Django Framework-based Food Ordering System using QR Code

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ABSTRACT
Food Ordering System is a web-based system that using qr-code for customer and admin to perform transaction and purchase more smoothly through the online to the internet. The aim of the system is to ease the customers to place the order as per they like without go to the cafe. Then the admin will check the order and prepare the food then delivery food. Users of this system consist of user and admin. Aim or objectives of this project are to create a convenient to use this system for user to make an order or buy food using online by reducing time and cost for a student. It also, to develop a system that can facilitate UniSZA"s Cafe and student to buy food without scrambling and long queue and test the system function with user. In addition, the main function of the cafe in this system is to provide food orders that have made by customers using the Priority Scheduling technique. By using this technique, it will update their status up to date by admin. It is significant to use the Priority Scheduling in café UniSZA because it helps to serve the order menu in bulk rather than serve it one by one and it can save many times. The expected outcome for this project is able to manage order by using the services from the website efficiently, display daily menus and prices for customers and allows customers to place an order directly. In conclusion, with the new technology implement in this system can help order food with systematic and properly for the future.

Keywords: food ordering system, QR code, Django framework, desktop application.

1. INTRODUCTION
1.1 Background
Currently, our country is being hit by the covid-19 virus and its numbers are growing rapidly. With the occurrence of this virus, we must maintain the distance from each other, reduce face-to-face with outsiders and most importantly do not forget to wear face masks. Me2Odr is an online system that can be used in any browser on mobile or web devices such as Chrome, Mozilla and others. Unfortunately, the current ordering system at UniSZA cafe is done manually by students by writing order using pen and paper. Therefore, this can cause the possibility of infection for the covid-19 virus to the public when they use the same items. So, this system will help the user to order food at Cafe UniSZA using the Qr-code which is meant by entering the requirement detail such as name, serve or take away, choose the menu and pay. By using this system, user also can place orders, view and select the store where they really want to place an order and also make it easier for students to place orders without long queues at UniSZA cafe. Lastly, they also can cancel the menu by requesting a stall and paying it using online banking. With this system, we can learn new norms by keeping distance and not touching each other. The method of this system is using priority scheduling technique.
1.2 Problem Statement
The manual system available for ordering in UniSZA cafe has limitations and inconveniences to students because there are still students who like to push, scramble while buying food. Manual ordering procedure is a very time consuming task because at lunch time, too many students and lecturers want to buy food without queuing until employees do not have time to serve students to buy food. Furthermore, it becomes trivial for students to go down to the cafe merely to place orders in packs. However, students also find it difficult to identify the menu and daily food quantity each store provides when students are still in their faculty. For this system, there will be a system administrator who is entitled to enter the menu at the current price.

1.3 Objective

- To create a convenient to use this system for user to make an order and buy food using online by reducing time and cost for a student.
- To develop a system that can facilitate UniSZA‟s Cafe and student to buy food without scrambling and long queue.
- To test the system function with user.

1.4 Scopes

1.4.1 Admin

- Managed user (add, update, delete, retrieve)
- Admin can access to add food menu.
- Admin can update status food for user.

1.4.2 User

- User must register and log in to the system.
- User can view menu, list and retrieve order.
- User can update profile.

2. LITERATURE REVIEW

Mohd Chan (Chinese Muslim Restaurant) is a Chinese Muslim restaurant that serving „halal‟ menu, tasty, and nutritious comfort food, done in home-cooked Cantonese style per. Besides, this system was developed for Mohd Chan Restaurant by oddle.me in 2017. It also used is used to provide delivery services for food and catering around Klang Valley, Kelana Jaya, Shah Alam, Ampang, Damansara and Kuantan. However, the system also has additions to cart and allow consumers to order as much food as they want. The system also has a map aims to make it easier for users to know the location of the store. Menu for this the system is organized by category.
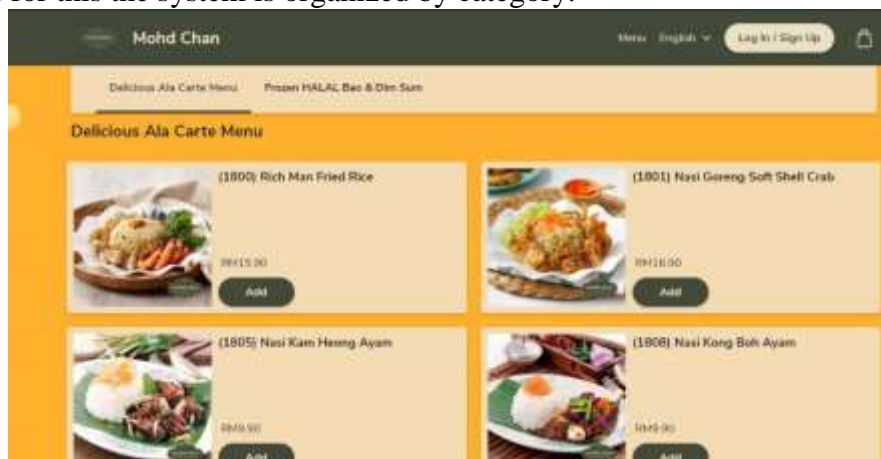

