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Design Build Canteen Web Applications in Majalengka University: Contemporary Ways to Boost User Satisfaction and Management in the Campus Environtment

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ABSTRACT

For Majalengka university, a web-based canteen application has been developed as a modern solution in response to the growing demand for effective and user-friendly campus services. The goal of this project is to create and deploy a cutting-edge application that improves user satisfaction and expedites campus environment management procedures. The application combines state-of-the-art technologies to offer users—including staff, instructors, and students—a seamless and accessible experience. Real-time inventory management, safe payment methods, and online ordering are important features. The responsive design accommodates the varied tastes and needs of the campus community while guaranteeing accessibility across a range of devices. The canteen hopes to streamline operations by using this web application, which will improve order processing efficiency and cut down on wait times. The system also helps with improved resource and inventory management, guaranteeing customers a reliable and excellent dining experience. In addition to meeting the needs of the campus community today, this project establishes a standard for the use of technology to improve administration and services in educational settings. The findings of this research offer significant contributions to the development and execution of web-based canteen management applications, and may have consequences for comparable settings outside of Majalengka university.

***Keywords**: Canteen Web Applications, Majalengka university, Contemporary Design, User Satisfaction, Campus Management Optimization*

1. INTRODUCTION

The purpose of this study is to investigate how a mobile food ordering application is seen to confirm expectations and be useful, taking into account how this affects user satisfaction and intention to use the app going forward. Convenience sampling was employed in this study to get information from 102 respondents who had previously utilized mobile apps for ordering meals while the COVID-19 epidemic was active in Indonesia. The statistical tool of choice is the regression approach. The study's conclusions show that e-satisfaction is positively impacted by the customer's expectations being met and their perception of the product's usefulness. And lastly, e-satisfaction has a big impact on users' decision to keep using a mobile meal ordering service[1]. Online meal delivery services, which are provided by third parties and enable online ordering and delivery, offer a different ordering experience that appears to be increasing popularity. This study will look at how consumers accepted the FDA's food delivery application during the COVID-19 epidemic and what factors made them decide to accept or reject the FDA. The applications that consumers typically utilize for meal delivery services will also be identified by this study [2]. Here, an online system for ordering food is suggested, making the ordering process easier. To make the task of the customer easier, the suggested system displays a user interface and updates the menu with all accessible alternatives [3].

The purpose of this study is to ascertain how discounts affect users' interest in, choices made, and level of satisfaction with food and beverage ordering applications. A food e-commerce website and application is one of the many applications that the public uses to order food and beverages in the contemporary digital era [4]. In today's technologically advanced market, retailers and their supply-chain partners should reevaluate their competitive advantages and look for ways to work together. Smartphone applications have become a unique kind of online shopping that saves customers time and effort [5]. The creation of the online meal ordering application "FOODIE" is the aim of this thesis. The "satisfaction of consumers by using online food services" is another topic included in our research [6]. The online food ordering system that is the subject of this document was created to meet a specific market need. It allows small restaurants to give their patrons the option of ordering online without having to shell out a lot of money and effort for specialized software. Through a very user-friendly graphical interface, the highly adjustable system enables restaurant patrons to easily alter the site's content—most notably, the menu [7]. The purpose of this study is to ascertain the intention and actual online purchases of food and beverages made through online food applications, particularly during the Covid-19 pandemic. This research uses a structural equation model for its analysis [8]. An app that is based on a website and allows users to order food and beverages from the canteen is called a website-based food ordering app [9].

The goal of this research is to create an application that notifies wait staff about a table that needs assistance and the chef or drink maker about the order in a sequential manner. It will also make it easier for restaurant management to update the menu without having to pay additional fees, encourage customer loyalty by allowing customers to save points, assist customers in tallying their individual payments, including tax, and assist the establishment in revenue, product, and customer satisfaction analysis [10]. These days, more people are using meal delivery apps because of the recent global pandemic caused by the coronavirus epidemic. Apps for food delivery provide several advantages for both catering companies and students. The purpose of this essay is to investigate how university students' perceptions of the value of meal delivery applications are affected [11]. The proliferation of smartphone applications for ordering food, particularly Go-Food, has led to an increase in both the number of restaurants partnering with Go-Food and its usage [12].

