Design and Development of Online Retail System

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Abstract. This project involves designing and bulding a system in a coffee shop. The method of data collection used in this journal was interview. The approach method used to design and build this system is through object oriented approach, which one of the main principles is the form of abstractions. The SCRUM method is also used to manage a project or as a method of software development. The goal is to show whether this system can support all online business processes such as online ordering, online transcations, and product catalogs that are accessible to everyone. The result of this scientific paper making is that the role of technology can support to maximize our business effort especially on every business process, for example case study which writer use in making of this scientific paper is coffee shop Ninyuh Kopi which where writer try to make design and system development web-based online shop using object-oriented approach method or OOAD (Object Oriented Analysis Design) using UML diagramming tool which includes use case diagram, scenario, activity diagram, sequence diagram, class diagram, object diagram, component diagram, and deployment diagram , while for software development method writer use SCRUM method.
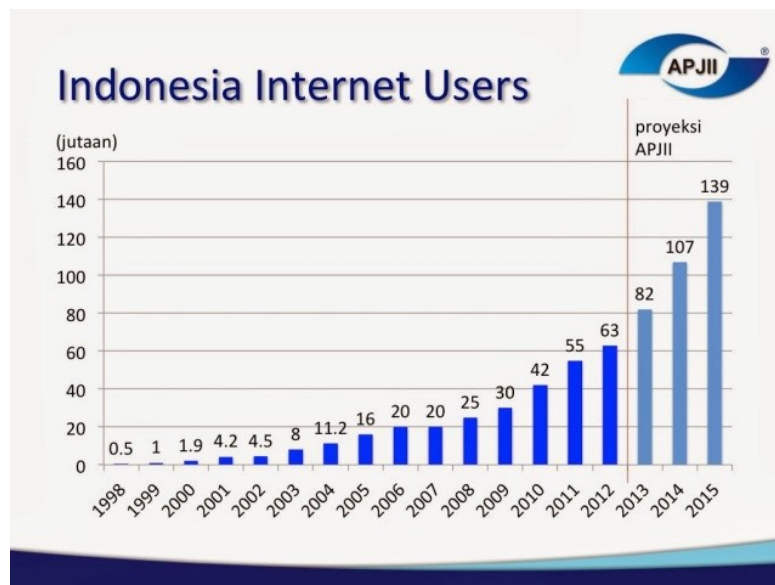
1. Introduction
The design of the system according to Bentley and Whitten are methods that are designed and have a specific purpose to solve a problem solving by using certain techniques and components in a unity or group in accordance with the established provisions. [1] In the current state of affairs, the design of system designs requires special expertise that is internet expertise. Internet skills, important assets in the information society begin with a brief history of communication technology. It seems that in the course of history, this technology has changed and has increased the demands on the people who use it. [2]

Based on Figure 1 projection of APJII (Association of Indonesian Internet Service Providers) we can see internet user data in Indonesia from 1988 until 2015 always experience improvement and never decrease, this indicates a promising business if we mix with technology as a means of marketing and business processes. Sales is the company's main activity in generating revenue, both for large companies and small companies. Sales is the ultimate goal of marketing activity, because in this section there are pricing, negotiation and acceptance agreements, as well as agreement on payment methods agreed upon by both parties, to reach the point of satisfaction. [3] One of the ways to sell is to use web-based. [4] Web-sales can increase profits. [5] "Marketing is an organizational function and a set of processes for creating, communicating, and delivering value to customers and for managing customer relationships in ways that benefit the organization and its stakeholders." [6] Online business users are increasing because of the increasingly affected social media. The increasing popularity of social media like Facebook and

Twitter creates a new delivery platform in e-commerce called social commerce. [7] Social media platforms such as Twitter and Facebook enable the creation of virtual customer environments where interested online communities are formed around specific companies, brands, or products.[8] Departing from that, then Social media has provided new opportunities to consumers to engage social interaction on the internet. Consumers use social media, such as online communities, to generate content and network with other users. [9] The smoothness and ease of mechanical trading of transactions in the online store business can provide an opportunity to grow global market goals. [10].

Figure 1. Indonesian Internet Users.

2. Method

The making of this scientific paper is designed to explain how the steps in designing and making the online store system to one of the coffee shop that is Ninyuh Coffee as a case study which the writer choose, first the author need the necessary data such as transaction data, expense data, and income data.

The author uses an interview technique to the owner of a coffee shop to get the data and information necessary to create an online store system that will be designed. The author makes a general questionnaire about the preferences and tastes of today's society or youth against drinks that can improve the brain's performance of coffee drink is quite popular by all circles both children, teenagers, including parents, even men and women are many who like such drinks. This questionnaire authors create and disseminate online through social media such as Facebook, twitter, and Instagram. Data collection techniques with the online questionnaire is what the authors use to obtain and collect data of respondents that the authors need.

The research design that writer use to make this online store system using explorative research design which in this kind of research will give general description about research which is being done by writer in making of this scientific paper with certain tools which adapted to method approach of chosen system by the author.

The data analysis technique that writer use to make this online store system is using domain analysis technique (Domain Analysis), this data analysis technique is very suitable to be used for research using explorative research design because both focus to analyze the objects studied in order to get general description of the objects of the study, but in this technique will not be explained in detail about the description of the object of the study because for the details will be clarified using tools that have been adapted to the method of approach used by the author.

Because the research design used to make this scientific work using explorative research design and data analysis techniques using Domain Analysis techniques then for a suitable system approach method

is to use object-oriented system approach or OOAD (Object Oriented Analysis Design). Object-oriented system approach is one of the systems approach technique in which the approach sees the overall system problems through the objects associated with the system. Therefore the authors chose this object-oriented system approach method because it will simultaneously focus on researching the collection of objects and the system is built or proposed will also automatically also describe the objects in general, which is expected by the author is a system that created or delineated in the making of this scientific work will be appropriate at the stage of implementation of the system.

