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Acrylic Sales Application for Mica-Based Shops Website

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Abstract
Guna Mica Store is a store that sells acrylic materials to meet the needs of the community in the furniture, crafts, and decoration sectors. Guna Mica Store, which sells acrylic materials offline, faces significant challenges in the digital era. The shift in consumer behavior toward offline shopping and the increasing need for convenience and access to information are major factors in the decline in customer numbers and sales turnover. The development method used is the System Development Life Cycle (SDLC), using the programming languages HTML, CSS, PHP, JavaScript, and the MySQL database. This website is expected to assist store owners in marketing their products and assist customers in purchasing acrylic products online. With this website, it is hoped that the quality of Guna Mica Store's services will improve, the number of customers will increase, and market reach will expand. Based on test results on browsers and devices such as PCs/laptops and smartphones, it can be concluded that the Guna Mica Store website sales application runs well. Website page access time depends on the speed of the internet connection used.
Keywords: *Acrylic, E-Commerce, SDLC, Guna Mica Store, Website*

INTRODUCTION

E-commerceis the digital transformation of traditional business activities that enables the electronic buying and selling of goods and services via the internet. By utilizing technologies such as online payment systems and integrated logistics,e-commerceoffers unprecedented convenience and efficiency for both consumers and businesses. In addition,e-commercealso opens up wider market opportunities and encourages the growth of the digital economy (Dasopang, 2024).

Acrylic is a material used in various applications, including crafts, dentures, and more. Acrylic is a synthetic material made from a mixture of monomers and polymers. Acrylic has several advantages, such as being malleable, colorable, and resistant to weathering and damage. In several studies, acrylic is used as a base material for various crafts, such as flowers, key chains, tissue holders, and others. Acrylic is also known to be readily available in the market and can be molded into various patterns and shapes (Saragih and Sianipar 2021).

Acrylic products are essential for promotional activities and space design, both functional and aesthetic. These products enjoy high and stable demand across various sectors. However, conventional acrylic sales often face challenges in terms of market reach and presentation.visual limited products. Therefore, the presence ofplatform digital become one of the solutions to increase the business potential of acrylic products more effectively.

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Guna Mica Shop is a business actor engaged in the sale of productsdisplay Acrylic. As a business entity, Guna Mica certainly has the potential to expand its market reach throughplatform online. However, product salesdisplay Conventional acrylic may have limitations in terms ofvisualizationoptimal products and ease for customers to view product details and place orders. Therefore, the use ofplatform website as a medium for displaying acrylic display productsvisual And interactivecan be an effective solution. A product applicationdisplay acrylic basedwebsite can provide various benefits, including displaying various types of acrylic products with detailed images and descriptions, allowing customers to see products from various angles, providing information on size, color, andspecificationsothers, as well as facilitating the ordering and transaction processonline.

METHODS

The research method used in developing this application is*System Development Life Cycle* (SDLC) model waterfall. *System Development Life Cycle*(SDLC) is a series of stages in creating and modifying a system, along with the models and approaches used in the system development process (Sugiarto, Susilawati, and Hidayat 2021). The first stage is requirements analysis, which involves gathering information from customers and relevant parties to detail system features, such as acrylic product management, inventory, ordering, and order history. Next, system design is performed, including the creation of a MySQL database structure and web interface design using PHP and CSS. In the implementation stage, the website*e-commerce*built according to design with HTML, CSS, JavaScript, PHP, and MySQL technology, and equipped with product catalog features, shopping cart,*checkout*, stock management, and admin pages. The testing phase is conducted to ensure all functions run smoothly through unit, integration, and system testing on various devices and browsers. Finally, the maintenance phase is conducted periodically to fix errors and adjust features based on user feedback to maintain the system's optimal performance.

RESULTS

In the design section it is divided into four parts, including navigation structure design, UML diagram design (*Unified Modelling Language*), the database design used in*website* Mica's Guna Store, and the design of the interface page display.

