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Application of the RAD Method in Designing a Menu Ordering System Using QR Codes

Fadly Ariadi [a,1,*], Ria Ester [a,2], Dede Handayani [a,3]

[a] *Informatic Engineering Study Program, Faculty of Computer Science, Pamulang University*
[1] *dosen02389@unpam.ac.id** ; [2]*dosen02665@unpam.ac.id*; [3]*dosen02411@unpam.ac.id*
*Corresponding author

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ABSTRACT

Cafe businesses that provide food and beverage menus are fast-growing nowadays. Ruang Kopi Teka located in Tangerang is a cafe that wants to further optimize service to consumers by simplifying the process of ordering food and drinks. The purpose of this research is to design an ordering system to make it easier for customers to order menus with business owners managing the orders. The method used in designing this system is Rapid Application Development (RAD). The stages in the RAD consist of Requirements planning, Design Workshop and Implementation. The system was built using the PHP programming language with the CodeIgniter Framework, the system display uses the Bootstrap CSS Framework and data storage uses MariaDB. The result of this research is a system that allows customers to order food and beverage menus by simply scanning the Quick Response (QR) Code that has been provided at each customer's table.

I. Introduction

The food and beverage sales business or culinary business is one of the businesses that currently has considerable development potential. Strategic business places, quality and menus offered are the main attractions in culinary businesses. In addition, no less important thing is service. Good service will make customers feel comfortable and satisfied, and will, of course, leave a positive impression. With the number of similar businesses and the fierce competition, business actors must further improve service to customers. Teka Coffee Room in Tangerang is one of the café businesses that provides food and drinks. The menu ordering process is still conventional by using handwriting on the order paper. Customers come, look for a seat, and the waiter will provide menu lists. The waiter records the menu ordered by the customer, then the waiter will provide the order list in the kitchen. After the order is completed, the waiter will deliver the menu to the customer's table. The waiter re-mentioned the order list and immediately served the menu. In the ongoing process, there is no problem but the Teka Coffee Room wants to further optimize the ordering process so that customers can order menus to the system, and the order menu is directly received by the chef in the kitchen, and also the cashier. Then, in the process of recapitulating sales data, the Teka Coffee Room used a book as a place to record temporary data and later transferred to Ms. Excel. This system of recording and storing sales data results in a repetitive process, namely in the sales book and Ms. Excel. The management also has difficulty getting information and sales reports in real-time and based on a certain period (day, week, month, year, etc.)[1]. Based on the description above, this study aims to build a menu ordering system in the Teka Coffee Room using a Quick Response (QR) Code, so that it makes it easier for customers to order menus and business owners to manage orders in real time.[2]

II. Method

2.1 Research Steps

The research methodology steps used in this study are literature study, data collection, data analysis and the last stage is the interpretation of the results [1].

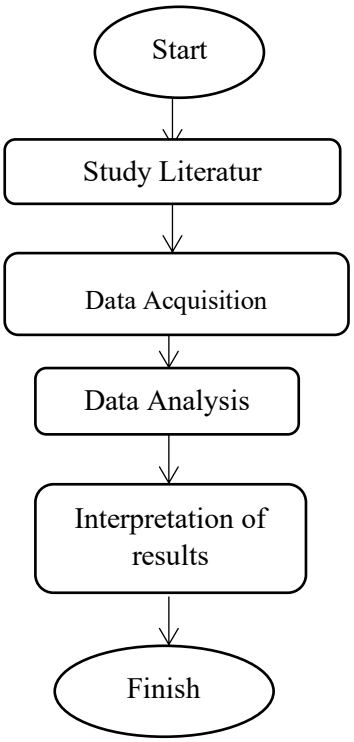

Fig. 1 Research Methodology

There is a research methodology that can be seen in figure 1. which will be explained as follows[4]:

a. Study Literature

In this writing, it is inseparable from the data contained in various articles that are references, such as guidelines for various kinds of tutorials for making web-based applications and other references related to the preparation of reports and as a theoretical basis to solve the problems faced.

b. Data Acquisition

Data collection in this study uses the study literature data collection method. After the data is collected, data analysis is carried out to adjust the data process to be processed using the Rapid Application Development (RAD) method.

c. Data Analysis

After the data from the KopiTeka Room is taken and collected, the next process is the data analysis process.

d. Interpretation of Results

After data analysis, the next process is the interpretation of the results, where this aims to interpret the data that was previously analyzed based on the theories and research carried out.