3. Results and Discussion

The research object chosen for the case study on the making of this scientific paper is the Ninyuh Coffee shop, coffee shop opened on August 15, 2017 which is addressed at jl babakan cianjur No.5 Rt.11 Rw.02, Sukaraja Cicendo (See Figure 2).
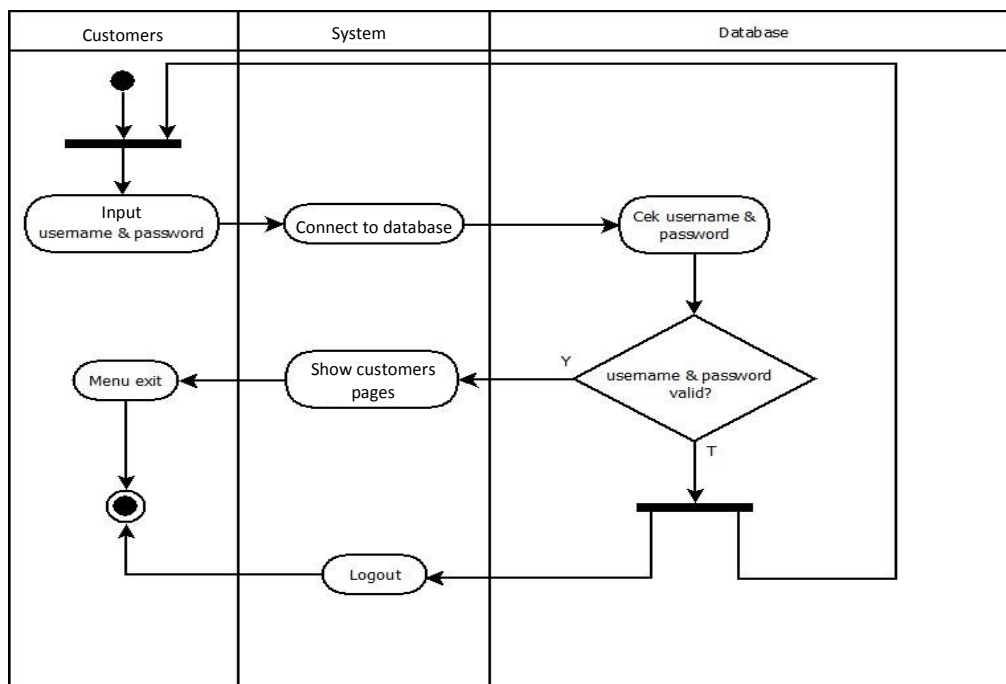

Figure 2. Logo Kedai Ninyuh Kopi.

Online store system proposed by the author in making this scientific paper is a web-based online store system that is responsive, because the authors use object-oriented approach method then the authors must describe the results of online store system that the author proposed by using UML diagrams that include use case diagram, activity diagrams, sequence diagrams, class diagrams, object diagrams, component diagrams, and deployment diagrams (See Figure 3).

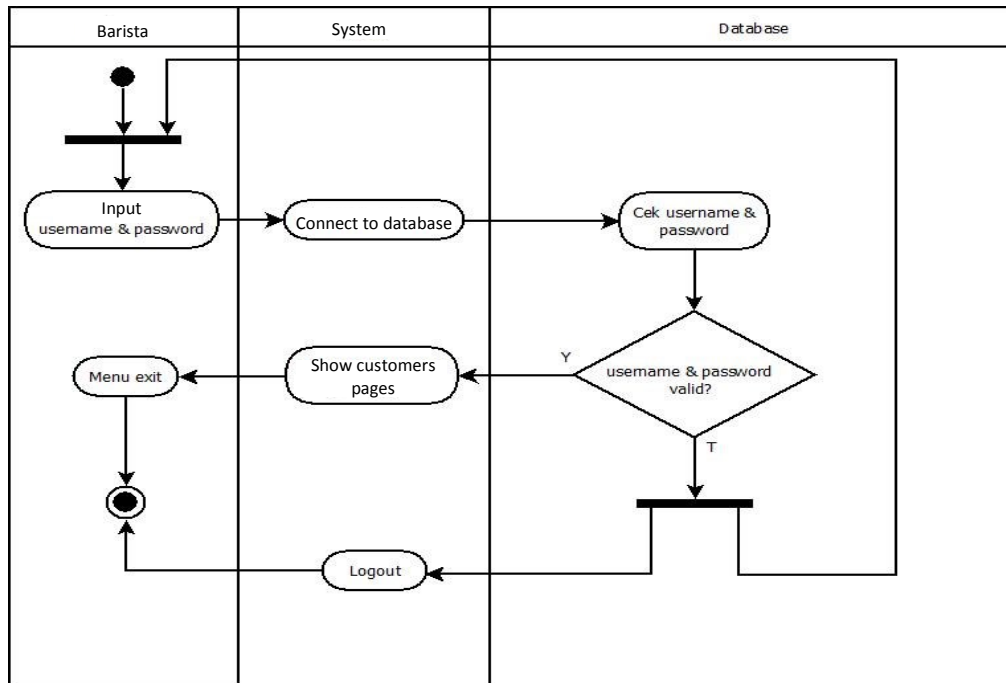**Figure 3.** Gambar Use Case Diagram.

