Project Proposal: JikeDa System - Campus Food Delivery Management Platform

Team Name: Tech Dine Innovators

Team Members:

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Project Background and Motivation:

The **JikeDa System** is designed to meet the growing demand for fast, efficient, and reliable food delivery services within university campuses. The need for such a platform arises from the hectic schedules of students, faculty, and staff who often find it challenging to manage their time effectively between academic commitments and finding quick, nutritious meals. Traditional food delivery platforms like Meituan and Ele.me, though popular, fail to address the specific logistical and operational challenges unique to a university setting, such as campus-specific locations and delivery times that align with student schedules.

University life often requires rapid access to food, with students frequently needing to order between classes, during study sessions, or late at night. The **JikeDa System** offers a solution that bridges this gap by providing a customized food delivery service that caters specifically to the unique demands of a university campus. It not only

ensures that meals are delivered on time, but also offers features that simplify the entire process—from browsing menus to receiving deliveries—while promoting sustainability through eco-friendly options.

Project Objective:

The primary objective of the **JikeDa System** is to create an efficient, multi-role food delivery management platform designed to serve three core user groups: restaurant owners, delivery personnel, and regular users (students, faculty, and staff). By offering an easy-to-navigate platform for order processing, delivery management, and user feedback, the **JikeDa System** enables a seamless food ordering experience. The platform's intelligent and modular design allows for scalability and flexibility, ensuring it can be tailored to the specific needs of university campuses of different sizes.

In addition, this project aims to innovate in areas where existing platforms fall short, such as the optimization of campus-specific delivery routes, reducing delivery times, and improving overall system efficiency. Another key objective is to integrate a smart data analytics component that enables restaurant owners to better understand customer preferences and optimize their offerings accordingly.

Key Features and Characteristics:

1. User-side Functions:

- **Browse Restaurants and Menus**: Users can easily search for and browse restaurant offerings on campus, including daily specials, promotional offers, and popular menu items.

- **Order Creation and Management**: Users can place orders through a simple, intuitive interface, track order status, and modify or cancel orders if needed.

- **Manage Personal Information**: Users can store and update their personal details, delivery addresses, and favorite restaurants for faster ordering in the future.

- **Coupon Support**: The system allows users to purchase, store, and use coupons or promotional codes during checkout, providing additional value.

- **Order History and Feedback**: Users can view their previous orders and submit feedback to rate the service, enabling continuous improvement.

2. Restaurant-side Functions:

- **Menu and Inventory Management**: Restaurant owners can update their menus, manage inventory levels in real time, and highlight items that are low on stock.

- **Order Status Management**: Restaurants can easily view and process incoming orders, marking them as accepted, in preparation, or ready for delivery.

- **Sales Reports and Financial Data**: The system generates detailed sales reports, allowing restaurant owners to track daily, weekly, and monthly performance and plan for inventory and staffing accordingly.
- **Promotion Setup**: Restaurants can create and manage special promotions, including discounts, limited-time offers, and loyalty rewards for frequent customers.

3. Delivery-side Functions:

- **Order Information**: Delivery personnel can view detailed order information, including pickup locations, delivery addresses, and estimated delivery times.
- **Accept or Reject Deliveries**: Riders can accept or reject delivery requests based on their availability and proximity to the restaurant or delivery location.
- **Delivery Confirmation and Earnings**: Once an order is delivered, the rider confirms delivery and can withdraw earnings securely through the system's integrated payment platform.

4. Admin-side Functions:

- **Order and Promotion Management**: Admins can manage order statuses and oversee platform-wide promotions to ensure smooth operation.
- **User, Restaurant, and Delivery Personnel Management**: The admin interface allows for the management of users, including restaurant owners and delivery personnel, ensuring that only verified accounts are active on the platform.

Target Users and Usability Goals:

Target Users:

- **University Students and Faculty**: These users benefit from a service that allows them to quickly browse and order food from on-campus restaurants and have it delivered with minimal delay. This is particularly useful for students balancing tight schedules, faculty members during work hours, or anyone needing a meal between lectures and study sessions.
- **Campus Restaurant Operators**: Campus-based restaurant owners can use the platform to manage orders efficiently and tailor their offerings specifically for a university audience. The system allows them to offer discounts, promotions, and set up special meal deals to cater to students and staff.
- **Campus Delivery Personnel**: Often university students themselves or staff, the delivery personnel benefit from an intuitive system that allows them to quickly accept, deliver, and confirm food orders, ensuring prompt service across campus.

Usability Goals:

- **Simple, Intuitive Interface**: The platform provides a clean and easy-to-navigate interface designed specifically for the fast-paced university environment. This ensures that even first-time users can easily browse menus, place orders, and track deliveries without difficulty.

- **Optimized for Speed and Simplicity**: The platform is designed to ensure quick responses and short learning curves, so users can place and track orders in just a few clicks, meeting the fast-paced needs of university life.

Analysis of Existing Products:

Although leading food delivery platforms like **Meituan** and **Ele.me** are well-established, they lack the specialized features necessary to meet the specific needs of a university campus. Key limitations include:

1. **Complex User Interfaces**: The interfaces of existing platforms tend to be designed for broader urban settings, making them overly complex for quick use by students and faculty.