2.2. System Planning (RAD)

The RAD method is an object-oriented approach to producing a system with the main goal of shortening the application and process work time to empower the software system as soon as possible appropriately and quickly[3].

Stages Rapid Application Development (RAD)[6]:

a. Requirement Planning

The stage where the researcher and the owner of the café terrace meet to identify the purpose of the system and identify the requirements for information on problems that occur to build the system and determine what is needed to achieve the goals of the system.

b. Design System
The stage where the researcher determines to achieve the goal because in this process the design process is carried out and improvements are made if there is still a design discrepancy between the user and the analyst[2].

c. Implementation
At this stage, the system that has been built will be tested with the aim of determining and ensuring that the components in the built system can run and function according to what has been planned. This test is carried out in 2 stages, namely Blackbox testing and beta testing. Blackbox testing is to test whether or not each content when invoked or executed can be executed as planned. If there is content that is not in accordance with expectations, it will be re-edited. After the Blackbox test, the system will be tested using beta testing. This beta testing will be carried out by the system user, then the user will be asked to test the system[5].

III. Results and Discussion

1. System analysis

1) 3.1.1 Running System

At this stage, the researcher studies the system that is running in the Teka Coffee Room to find out the overall system picture which will later be used as a new system material to improve the weaknesses of the running system [5].

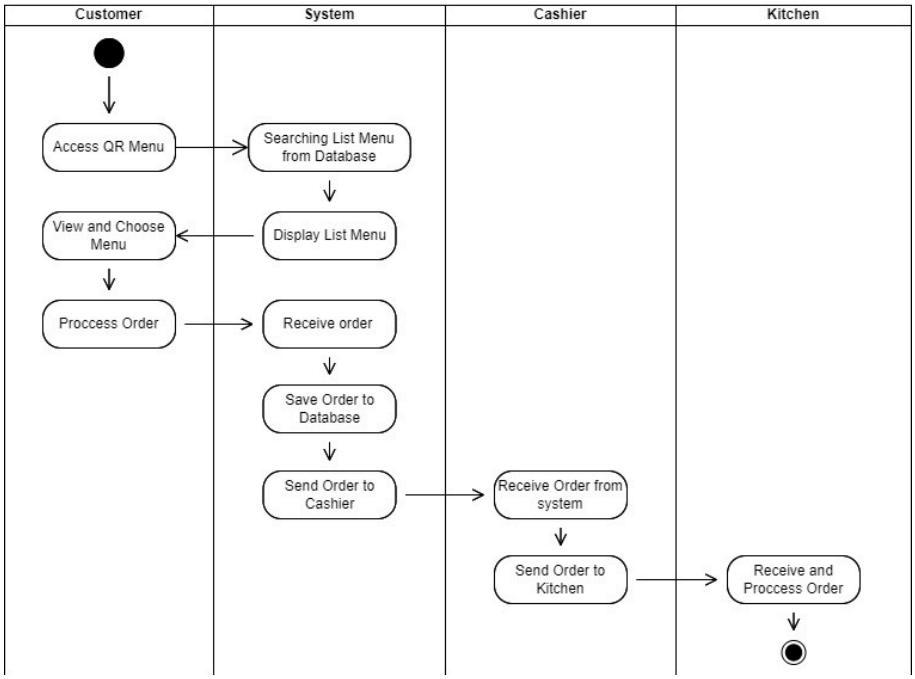

Fig. 2 Activity Diagram of the Running System

2) 3.1.2 Proposal System

At this stage, the researcher will design a proposal system that is in accordance with the needs and problems related to daily reports[8]. The following is the result of making a Proposed Activity Diagram on the system[6].

