

Design And Build A Mobile-Based Calligraphy And Inscription Order Customize Application With The Waterfall Method Using Fabric JS

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ABSTRACT

Mobile-based apps have become one of the most important aspects of daily life and even for spiritual and aesthetic purposes such as ordering calligraphy and inscriptions. This also had an impact on the Inscription Blessing Shop. In recent years, the demand for personalized calligraphy and inscriptions has increased significantly. However, this store experienced problems in the ordering process. The process of ordering calligraphy and inscriptions is often still done conventionally, where consumers have to come to the store to place an order which may take a long time and is inefficient. To overcome these obstacles, an effective and efficient system is needed by designing and building a mobile-based booking application. This application will be designed using the waterfall development method by utilizing Fabric JS technology as an interface design. The results of this study were obtained that a mobile-based application called the Blessing Inscription Application was formed which can order inscriptions and other carvings anywhere and anytime. The app can allow users to select different types of calligraphy fonts, set layouts, and add decorative elements. This research is expected to make a significant contribution in facilitating users' creativity and enriching their experience in designing and sharing calligraphy works and digital inscriptions.

Keywords: Fabric JS; Mobile; Waterfall; Booking; Inscription

INTRODUCTION

In today's digital era, mobile-based applications have become one of the most important aspects of everyday life (Dasuki & Abdurrahman, 2024). People increasingly rely on their mobile devices to perform various activities, including shopping, accessing information, and even for spiritual and aesthetic purposes such as ordering calligraphy and inscriptions (Ena, 2022).

Calligraphy and inscriptions are traditional arts that have high aesthetic and spiritual value in the cultures of many societies around the world, including in Indonesia (Widyassari et al., 2023). Both are often used as decorations in homes, offices, or as gifts of symbolic high value. In recent years, the demand for personalized calligraphy and inscriptions has increased significantly. Individuals, organizations, even companies, often look for ways to create unique artwork that reflects their identity or message (Dongga et al., 2023).

However, despite the increasing demand for personalized artwork, the ordering and manufacturing process still faces frequent challenges. One of the main problems is the lack of a platform that makes it easy for users to order calligraphy or inscriptions according to their preferences quickly and efficiently. The process of ordering calligraphy and inscriptions is often still done conventionally, where consumers have to come to the store directly which may take a long time and be inefficient. Proof of order that still relies on bond notes which can increase the risk of loss for consumers. To overcome these obstacles, a system in the form of a mobile-based booking application was formed. This kind of app allows users to easily explore various calligraphy designs and inscriptions, personalize them as desired, and create an online ordering process quickly and efficiently.

In addition, in the development of this application, Fabric JS technology will also be used. Fabric JS is a powerful JavaScript library for creating interactive web applications with high graphical capabilities (Ardiansyah et al., 2023). The use of Fabric JS in the development of this application will enable the integration of an attractive and interactive user interface, so that users can easily personalize calligraphy designs and inscriptions according to brand preferences (Widyantara et al., 2022). Later, by using Fabric JS, consumers can make their own custom calligraphy or inscriptions in ordering.

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The previous research that can be used as a basis for research entitled " Design and Build a Custom T-Shirt Ordering Application Using Fabric Js and Payment Through Midtrans Payment Gateway" by (Luthfi & Asmunin asmunin, 2022). The results of the study show that the application as a booker can easily design and order t-shirts easily. In the online custom screen printing website, there is FabricJS which makes it easier for users to customize screen printing t-shirts even though the customer cannot draw because in FabricJS we can set the scale, move the image and rotate the image on the canvas besides FabricJS can change the color, do transparency on the object, and manipulate the object.

Based on this discussion, researchers raised a study entitled "Design and Build a Mobile-Based Calligraphy and Inscription Order Customization Application with the Waterfall Method Using Fabric JS". The research aims to design and develop a mobile application that allows users to order custom calligraphy and inscriptions. This application will be designed using the waterfall software development method, known as a structured and measurable step-by-step approach (Purnia et al., 2019). The difference with the previous application is that the calligraphy and inscription application focuses on a more unique and specific domain, namely designing and creating custom calligraphy and inscription content. This can be an advantage in attracting users who are interested in visual content such as calligraphy and inscriptions. In addition, to achieve this goal, researchers will utilize Fabric JS technology. Through a combination of the waterfall method and Fabric JS technology, it is hoped that the resulting application will provide an optimal user experience and meet their needs in ordering custom calligraphy and inscriptions.