Navigation Structure Design

Navigation structure is a sequence of flow of a program that describes the relationship between different areas in*website*. On *website* Toko Guna Mica, uses a mixed navigation structure consisting of two types of navigation structures, namely a navigation structure for*user* and navigation structure for admin

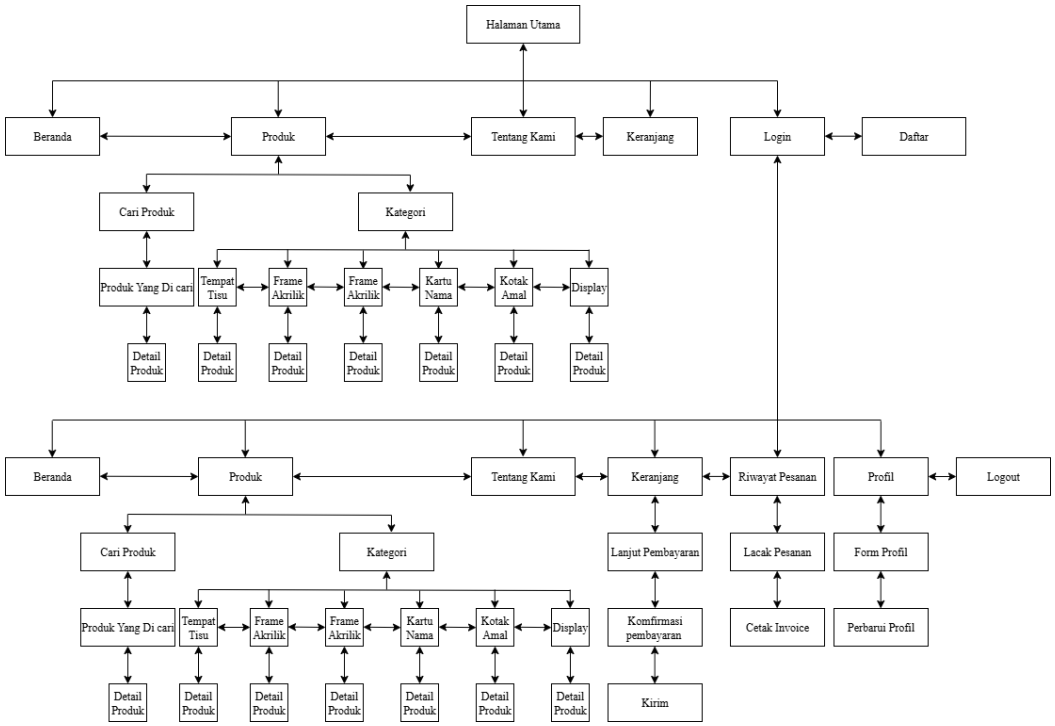


Figure 1. User Navigation Structure

Based on the diagram, when*User*open*website*, the main page which provides menus such as homepage, products, about us, cart,*login*, and list. In the product section,*user* can search for products or by category. After*login*, customers have additional access such as order history, profile, and*logout*In the cart menu, customers can proceed with payment, followed by payment confirmation and shipping. Meanwhile, in the profile menu, customers can access and update their data via*form* This structure is designed to make it easier for customers to navigate the main features of the application, both before and after*login*.