In the use case diagram the authors propose an online store system that will be built with 2 actors that are customers and baristas, while for its own use case there are 4 that is login, order, search, and enter menu data, where case order and case enter data menu the actor must perform the process that is in the case login, while in the search case that is extends the customer actor can do a search before the order or not but the customer actor still have to do the existing process in case login first (See Figure 4).
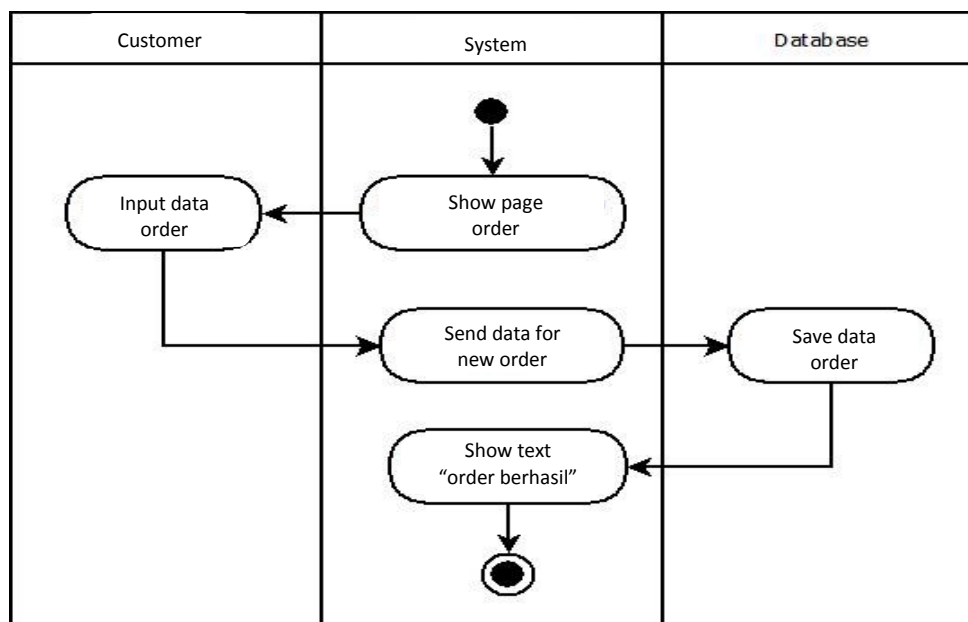

Figure 4. Diagram Aktivitas Login Pelanggan.

On the customer login diagram above described the flow of customer login which will order menu through online store system to be built, on this login activity customer input username and password, then the system will send data username and password to the database and check it, if valid then the

customer successfully login and enter the customer page, and if invalid then the customer can re-enter the username and password or close the program (See Figure 5).
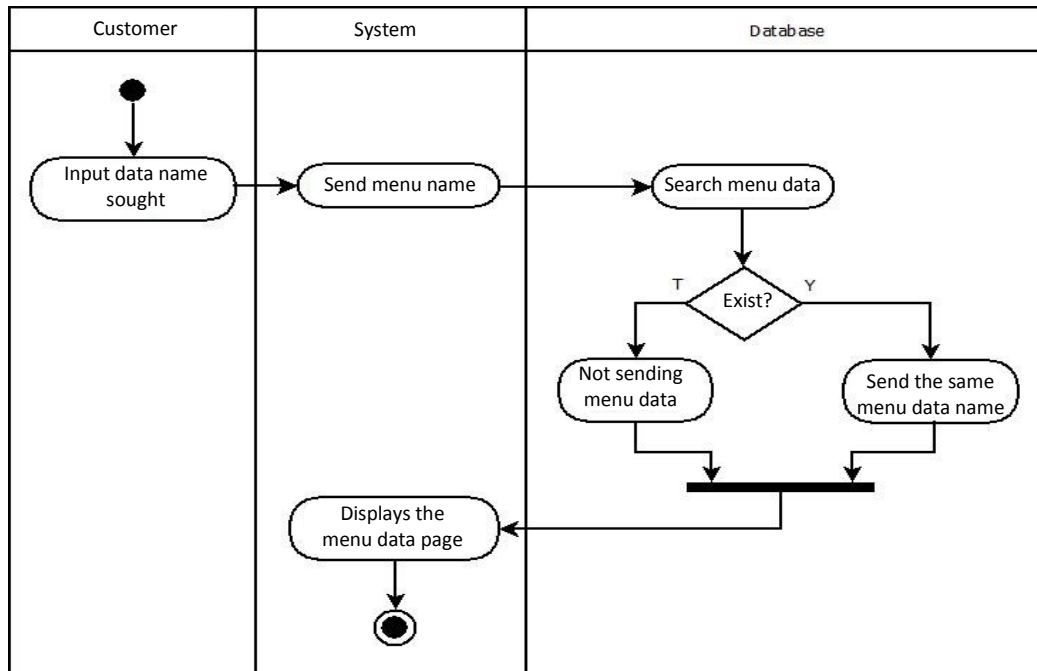

Figure 5. Diagram Aktivitas Login Barista.