LITERATURE REVIEW

Mobile Development

Mobile programming is the process of creating software applications that are specifically designed to run on mobile devices such as smartphones and tablets. These applications can be native, web, or hybrid applications (Nasaruddin et al., 2023). Native app programming involves creating an app that is developed specifically for a single mobile platform (iOS or Android) using the programming language and development tools recommended by that platform. iOS apps are typically built using the Swift or Objective-C programming languages using Xcode development tools. Android apps are typically built using the Java or Kotlin programming languages using Android Studio development tools. Hybrid apps combine elements from native apps and web apps. They are developed using web technologies (HTML, CSS, and JavaScript) but are wrapped in native applications using frameworks such as Apache Cordova or Ionic (Wijayanti et al., 2022). Frameworks such as React Native and Flutter are also used to develop hybrid applications with near-native performance.

Fabric JS

Fabric.js is a JavaScript library that provides features for working with HTML5 canvas elements in an easier and more interactive way (Nasaruddin et al., 2023). It is an open-source library that makes it easy to create, manipulate, and animate objects on the canvas. Fabric.js is often used in web applications that require interactive graphic manipulation, such as image editors, graphic design applications, and data visualization applications. Fabric.js is a very useful tool for web developers who want to work with interactive graphics on an HTML5 canvas. With its easy-to-use API and rich features, Fabric.js allows for the creation of complex and engaging graphical applications with less effort. The library is perfect for applications such as image editors, graphic design tools, and interactive data visualization.

METHOD

The research method used in this study is the Research and Development method. Research and Development method is a process used to produce certain products and test the effectiveness of those products (Zaini et al., 2022). The resulting product can be a physical product, a non-physical product, or a service product (Musyawir, 2023).

System Development Methods

This research uses system development with waterfall method. The waterfall method is a software development method that is systematic sequentially in building software starting from the problem analysis stage and system functional needs analysis, design stage, making applications with programming languages, system testing (Rahman et al., 2020).

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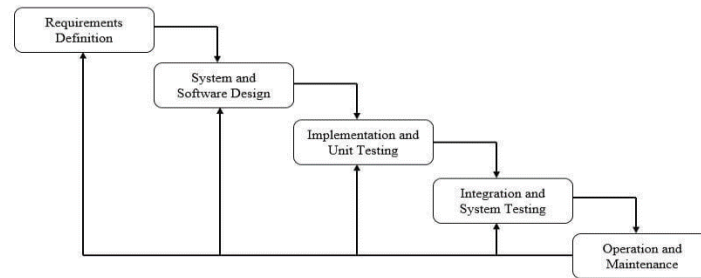


Fig. 1 Waterfall Method

According to (Wicaksono et al., 2022), there are several main steps in the waterfall application development model:

1. Planning, which is to carry out careful work planning by compiling detailed stages of the team's work plan.
2. Analysis, which is to analyze the needs of the system users to be created. This stage is carried out to evaluate the appropriate material to be included in the learning media.
3. Design, i.e. designing an application architecture based on needs. At this stage, it starts with designing the concept and creating the application from start to finish. In the study, a design with Unified Modeling Language (UML) was designed to use case diagrams, activity diagrams, sequence diagrams.
4. Implementation, which is the process of coding applications based on design and conducting tests on applications that have been built to collect results that will be used to evaluate, correct and correct errors in order to improve the learning applications that have been built. In this study, the author uses android studio with java programming language in building mobile applications.

Data Collection Methods

The data collection methods carried out in this research activity include: (Robbani et al., 2020)

1. Observation, which is making observations on the object of study. Things observed include the Company's profile, organizational structure, and problems in the manual mail management system.
2. Interview, i.e. Interview is the process of interaction between researchers and respondents, where researchers ask questions and respondents give answers. Here, of course, the author conducts interviews with responsible parties.
3. Literature study, which is collecting data by citing several references from journal articles or books related to the research conducted.

