

RESEARCH ARTICLE

Designing the Indonesian Bird Lovers Website using Bootstrap PHP and MySQL with the Content Management System (CMS) Method

Muhamad Arya Nurfadilah ^{1*} | NM Faizah ² | Ryan Rakryan WP ³

^{1*,2,3} Computer Science Study Program,
Universitas Tama Jagakarsa, South Jakarta City,
Special Capital Region of Jakarta, Indonesia.

Correspondence

^{1*} Computer Science Study Program, Universitas
Tama Jagakarsa, South Jakarta City.
Email: aryazio10@gmail.com.

Funding information

Universitas Tama Jagakarsa.

Abstract

Birds are a diverse group of vertebrate animals characterized by their possession of a backbone, feathers, and wings. Unlike mammals, birds lack teeth and possess unique features akin to reptiles, such as scaled feet, hardened beaks, and the ability to lay amniotic eggs with hard shells. In the era of advancing technology, the accessibility of the internet has become ubiquitous, with widespread availability of internet cafes and smartphones in various markets. The internet serves as a vital tool for global connectivity and communication across numerous sectors including business, academia, government, and organizations. In the development of websites, tools like Brackets, a code editor, facilitate efficient programming akin to Notepad++. Notably, Brackets offers quick editing capabilities to enhance user experience. The creation of the "Pecinta Burung Indonesia" website involves the meticulous design of navigational structures, visual layouts, and programming execution within Brackets. This platform serves as an invaluable resource, providing comprehensive information on bird species and their care. Additionally, users are afforded the opportunity to engage through commentary tailored to predefined categories.

Keywords

Bird; Website; Maintenance; Types of Birds; Brackets.

1 | INTRODUCTION

Indonesia, with its abundant natural resources, has long been home to an astonishing variety of bird species. Nature and bird lovers are often fascinated by the beautiful feathers and melodious voices of various types of birds throughout the archipelago. Birds, as part of the vertebrate animal group, have distinctive characteristics that differentiate them from other animals, such as spines, feathers, and wings. Although they have no teeth and tend to only have tails, they share similarities with reptiles, such as the presence of foot scales, a hard beak, and the ability to produce hard-shelled amniotic eggs. The development of technology, especially the internet, has brought major changes in the way society interacts with information. Facilities such as internet cafes and the spread of smartphones have become evenly distributed in various regions, making internet access even easier. The internet is not only a means of connecting to global computer networks, but also a very important communication medium in various aspects of life, including business, academics, government and organizations. The internet is an invaluable source of information. Currently, many websites provide information about various types of birds in Indonesia. However, often the information presented is incomplete or difficult to access easily. Therefore, creating a website that provides complete and easily accessible information about various types of birds in Indonesia is very important. It is hoped that this website can become the main reference for bird lovers in choosing bird species that are suitable for keeping or protecting. Through website media, the dissemination of information will become easier and wider, so that it can reach more people throughout Indonesia. Thus, it is hoped that the development of this website can make a positive contribution to preserving bird biodiversity in Indonesia.

The design of a website for bird enthusiasts in Indonesia can benefit from various theoretical and practical considerations. The application of User-Centered Design (UCD) methods can significantly enhance the user experience of the website, ensuring that the website is designed with the users' needs and preferences at the forefront, leading to a more intuitive and engaging interface (Irfani, 2023). Additionally, the implementation of the Model View Controller (MVC) architecture can provide a structured framework for developing the website, enabling efficient management of the bird-related content and interactions (Alip *et al.*, 2022). Furthermore, the utilization of Human-Centered Design principles in designing the user interface for the website can further enhance its usability and appeal to the target audience (Ramadhan, 2023). These theoretical underpinnings, combined with practical methodologies such as UML modeling, can contribute to the creation of a comprehensive and user-friendly website for bird enthusiasts in Indonesia (Voutama, 2022).