In the diagram barista login activity is the same as the diagram of customer login activity, it's just that distinguish it on this barista login activity the system will display the barista page if the username and password entered by the barista valid (See Figure 6).
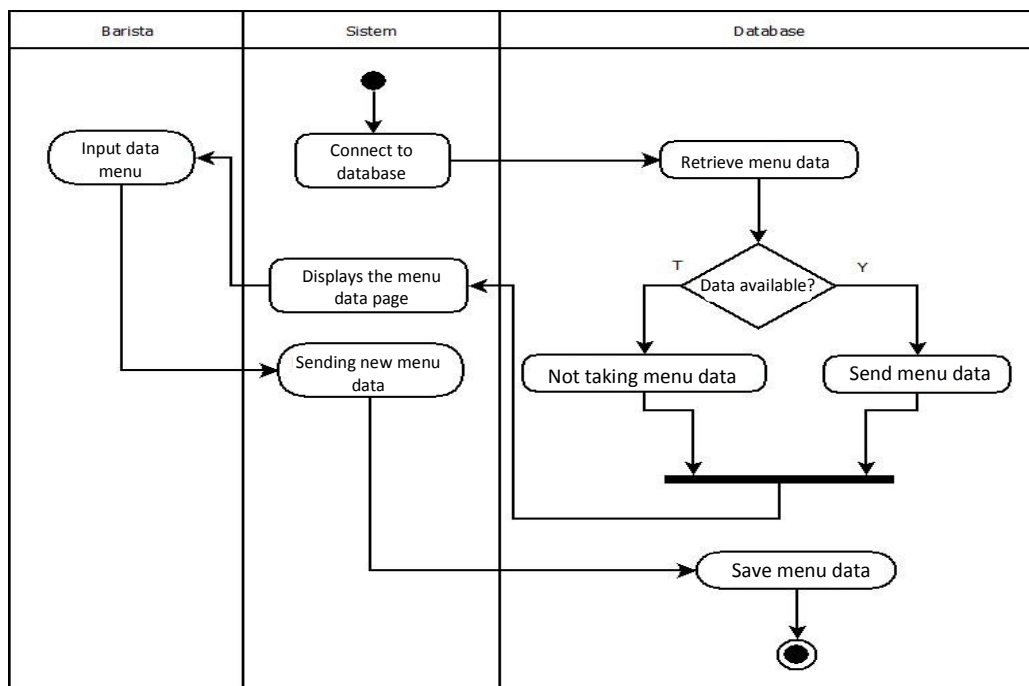

Figure 6. Diagram Aktivitas Order.

In this order diagram can only be accessed by customers who have successfully logged into the system, the system will display the order page and the customer can input the menu data you want in order, then the system will send the order data into the database and save it (See Figure 7).
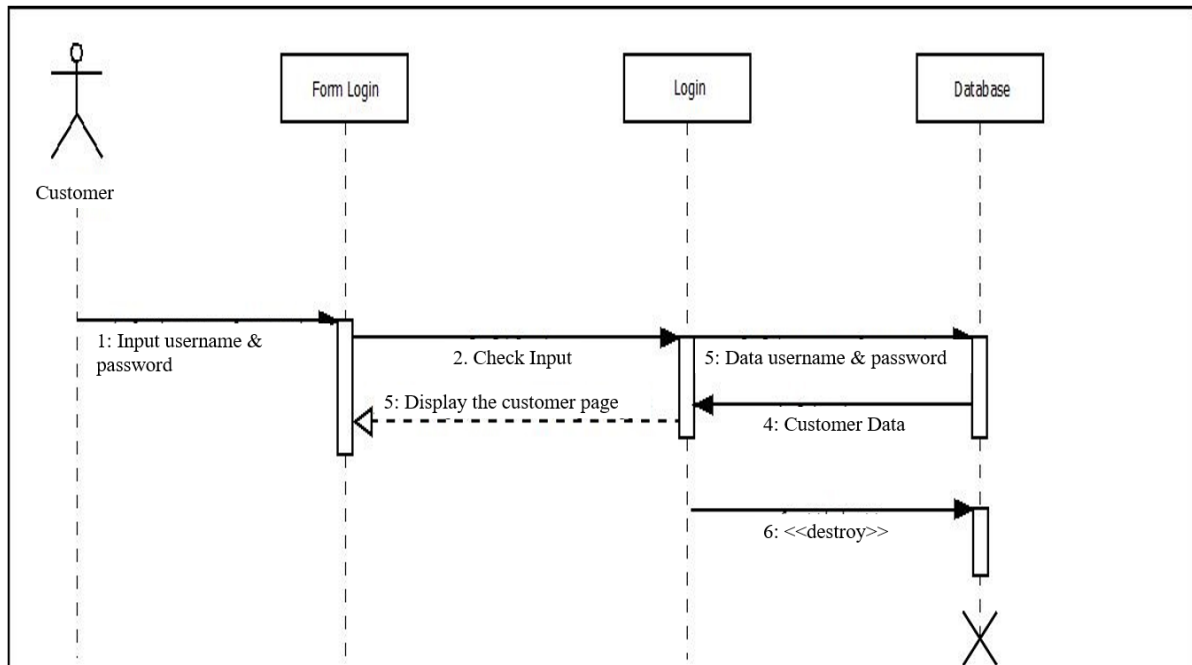

Figure 7. Diagram Aktivitas Pencarian.