System Design

The design of this system uses UML (Unified Modelling Language) diagrams. UML (Unified Modelling Language) is a visually presented modeling method that aims to demonstrate object-oriented system design (Anugrahno, 2024). In this system, the author models the system design into several UML diagrams such as use case diagrams, activity diagrams, class diagrams and sequence diagrams.

- 1) Use Case Diagram

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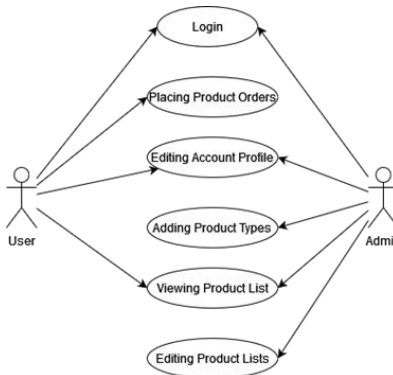


Fig. 2 Use Case Diagram

The following is a use case diagram of the Inscription Blessing Application. This diagram describes the activities performed by system users (Wicaksono et al., 2022). There are 2 system users, namely admin and user. Admin is the one who owns the business while the user is the buyer.

2) Activity Diagram

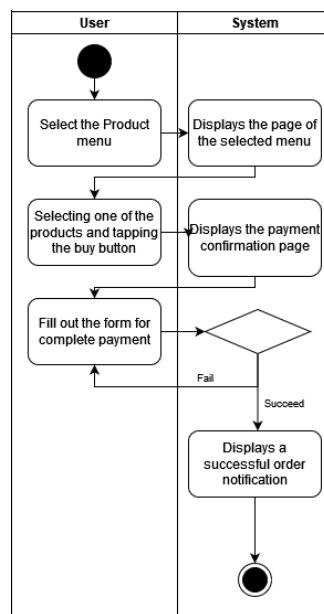


Fig. 3 Activity Diagram

This diagram describes the flow of the system that has already been created. This flow is a flow in ordering products by users.

3) Class Diagram

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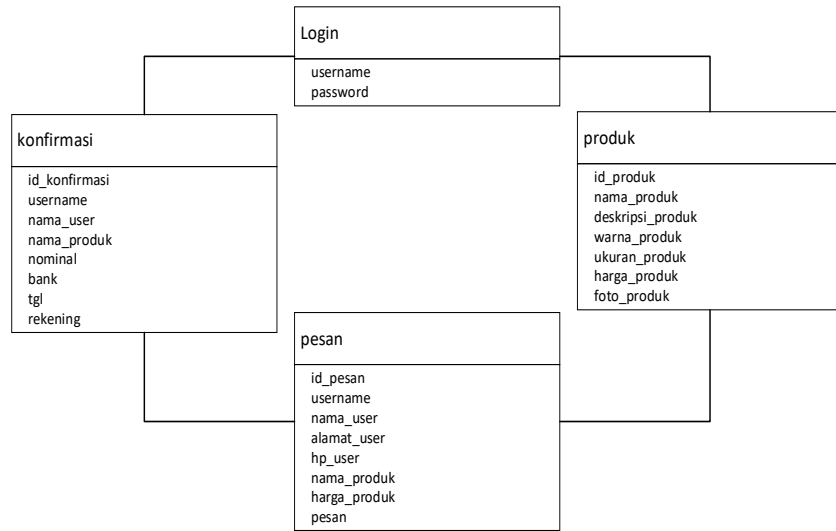


Fig. 4 Class Diagram

The following is a class diagram of the Inscription Blessing Application. Class diagram is a diagram used to describe the structure of the system in terms of defining the classes that will be created to build the system (Hikmah et al., 2020).