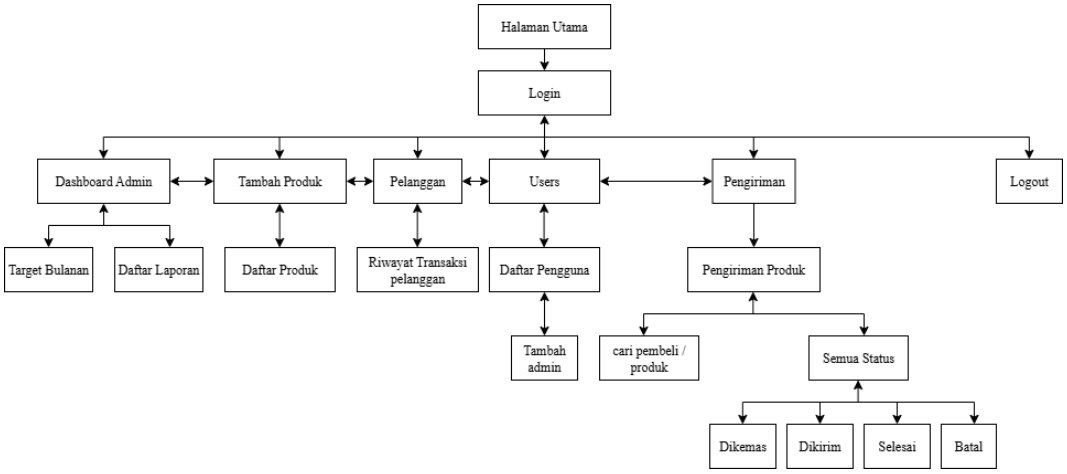


Figure 2. Admin Navigation Structure

Based on the navigation structure image above, when the admin opens*website*, the main page goes to the page*login*. After *login*, admins can access various main menus such as the admin dashboard which contains monthly target data and a list of reports, as well

as the add product menu to manage the product list. The customer menu provides access to customer transaction history, while the*users* Allows admins to view customer lists and add admins. Meanwhile, the shipping menu contains a product shipping section that includes searching for product buyers and monitoring all shipping statuses, including packed, shipped, completed, and canceled. This navigation also includes options.*logout* to exit the system. This structure is arranged hierarchically to facilitate efficient data management and operational processes by the admin.

UML Design

In building a*website*Of course, you have to design a model of the system you are going to build. One of the software tools used to design a system model is UML. (*Unified Modelling Language*). The types of diagrams used include*Use Case Diagram*, *Activity Diagram*, And *Class Diagram*.

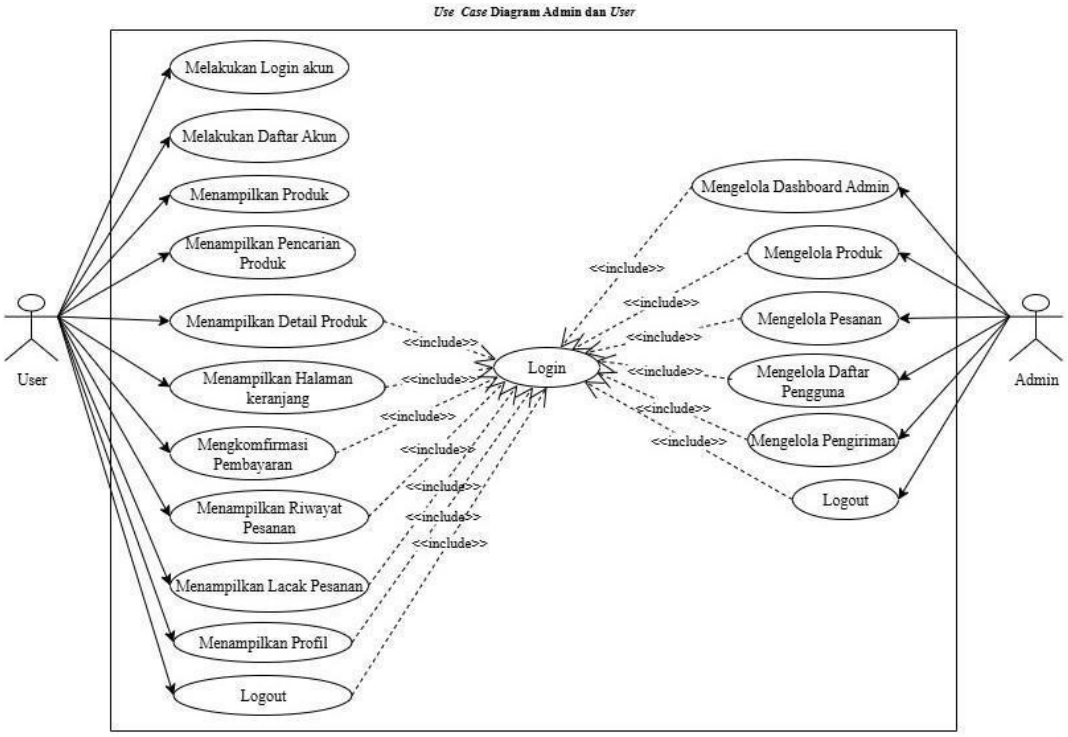


Figure 3. *Use Case* Diagram

Use case admin diagram and*user* This describes the interaction between two main actors, namely*user* and admin, with the system. On the side*user*, there are various*use case* like doing*login*, register a new account, display products, search for products, view product details, access the shopping cart page, confirm payment, view order history, track orders, view profiles, and make purchases.*logout*. All major activities*user* connected to the process*login* as a condition for accessing these features. Meanwhile, on the Admin side, there is*use case* to manage the system such as managing the admin dashboard, products, orders, user lists, and shipping. Admins can also do*logout* after completion. The relationship between*use case* And *login* are described with the <<include>> relationship, which means that these features require*login* first.