2. METHODS

The research team decided to use a prototype method for the development of the E-Canteen application system. Prototyping is a process that involves defining in advance what should be on the E-Canteen application, which orders food and beverages from the University of Majalengka's canteen by going through several stages of them and conducting preliminary interviews to gather data. The next steps are application design, application modeling, application prototyping, and, finally, submitting the E-Canteen application to users for reuse while addressing any shortcomings.

The waterfall approach was employed in this study to create the applications. The method is a step-by-step process for creating systems, including requirements, design, coding, testing, integration, testing, and maintenance for both applications and operations. The method is known as the waterfall model because each step of the process follows a set of rules; if a step is not completed, the process will not move on to the next. A traditional and methodical approach to system construction is waterfall. The Unified Modeling Language (UML), an image-based language, is used in the research to define, build, document, and describe object-oriented software development systems.In 2019 [13]. The plans created for the input plan, process plan, and output plan are covered

in this. This method reduces the amount of errors that occur during system processing because it is very detailed and sequential from step one to step one.

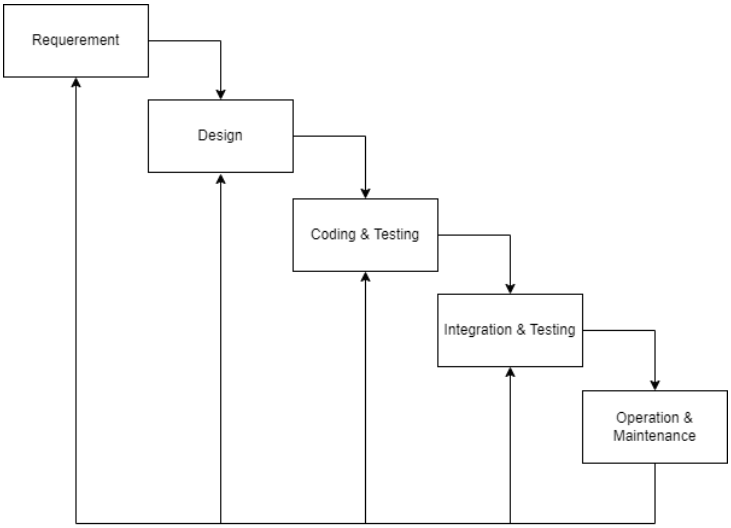


Figure 1. Method waterfall

1) Requirement: During an interview, the subject or object of study meets with the researcher at a designated time and place to discuss the information they are interested in learning. Initially, we interviewed canteen owners near Majalengka University in order to collect baseline data and information required for creating facilities in the E-Canteen application.
2) Design: The next stage is to immediately execute the data by creating the application design after gathering the data and information requirements of the canteen owner through a field interview. The process of creating an E-Canteen application that has a tool interface between two programs is called application design.
3) Coding & Testing: The Microsoft Visual Studio Code IDE will be used to create the program during the encoding step. Javascript is the programming language used, along with a PHP library. The database design uses cloud firestoredan testing with blackbox testing to expedite the improvement.
4) Integration & Testing: At this stage, the finished project is delivered to Once everything is finished, the next stage is to present our findings to the users and request feedback if the application contains any errors.

3. RESULTS AND DISCUSSION

3.1 Procedur

The system's design phase is intended to make it easier for users to order food and drinks from the district's Majalengka University canteen.

1. Use Case Diagram

Is a collection of multiple diagrams that illustrate the relationship between the system and the actor. Once the system is operational and the requirements are clear, the next stage is to reduce the amount of information in the application design description by using the use case diagram to highlight the relationship between the system and the actor.

