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DEVELOPMENT OF BOOK NOOK ONLINE BOOKSTORE APPLICATION WITH PROTOTYPING MODEL METHOD

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Abstract

Book Nook online bookstore is an small medium sized enterprise (UMKM) that sells many books online. Some of the problems that are often faced by these bookstores are the high demand for books while the sales media are limited to a few media so that operations are also limited. In addition, the rampant issue of book piracy is also affecting the booksellers' sales. The lack of a reliable online bookstore is one of the reasons. The purpose of this research is to develop a mobile-based book nook online bookstore that can help these MSMEs sell books quickly and easily and reliably. The method that researchers use in accomplishing this research is SDLC in the form of a prototyping model. The equipment used to design the system is UML consisting of Class Diagram, Use Case and Activity. Furthermore, application development is implemented using the flutter framework using the Dart language and MySQL database. This research resulted in a book nook mobile-based application that functionality also tested with the blackbox method with the status of all features has been running well. Book Nook online bookstore assists in providing accurate book information, effective book promotion media, and connecting the store to a wider target market with easier and time-saving service of sales

Keywords*: UML, Online Book Application, E-commerce, Android Apps, Prototype*

Abstrak

Toko buku daring Book Nook merupakan sebuah UMKM yang menjual berbagai macam buku secara daring. Beberapa masalah yang kerap dihadapi oleh toko buku tersebut adalah tingginya permintaan buku sementara media penjualannya terbatas pada beberapa media saja sehingga operasionalnya juga terbatas. Selain itu, maraknya isu pembajakan buku juga turut mempengaruhi penjualan toko buku tersebut. Hal tersebut salah satunya karena kurangnya toko buku secara online yang terpercaya. Tujuan penelitian ini adalah untuk mengembangkan toko buku online book nook berbasis mobile yang dapat membantu UMKM tersebut dalam menjual buku secara cepat dan mudah serta terpercaya. Metode yang peneliti gunakan dalam menyelesaikan penelitian ini yaitu SDLC berupa prototyping model. Adapun tools yang digunakan untuk melakukan perancangan sistemnya yaitu UML terdiri Class Diagram, Use Case dan Activity.

Selanjutnya, pengembangan aplikasi diimplementasikan menggunakan framework flutter menggunakan bahasa Dart dan database MySQL. Penelitian ini menghasilkan aplikasi berbasis mobile book nook yang fungsionalitasnya juga telah diuji dengan metode blackbox dengan status seluruh fitur telah berjalan baik. Toko buku online Book Nook membantu menyediakan informasi buku yang akurat, media promosi buku yang efektif, serta menghubungkan toko tersebut kepada target pasar yang lebih luas dengan pelayanan penjualan lebih mudah dan hemat waktu.

***Kata kunci**: UML, Aplikasi Toko Buku Online, E-commerce, Aplikasi Android, Prototype*

1. INTRODUCTION

Book Nook online bookstore is a business that sells a variety of books online. This business idea initially focused on selling books offline. But in this era, there are many ways to market products and find customers online. Therefore, the Book Nook online bookstore decided to sell books online, both in the form of physical books and electronic or e-books[1].

The genesis of the Book Nook business was because the business owner was convinced that books are one of the most frequently used sources of scientific information. As a result, there is an increase in demand for books. In addition, the business owner also observed the high price of books sold in conventional bookstores. The impact of the high demand and price of books is that more and more duplication and sales of books are done through piracy. In fact, the act of book piracy is a violation of Law Number 28 of 2014 on Copyright Law[2].

This problem then led Book Nook business owners to try to respond to the high demand for books by establishing an online bookstore business. This step is expected to eradicate book piracy by providing online bookstore application options that make it easier for people to find and buy the books they want. Physical books sold in this business are cheaper due to the absence of rental costs for business premises. In addition, the business owner also provides books in e-book format, so that buyers can buy and read quality books at a low price. For this reason, in this problem, researchers developed an application for the Book Nook online bookstore application[3]. The design of this application is the first step in the workflow of creating the Book Nook online bookstore application.

