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Implementation Of The Rational Unified Process Method In The Web-Based Profile Information System At The Ica Aquarium

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ABSTRACT

Ica aquarium is a shop that sells ornamental fish in the city of Medan. This store also sells necessities in fish breeding, such as fish feed, aquariums, and aquarium accessories. The products sold in this business can be said to be quite a lot, considering that there are many types of ornamental fish that can be marketed and cultivated. Not only that, fish feed products and aquarium equipment are also available with many different brands. To introduce the types of ornamental fish and products needed by ornamental fish, it can be accompanied by providing a system that introduces the products sold to customers. This aims to make it easier for customers to choose products to buy. Not only that, the information system that will be provided can also help them in managing data, stock, and product marketing. Therefore, this study will create a profile information system at the Ica Aquarium store using the Rational Unified Process (RPU) method in their system development method, with Unified Model Language (UML) as system design and software implementation in coding using PHP and HTML programming languages. Researchers use blackbox testing as information system testing. This research produces a profile information system that is multiuser, besides that It can also provide information about products in the store. That way this profile information system also helps Ica Aquarium to market its products.

1. INTRODUCTION

Technological advances in this era are increasingly advanced and rapid to spur the community to be directly involved in its use. One of the technological advances is the field of information technology and data processing. Where the use of this technology and data processing is widely needed in various fields of work, such as education, hospitals, schools, sales, and so on [1]. Ica aquarium is a shop that sells ornamental fish in the city of Medan. This store has been established for approximately 13 years. This store also sells necessities in fish breeding, such as fish feed, aquariums, and aquarium accessories. This business is included in the hobby business category, where the target market of this store is fish hobbyists who have no age and gender restrictions. The products sold in this business can be said to be quite a lot, considering that there are many types of ornamental fish that can be marketed and cultivated. Not only that, fish feed products and aquarium equipment are also available with many different brands. To introduce the types of ornamental fish and products needed by ornamental fish, it can be accompanied by providing a system that introduces the products sold to customers. This aims to make it easier for customers to choose products to buy. Not only that, the information system that will be provided can also help them in managing data, stock, and product marketing.

Research that has been conducted previously by Raharjo and Putra (2023) discusses the development of a company profile information system in Two-Way stores using Extreme Programming as a development method, in this research the information system is intended as a means of promotion and marketing of goods[2]. Research study conducted by Hidayatullah, wardani and rachmadi (2018) on the development of the jetis batik village website. In the development of the system using the Rational Uniefied Process method, where this method there are four phases identified in the software process. These phases are in the form of inception, elaboration, construction, and transition phases [3]. In this study, researchers will use Rational Unified Process (RPU) in their system development method, with Unified Model Language (UML) as system design and software implementation in coding using PHP and HTML programming languages. Researchers use blackbox testing as information system testing. Based on the description and problems above, researchers obtained a study entitled "Implementation of the Rational Unified Process Method in a Web-Based Profile Information System at the Ica Aquarium Store".

2. LITERATURE REVIEW

Information systems are components that gather and are interconnected, information systems can collect, obtain, perform actions (process), store, and send information with the aim of supporting decision making, coordinating, supervising, and also analyzing problems [4]. Making information systems can be done in any form, one of which is to make a website-based information system. The website itself is a space that contains a set of information. Information presented by the website in the form of text, videos, images, models, graphics, charts, tables, and others [5].

In making a website-based information system, it requires a programming language to build it. One of the most widely used programming languages in website creation is Hypertext Preprocessor (PHP). Meanwhile, the database that is often juxtaposed with PHP is the My Structured Query Language (MYSQL) base. To complete the system work as quickly as possible, developers can take advantage of various types of frameworks in PHP. One of them is Codeigniter, this framework has Model-View-Controller (MVC) rules in it [6]. PHP is an open source programming language that is very useful for creating dynamic websites (websites with information in them often change) [7]. In developing the information system itself, there are many methods that can be used, one of which is the Rational Uniefied Process (RUP) method [8].

Rational Uniefied Process (RUP) is one of the methods used in system development, the focus on system development is an object oriented concept using Unified Model Language (UML). RUP itself is a phased method in which there are four phases that will be identified in the software process[9]. These phases are the inception, elaboration, construction, and transition phases [10]. Rational Unified Process (RUP) is an iterative phase of software system development [11].