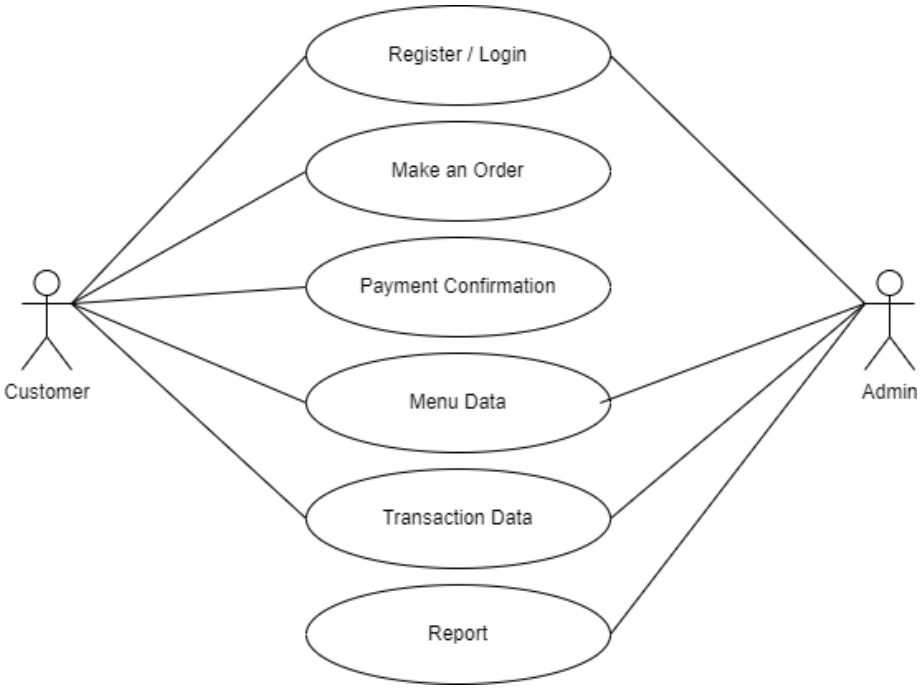


Figure 2. Use Case Diagram

2. *Activity Diagram*

The activity of the system and its operation can be displayed using an activity diagram. The vertical model mimics how system mechanisms are described. The system's operations and application menus can be quietly explained in relation to the simulated fine activity.

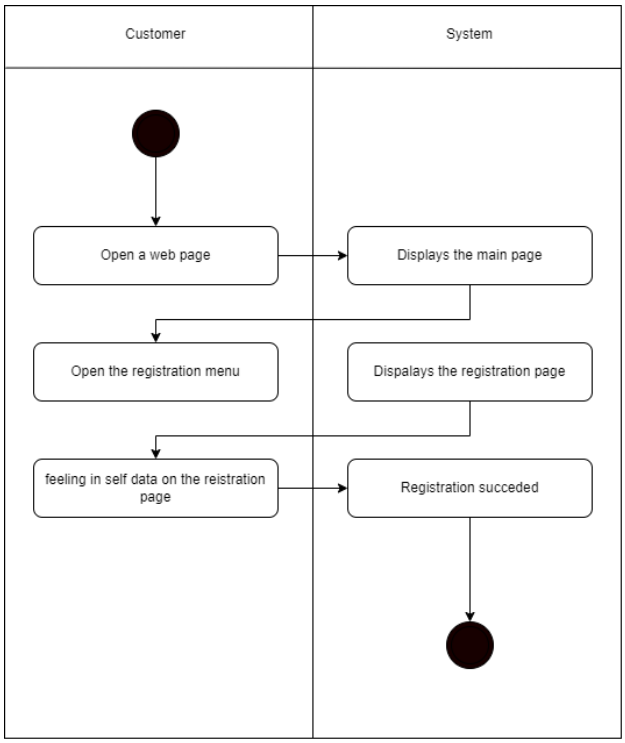


Figure 3. Activity Diagram Customer Registration

The activity diagram above represents a registration page where users can follow the steps to log in and access the site as a user by providing their email address, password, and username in accordance with their personal data. You must enter the following information in multiple columns in the "List" menu: username, gmail, password, address, and phone number.

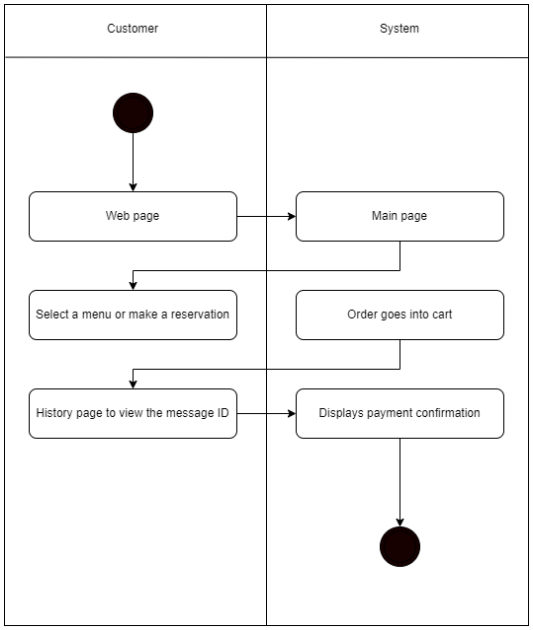


Figure 4. Activity Diagram Customer Booking Proces

The page where customers select, order, and pay for food is shown in Figure 4. You will see the order code, the amount due, and a payment confirmation. But, the customer purchases menu items or purchases menu items before the step; these are then moved to the chart and purchased.

