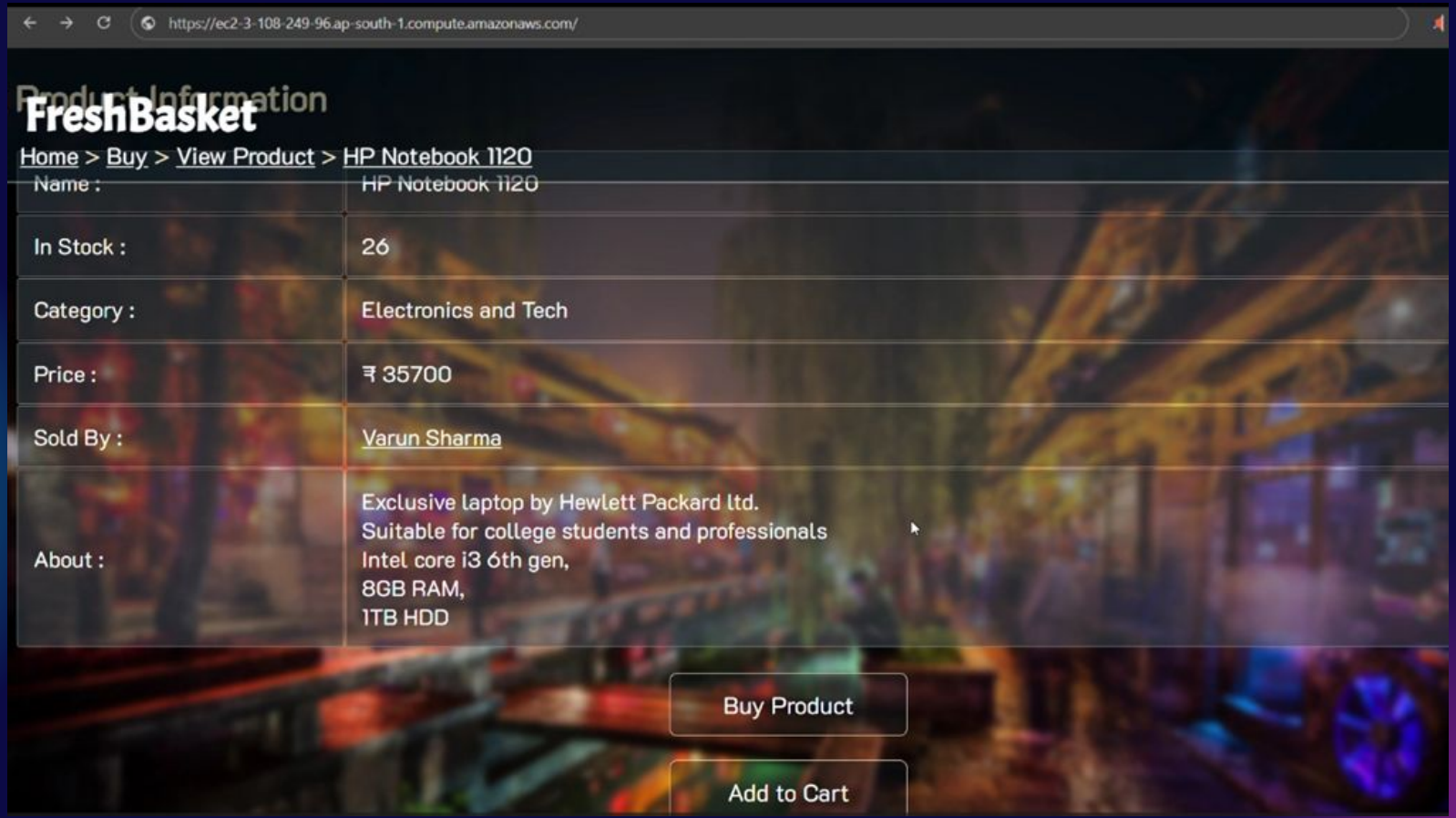
Editing the Address as Chennai



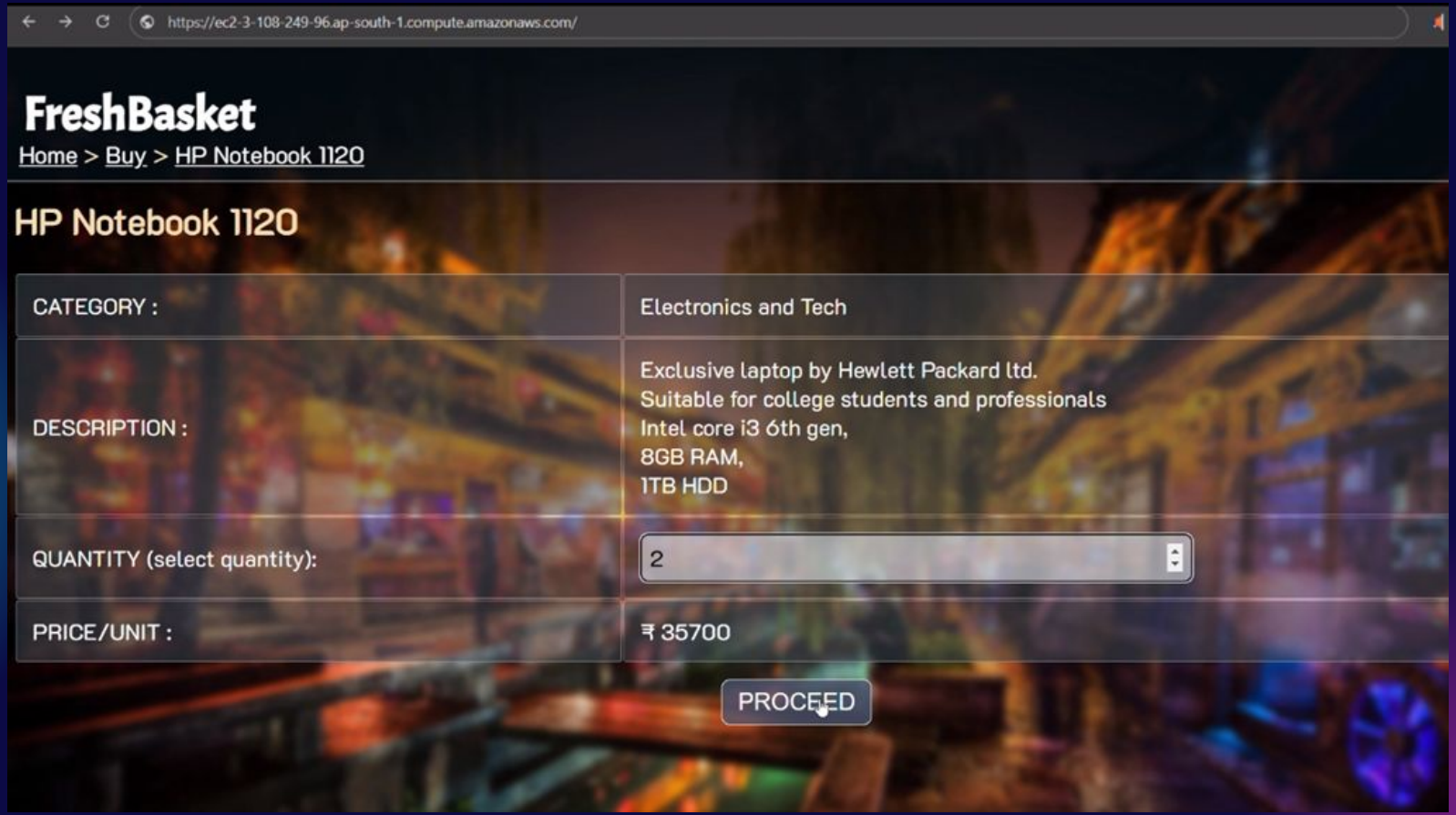
Searching a product by its category



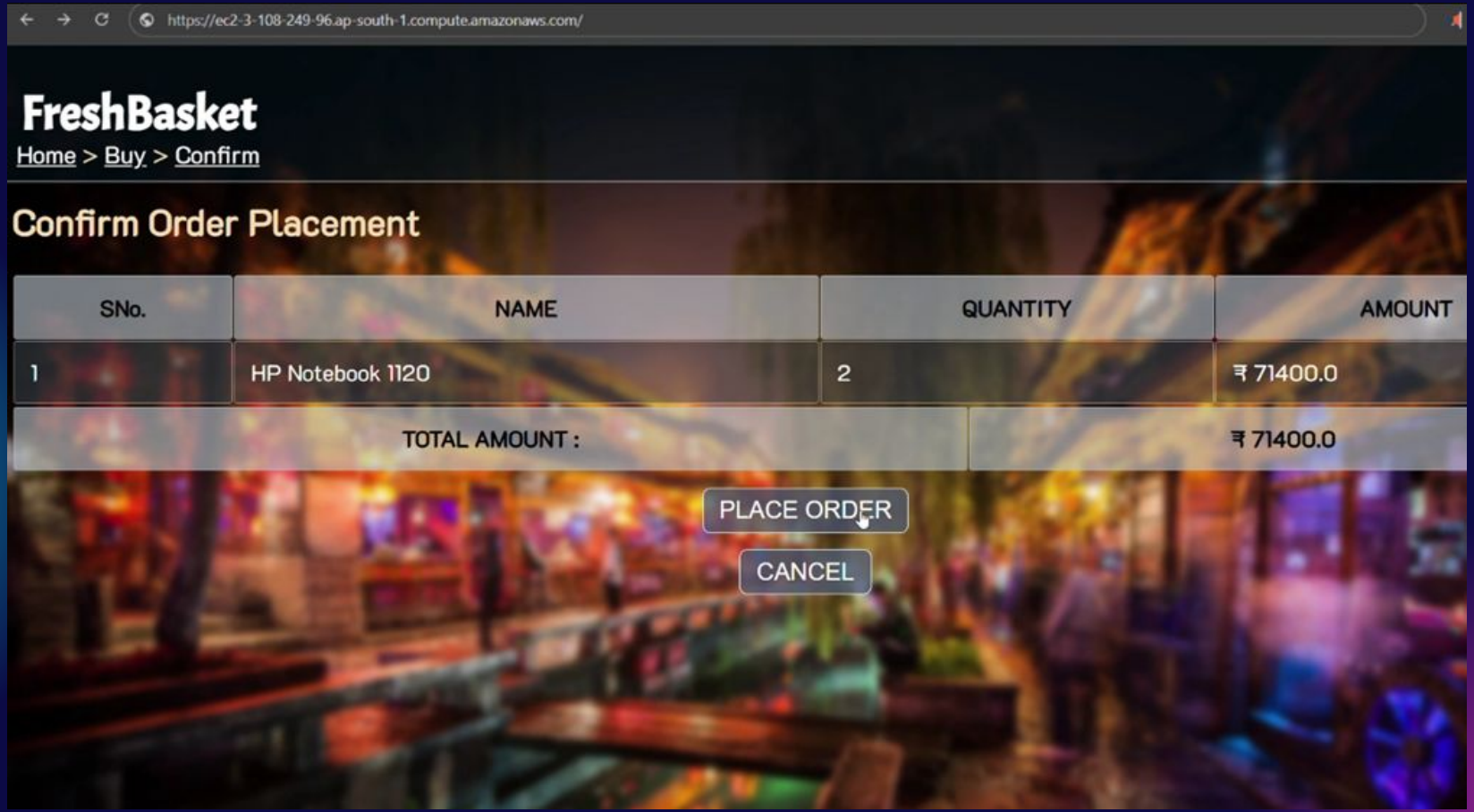
Adding a product to cart



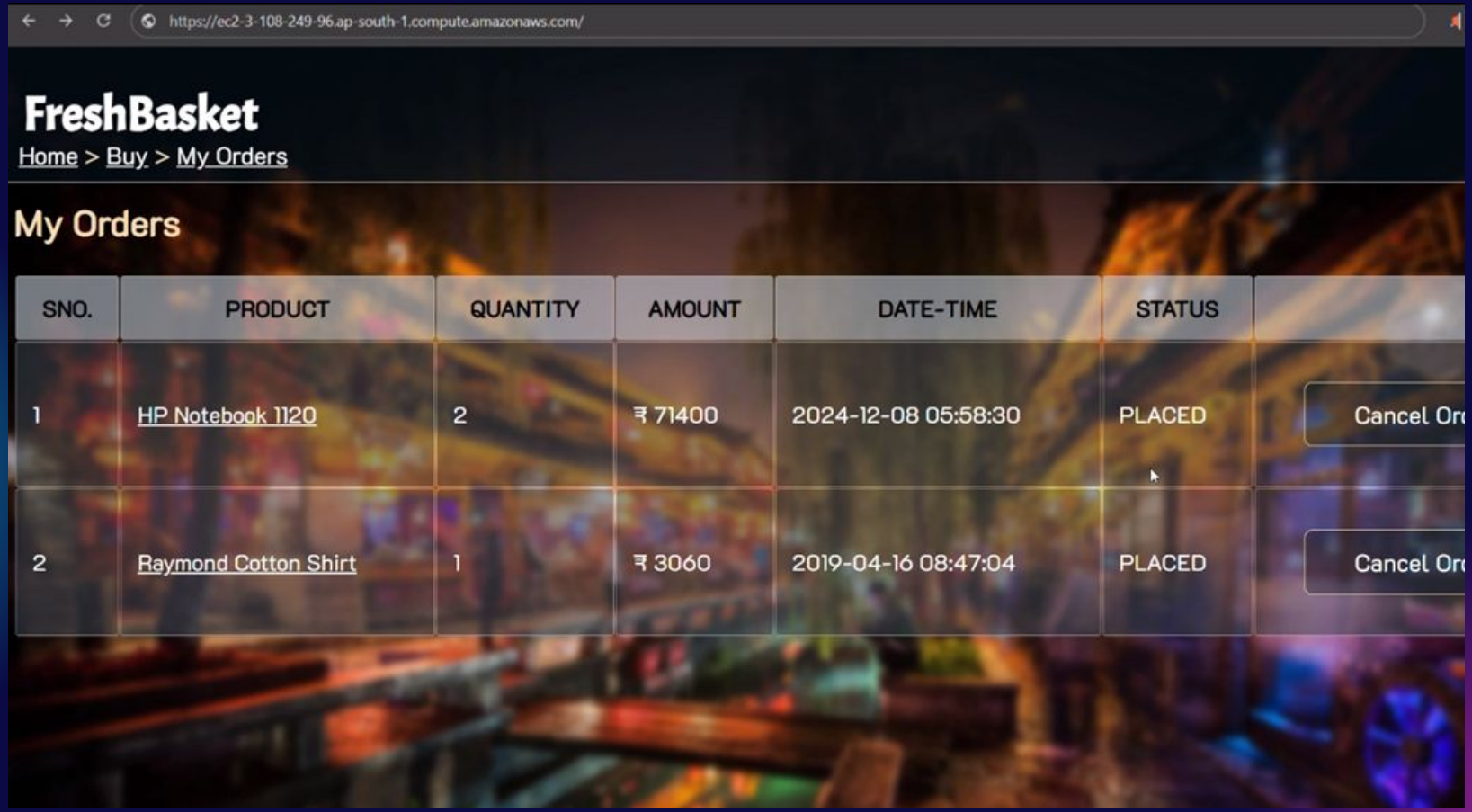