Unified Model Language (UML) is a tool for visualizing the results of analysis and design, and is also useful for describing a software system related to objects[12] . UML has a variety of diagrams, including use case diagrams, activity diagrams and sequence diagrams. Use case diagram describes how actively running or actors when using the system to perform activities [13]. In contrast to activity diagrams that focus on illustrating system activities [14]. While the sequence diagram illustrates the use case, and serves to illustrate a logic or procedure [13].

After the implementation is complete, in the last stage of the RUP method, the thing that is done is testing. Black box testing is a software testing method that tests the functionality of an application rather than its internal structure or functionality. No special knowledge of application code or internal structure or general programming knowledge is required [15].

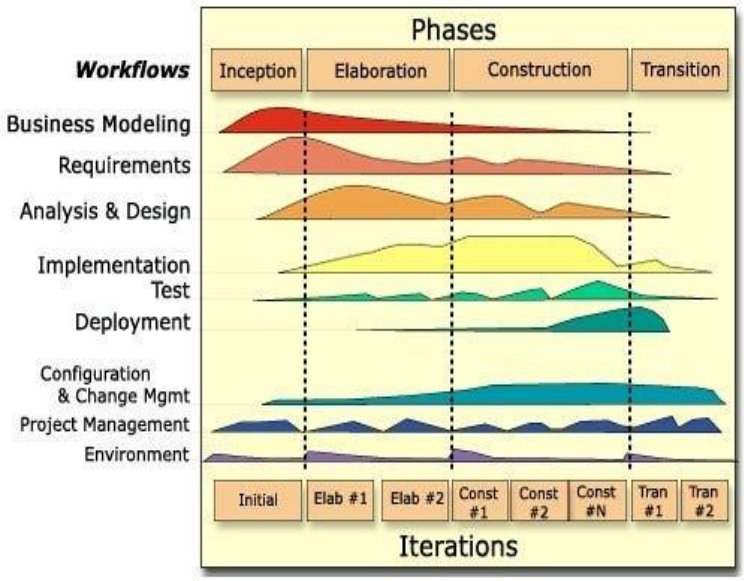

Figure 1. RUP Method Architecture

3. RESEARCH METHODS

Research methods are a series of systematic stages and procedures for planning, collecting, analyzing, and interpreting data to answer a research question or achieve a specific research objective. Using appropriate methods, researchers can develop effective and efficient advertising and sales sites, as well as increase user satisfaction and business profits. In addition, research needs to be carried out first before acting so that it is easier to pass the stages that need to be passed [16]. In this study, there are several stages that follow the RUP method as shown in figure 2.

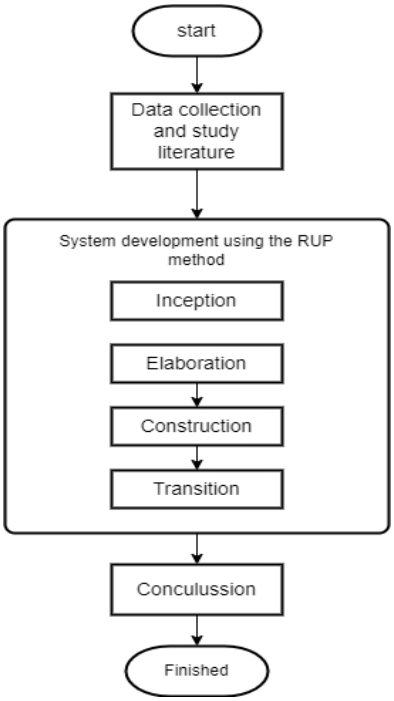

Figure 2. Stage of Research

3.1 Data Collection and Study Literature

Data collection is carried out in two ways, namely observation and interviews.

1. Observation: At the observation stage, researchers make direct observations of the sales process in the Ica Aquarium store to observe the system that is operating, interactions between customers and products, and so on.
2. Interviews: Interviews were conducted with Ica Aquarium shop owners with a focus on gaining insight into the products sold.
3. Study literature: While the literature study is to conduct a literature review on the development of promotional information systems in stores, and related research.