In this activity diagram the customer inputs the searched menu data, then the system sends the search data into the database and searches it, the system will display similar menu data if any, if no then the system will tell that the data order sought does not exist (See Figure 8).
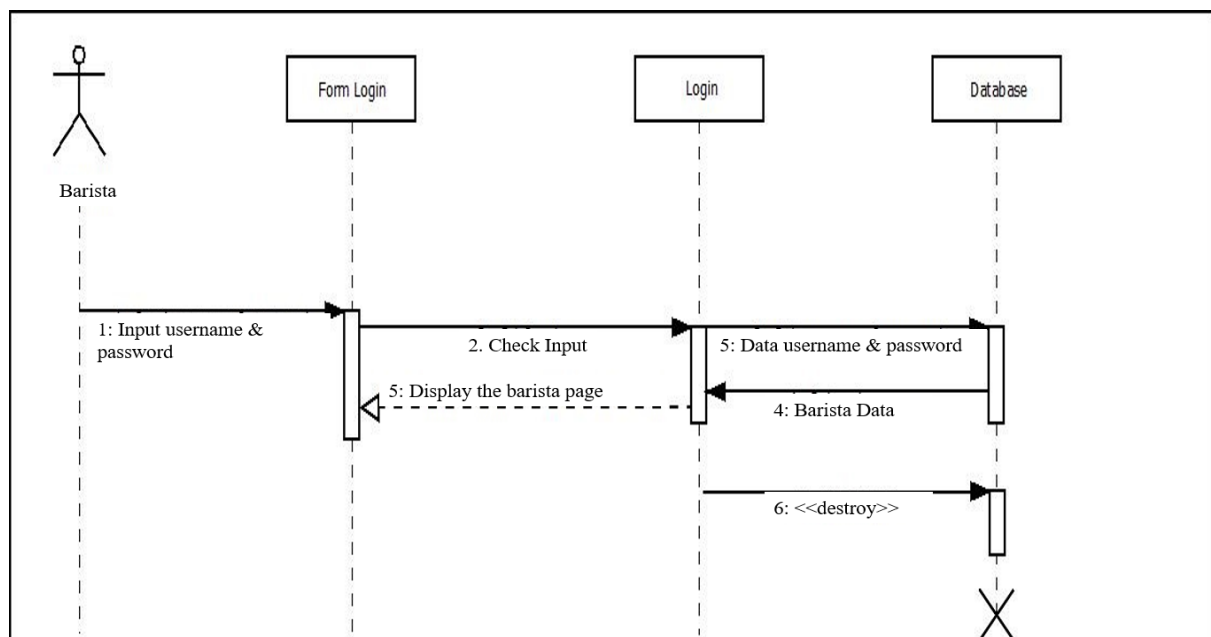

Figure 8. Diagram Aktivitas Memasukkan Data Menu.

The system will display the menu data page along with the data menu on the database, then on the page barista can input new menu data and the system will store it into the database (See Figure 9).
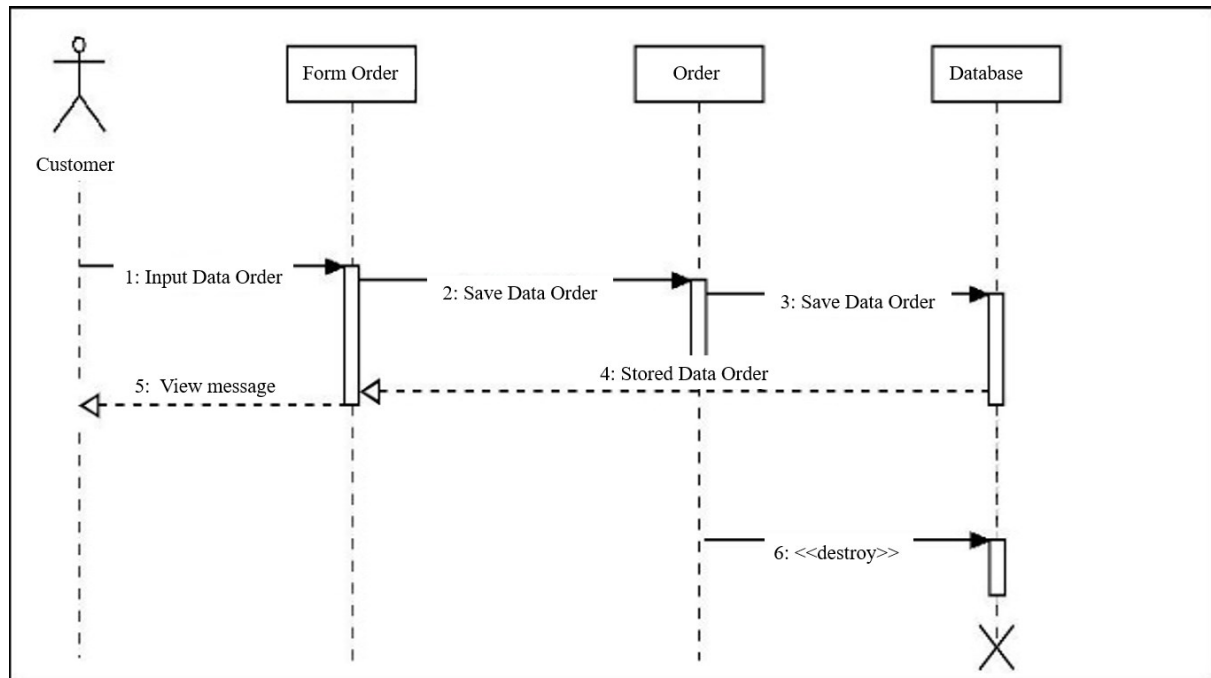

Figure 9. Diagram Sequence Login Pelanggan.