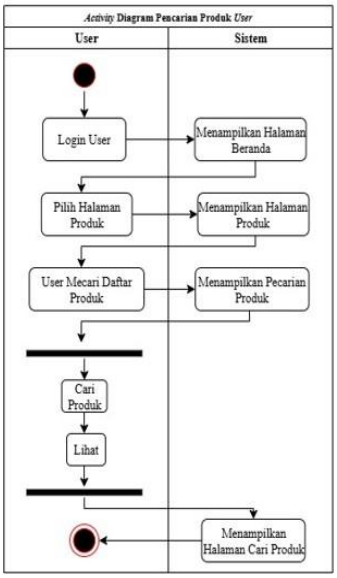


Figure 4. *Activity* Diagram Search Product List *User*

Activity product search diagram*user* This explains the flow of activities between the user and the system when searching for a product. The process begins when*user* do *login*, then the system displays the home page. After that*user* select a product page and the system responds by displaying the product page. Next*user* perform a product list search, then the system displays the product search results. After that, there is a parallel activity where*user* You can perform a more specific product search and view available product details. Finally, the system will display a product search results page according to your request.*user*This diagram illustrates how the interaction between*user* and the system runs from*login* until the product search results are successfully displayed.

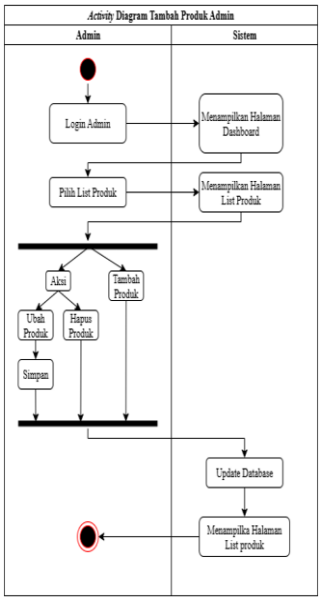


Figure 5. *Activity* Diagram Add Product Admin

Activity Admin product add diagram, on the Admin Add Product list page, it is used to show the activities where the admin adds Add Products, changes Add Products, and deletes Add Products.

Database Design

After creating the navigation structure and UML design, then create the database design needed to create this application as shown in Tables 1 and 2.

Table 1. Product

Field	Data Type	Primary Key
id	Int(11)	No
debt	Varchar(100)	No
category	Varchar(100)	No
thickness	Varchar(100)	Of
size	Varchar(100)	Of
color	Varchar(50)	Of
price	Decimal(7,2)	No
picture	Varchar(100)	No
stock	Int(11)	No
picture 2	Varchar(100)	Of
picture3	Varchar(100)	Of

The product table is used to store product data available in the system.*Field* id type*int* functions as a unique product identity, even though it has not been designated as*primary key*. *Field* name contains the product name with type*varchar*(100), while category, thickness, size, and color each describe the physical specifications of the product with data type*varchar*. *Field* price type*decimal*(7.2) stores product price information precisely.*Field* image, image2, and image3 store the product image file names, allowing for visual viewing from multiple angles.*Field* stock type*int* shows the number of product availability. Some*field* such as thickness, size, color, image2, and image3 are mistakenly marked as*primary key*, whereas the ID should be the primary key to ensure the uniqueness of each product entry. This table plays a crucial role in managing and displaying product information to customers.

Table 2. Cart Item

Field	Data Type	*Primary Key*
id	*Int*(11)	No

*user*_id	*Int*(11)	No
product_id	*Int*(11)	No
quantity	*Int*(11)	No
color	*Varchar*(100)	Of
*created*_at	*timestamp*	No

Table*CartItem*used to store data on items that customers add to their shopping cart.*Field* id type*int* serves as a unique identity for each cart entry, even if it has not been assigned as a*primary key*. *Field user*_id and produk_id, both of type*int*, used to show the relationship between the customer and the selected product.*Field quantity* stores the number of products added to the cart by the customer.*Field color* type*varchar*(100) contains the selected product color information and is erroneously set as*primary key*, which should be id.*Field created_at* type*timestamp* records the time an item was added to the cart. This table is a crucial part of the transaction process because it serves as a temporary repository for products a customer will purchase.