From the background that has been described, the author takes several things as a problem formulation. First, how can bird fans in Indonesia obtain more complete and quality information about various types of birds in Indonesia? Second, how can content about various types of birds in Indonesia be accessed easily via the internet by bird fans in Indonesia? Third, what is the impact of habitat changes and the risk of bird extinction on the sustainability of bird populations in Ragunan National Park? The problem boundaries taken by the author include a focus on collecting data on bird management, diet and how to care for them. Apart from that, the research location is limited to Ragunan National Park. The aim of this research is to collect complete information about various types of birds in Indonesia to be presented via a website. Apart from that, another goal is to build an Indonesian Bird Lovers Website as an easily accessible information platform about various types of birds in Indonesia using the Content Management System (CMS) method. Lastly, the aim of this research is to evaluate the diversity of bird species before and after infrastructure development to determine its impact on the composition and abundance of bird populations. Thus, it is hoped that this research can make a positive contribution to conservation efforts and increase understanding of birds in Indonesia.

2 | BACKGROUND THEORY

The design of a website for bird enthusiasts in Indonesia requires a comprehensive understanding of the ecological and behavioral aspects of birds, as well as the technological and social considerations related to online platforms. Urbanization has been found to impact bird populations, indicating the importance of considering environmental factors in the design process. Additionally, the use of social media platforms for identity curation and political participation highlights the potential for digital spaces to facilitate engagement and community building among bird enthusiasts. Furthermore, the assessment of wildlife trade on the dark web emphasizes the need for effective enforcement against illegal wildlife trade, which could inform strategies for promoting ethical bird-related content on the website. In the context of community theory and multidisciplinary approaches, the website design should aim to create a safe and inclusive space for individuals interested in bird conservation and appreciation, aligning with the principles of dangerous writing and queer studies. Understanding the dynamics of online wildlife markets, including the use of social media platforms for wildlife trade, can inform the implementation of measures to prevent the exploitation of birds through the website (Bonier *et al.*, 2007). Moreover, the integration of citizen science data

and weather radar information can contribute to the study of bird migration patterns, offering opportunities for engaging the website users in scientific research and data collection (Hanckel *et al.*, 2019; Harrison *et al.*, 2016).

Considering the potential risks associated with online anonymity and illegal market trading, the website design should prioritize user privacy and security while fostering a sense of community and trust among its members (Barozzi, 2022). Furthermore, the intersection of online platforms and intimate ethnographies underscores the significance of creating a respectful and supportive online environment for bird enthusiasts, recognizing the diverse backgrounds and experiences within the community (Xu *et al.*, 2020; Siritwat & Nijman, 2020). Additionally, the study of bird introductions in Australia highlights the need to address socio-economic factors and human modification of the environment, emphasizing the importance of promoting responsible bird ownership and conservation efforts through the website (Weisshaupt *et al.*, 2021). The design of a website for bird enthusiasts in Indonesia should encompass ecological, social, and ethical considerations, aiming to provide a valuable and engaging platform for individuals passionate about avian biodiversity and conservation.

Content Management Systems (CMS) have become an integral part of web development, allowing users to manage online content without extensive knowledge of web technologies (Masner *et al.*, 2018). CMS encompasses various types, including document management, record management, and learning content management (Alalwan & Weistroffer, 2012). The implementation of CMS often involves the use of PHP and MySQL, as seen in the development of educational content management systems (Vásquez-Ramírez *et al.*, 2012). PHP, a scripting language, and MySQL, a database management system, are widely used in web-based applications due to their success as open-source technologies (Korhonen *et al.*, 2008). The use of PHP and MySQL is also evident in the development of academic information systems, such as academic information websites and academic payroll systems (Ratih & Desriyani, 2021; Taufiq *et al.*, 2019). Furthermore, the integration of PHP and MySQL in CMS extends beyond academic applications. For example, the implementation of the weighted Moore-Penrose inverse utilized PHP and MySQL for procedural programming (Milosevic *et al.*, 2016). Additionally, the development of a vehicle rental application based on a website involved the use of PHP and MySQL for the backend database (Nugraha *et al.*, 2022). The significance of PHP and MySQL in CMS is further emphasized by their application in the creation, storage, and presentation of online information content (Masner *et al.*, 2018). Moreover, the evolution of CMS, particularly the trajectory changes in the software industry, has been studied longitudinally, demonstrating the impact of CMS players and their segments' change trajectory (Vitari & Ravarini, 2009). This highlights the enduring relevance and influence of CMS, further underscoring the importance of the technologies that underpin CMS, such as PHP and MySQL. PHP and MySQL play a pivotal role in the development and implementation of CMS across various domains, including academia, industry, and software evolution. Their versatility and effectiveness in supporting CMS underscore their significance in web-based applications and content management.