Fig. 1: Print Screen of Mohd Chan (Chinese Muslim Restaurant)

Radiance Restaurant Application is a restaurant located in Brooklyn, New York City and this application was developed in 2017. This application also aims to place orders and delivery food. The restaurant has a variety of main dishes such as sautéed broccoli carrots with grilled salmon, shrimp parmesan, garlic butter shrimp and more. To make an online order must use uber eat and seamless. Besides, it also can make an order by phone and pick it up at the restaurant. Furthermore, this restaurant can also make a reservations or an order for catering. For the payment it only pays using cash on delivery and cash.
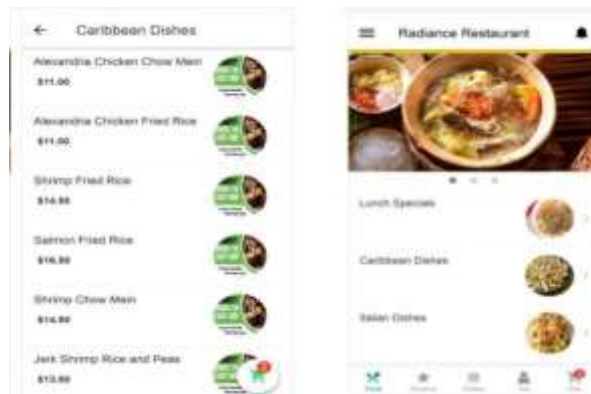
Fig. 2: Print Screen Radiance Restaurant Apps

Dapur Mama Food Delivery Service is a system that combines all the food choices such as Malay, Thailand and Indonesia under one roof. This system was built by GloriaFood and it based in the district of Sepang, Selangor. The restaurant has take away or make delivery for their customers. Besides that, through this web system, customers can see various menus and prices and also can add menus to the cart what they want. Then, they have to choose whether to take away or delivery. If a customer chooses a delivery, then they will need to fill in their information to confirm their order confirmation.
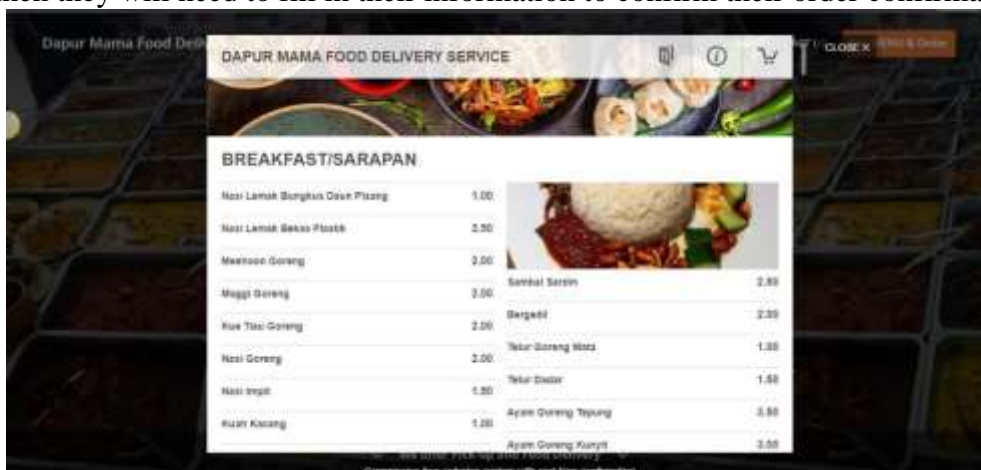

Fig. 3: Print Screen of Dapur Mama Food Delivery Service

3. Methodology

Research in different Techniques: Different technique or method has been analyse through the previous research and articles. All the article that related to the specific technique will be observe on their advantage for implementation the suitable technique in this project system. Only one technique was chosen for the literature review.

Priority Scheduling Technique: This project will implement Priority Scheduling. Priority scheduling is a method of scheduling processes based on priority. In this method, the scheduler chooses the tasks to work as per the priority, which is different from other types of scheduling, for example, a simple round robin. Priority scheduling involves priority assignment to every process, and processes with higher priorities are carried out first, whereas tasks with equal priorities are carried out on a first-come-first-served (FCFS) or round robin basis.

The difference between a priority scheduling and the normal scheduling is the priority scheduling based on values comes out in order by priority instead of being a "first-in-first-out" data structure. A priority scheduling is implemented in Food Ordering System (Me2Odr) during the process of the queue the order that will be selected by the customer. The order that has the same type or exact food will be set into the highest priority along with the current order that is being processed. The main problem with priority scheduling is starvation which is low priority order may never execute. A solution to this problem is aging, as time progress the priority of the order in the ready queue is increased.