Website Display Design

The next stage is to create a website display that explains the design pages on the Toko Guna Mica website.

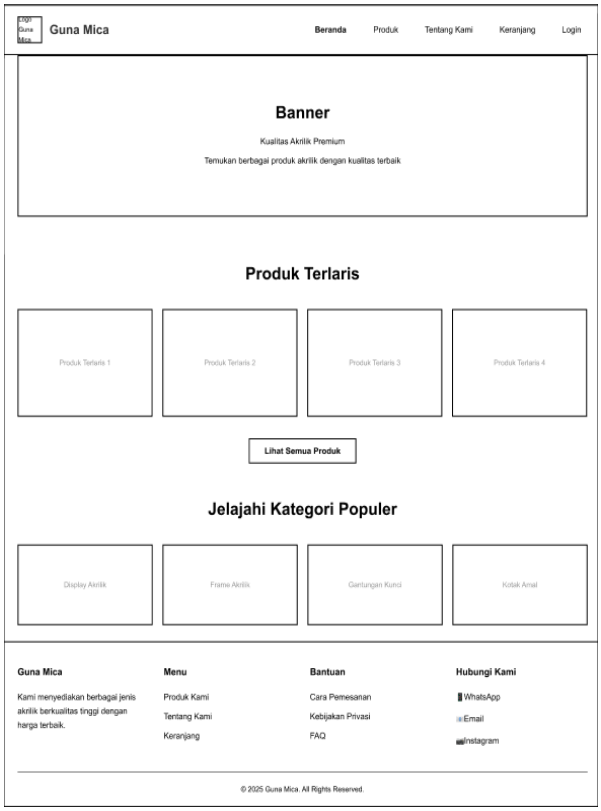


Figure 6. Home Page Design

The homepage displays the initial interface of the Guna Mica site, which consists of several main sections. A slider banner grabs attention with information about the quality of acrylic products. Below it, best-selling products are displayed to help customers see popular offerings. Next, there's a popular category section that helps customers explore product types, such as:*display* acrylic,*frame* acrylic, key chains, and acrylic boxes. This page also features*footer* contains information about the Guna Mica Store, navigation menu, help, and contact information.

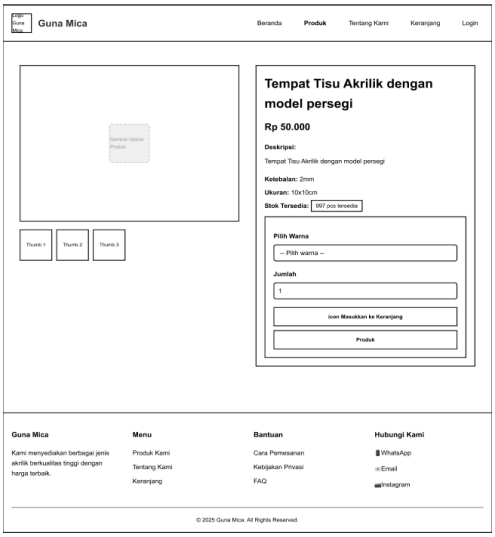


Figure 7. Product Detail Page

The product detail page displays complete information about the product selected by the visitor. This information includes the product name, price, available stock, and product specifications such as thickness, size, and a brief description. Visitors can also select color variations, specify the purchase quantity, and view multiple product images.

Implementation

The implementation phase will implement the previously created design into a programming language. The following are the Home Page and Product Detail Page..