In designing the application model for this problem, researchers used the prototype method. The prototype model is a method that requires software developers to create a mockup in the form of an application model, very suitable in conditions where users cannot present clear information about the needs that match their wishes[4]. The result of the prototype model is a mockup that will be a reference design model that will be used when training, presenting, assessing a design, promotion, or other purposes. The results of this development can be the foundation for the development of the mobile-based Book Nook online bookstore application[5].

The results of this development and implementation are then tested using the black box testing method. In developing the application, the author utilized the Flutter framework and MySQL database [6]. The selection of the Dart language in the Flutter framework is in accordance with the author's priorities in application development [7]. By using the framework, the Book Nook application can be easily used for the Android platform. The output of this research is a prototype of the Book Nook application developed using the Android Studio tool.

2. RESEARCH METHODS

In solving the problems in this study, researchers took several steps as shown in Figure 1. These steps are carried out sequentially to be able to produce an application development that suits the needs. From Figure 1, we can see the stages and steps of research carried out by the author in completing this research.

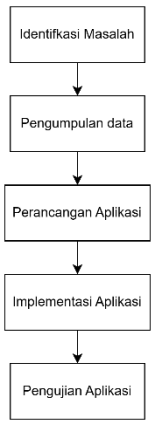


Figure 1. Research Steps

2.1. Problem Identification

The first step taken in this research is to identify problems. Initially, researchers conducted interviews with Book Nook business owners. After that, it was known that the beginning of their desire to establish a bookstore business was because as a step to eradicate book piracy that occurred in Indonesian society. The business owners also wanted to provide a solution to the high demand for books. In addition, they knew that the world was in the information and digital era, so they decided to do an online book sales business through an e-commerce type application. Therefore, this research seeks to create an application development that can be useful for the Book Nook business online bookstore application.

2.2. Data Collection

In the data collection process, the methods used by researchers are interviews and study methods. Researchers conducted direct interviews with Book Nook bookstore business owners to obtain primary data from the owners to clearly know the problems faced. In addition, researchers also conducted interviews with some of the general public who would later become the target market, with sample questions such as "Are there any difficulties when you want to buy books online?". Then, researchers also conducted literature studies on various books and research journals that were useful for strengthening theories to draw conclusions from existing data

2.3. Application Design

At this stage, researchers create a design for the Book Nook online bookstore application. This design aims to facilitate researchers in the application implementation stage. The design of the Book Nook online bookstore application is made using a model with the Unified Modeling Language (UML) model. The reason researchers chose the UML model is because UML is a graphical modeling language to specify, visualize, build, and document all software system artifacts. The UML model is used to identify the parts that are included in the scope of the system being discussed and the relationship between the system and subsystems and other systems outside [8], [9]. In research that uses the SDLC (Software Development Life Cycle) model, UML is used in the design phase of the system to be built. UML is used to create several diagrams such as Use Case Diagrams, Activity Diagrams, and Class Diagrams. The use of UML aims to obtain better communication between developers and customers, so as to obtain the same goals, obtain input from customers when doing prototypes, and shorten development time.

2.4. Application Implementation

In implementing the Book Nook online bookstore application, the MySQL database system is used to store and manage book information, user information, and transaction data. The use of MySQL as a database aims to ensure security, stability, and efficiency in data storage and retrieval[10]. In addition, the implementation of this application utilizes the Dart programming language and uses the Flutter framework for the development of a responsive and attractive user interface.

2.5. Application Testing

Testing the Book Nook online bookstore application using the black box method aims to evaluate the functionality and performance of the application without paying attention to its internal structure [11].

3. RESULTS AND DISCUSSION

3.1. Problem Identification

The problem identified by the author in this research is the obstacles faced by Book Nook online bookstore business owners related to efforts to prevent book piracy. As a solution, they choose to run an online book sales business through an e-commerce type application. Furthermore, the author develops an application that can provide benefits for the operations of the Book Nook online bookstore.