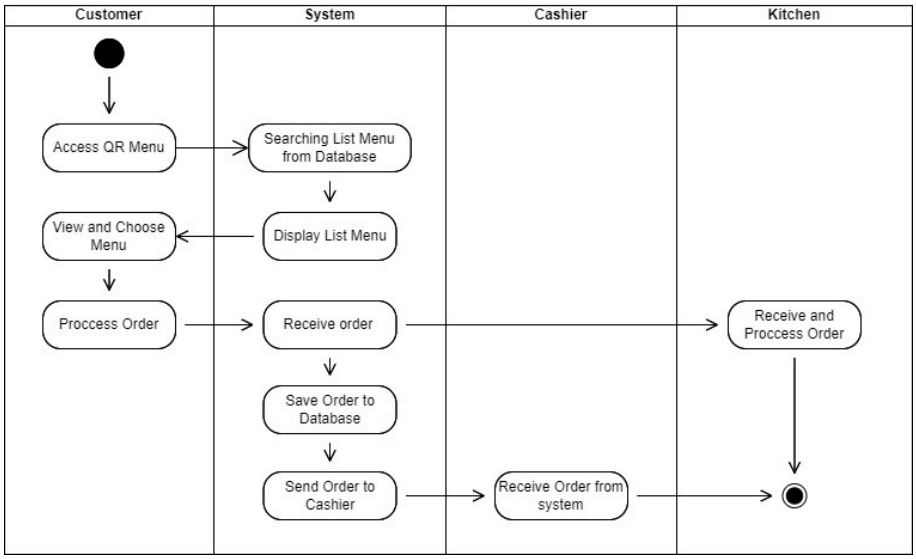

Fig. 3 Activity Diagram Proposal System

Use Case Diagrams present in a simple way how the user interacts with the system so that users can later understand the system's functions. The following is a use-case diagram of the built system.

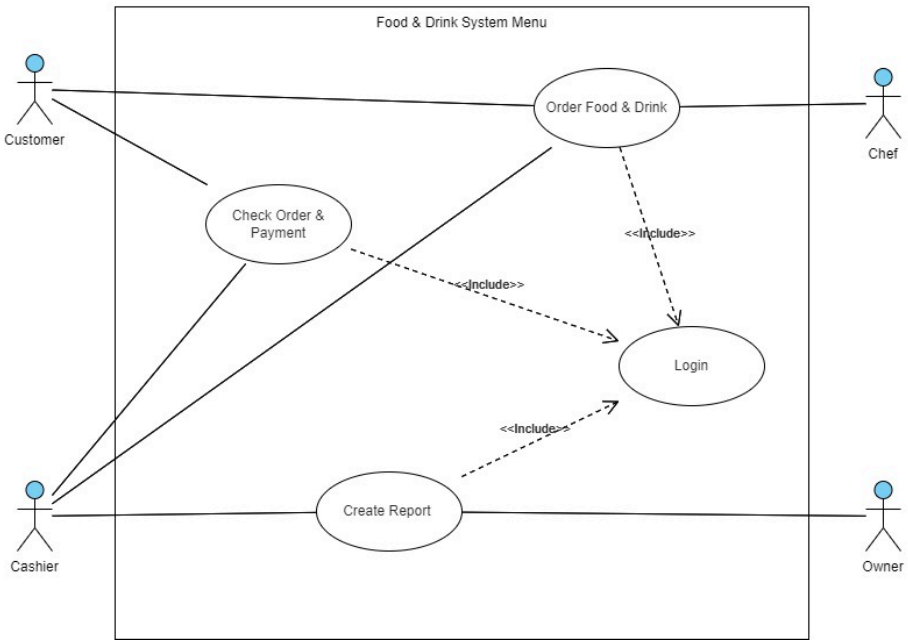

Fig. 4 Use Case Diagram Proposal System

A flowchart or flowchart is a set of symbols or schemes that show or describe a series of activities - activities of an Entity Relationship Diagram program from the beginning to the end. The essence of making a flowchart or flowchart is a depiction of the sequence of steps to work on an algorithm [7].