4) Sequence Diagram

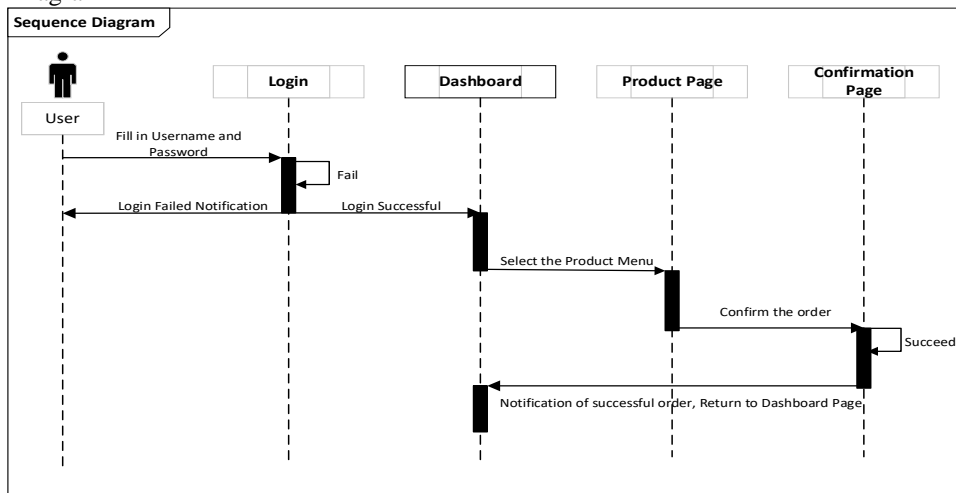


Fig. 5 Sequence Diagram

The following is a use case diagram of the Inscription Blessing Application. This diagram provides a visual picture of how objects communicate and interact with each other in a given scenario.

RESULT

Design and build this application using an android studio application using laptop and mobile devices that are connected to each other. The application uses mysql and Fabric.js databases as the main libraries to support product design customization and visualization functions. Here's what the app looks like:

- 1) Login Page

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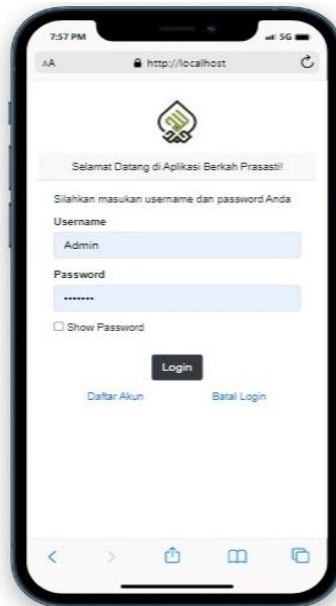


Fig. 6 Login Page

This page is the start page when opening the Berkah Prasasti application. This page contains a security system in the form of a username and password that can only be accessed if the account has been registered into the application's database. This page can be accessed by users and admins.

2) Home Page

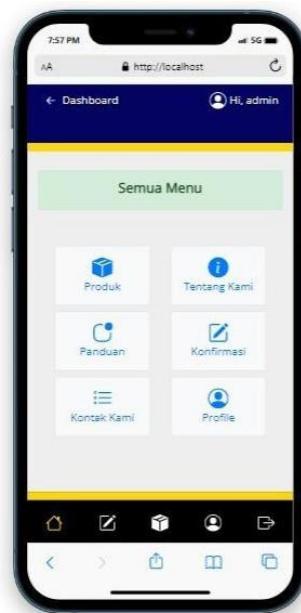


Fig. 7 User Home Page

This system has 2 users, namely admin and user. Figure 7 is the view of the user's homepage. Where the user account has a product menu, guide, contact us, confirmation and profile.

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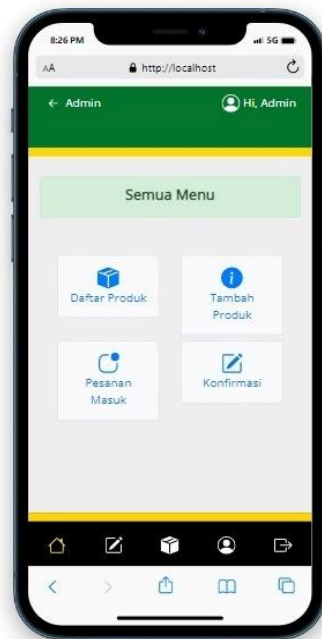


Fig. 8 Admin Home Page

Figure 8 is what the admin home page looks like. Where the admin account has a menu of product list, incoming orders, add products and confirm.