2. **Lack of Campus-specific Features**: These platforms do not offer features tailored to the unique logistical challenges of university campuses, such as limited delivery zones or precise campus address targeting.

3. **Low Delivery Efficiency**: Delivery efficiency within campus areas tends to suffer from a lack of integration with university infrastructure, leading to delays and inaccurate delivery locations.

Innovation and Enhancements:

The **JikeDa System** offers several innovations and enhancements over existing platforms, including:

1. **Campus-Optimized Design**: The system is designed specifically for universities, optimizing delivery routes and restaurant management tools for the unique layout of a campus. Precise address location features ensure that deliveries are made quickly and accurately to specific campus buildings or dormitories.

2. **Smart Data Analytics**: The system provides real-time data analysis for restaurants, allowing them to better understand student and faculty consumption patterns. This enables targeted promotions, optimized menu offerings, and improved inventory management based on campus-specific trends.

3. **Green Initiative**: A key feature is the ability for users to select an "eco-friendly" option, declining utensils in their orders to reduce waste. This feature aligns with the increasing demand for sustainable practices and provides metrics for tracking eco-friendly order percentages across campus.

4. **Multi-Role Permissions Management**: The system separates functionalities based on user roles (students, restaurant operators, delivery personnel), ensuring secure and efficient use of features relevant to each user group.

Team Organization and Project Plan:

The project will be carried out in the following phases, with specific team roles assigned:

Team Roles:

- **System Architecture and Database Design**: Wang Haoran, Yu Siyuan
- **Front-End Design and Implementation**: Zhao Ziyi, Chen Lejunjie
- **Back-End Development and API Design**: Yu Siyuan

Project Plan Phases:

1. **Requirement Analysis and System Design** (Weeks 3-5): During this phase, the team will gather detailed requirements from potential users, including university students, restaurant operators, and delivery personnel. This will be followed by designing the overall system architecture.

2. **Front-End and Back-End Development and Integration** (Weeks 6-9): The development phase will focus on creating the user interface and integrating the front-end with back-end functionality, including the database, order management, and delivery tracking systems.

3. **System Testing and Optimization** (Weeks 10-13): Once the system is fully developed, it will undergo rigorous testing to identify and resolve any bugs or performance issues. This phase will also include optimizing the system for speed and scalability.

4. **Final Delivery and Maintenance** (Weeks 14-16): The final system will be delivered to users, followed by ongoing maintenance and updates based on user feedback.

Engineering Process and Development Methods:

The project will follow an **Agile** development methodology, with weekly sprints and continuous feedback loops to ensure that the system is delivered on time and meets user expectations. **Scrum** will be used for task assignment and progress tracking, ensuring efficient team collaboration and communication throughout the

development cycle.

Collaboration Platforms and Tools:

The team will use the following platforms and tools to manage development:

- **Version Control**: Git will be used for collaborative development and code versioning, ensuring that all team members can work on the codebase simultaneously without conflicts.
- **Communication Tools**: WeChat will be used for internal communication, enabling quick discussions and decision-making during the project.
- **Project Management**: GitHub will be used for tracking tasks, monitoring progress, and managing bugs or feature requests.
- **Continuous Integration and Testing**: Jenkins will be employed for continuous integration and automated testing, ensuring that the code remains stable and functional throughout development.

Technology Stack and Related Tools:

- **Development Platforms**: Visual Studio 2022, Visual Studio Code
- **Programming Languages**: C# (ASP.NET), CSS3, HTML5, JavaScript
- **Database**: ORACLE
- **Tools and Libraries**: Vue3, Axios, npm, node.js
- **External API**: Gaode Maps API (for distance and location calculations)

Potential Challenges:

- **Performance Optimization**: One of the key challenges will be optimizing the system's response time, especially during peak order hours, such as lunchtime and dinner.
- **Database Scalability**: As the number of users and orders grows, the database design and query efficiency may become bottlenecks that will need to be addressed through indexing and database optimization techniques.
- **Cross-Platform Compatibility**: Ensuring a seamless user experience across both mobile and desktop platforms will be another challenge, as different devices may require varying interface optimizations.

Professional Growth from this Project:

This project offers numerous opportunities for personal and professional growth for all team members, including:

Project Management Practice:

- Learning how to analyze market demand and understand the unmet needs of existing software solutions is crucial. By investigating the current landscape, the team will gain insight into how to design and develop systems that better meet real-world needs.

Technology Knowledge Acquisition:

- The team will learn how to use **UML** to model system software, which will help standardize the development process and ensure that the project adheres to industry best practices.

Teamwork Experience:

- Working on a collaborative development project will improve communication and coordination skills, enabling team members to effectively manage their responsibilities and work together to achieve common goals. This project also offers a chance to refine the ability to describe technical concepts clearly and concisely.

With these features and objectives, the **JikeDa System** is poised to revolutionize food delivery services within university campuses, offering a tailored solution that meets the needs of students, staff, and on-campus restaurants alike.