In the sequence diagram above customer diagram describes the relationship between customers with the system to be built, which in the sequence diagram of the customer start input username and password, then the system on the controller will send the input into the database, then from the database will be checked valid or not the input, for the validation result will be given to the system login controller, and the login controller will call the customer's page (See Figure 10).
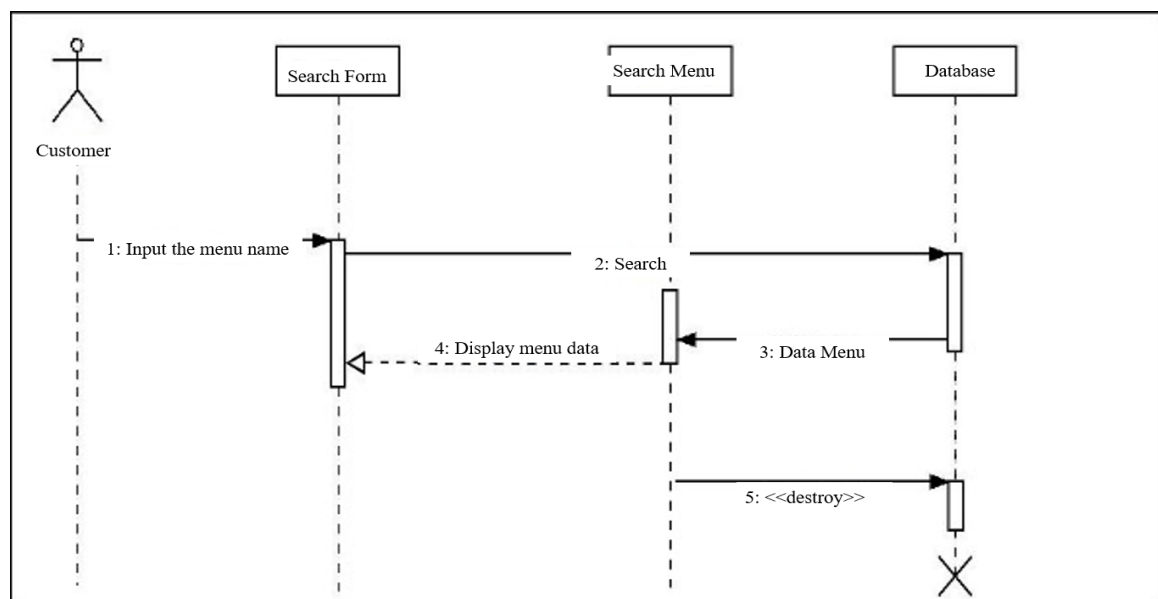

Figure 10. Diagrarm Sequence Login Barista.

In the sequence diagram of the login line is not much different from the sequence diagram of customer logins, only that distinguishes the pages that are called by the controller (See Figure 11).

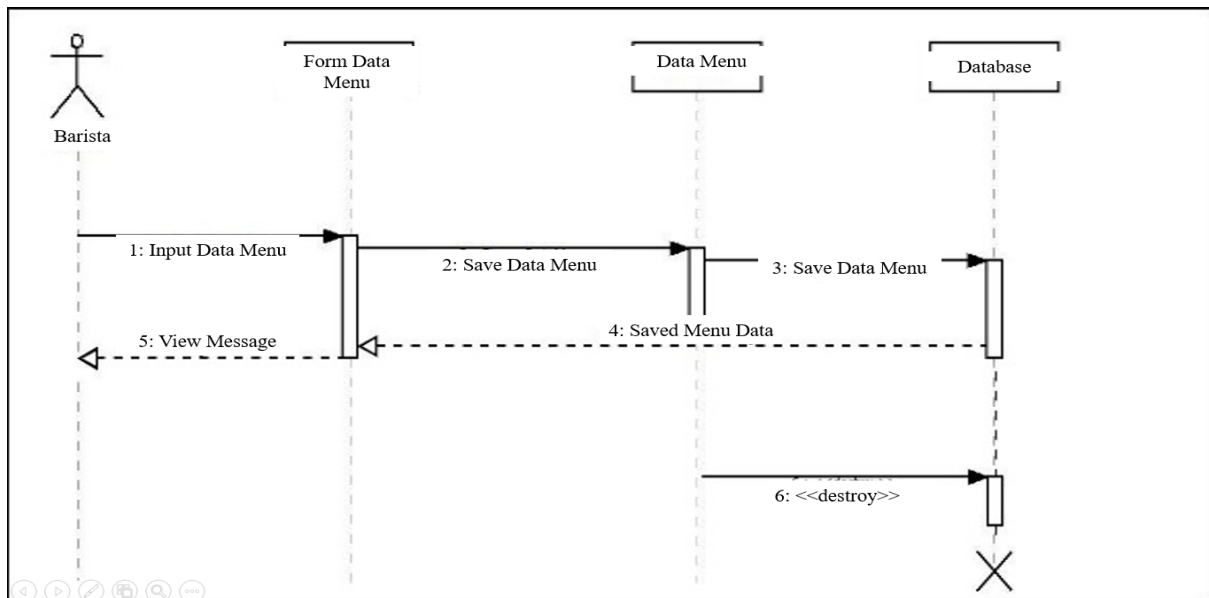**Figure 11.** Diagram Sequence Order.

In the sequence order diagram describes the relationship between the customer and the system on ordering, the customer begins to input the menu data to be in order and then by the order controller will be stored into the database, and the system will send a message that the data order successfully stored to the customer (See Figure 12).

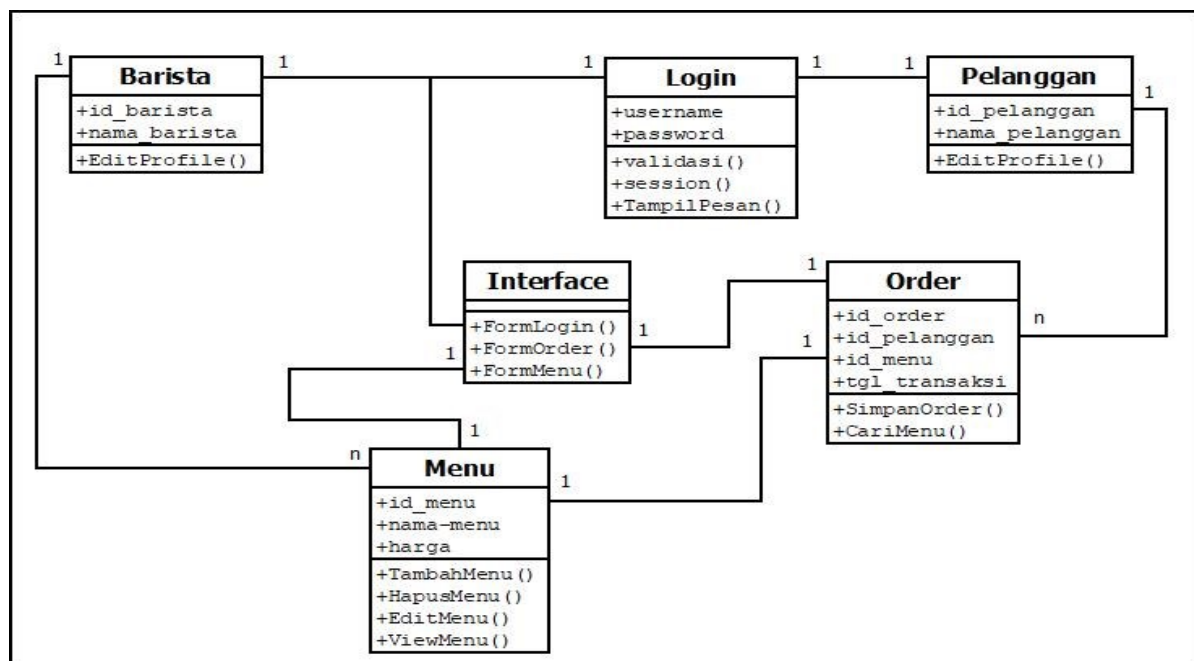**Figure 12.** Sequence Search Diagram.