3) Admin Product List Page

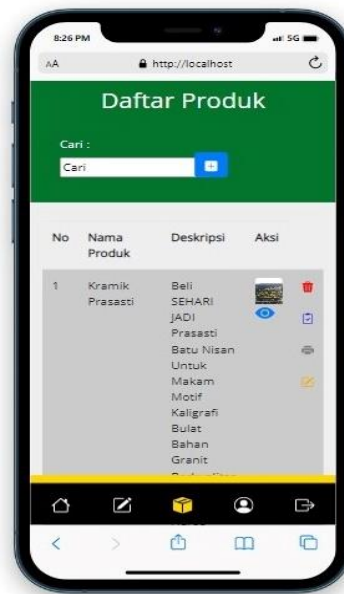


Fig.9 Admin Product List Page

This page contains a list of products that you want to market in the user product menu by the admin. On this page admins can see products that have been added, can edit and delete product types, and print product lists.

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4) User Product Page

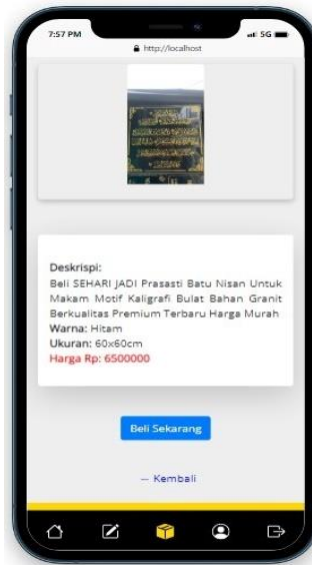


Fig.10 User Product Page

On this page users can see various products that can be ordered through the Berkah Prasasti application. If the user wants to order one of the products, simply tap the blue "Buy" button at the bottom of the page.

5) User Confirmation Menu

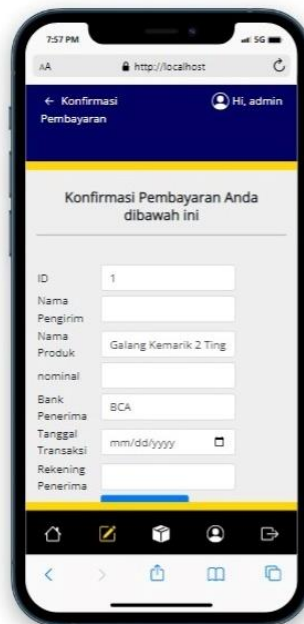


Fig. 11 User Confirmation Menu

This page contains a form to complete the payment of the product you want to order. In this payment is still a bank transfer.

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DISCUSSIONS

The Cuztomize Inscription and Calligraphy application is designed to be mobile-based using android studio. The application is connected with a Mysql database connection. The menus in this application include product menus, confirmation menus, guide menus, contact menus and many others.

System testing uses blackbox testing to ensure that all functions in the application are running properly. The following are the results of testing the Berkah Prasasti application presented in tabular form.

Table 1
Blackbox Testing

Testing	Desired realization	Test Results	Conclusion
Form Login	Enter username and password	Successfully entered the application	Valid
Dashboard Page	Select the Dashboard menu	Successfully access menu	Valid
Admin Product List Page	Select the Product List menu	Successfully enter the Product List page	Valid
User Product Page	Select the Product menu	Successfully entered the Product	Valid
User confirmation page	Select the confirmation menu	Successfully entered into the confirmation	Valid

CONCLUSION

Based on the results of the research that has been obtained, researchers concluded that the waterfall method used in the development of this application has proven effective in producing applications that are in accordance with predetermined specifications. Moreover, Fabric JS proves to be a reliable and easy-to-use framework for mobile application development. This application has a positive impact in increasing the efficiency of the calligraphy and inscription ordering process. Users can order products according to their preferences quickly and accurately, reducing the time required in communication between users and sellers.

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