The design and development of a website for bird enthusiasts in Indonesia requires a multifaceted approach that encompasses ecological, social, and ethical considerations. By integrating insights from ecological studies on bird populations, social dynamics in online communities, and ethical frameworks for wildlife conservation, the website aims to serve as a valuable platform for promoting bird appreciation and conservation efforts. Furthermore, the utilization of Content Management Systems (CMS), particularly through technologies like PHP and MySQL, offers a robust foundation for managing online content and facilitating user engagement. The versatility and effectiveness of PHP and MySQL in supporting CMS underscore their pivotal role in web-based applications and content management across diverse domains. As the digital landscape continues to evolve, it is imperative to prioritize user privacy and security while fostering a sense of community and trust among website users. By embracing technological innovations and interdisciplinary insights, the website for bird enthusiasts in Indonesia aspires to create a vibrant and inclusive online space that celebrates avian biodiversity and inspires collective action for bird conservation.

3 | METHOD

The research was conducted in Ragunan National Park, which is located on Jl. Harsono RM No.1, Ragunan, Ps. Sunday, South Jakarta City, Special Capital Region of Jakarta 12550. The research was conducted in June. The main page on the Indonesian Bird Lovers website is designed with several important elements. There is an Indonesian Bird Lovers logo to access the home page, a button about the Indonesian Bird Lovers website, a button for bird types, a button for maintenance, a button for food, and a user icon to view the user profile and log out. On the home page, there is also a navigation bar and several articles that are randomly called from the database. The article pages on this website have a uniform appearance with the other pages. There is a navigation bar and content containing articles

and a comment form. Apart from articles and comment forms, there is also a button to view other articles that have been created by the admin. If the button is pressed, the page will display articles according to the selected category. The category page is divided into three main categories, namely Types of Birds, Care, and Food. Each category page displays all articles in the database retrieved according to the selected category. The login page is designed for users who want to access the home page. Users must fill in the login form correctly to enter the home page. If you don't have an account, users can create a new account by pressing the registration button. The registration page is intended for users who want to create a new account to access all articles on the website. The admin page is designed to manage the database without having to open the database directly. The admin must log in first by entering the username or email and password to access the admin page. The admin page allows admins to change website data easily. This website has a use case diagram that shows the interaction between users and admin. Users must register as members to access all website features. They can provide comments and create articles. Admins have full access to change data in the database, such as deleting user comments or articles. Activity diagrams are created to describe workflows for both admins and users. This diagram helps in understanding the activities that can be carried out by admins and users. The activity diagram for admins includes the login process and data execution, while for users it includes the process of providing comments on articles and changing user data.

