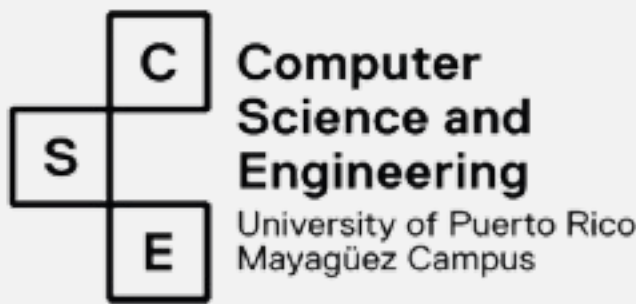# UPRMeals

Isabella Garrido, Kenneth Aponte, Jorge Cruz
Advisor: Wilfredo Lugo
Department of Computer Science and Engineering

1 Problem Statement

Students in our university campus often experience extended wait times when dining at the cafeteria. Additionally, the cafeteria staff are often faced with an overwhelming volume of students at peak hours, resulting in occasional instances where food is not readily available. Consequently, many students opt to leave.

2 Problem Background

The current process for food preparation and distribution is not efficient enough to meet the demands of the students and staff that visit the cafeteria daily. Research indicates that approximately 10% of a university's population frequents its cafeteria each day [1]. According to the university, the student population of the UPRM campus is 12,136 students [2]. This would imply that roughly 1,200 students in the UPRM campus, use the cafeteria services every day.

3 Objectives

We aim to create a system that provides students and staff members of the University of Puerto Rico - Mayagüez a means to efficiently and conveniently place orders in the campus cafeteria. Our goal is to design a user-friendly system that is easy to use and understand. This will not only encourage utilization of the cafeteria but also to optimize the cafeteria staff's processes.

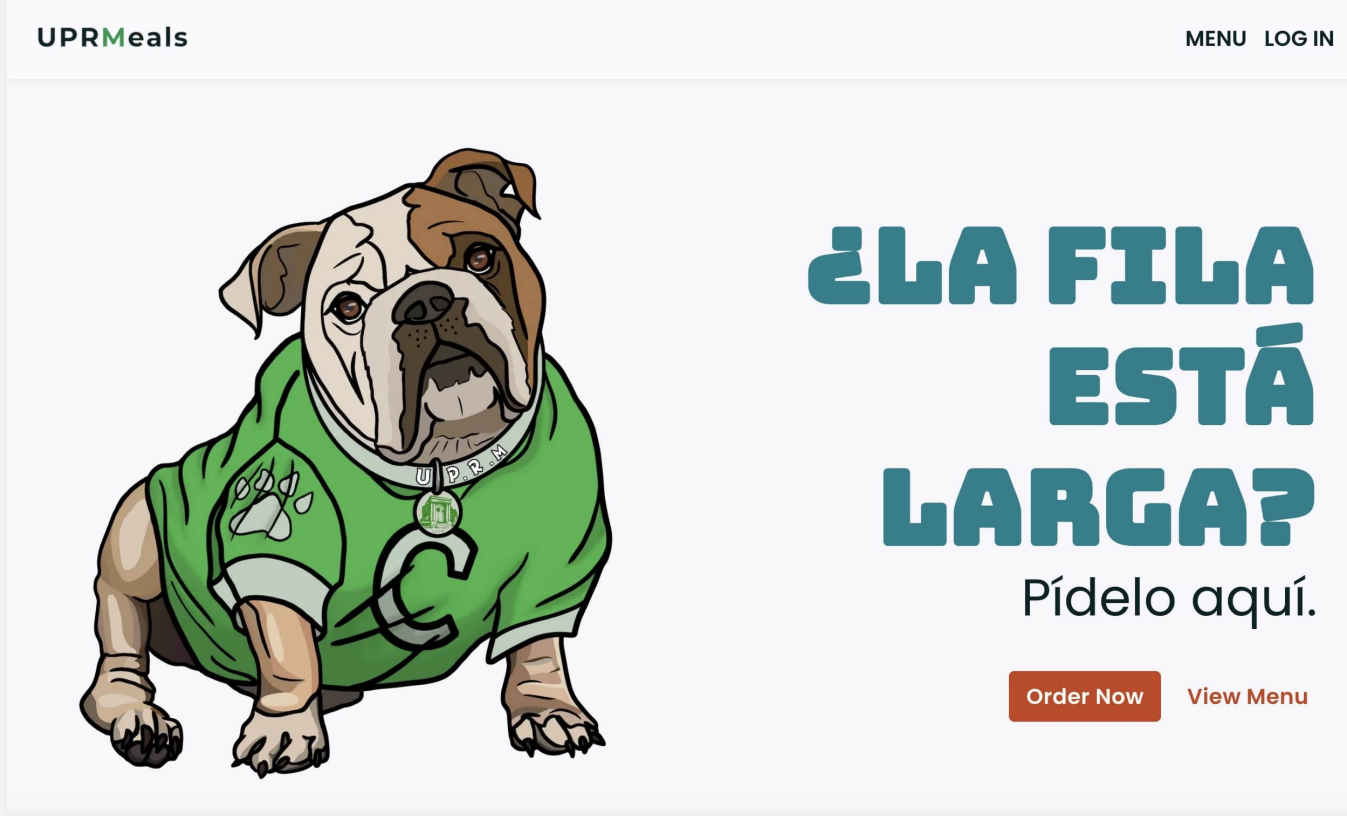**Objective 1:** Support a minimum of 500 active users.