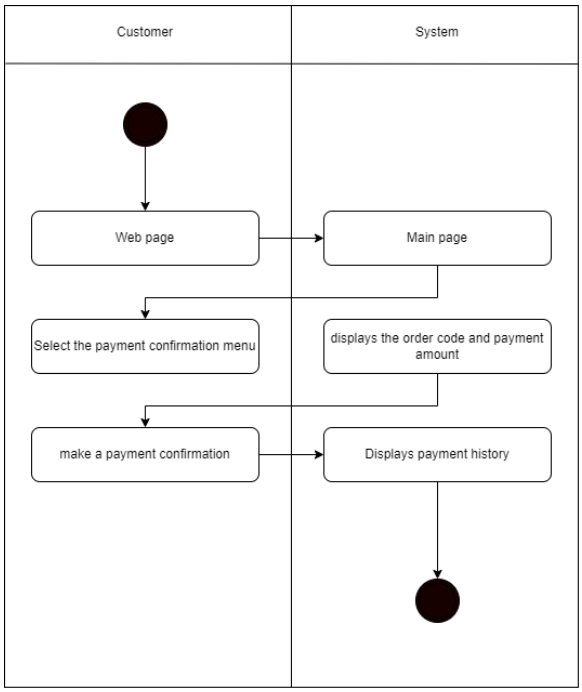


Figure 5. Activity Diagram of Customer Making Payment Confirmation

The page that follows provides information on any user transactions pertaining to menu reservations, such as the date of purchase, the time of payment, and other details.

3. Sequence Diagram

That is, a diagram that provides a more thorough explanation or modeling of the interaction between two objects. Next, using this sequence diagram, describe how objects interact with one another in a sequential order.

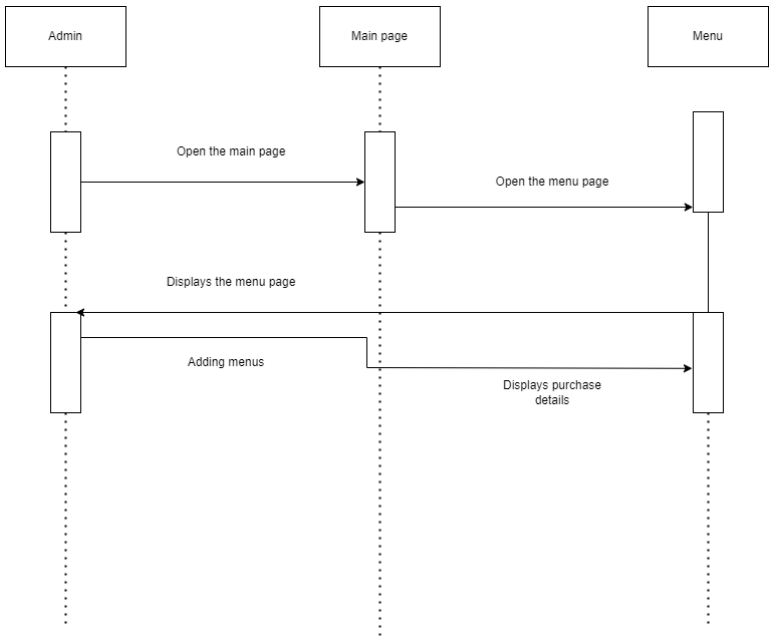


Figure 6. Admin Diagram Sequence

The admin can add or remove descriptions from the menu at any time, as seen in the image above.