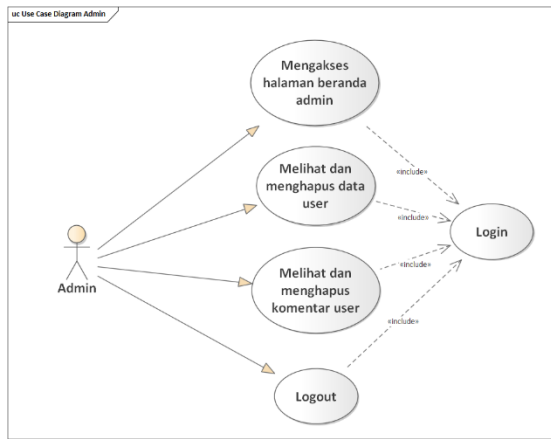


Figure 1. User Use Case Diagram

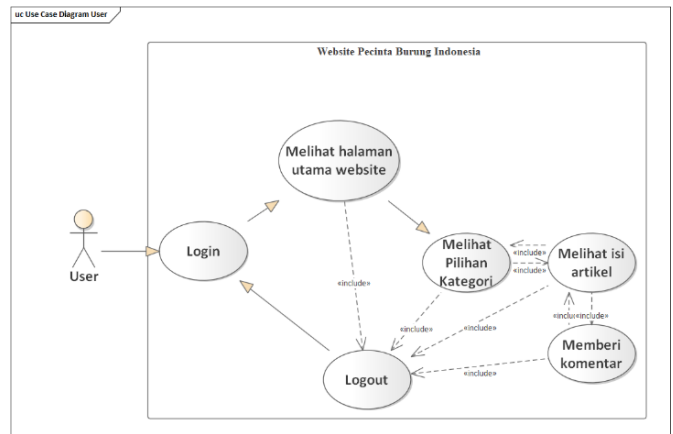


Figure 2. Use Case Diagram User

Navigation structure is very important on a website to make it easier for users to access existing pages. The navigation structure for users uses mixed types, namely hierarchical and linear. Users will see the main page, register as a member, log in, and then see the homepage. Meanwhile, the navigation structure for admin uses a linear type, with a focus on administrative tasks. Admin must log in first to access the admin home page and execute data. This admin activity diagram is divided into two, namely for logging in and executing data on the admin page. Admin can execute data from the website such as user data, comments, and others. Activity diagram login for admin, where admin must log in first to be able to enter the admin home page. The admin must go to the login page and the system will display the login page. The admin can immediately enter the username and password then the system will check whether the admin data is the same as the existing data. If the data does not match, the admin will immediately see an error message regarding the username or password data. Admin must log in again correctly according to the data in the database. The system will display the admin home page if the admin has successfully logged in. As in Figure 3 below.

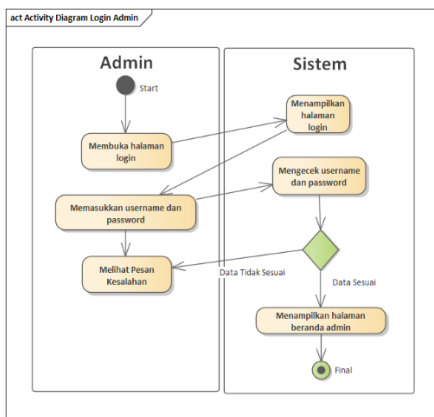


Figure 3. Admin Login Activity Diagram

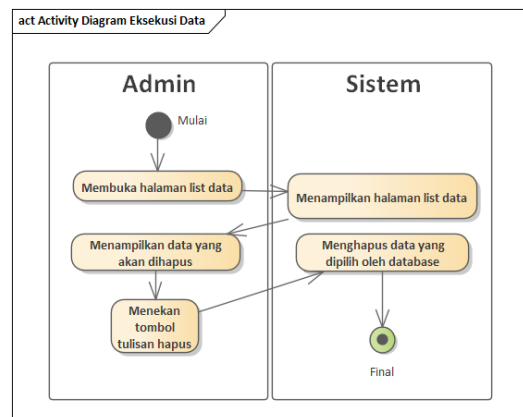


Figure 4. Data Execution Activity Diagram

In figure 4 is the data execution activity diagram that will be carried out by the admin. The admin can execute the data after successful login and go to the admin home page. The system will display the home page and the admin selects the data to be executed. The admin must press the button or button that says delete to delete the data. The system will delete the data selected by the admin from the database. This user activity diagram was created for the activities of users who will follow this website. This activity is divided into 2, namely, article comments, and changing user data.