Objective 2: Offer a secure system that only authenticates users from the UPR domain.

Objective 3: Handle responses from the backend in less than 500ms.

4 Technical Approach

Our solution involves implementing an efficient web-based ordering system to provide students and staff with the capability to place orders simultaneously and in advance. This will enable cafeteria staff to prepare efficiently for anticipated demand. To cater to students, the customer facing interface is fully responsive, allowing students to easily access and navigate the platform on any device, including tablets and phones. Additionally, the platform contains a reliable authentication system that distinguishes between customers and cafeteria staff. Moreover, staff members are provided with a means for flagging dishonest users and those with malicious intent.

The platform leverages Next.js, a framework based on React, for our frontend development. For the backend, we utilize Nest.js to make use of a modular architecture. Additionally, our project uses PostgreSQL as the database system.
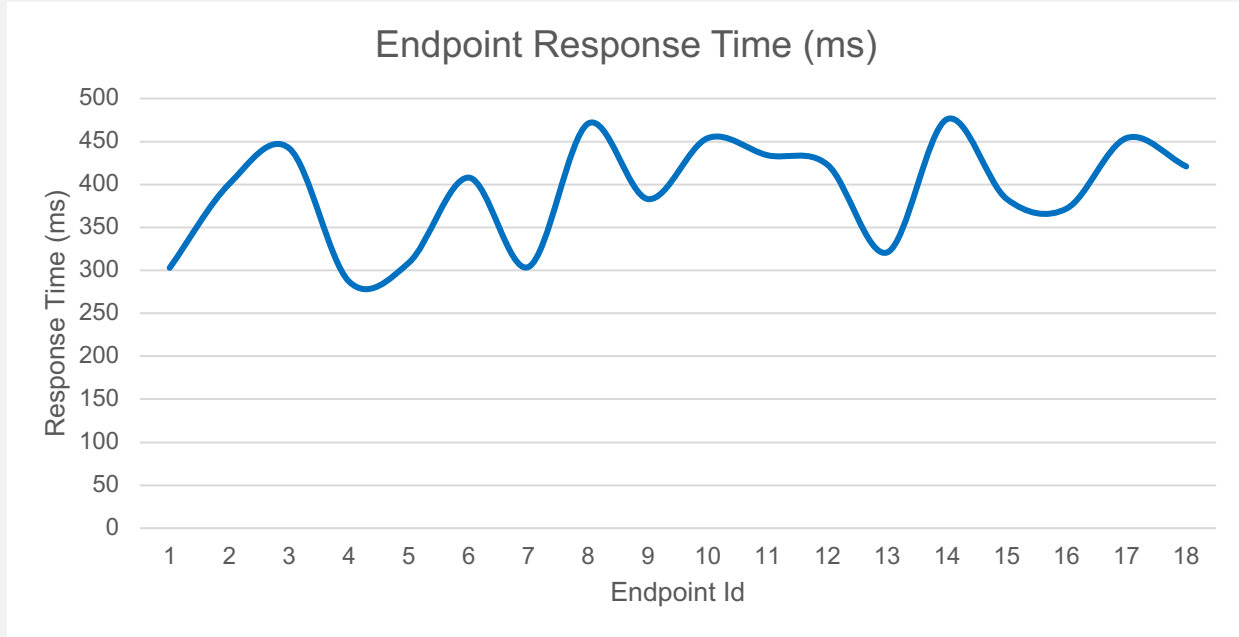