There are several methods available to run the project. The methodology that is used in this project is the real Interactive and Incremental Life Cycle Model. It basically delivers a series of releases call increments which progressively more functionality for the user as each increment is delivered. The phases involve in interactive and incremental model are: Initial Planning, Requirement Analysis, Design, Implementation, Testing and Deployment. The basic idea behind this method were to develop a system through repeated sequences called iterative and smaller portions at a time called incremental. The iteration step begins with Initial planning phase as a base version of the system.
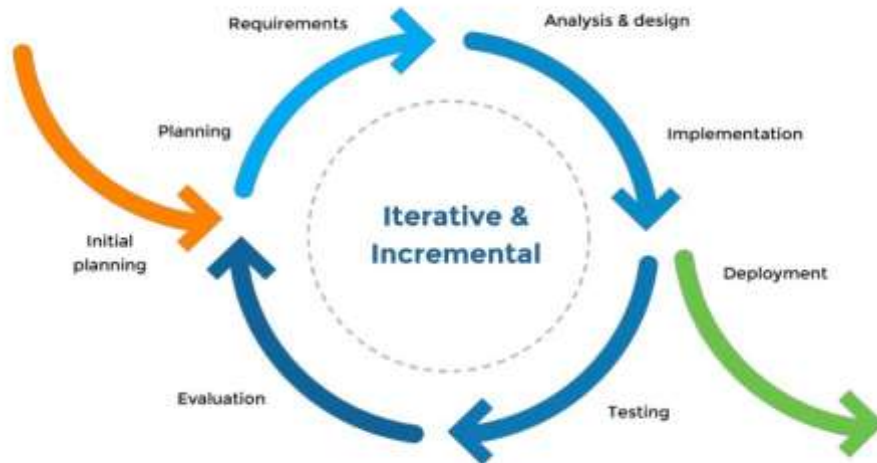

Fig. 4: the Interactive and Incremental Methodology

Planning Phase: In this phase, the project title had been selected. The project title selected was ABC restaurant food restaurant. The project modules need to plan according to the given period to complete this system, starting with brainstorming ideas with the supervisor and proposed the title of the project. An abstract which basically describe the project module has also been done and attached. Besides, the Gantt chart also needed as a reference for a project's schedule.

Requirement Phase: Related data about Priority Scheduling are gathered by referring to the articles, journals, internet and other research paper. Those related papers are usually used as guideline in order to develop the Food Ordering System (Me2Odr).

Analysis and Design Phase: Requirement analysis phase is to gathering the requirements. The entire requirement that had been collected in this system is being analyse and need to fully understand the criteria that have been listed. This phase also include a researching phase where all the questions and references are being collected in order to get the requirement needed for this system and the design phase to identify the system and developed prototype based on the functionalities that will be build. The data or requirement obtained during planning and analysis phase transformed into the design. Some diagrams are built such as Framework to show the flow of the system, Context Diagram, Data Flow Diagram (DFD) Level 0 and 1, Entity Relation Diagram (ERD) and Data Dictionary in this chapter. These diagrams are designed as a guideline flow of the system and to help in a developing system. The interface is also sketched. During this phase, the proposal of the project created and presented to the panel.

Implementation Phase: At this stage, use priority scheduling as its technology to implement an effective process for the Food Ordering System and the decisions made in the previous phase will affect how the implementation phase is executed.

Testing Phase: This phase is where the testing occurs. After the implementation is complete, Food Ordering System that using Priority Scheduling Technique is tested to understand whether the implementation plan decided from the analysis and design stage is accurate and suitable for the system.

Evaluation Phase: In this evaluation phase, the effectiveness of the implementation and services of the Food Ordering System using Priority Scheduling Technique is analysed. In addition, the effectiveness of the system will determine whether the process of the system follows the target and is delivered to the user as expected.

Deployment Phase: This is the phase where the process of the Food Ordering System using Priority Scheduling Technique is ready to be used by users. Hence, when the system is confirmed stable or ready to be used, it will be observed or checked whether the system meets with the objectives in order to fulfil their needs.

4. Conclusion

In conclusion, the QR-based food ordering system using the Django framework is a modern solution to streamline the ordering process in restaurants. By scanning a QR code, customers can easily access the menu, place their orders, and pay online, without the need for physical menus or interaction with staff. This not only enhances convenience for customers but also improves efficiency for restaurant owners, reducing waiting times and minimizing errors. The use of Django, a powerful and flexible Python web framework, ensures that the system is scalable, secure, and easy to maintain. The framework's built-in features such as authentication, database models, and templating, enable developers to create a robust and customizable application that meets the specific needs of the restaurant. Overall, the QR-based food ordering system using Django is a valuable innovation that benefits both customers and restaurant owners. It provides a seamless and contactless ordering experience that is essential in today's world, where health and safety concerns are a top priority. With the ongoing advancements in technology, we can expect to see more innovative solutions like this in the future.

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