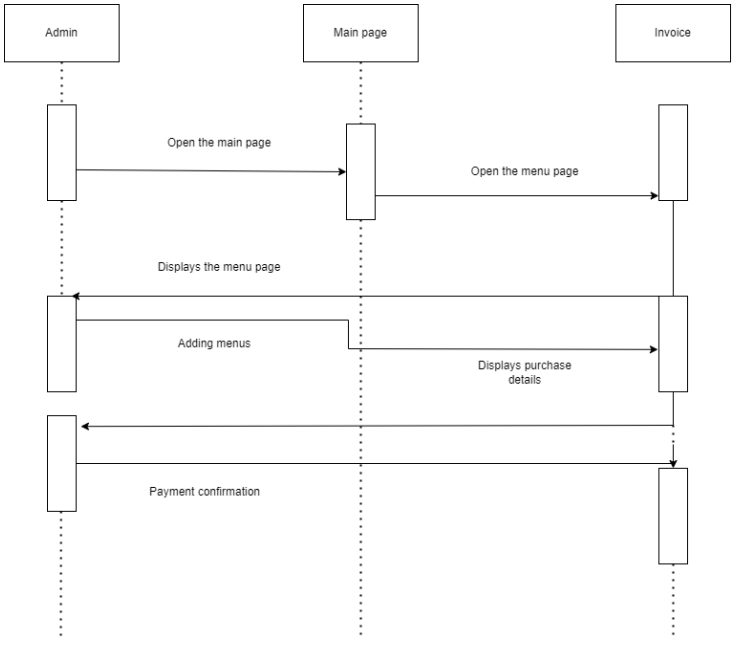


Figure 7. Admin Transaction Sequence Diagram

The procedure for invoice transactions with the admin is shown in the above illustration. By making it easier to browse the home page, invoices, payment details, and payment confirmation.

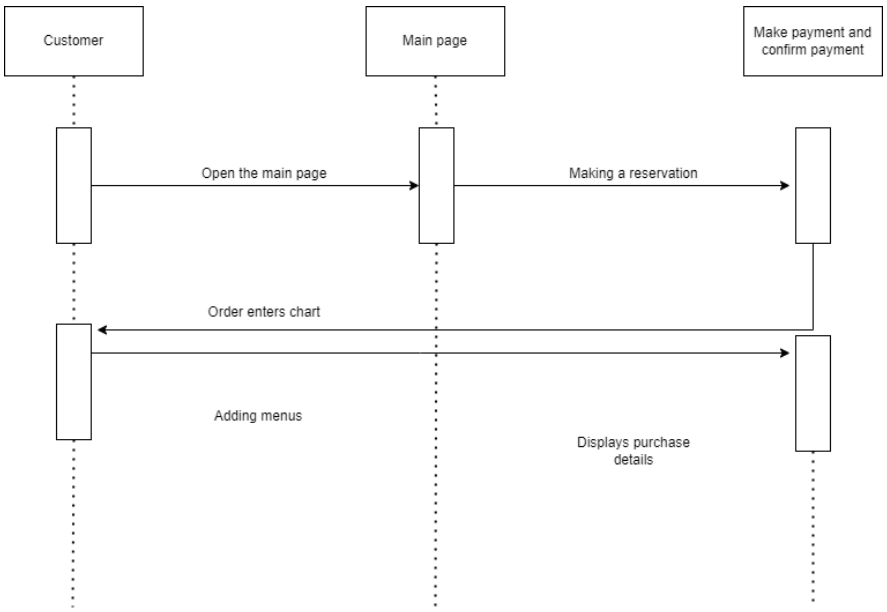


Figure 8. Order in Process and Order Confirmation

The booking process is depicted in the image, which also verifies the payment. The user loads the home page first, followed by the payment page.