Table 1 Needs Analysis

Needs	Solution
Book Nook bookstore business owners need an e-commerce-type application as the foundation of their business.	Design and implementation that can later be integrated with the Book Nook bookstore e-commerce application.
The plan is to build a Book Nook bookstore e-commerce application that will have many special features, such as a purchase feature for each product, as well as search and filter features to facilitate book searches.	Good and comprehensive application development, so that it can accommodate various features in the Book Nook bookstore e-commerce application.
The general public who need an online bookstore application that can make it easier for them to find the books they want.	Development and creation of an online bookstore application that can facilitate the community in finding and buying the desired book.

A. Use Case Diagram

Use case diagrams can be used to model the interaction between users and the Book Nook Online bookstore application. This diagram can help in understanding the functionality of the system and clarify the interaction between the user and the system[12]. In the study, use case diagrams were used to model system functionality such as viewing profiles, updating data, and reviewing their book purchases. Use case diagrams can also be used to model system functionality such as book purchase transactions, book data management, and user data management.

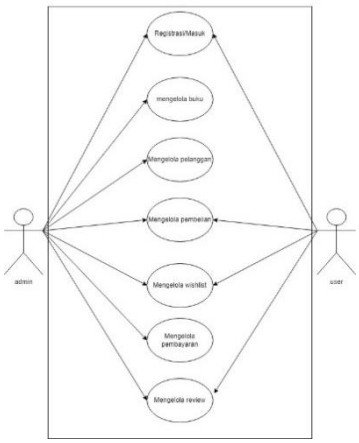


Figure 2. *Use Case Diagram*

B. Class Diagram

In the context of developing Book Nook online bookstore applications using the prototyping method, class diagrams can be used to represent classes and their relationships in the system [13]. The design of the diagram is shown in Figure 3.

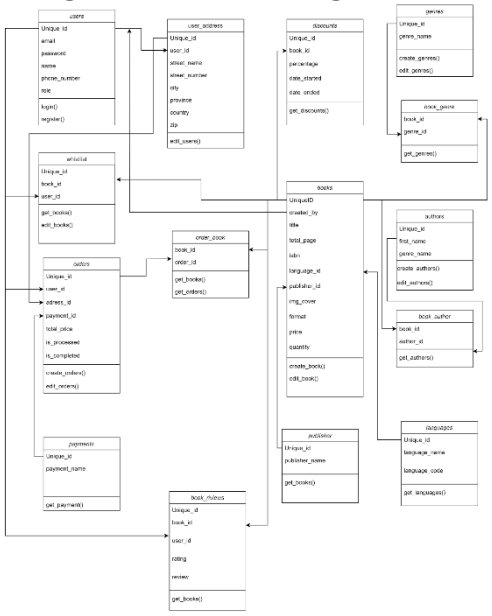


Figure 3. *Class Diagram*

C. *Activity Diagram*

Activity diagrams can be used to model the workflow in the Book Nook online bookstore application [14]. This diagram can help in understanding the workflow of the system and clarify the processes that occur in the system [15]. The activity diagram design in the study can be seen in Figure 4.

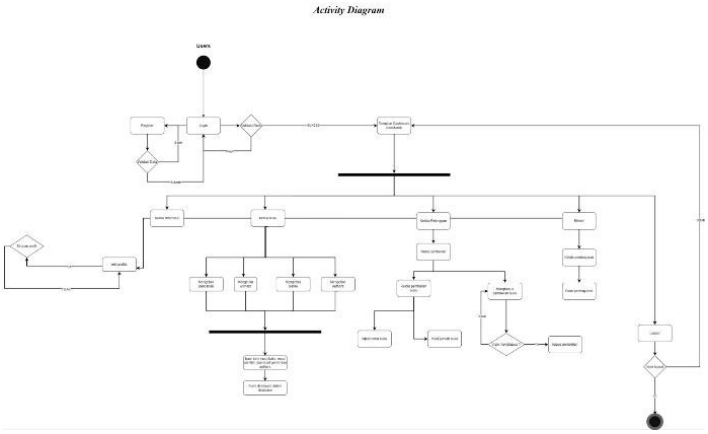
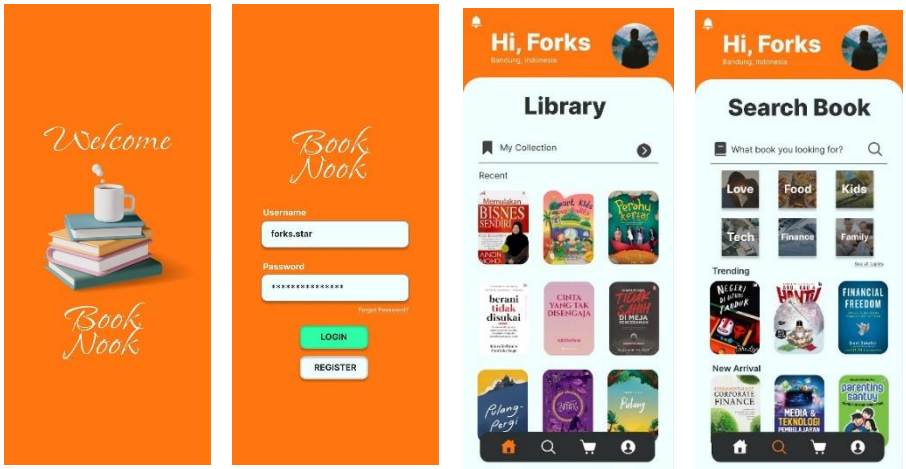