Homepage of the UPRMeals platform.
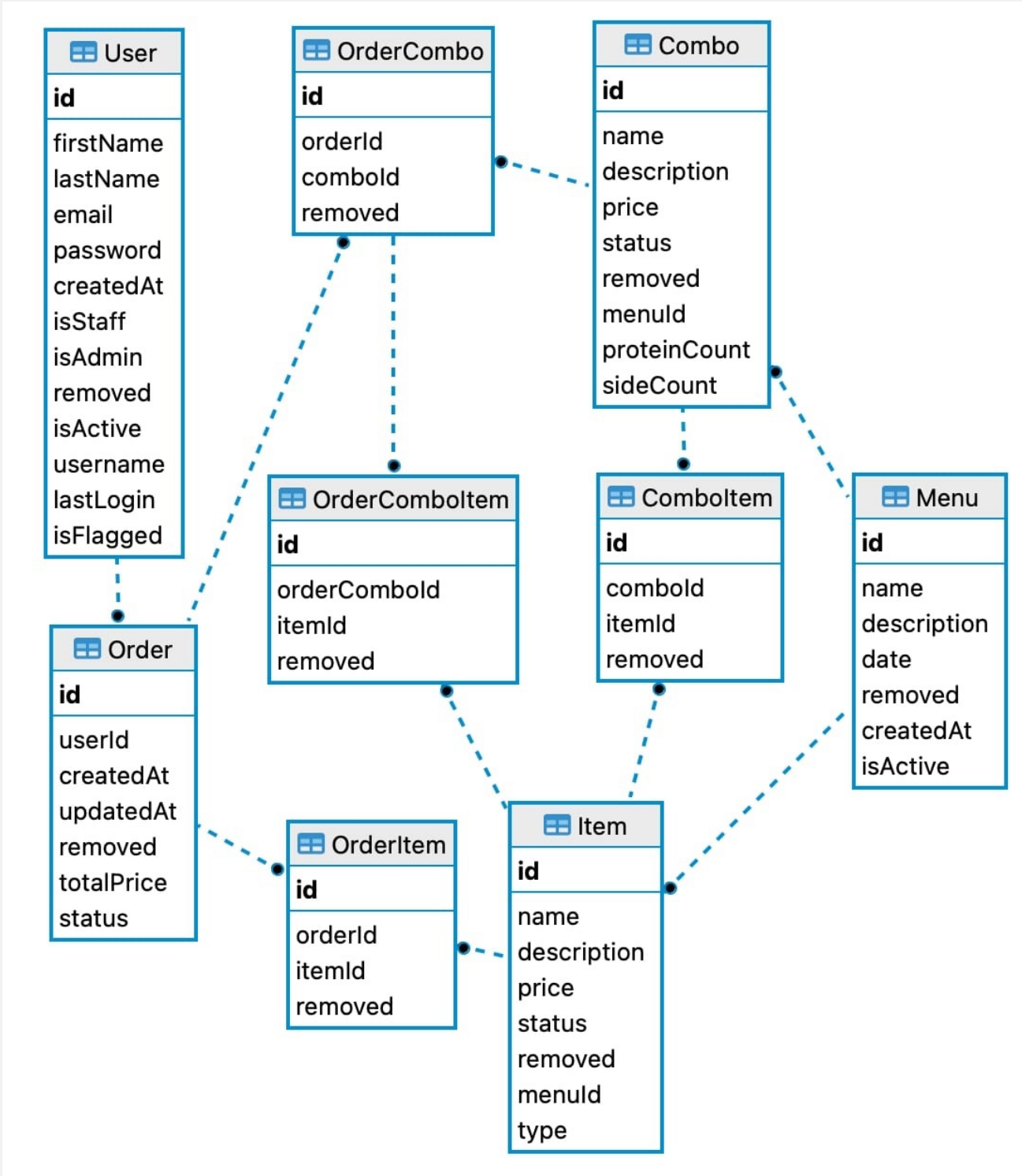
Entity Relationship Diagram for the UPRMeals platform.

5 Results

Our web application is designed to support a minimum of 500 active users. Leveraging Vercel for deployment ensures scalability, allowing us to seamlessly accommodate increased demand [3].

To authenticate users that only pertain to the UPR domain, we implemented validations in the frontend sign-up form. Additionally, the backend does not allow for users who do not belong to the domain. As a result, the application only authenticates users of the UPR domain.

Furthermore, the application was developed with an objective of keeping response times low to improve user experience. As a result, we have managed to keep a consistent backend response time of under 500ms.

Endpoint Response Time graph for the UPRMeals platform.

6 Conclusion

Our web-based ordering system for the UPRM cafeteria helps mitigate excessive wait times by offering a user-friendly platform with a focus on efficiency and security. We aim to improve the dining experience for students and staff.

R References

1. J. Fantozzi, "Trend Watch: 90% of college students eat off campus once a week," Restaurant Hospitality, 02-Oct-2019. [Online]. Available: https://www.restaurant-hospitality.com/consumer-trends/trend-watch-90-college-students-eat-campus-once-week. [Accessed: 29-Mar-2024].
2. University of Puerto Rico at Mayagüez, "Sobre Nosotros," University of Puerto Rico at Mayagüez. [Online]. Available: https://www.uprm.edu/cms/index.php/page/3773. [Accessed: 29-Mar-2024].
3. Vercel, "What's Vercel's Policy Regarding Load Testing Deployments," Vercel Guides. [Online]. Available: https://vercel.com/guides/what-s-vercel-s-policy-regarding-load-testing-deployments. [Accessed: 30-Mar-2024].