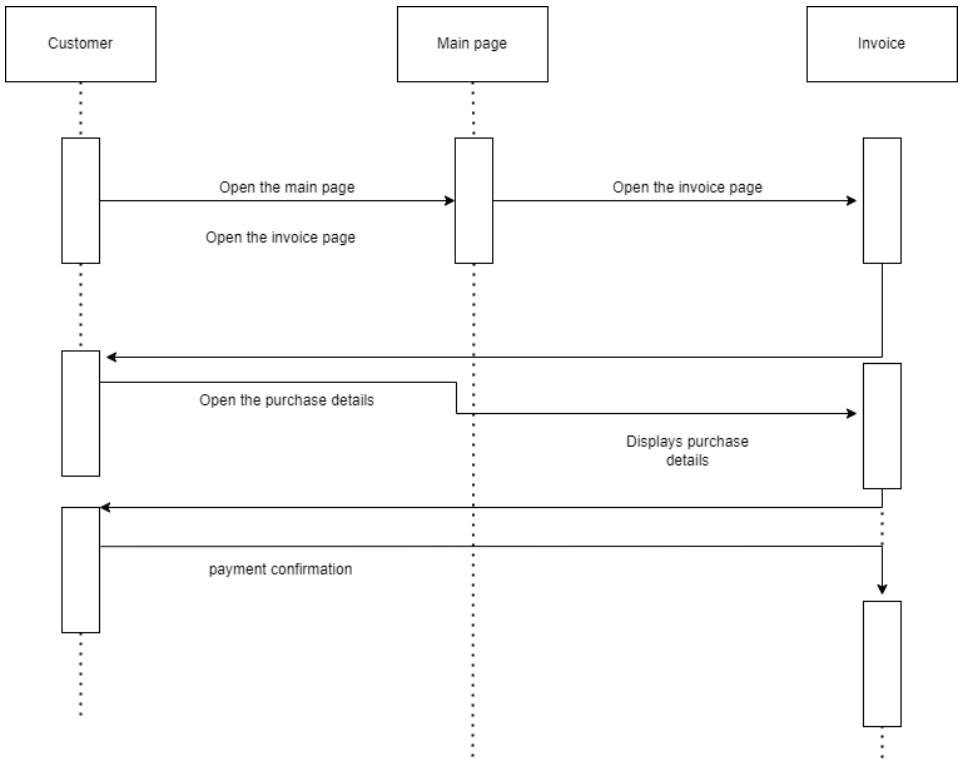


Figure 9. Sequence Diagram Invoice

The administrator invoice view allows the administrator to verify which users have paid and which have not.

4. Class Diagram

A "class diagram" is a process that depicts a system's static class structure. By defining the classes that will be created later, a class diagram explains the structure of an application.