3.2 System Development with RUP Method

The phases in the RUP are as follows:

1. Inception: At this stage what is done is modeling the required business process (business modellig), and also defining the system needs to be created (requirements). The goal of this first phase is to build a business case for the system. The developer identifies all external entities (humans and systems) that interact with the system and defines those interactions [17].
2. Elaboration: In this second phase, it will focus on designing the system architecture. In this phase can analyze the system and design the system. The purpose of the elaboration stage is to understand the problem area and create a project plan. Upon completion of this phase, the researcher will have a requirements model for the system, including use cases, architecture descriptions, and software development plans [18].
3. Construction: At this stage, what will be done is the implementation and development of the previous stages. This involves programming that focuses on developing system components and features [19].
4. Transition: In this last phase, it will focus on system installation so that users can understand system usage. Money activities are carried out in this phase in the form of user training, maintenance and user testing [20]. In this phase, researchers use black box testing, to determine the state of functional and non-functional needs.

4. DISCUSSION AND RESULT

4.1 Inception

At this stage model the business processes needed (business modeling) at the Ica Aquarium store and define the need for the system to be created (requirements). The thing that needs to be done at this stage is to understand the scope of the project and build the business case needed. The scope of the needs of the Ica Aquarium store for the website to be developed is as the following table:

Table 1. Scope

Actor	Access Rights
Users	a. View products b. View gallery c. View testimonials d. See about us e. View location
Admin	a. Login b. Manage products c. Manage your gallery d. Display testimonials e. Manage about us f. Manage locations g. Logout

4.2 Elaboration

The focus in this phase is the design of the system architecture. In this phase, researchers will conduct system analysis and design and system implementation. The results of this stage can be seen from the Uniefied Model Leanguage (UML) which consists of use case diagrams, activity diagrams and sequance diagrams. The results of the elaboration phase can be seen in figure 3 to figure 9.

1. Use case diagram

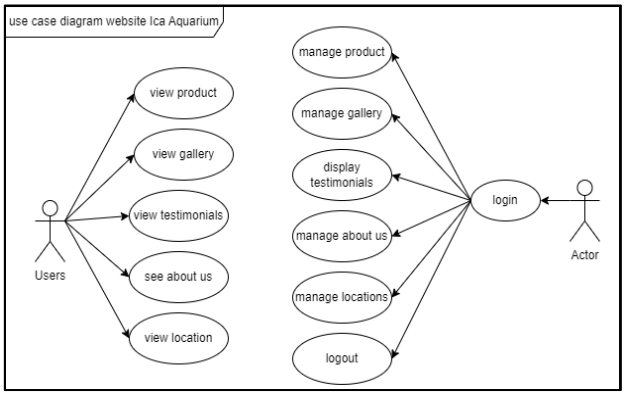

Figure 3. Use case diagram

2. Activity diagram

Here are some digram activities on designing the Ica Aquarium store profile website:

a. Activity diagram login:

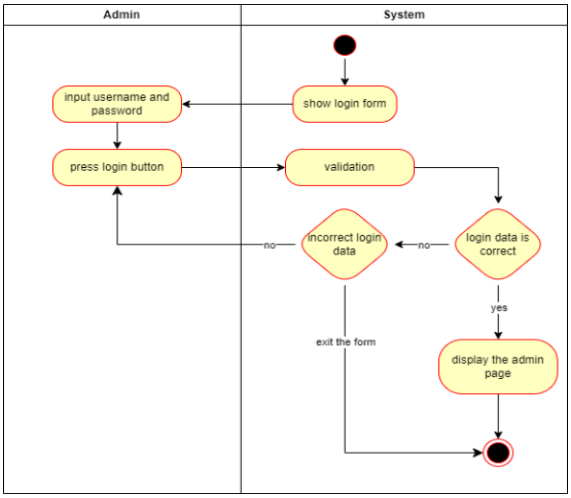

Figure 4. Activity diagram login

b. Activity diagram Product in admin:

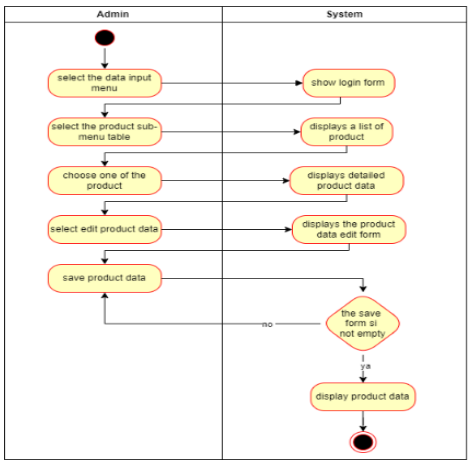

Figure 5. Activity diagram Product in admin

c. Activity diagram testimonials:

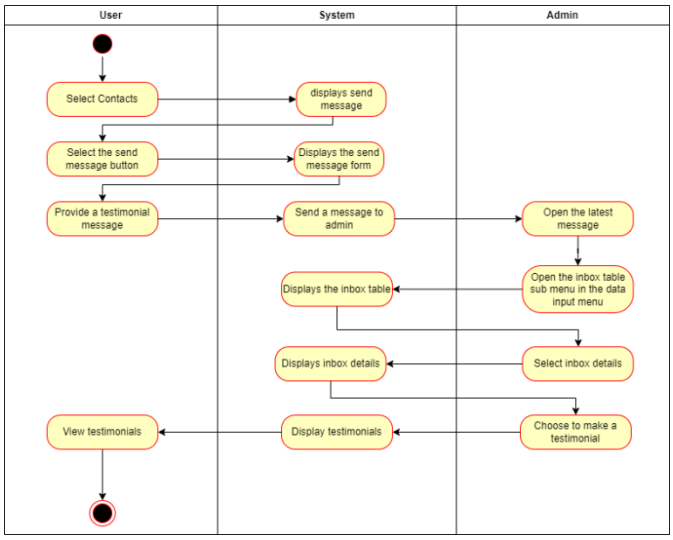

Figure 6. Activity diagram testimonials

3. Sequence diagram

Here are some sequence diagrams in designing the Ica Aquarium store profile website:

a. Sequence diagram login:

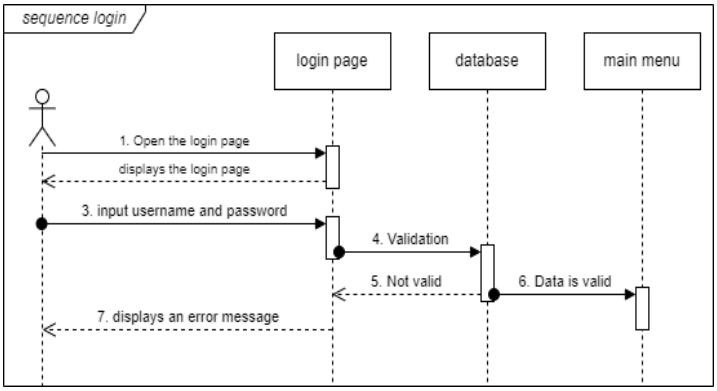

Figure 7. Sequence diagram login

b. Sequence diagram product in admin:

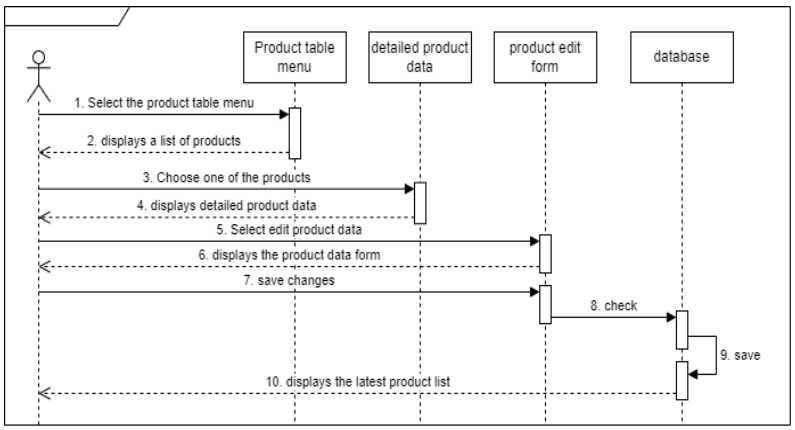

Figure 8. Sequence diagram product in admin

c. Sequence diagram testimonials:

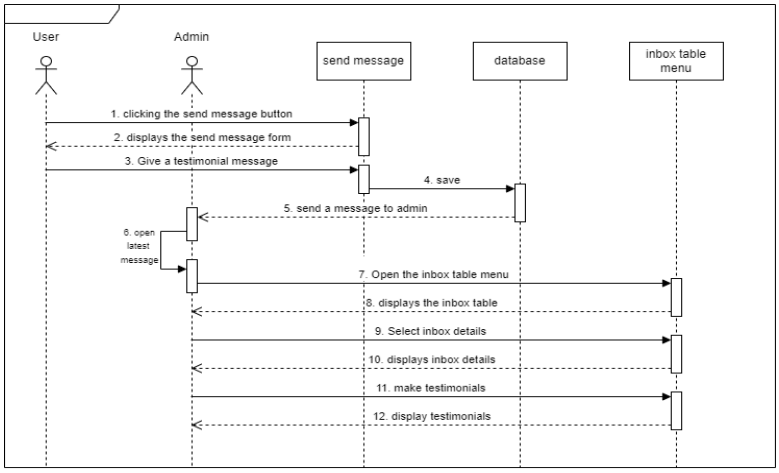

Figure 9. Sequence diagram testimonials

4.3 Construction

In this phase, researchers implement interfaces from previously created interface designs. The results of the construction phase carried out in this study there are 11 interface pages, including the following in figure 10 to figure 13.

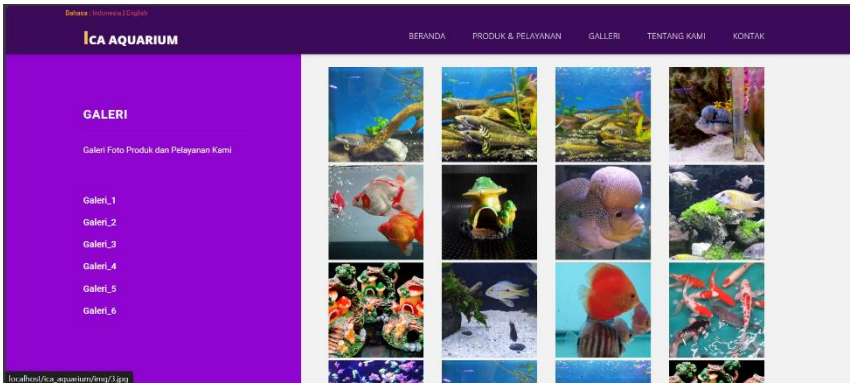

Figure 10. Gallery Page

Figure 10 is the gallery page at the ica aquarium store. This page does not require a login, users can log in without login access and see the contents of the gallery that has been managed by the admin.

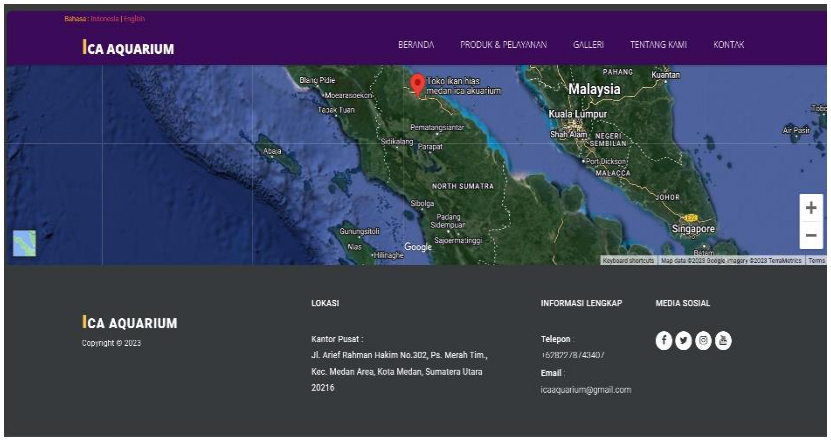

Figure 11. Location Page

Figure 11 is an image of the location page. This page is still the same as the gallery page, which does not require a login to be able to access this page. There are five pages that do not require a login, namely the product display page, gallery, testimonials, about us, and location page. Where these pages are user pages.