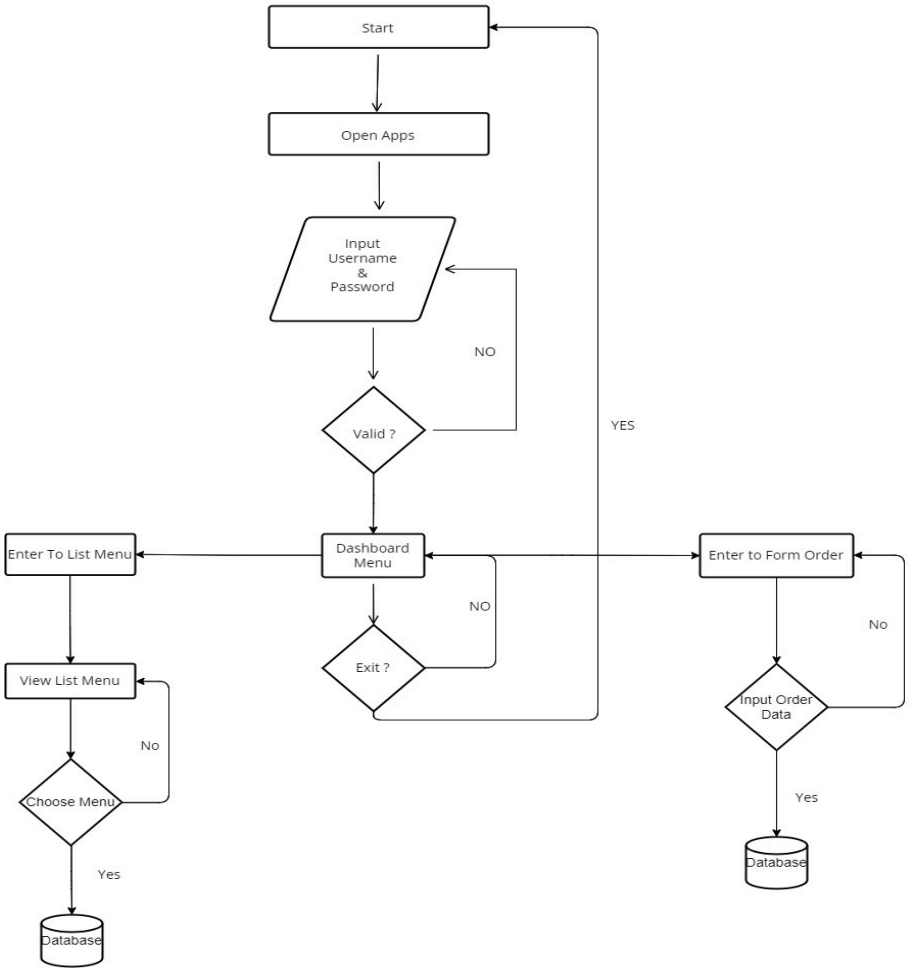

Fig. 5 Flowchart Proposal System

The display of the Home Menu in accessing the Teka Coffee Room website. There are 3 Sections in it, namely, Home, Profile, Exit.