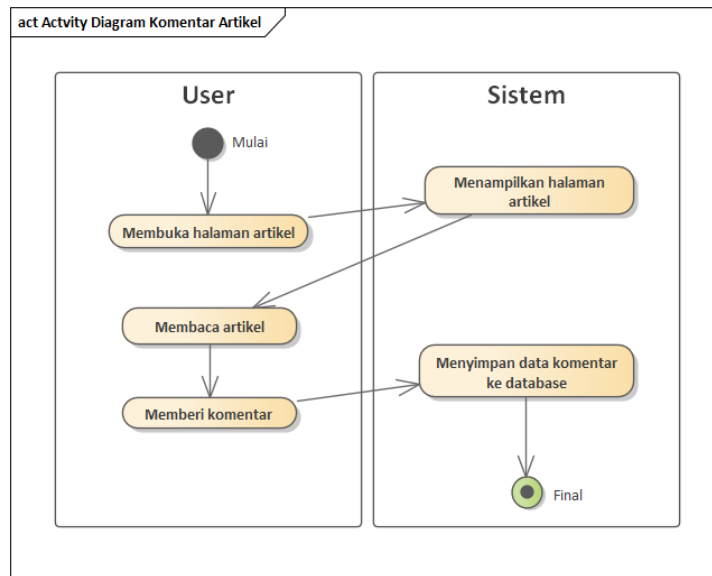


Figure 5. Activity Diagram for Article Comments

Figure 5 is an activity diagram for users if the user wants to comment on an article. Users must open the article first if they want to comment, then the system will display the article page. Once the article has been read by the user, the user can immediately leave a comment on the article page. The system will save the results or contents of comments provided by users to the database. The navigation structure is very useful on a website, because the navigation structure makes it easier for users to access the pages available on a website. The navigation structure is used to outline the contents of the web and the relationships between its pages. Multimedia application developers can analyze the interactiveness of all subjects in their applications and their impact on users and admins. For this user navigation structure, a composite or mixed type navigation structure is used, namely hierarchical and linear, where this type allows for branching and will display certain pages desired by the user and is intended that there are pages that act as main pages and there are also those that act as supporting pages. . User navigation structure to find out what users can do on this website. Users will see the main page on the website and will register as a member to be able to view further website content. Login is carried out after the user has successfully registered as a member. Users will see the homepage when they have successfully logged in. As in Figure 6 below.

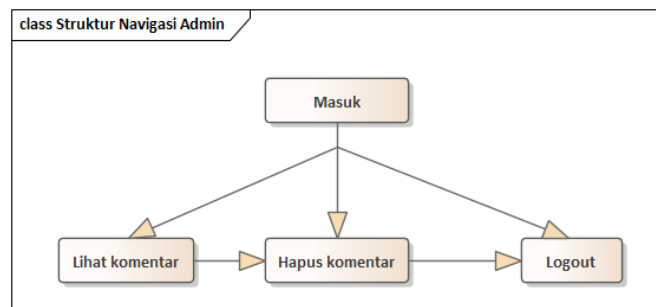


Figure 6. User Navigation Structure

The admin navigation structure is different from the user navigation structure. Admin uses a linear navigation structure type. Users cannot visit the admin page and users also cannot log in as admin.