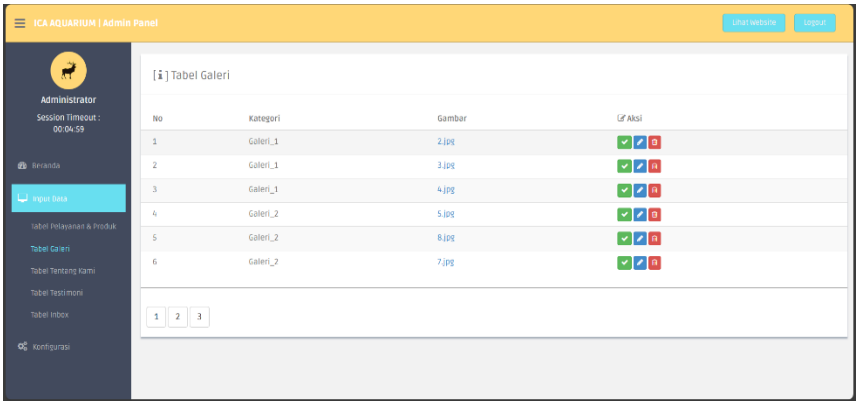

Figure 12. Gallery Menu in Admin

In figure 12 is the gallery menu page in the admin. Only admins can access this page by logging in first. In this gallery menu there is a gallery table, where admins can manage the gallery by selecting photos that will be displayed on the user page.

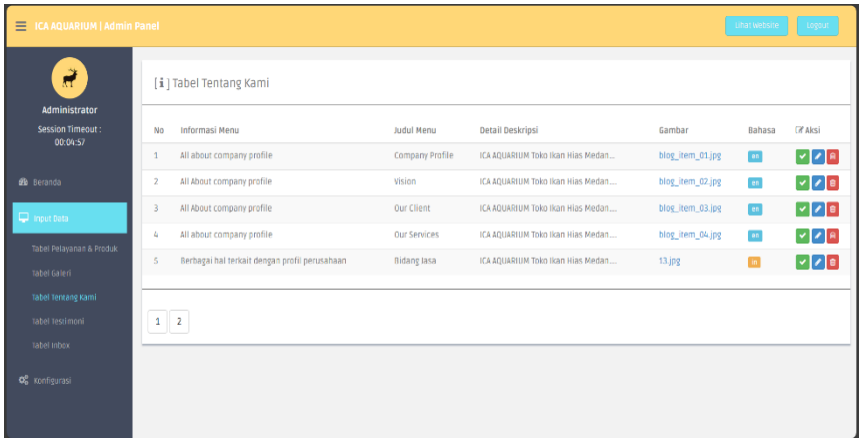

Figure 13. About Us Menu in Admin

There are six pages managed by admins, namely the login page, the page that manages products, galleries, testimonials, about us and location. In figure 13 is the about us page managed by the admin, on this page has an about us table and there is a Create-Read-Update-Delete (CRUD) feature.

4.3 Transition

In this phase, the Ica Aquarim profile information system that has been built will be tested to determine whether there are features that do not work. The testing technique used to test the profile information system at the Ica Aquarium store is using blacbox testing. Here are the results of the blackbox testing in table 2 and table 3.

Table 2. Blackbox Testing on Visitor Pages

No	Test Scenarios	Expected results	Result
1.	User selects product menu	The system displays product pages	Appropriate
2.	User selects gallery menu	The system displays photographs on	Appropriate
3.	User selects testimonial menu	The system displays customer testimonials	Appropriate
4.	User selects about us menu	The system displays the about us page	Appropriate
5.	User selects location menu	The system displays the location of the Ica Aquarium store	Appropriate

Table 3. Blackbox testing on admin page

No	Test Scenarios	Expected results	Result
1.	Admin enters the correct username and password	The system receives login access and takes the admin on the main admin page	Appropriate
2.	Admin entered wrong username or password or wrong username and password	The system denies login access	Appropriate
3.	Admin selects product menu	The system displays a table managing products with the CRUD feature in a table on the product page	Appropriate
4.	Admin selects gallery menu	Sistem menampilkan tabel mengelola galeri dengan fitur CRUD didalam tabel pada halaman galeri	Appropriate
5.	Admin selects testimonial menu	Sistem menampilkan tabel testimoni dengan fitur CRUD didalam tabel pada halaman testimoni	Appropriate
6.	Admin selects about us menu	Sistem menampilkan tabel mengelola about us dengan fitur CRUD didalam tabel pada halaman about us	Appropriate
7.	Admin presses logout button	The system displays a pop-out "are you sure to exit" which if clicked "yes" then the admin will exit to the visitor page	Appropriate

5. CONCULUSSION

Based on the results of the research that has been carried out, it can be concluded that, with the profile information system at the Ica Aquarium store can be reached by many people, it can also provide information about products in the store. Blackbox testing shows that 12 test scenarios match expected results. This profile information system can also help Ica Aquarium in terms of product marketing in accordance with the original purpose of the system built.

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