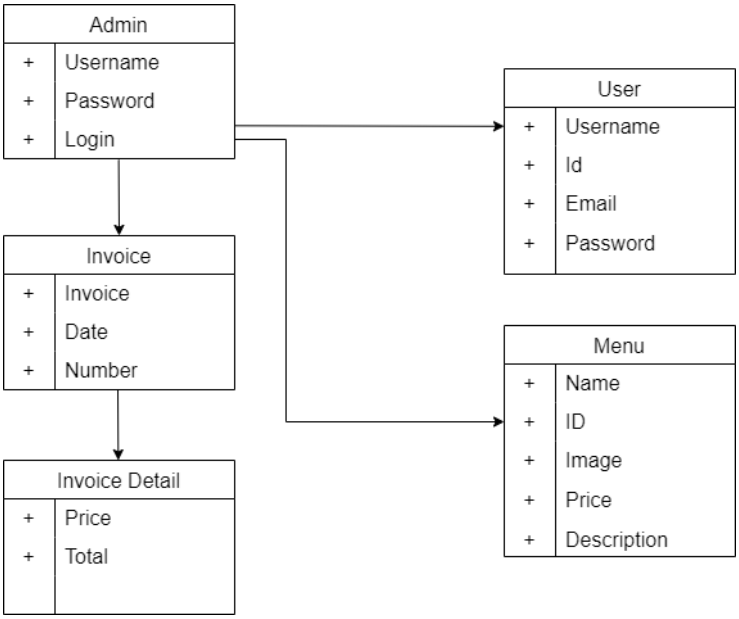


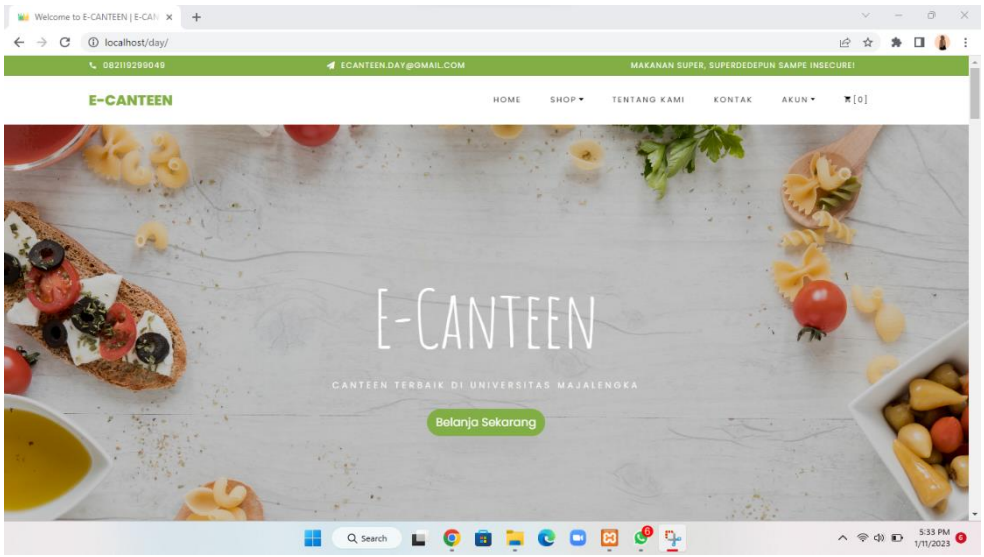
Figure 10. Class Diagram

A few key components of the registration, purchase, and payment processes are displayed in Figure 10. This class diagram is used by developers to build this information system. The class diagram should include simple but crucial tasks like payment, purchase, and registration. Furthermore, since most food orders are not always correct when placed, the canteen information system needs to be precise.

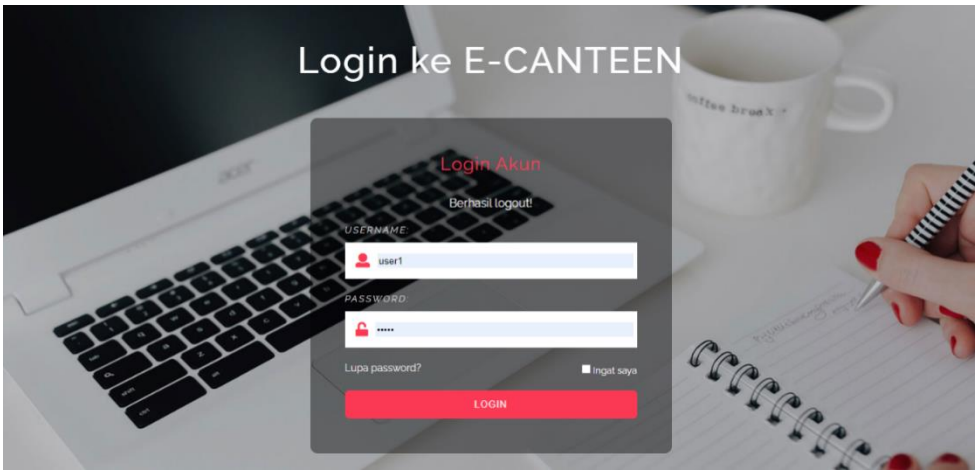
3.2 System implementation

The way the system is used to carry out the tasks assigned to each module is described in the system implementation. All operators involved in the system have the following user manuals, which are described as follows:

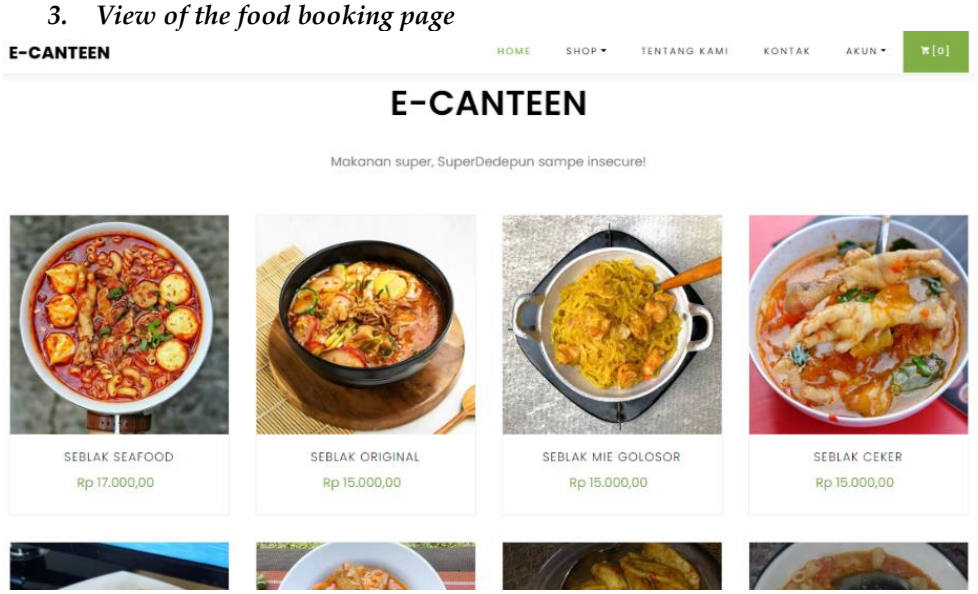
1. Page View



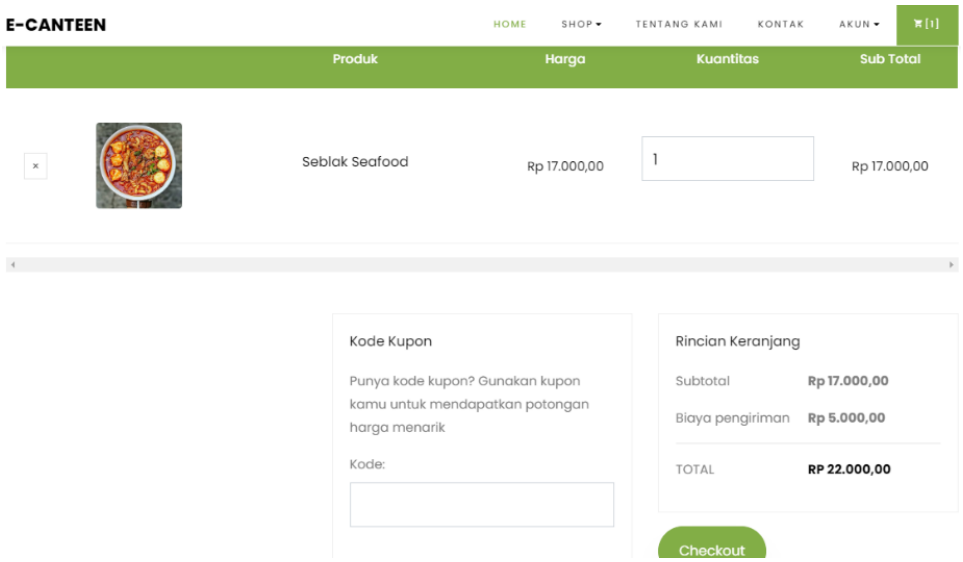
2. *Login View*



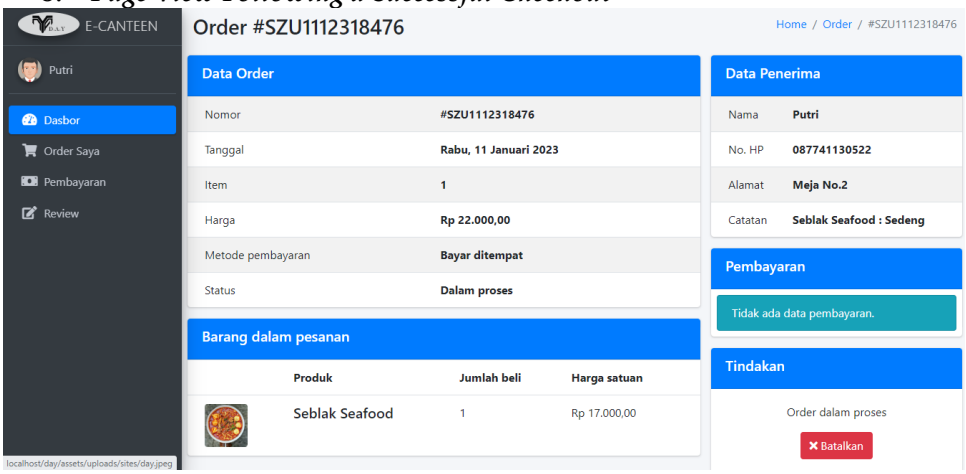
3. *View of the food booking page*



4. *Checkout Page View*



5. Page View Following a Successful Checkout



CONCLUSION

Based on research conducted on developing web-based E-Canteen applications, the following outcomes are anticipated:

1. This application will assist users in placing orders and processing payments.
2. The availability of an E-canteen application is anticipated to facilitate employees' data processing.
3. By enhancing the effectiveness, convenience, and ordering process, the application can help the University of Majalengka's canteen better serve its patrons and meet their needs.
4. By taking into account the requirements of the client, a responsive interface design, appropriate functionality, strong data security, and system integration with the canteen.

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