In the sequence diagram search the menu above, the customer will input the name of the menu that search then the system will use the search function into the database to find the same menu or similar to what is entered by the customer, then the controller on the system will display the menu data sought (See Figure 13).
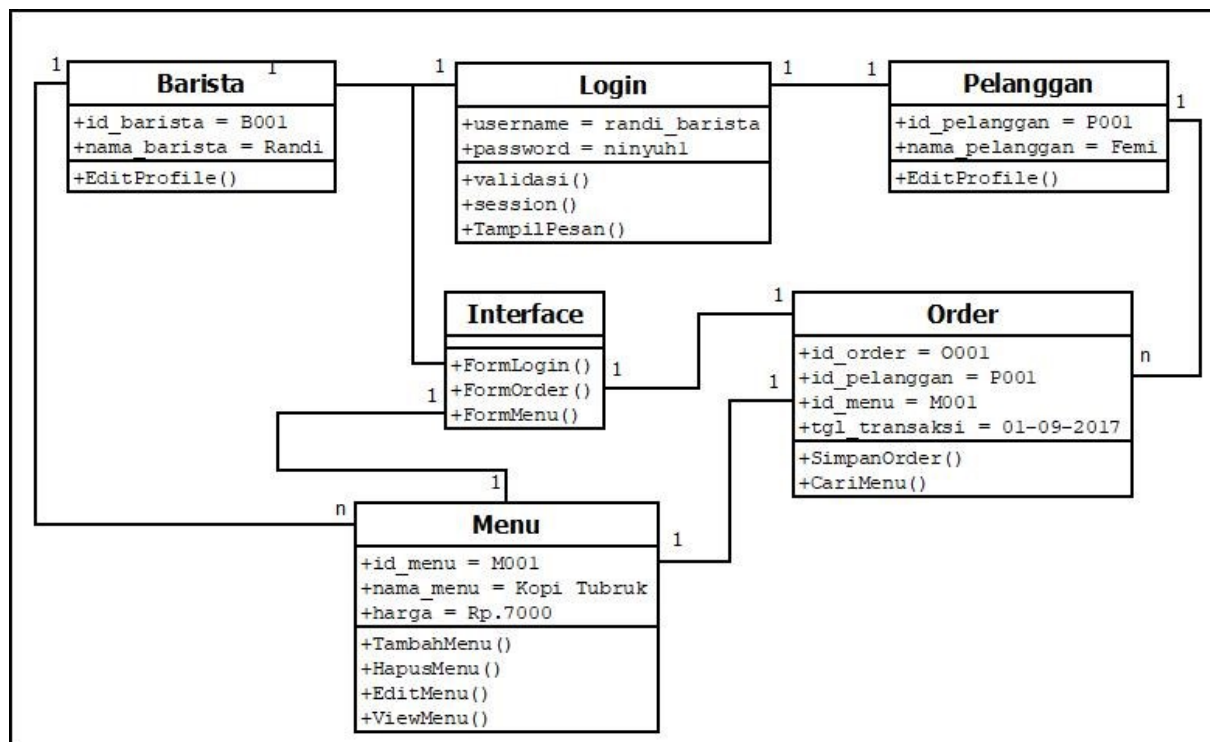

Figure 13. Sequence Diagram Entering a Data Menu.

In the sequence diagram entering the menu data above explains the relationship between the barista with the system, where the barista will input new menu data on the form data menu, then the new data will be sent by the controller into the database, if it is successfully stored then the system will bring the message to barista, in this sequence diagram also applies to the process of deleting and editing menu data (See Figure 14).
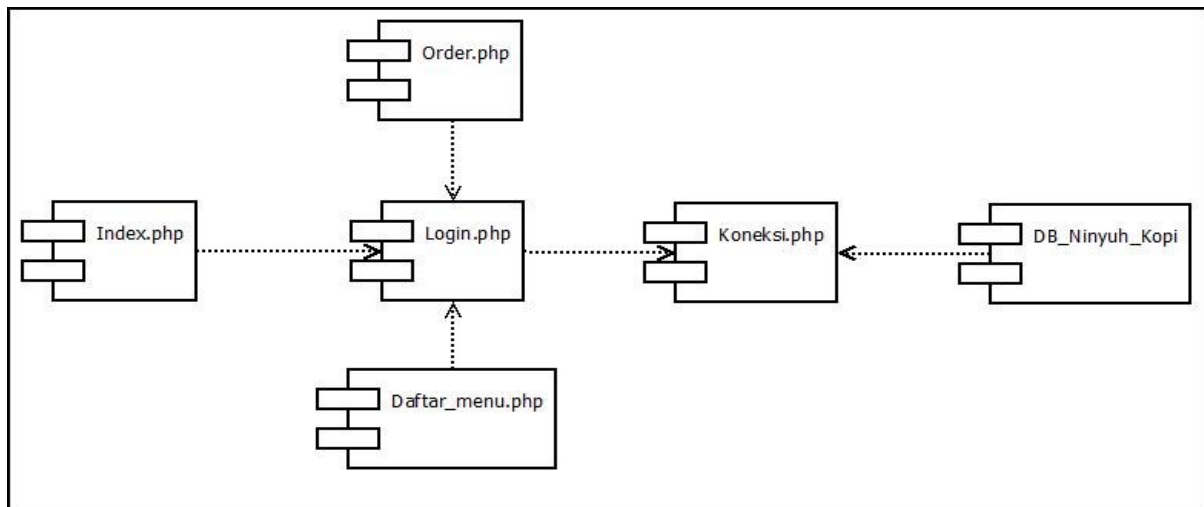