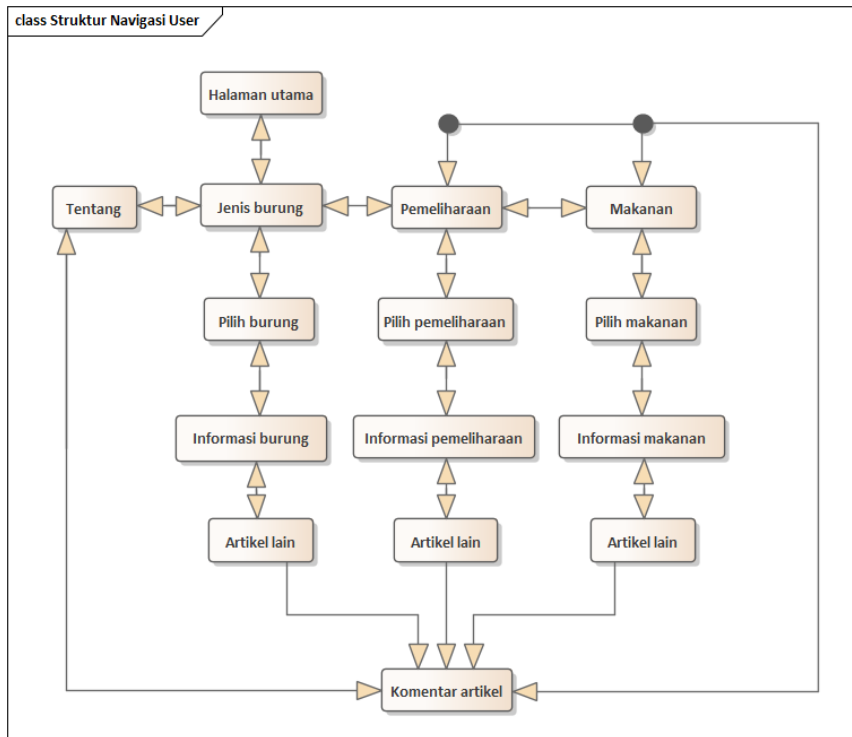


Figure 7. Admin Navigation Structure

In Figure 7 is the admin navigation structure where admins can carry out activities as in the picture. The admin must log in first to be able to display the home page which contains the data execution page. This research methodology covers various aspects in creating the Indonesian Bird Lovers website, from page design to user and admin activities. All of this aims to create an informative and easily accessible platform for bird lovers in Indonesia.

4 | RESULT

Creating a login page for admins involves a series of steps similar to the process of creating a login for regular users. First, a login form is created that allows the admin to enter a username or email and password to enter the admin home page. This login form is implemented in the login_admin.php file with the help of a CSS file called login.css to beautify its appearance. After filling in the login form, the admin will be directed to the admin home page. The process of creating an admin home page involves creating page views, creating tables, and other steps. This admin home page displays all data related to the website, including user data, articles posted by the admin, and so on. Creating an admin page appearance begins by creating the admin_berandastyle.css file using Brackets or another text editor. The appearance of the admin page must be clean and organized so that the admin can easily manage data. Apart from that, a database table is created to accommodate various fields in the database. Data from these tables will be displayed on the admin page and can be edited or deleted directly by the admin.

