

# CSE687 Object Oriented Design

## PROJECT PROPOSAL

### Food Delivery System for Schine Student Centre

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## **Introduction**

There is a noticeable void in providing for the food needs of students, staff, and faculty in the midst of the busy activity at Syracuse University's Schine Student Centre, the centre of campus life. Even though the area is filled with a variety of cafes and restaurants, the lack of an online delivery system causes a great deal of inconvenience for customers as they have to physically visit these establishments, which frequently results in long wait times and interferes with busy schedules. To bridge this gap and improve the dining experience for the Schine community, we propose developing a comprehensive food delivery system. Our solution, which uses current technology and object-oriented design concepts, intends to expedite the ordering and delivery of meals from the Schine Student Center's different cafés and restaurants. Individuals will be able to browse menus, place orders, and get delivery straight to their selected location on campus thanks to a user-friendly platform that is available via the web and mobile devices.

In order to effectively close this gap and improve the Schine community's dining experience, we support the deployment of a reliable food delivery system. Our suggested solution simplifies the ordering and delivery of meals from the wide variety of restaurants located within the Schine Student Center by utilizing state-of-the-art technology and adhering to object-oriented design principles.

Our suggested food delivery system breaks through the conventional bounds of on-campus dining, bringing in a new era of comfort, effectiveness, and happiness for the Schine community. We see a world in which food is instantly satisfied and accessible at the touch of a button, thanks to the smooth integration of technology and creativity.

## **App Overview and Scope**

The food delivery application is a comprehensive platform designed to revolutionize the dining experience for users within the Schine Student Center at Syracuse University. The application's main feature is a strong backend REST API that was thoroughly developed with Java and Spring Boot to enable smooth communication between the frontend and backend systems. Role-based access control strengthens user authentication through the use of Spring Security, enabling users to create, log in, and manage their accounts safely. With Spring Websocket technology, real-time order management is seamlessly integrated into the application, allowing administrators to receive and process orders as they come in. This guarantees prompt and effective order processing, enhancing the entire dining experience.

By using the Google Maps API for restaurant geolocation, the application increases accessibility and convenience by allowing users to find nearby restaurants. The application uses a Redis Cache-powered caching mechanism to improve overall responsiveness and optimize data retrieval to boost system performance.

To ensure a safe and reliable user base, email verification is implemented, prompting users to confirm their email addresses through a verification link sent to their inbox after registration. The platform's seamless authorization and protection of user credentials are ensured by the use of JWT (JSON Web Tokens), which further strengthens secure user authentication.

### **Why is this a "Killer App" ?**

By filling a significant void in the Schine Student Center's dining experience, the food delivery app is a game-changer and has earned the title "killer app". The campus community has long been troubled by this gap, which is marked by inefficiency and inconvenience. As a result, a solution that provides both efficiency and convenience is required.

This application is unique because it seamlessly combines state-of-the-art features and technologies that have been thoughtfully chosen to transform dining. Orders are processed quickly and effectively when real-time order management is used, which reduces wait times and raises customer satisfaction levels. Furthermore, the incorporation of geolocation-based restaurant search functionality facilitates users in finding surrounding restaurants with ease, thereby augmenting accessibility and convenience.

The application's dedication to scalability and dependability is demonstrated by the choice to launch it on the Microsoft Azure cloud platform. This guarantees a consistent and dependable user experience by enabling the application to easily adjust to the increasing demand for food delivery services within the campus community.

### **Target Audience**

This food delivery application's main target audience is Syracuse University's diverse student body, faculty, and staff, all of whom frequently use the Schine Student Center for their dining needs. These people lead busy lives, juggling their professional obligations, extracurricular activities, and academic goals. They frequently find themselves craving a quick and filling meal due to their hectic schedules, but the thought of standing in line and spending a lot of time visiting several cafes and restaurants in the center puts them off.

Access to meals without having to leave campus or stand in long lines is a huge convenience for students, especially those who are juggling busy study sessions and class schedules. The effectiveness of a streamlined food delivery service is also valued by faculty and staff members, who can fuel up during hectic workdays without sacrificing valuable time.

The application frees users from time and location restrictions by doing away with the necessity of making in-person visits to each establishment, allowing them to easily indulge in their culinary preferences. The application makes sure that delectable dining options are always just a few taps away, whether you're looking for a quick bite to eat between classes, a leisurely lunch break, or a late-night study session.

### **Problem Being Solved**

When there is no online delivery system, users lose time and become more stressed, especially during rush hour when lines can get very long and people lose patience. The hectic schedules of teachers, staff, and students are not met by the traditional dining arrangement. This can be attributed to a variety of factors, such as the need for a quick meal prior to an upcoming event or the pressure to get between classes quickly.

The application successfully eliminates these problems by bringing in a centralized platform for food ordering, providing a more practical and effective substitute for the current situation. Users can now browse menus, place orders, and schedule deliveries from the comfort of their

own devices—be it a laptop, tablet, or smartphone—without being constrained by the requirements of physical presence.

This efficient method relieves users of the stress and frustration that come with navigating crowded dining areas and waiting long periods of time, in addition to saving them important time. Users can now concentrate on what really matters, such as academic goals, professional obligations, or just taking a break from the demands of university life, rather than juggling numerous tasks and obligations.

### **Technical Feasibility**

This project's technical viability is strong, mostly because it makes strategic use of well-established and extensively used technologies and frameworks. Combining Spring Boot, Spring Security, and Spring Data JPA with Java as the backend programming language offers a strong basis for developing scalable and maintainable applications. These frameworks simplify development efforts and guarantee code quality by providing extensive features for managing data, authentication, and general application logic.

The technical feasibility of the project is further enhanced by the integration of MySQL as the database management system. Orders, restaurant details, and user data can all be easily managed within the application with MySQL, an established and dependable relational database with strong data storage and retrieval capabilities. The project's technical viability is enhanced by the addition of Redis for caching purposes in addition to MySQL.

By utilizing reputable and frequently used services, the application gains additional functionality through the use of external APIs, like the Google Maps API and Cloudinary API. These APIs speed up development and simplify implementation by offering crucial features like geolocation-based restaurant search and image management without requiring substantial custom development.