Figure 14. Class Diagram.

Class diagrams that the authors created in the picture above is a class diagram that will be used to build the author of this online shop system, class diagram created based on the image above consists of 5 classes, including class login, order, menu, barista and customer, interface class is not calculated because the class is only the view class that serves as the link of each class. From the class diagram above the cardinality between customer classes with the order class is one to many which means one customer can order more than once, then the cardinality between the class menu and the order class is one to one which means one id menu there is only one id in the class order, and the last cardinalities between class barista and menu class is one to many which means a barista can make the addition of new menu data more than one (See Figure 15).
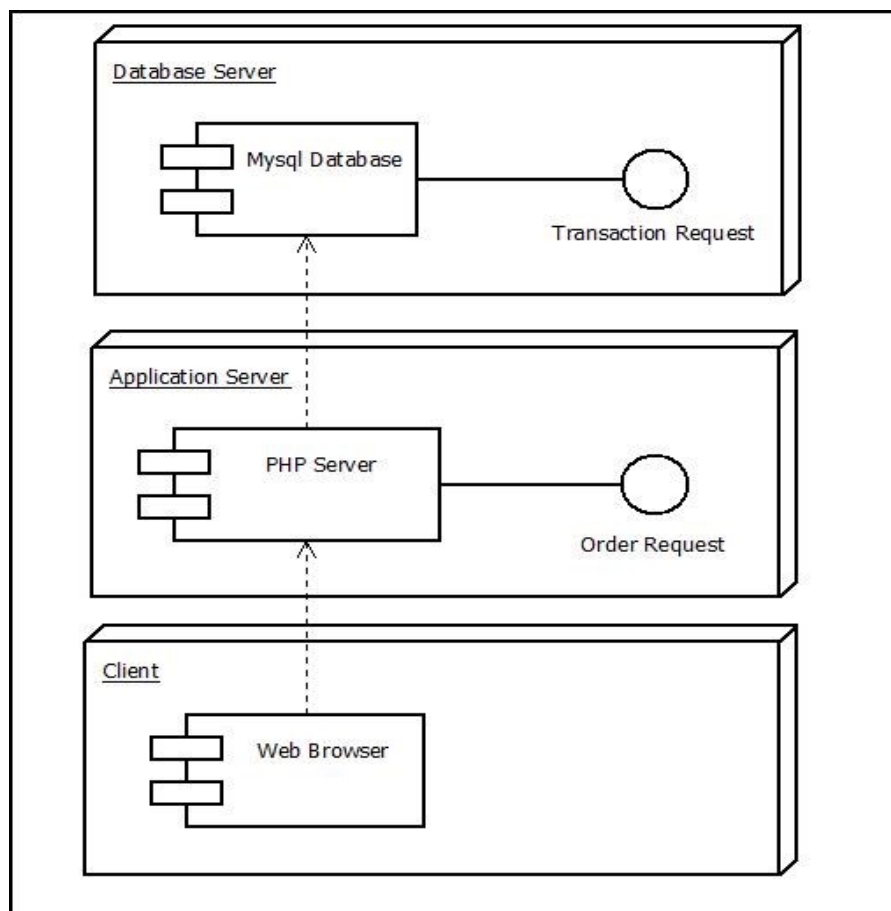

Figure 15. Diagram Object.

In the above diagram object is actually the same as the previous diagram of the class diagram, only distinguishes that there is value or value on its attributes, for example in the menu class that has the attribute id_menu, nama_menu, and the price is filled with "M001", "Kopi Tubruk", and "Rp.7000" (See Figure 16).

Figure 16. Diagram Component

On the component diagram of the online store system that the authors propose consists of 6 components, namely index.php which has dependence on login.php component, then component order.php and components list_menu.php which both have dependence on login.php component, then component login.php and component DB_Ninyuh_Kopi have full dependence on connection.php component (See Figure 17).

Figure 17. Deployment Diagram.

In this deployment diagram the online store system that the author will design consists of 3 nodes namely the database server node, node application server, and node client. Where on node database server writer will use Mysql Database, then for node application server using PHP Server, and last for node client using Web Server.

4. Conclusion

The conclusion of this scientific paper making is that the role of technology can support to maximize our business effort especially on every business process, for example case study which writer use in making of this scientific paper is coffee shop Ninyuh Kopi which where writer try to make design and system development web-based online shop using object-oriented approach method or OOAD (Object Oriented Analysis Design) using UML diagramming tool which includes use case diagram, scenario, activity diagram, sequence diagram, class diagram, object diagram, component diagram, and deployment diagram , while for software development method writer use SCRUM method.

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