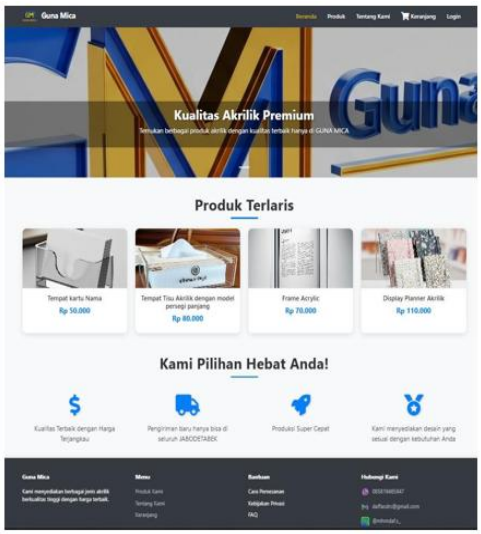


Figure 8. Home Page

The home page is the first page displayed when*user* access*website* Guna Mica Store. At the top, you'll find the "Guna Mica" logo and store name on the left, along with navigation menus like Home, Products, Track Items, Cart, and Login on the right. Below that, you'll find the main banner showcasing the quality of Guna Mica's premium acrylic products.

Figure 9. Product Detail Page

Product detail page is a page that displays complete information about a product selected by*user*This page features the main product image and several additional images as a gallery. Important information such as the product name, price, description, thickness, size, and stock availability are clearly displayed..

Test Try the App

Trials *website*Mica is used in two ways, namely trial*browser*and device testing. In the trial*website*Apply Mica using*browser*, wearing three*browser*namely among them*Google Chrome, Microsoft Edge* And *Mozile Firefox*. While testing on the device,*website*In order for Mica to try the test with two devices, namely a laptop and*smartphone*.

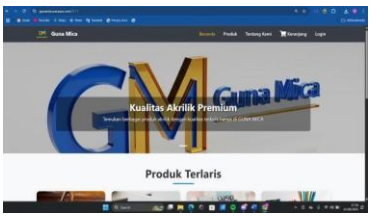
Table 3. Browser Testing

Browser	Version	Results
Google Chrome	138.0.7204.184	- *Website*can run well.
		- There is no change in appearance*website*.
		- Shape*font* and the color does not change.
		- *Login*admin is running well.
Microsoft Edge	127.0	- *Website*can run well.
		- There is no change in appearance*website*.
		- Shape*font* and the color does not change.
		- *Login*admin is running well.
Mozilla Firefox	138.0.3351.121	- *Website*can run well.
		- There is no change in appearance*website*.
		- Shape*font* and the color does not change.

	- *Login*admin is running well.

From the trial table above with 3*browser*, that is *Google Chrome*, *Microsoft Edge*, *Mozilla FireFox*, *website* can run well, no changes in appearance*website*, shape*font* and the color does not change, all functions on*website* works well and*login* going well.

Table 4. Device Test Table

No	Nama Device	Trials	
		Appearance	Feature
1	Laptop Asus TUF Gaming F15 FX506HCB_ FX506HCB		The appearance is appropriate and all features are working properly. Good.
2	Xiaomi 14T		The display is fine and all features work fine.

From the device test table above with 2 devices, namely the Asus TUF Gaming F15 Laptop and*smartphone* Xiaomi 14T, it can be concluded that the display is appropriate and the features work well.

CONCLUSION

From the results of the Acrylic Product Sales Application for the Guna Mica Shop based onwebsite has been successfully created and tested. Based on the research results, it can be concluded that the Acrylic Product Sales Application for the Guna Mica ShopWebsitecan be used to sell Acrylic products at the Guna Mica Shoponlineand consumers can shop anywhere and anytime. Furthermore, based on trials with shop owners, this application simplifies managing all data such as product categories, acrylic product details, transactions, shipping receipts, purchase status, and customer accounts. Thus, this application not only benefits customers but also improves the business performance of Toko Guna Mica.websiteThere is no use for Micaerror moment websiteGraha is run then it can be concluded thatwebsiteThis Mica function can run well and functionally on the device.laptop andsmartphone.

SUGGESTIONS

Suggestions based on developer results,website Toko Guna Mica's acrylic sales have significant potential for development. To improve the customer experience, it is recommended to add product rating and complaint features. live chat, return process, andMidtrans payments. Furthermore, the custom ordering feature is crucial for

accommodating specific customer needs, such as customizing acrylic sizes, designs, thicknesses, or colors. This development is expected to improve convenience and overall customer satisfaction.

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