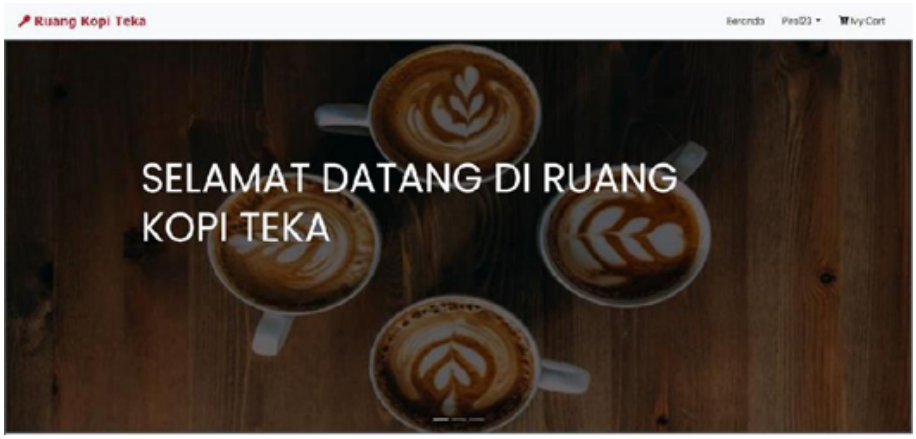

Fig. 6 Main Menu Form

The Order Menu view is used to view and add the desired orders that will enter the data into the admin.

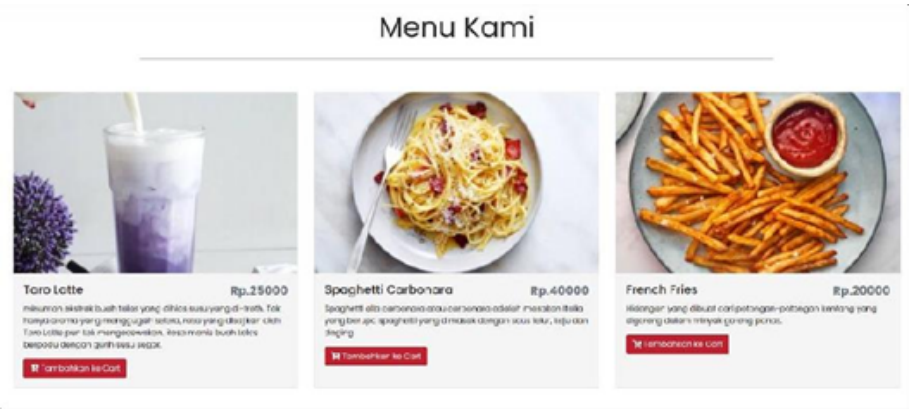

Fig. 7 Food Menu Form.

The Order Data Menu view is used to view the process of orders ordered by customers.

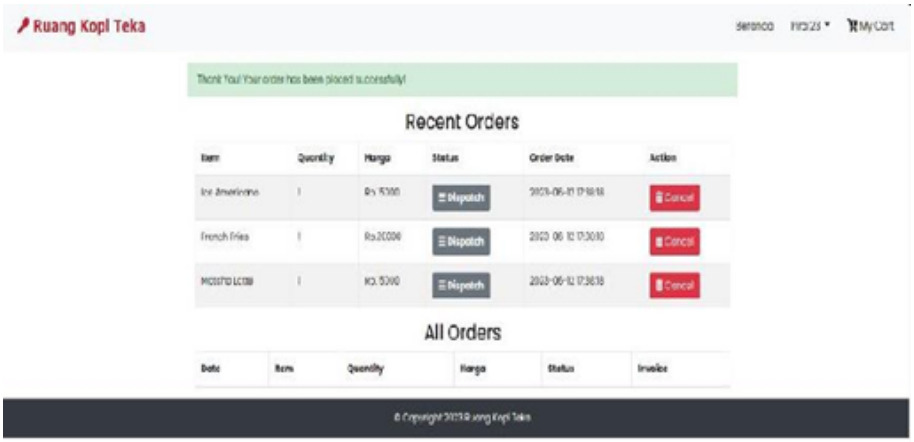

Fig. 8 Order data Menu Form.

IV. Conclusion

In the writing of this study, it has been described how to design a food and beverage ordering application in the Teka Coffee Room. Then it can be concluded as follows:

1. With the creation of this application to be more efficient, especially in overcoming booking problems, the results obtained in dealing with these problems will be obtained in dealing with these problems faster.
2. The implementation of a menu ordering system with QR codes in the Teka Coffee Room can provide several benefits, such as improved operational efficiency, ease of menu access, data tracking and analysis, and a reduction in the cost of printing physical menus.
3. Ruang Kopi Teka can implement an effective QR code menu ordering system, improve customer experience, and support successful business operations.

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