Buying the product



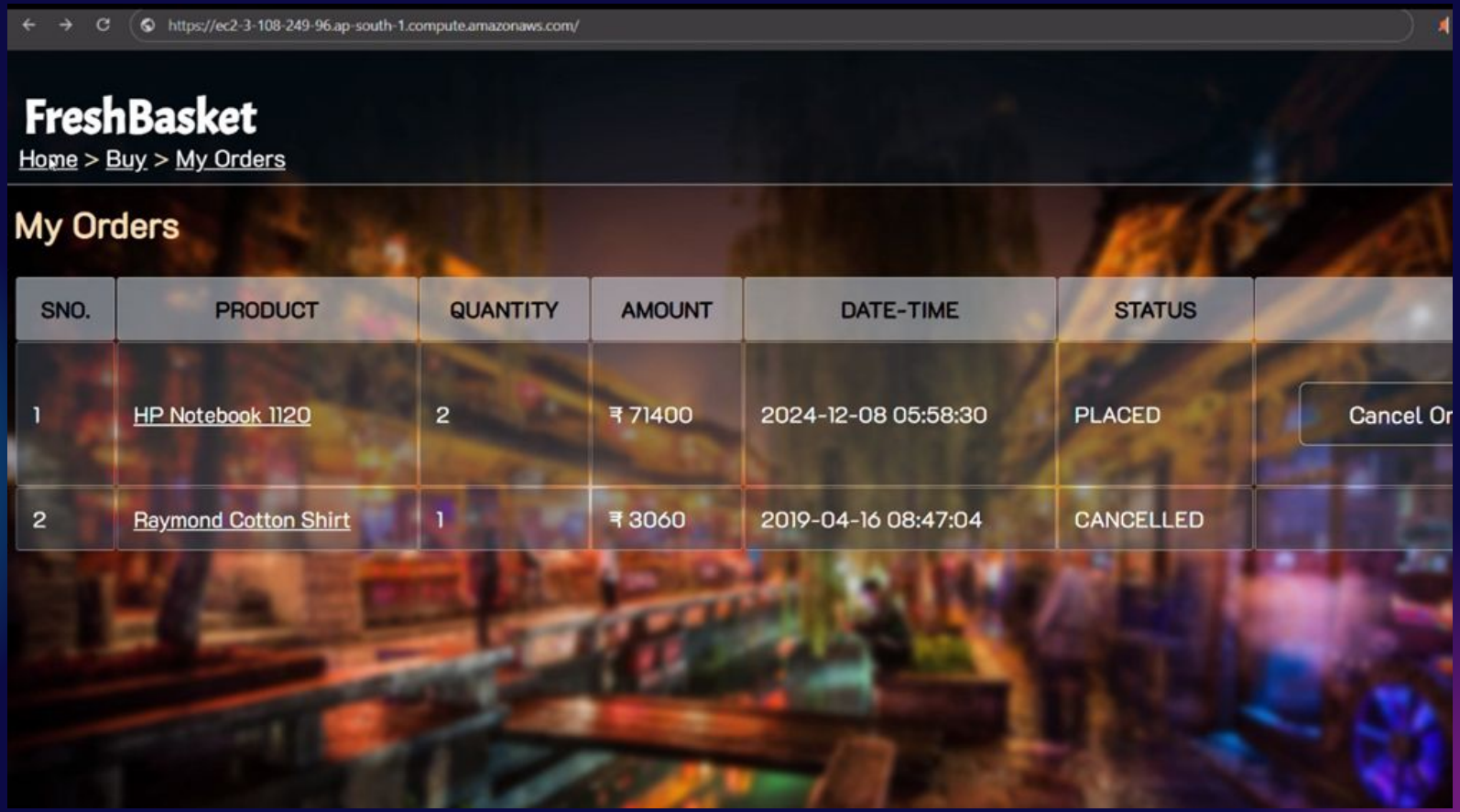
Confirming the order



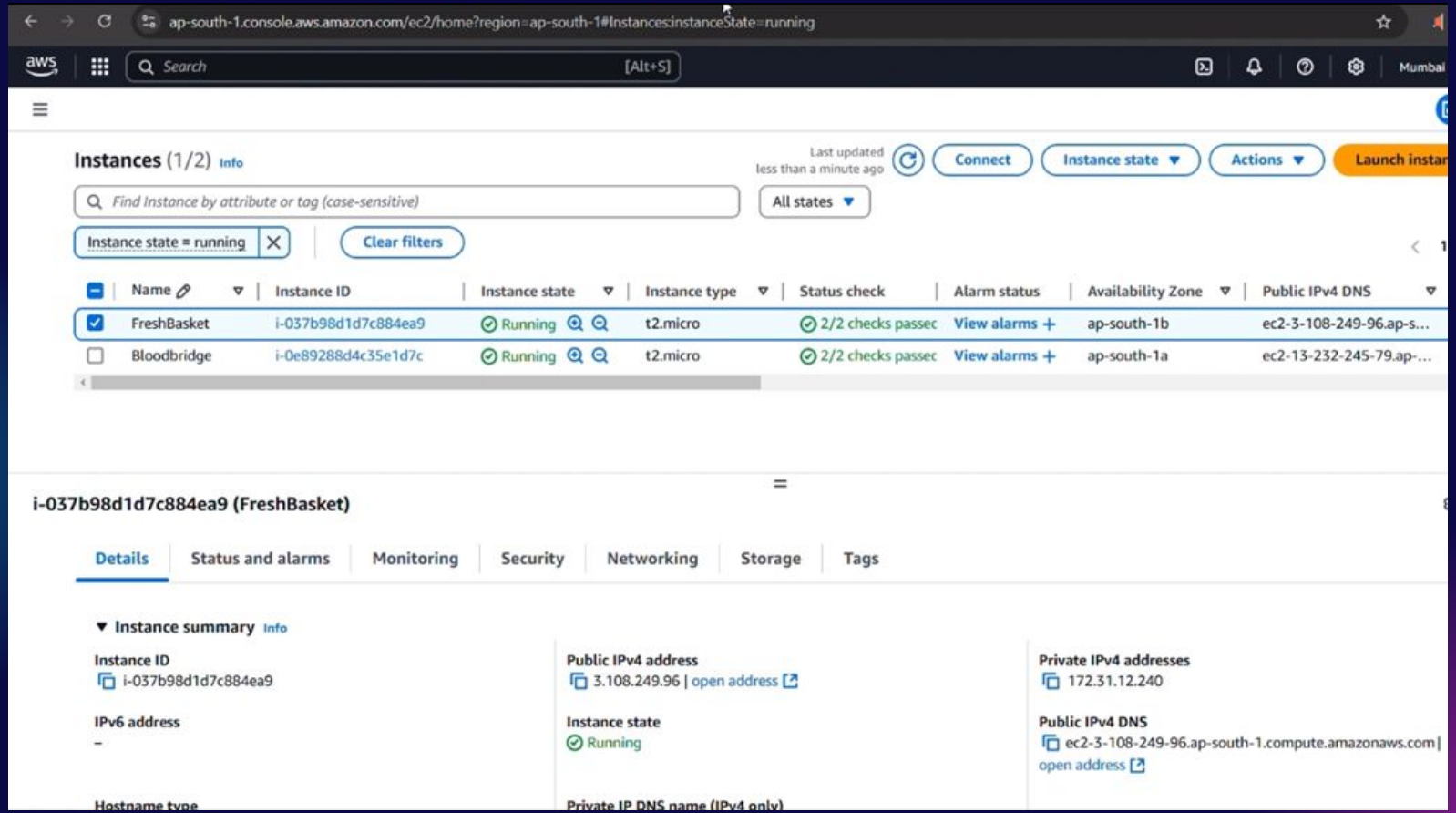
Viewing my orders



Cancelling a confirmed order



FreshBasket Instance is running in the AWS EC2



CONCLUSION

The FreshBasket project demonstrates the effectiveness of a cloud-based e-commerce platform, leveraging Flask for its simplicity in backend development and AWS's robust infrastructure for scalability and performance. By utilizing AWS EC2, the platform ensures high availability and can efficiently handle fluctuating user traffic. The integration of Amazon RDS guarantees secure and reliable database management for crucial data like product catalogs and user information. The modular design of the platform allows for easy scaling, ensuring that it can grow with increasing demand. This project showcases the advantages of cloud-native architecture, providing a flexible, cost-effective solution for the online retail of fresh produce. In conclusion, FreshBasket is a modern, efficient, and scalable e-commerce solution, prepared for the challenges of the ever-evolving digital marketplace. Future enhancements could focus on incorporating AI-based recommendations and expanding its product range.