Figure 4. *Activity Diagram*

3.2. Implementation

The next step taken by the author in this research series is to implement the results of analysis and design into program code as an effort to develop a mobile-based Book Nook application. At this stage, the author used the Flutter framework with the Dart programming language. For data storage purposes, the author decided to utilize a MySQL database that allows for smooth integration with the Flutter framework[16]. Some examples of the user interface (UI/UX) of the Book Nook application produced in this study include the home page, library page, book search menu, and book purchase menu as shown in Figure 5



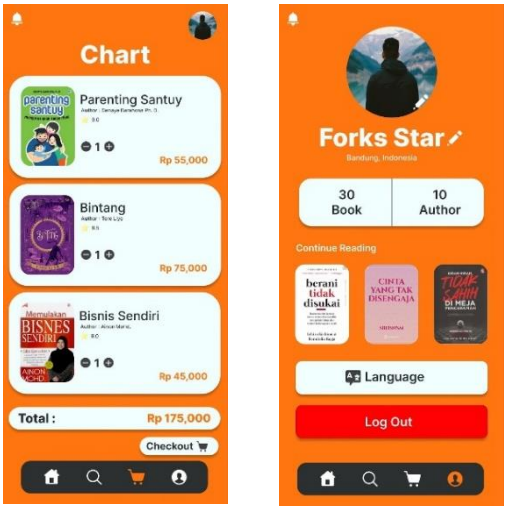


Figure 5. *Application Implementation*

3.3. Testing

The implementation results are tested using the black box method. Testing of application development is the last step in this research:

Tabel 2. Database Testing

ID	Description of Test	Expected Results	Testing Results	Conclusion
A	Login User, Register User	The system will create a User account and successfully display the dashboard	The system successfully login and displays the dashboard	Success
B	Clicking the search menu, searching for book name, searching for book genre, searching for authors, inputting wishlist	The system will display the search results for book name, book genre, and author and add the wishlist.	The system successfully displays the search results for book name, book genre, and author and saves the wishlist.	Success
C	Clicking the purchase menu, inputting the name of the book, and inputting the number of books	The system will display the results of the purchase book list and total price	The system successfully displays the results of the purchase book list and total price	Success
D	Click on profile menu, edit profile,	The system will display the	The system successfully saves	Success

edit language, edit wishlist	profile, save edit profile, save edit language, save edit wishlist	profile, edit profile, edit language, and edit wishlist

Source : researchers

4. CONCLUSION

In this study, researchers succeeded developed a prototype model for the Book Nook online bookstore application that can be used to solve the problems of high book demand, high book prices and the prevalence of book piracy. The Book Nook application offers a solution by providing physical books and e-books at a lower price and easily accessible to the public. The prototype of this application was developed using a Flutter framework and MySQL database and supports the Android platform. This research is expected to be able to assist in the development of the Book Nook online bookstore application and provide solutions to problems that exist in the book industry. In conclusion, the application has been tested with the blackbox method and everything is working properly and considered successful.

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