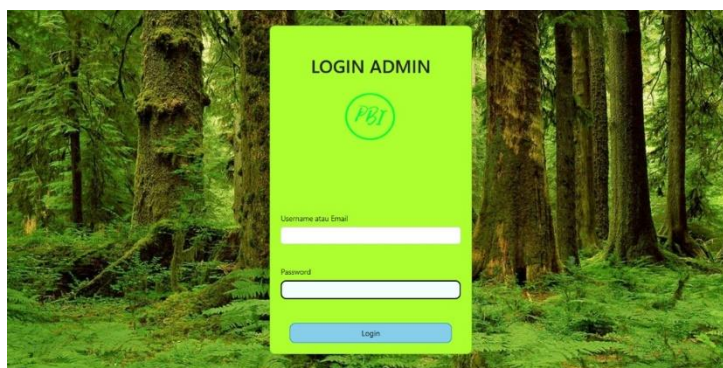


Figure 8. Admin Login Page Results

The process of deleting data is carried out by connecting the delete button on the admin page to the appropriate script (cepat.php). When the admin clicks the delete button on the data table, the selected data will be deleted from the database. This process ensures that the admin has full control over the data contained on the website. After completing the process of creating the admin home page, testing is carried out to ensure that the website functions properly. This testing process involves examining each website feature to identify and fix bugs or errors in the program code. One of the features being tested is the ability for users to leave comments on articles. This test aims to ensure that the comments feature functions properly without bugs. Users are required to fill out a comment form before submitting their comments. If the form is not filled in, an error message will appear reminding users to fill out the form correctly before sending a comment. After submitting a comment, the article page will automatically reload to display the newly submitted comment. Test results show that the comments feature runs well without any significant bugs or errors. The alerts that appear on the article page are as designed and provide a good user experience when using the comments feature. The process of creating a login page and admin homepage as well as testing website features is an important part of developing a quality website. Through these steps, websites can be created and improved so that they provide an optimal user experience and meet user needs well.

The screenshot shows an admin dashboard with a navigation menu at the top: 1. Table Jenis Burung, 2. Table Pemeliharaan, 3. Table Makanan, 4. Table User. The main content area displays a welcome message 'Selamat Datang arya22@gmail.com' and a table titled 'Table Komentar Jenis Burung'. The table has columns for NO., Tanggal Komentar, Id Komentar, Nama User, Isi Komentar, and Aksi. Below the table is a background image of several colorful birds perched on a branch.

NO.	Tanggal Komentar	Id Komentar	Nama User	Isi Komentar	Aksi
1	2023-04-28 01:54:38	11	joko	terima kasih.	Hapus
2	2023-05-01 08:19:20	12	Muhamad Arya Nurfadilah	sama-sama joko	Hapus
3	2023-05-05 11:06:19	26	bambang santoso	terima kasih.	Hapus
4	2023-05-05 11:00:06	27	bambang santoso	terima kasih.	Hapus

Figure 9. Admin Home Page Results

In the website development process, creating a login page and admin home page is a crucial step that allows admins to manage content and data efficiently. The admin login page ensures that only authorized users can access the admin page, so that website security is maintained. By entering a username or email along with a password, admins can enter the admin home page to manage various aspects of the website, such as users, articles and comments. On the admin home page, the admin has full access to manage website data and content. The admin home page is designed to be easy to understand and use, so that admins can quickly and efficiently carry out their administrative tasks. In this case, creating a clean and structured view and using tables to display data plays an important role in providing a good user experience.

The website testing process is a crucial stage to ensure that all features function properly without any bugs or errors in the program code. Testing is carried out to examine every aspect of the website, including interactive features such as the ability for users to leave comments on articles. The results of this testing provide a clear picture of website performance and help in identifying and fixing any problems that may arise. The comments feature is an important feature in the interaction between users and websites. Testing the comments feature ensures that users can smoothly comment on articles without experiencing problems or errors in the process. The error message that appears if the comment form is not filled out correctly is an example of an attempt to improve the user experience by providing clear instructions. Creating a login page and admin home page as well as testing website features is a crucial stage in developing a successful website. These steps not only ensure the security and functionality of the website, but also ensure that users can easily and comfortably use the website. With a thorough testing process in place, a website can be launched with confidence that it will provide an optimal experience for users.

5 | CONCLUSIONS

Based on the discussion presented in the previous chapters regarding the Indonesian Bird Lovers website, it can be concluded that the main aim of creating this website is to facilitate the maintenance process and knowledge about various types of birds for the wider community. By providing complete and easily accessible information, it

is hoped that this website can provide significant benefits for bird fans and the general public. This website was designed taking into account aesthetic aspects and user comfort. Using the Bootstrap framework provides advantages in terms of responsiveness and attractive layout, so that it can increase visitor interest in exploring the content provided. Thus, it is hoped that this website can become a reliable and leading source of information regarding bird care. Apart from that, the ease of providing comments and sharing information is an important feature in the interaction between users and this website. With this feature, users can share experiences, knowledge and tips regarding bird care, thereby enriching the user experience and building a solid community around this topic. In further development, it is necessary to periodically evaluate the performance of this website, both in terms of technical and content, to ensure that the website remains relevant and useful for its users. By adopting this approach, it is hoped that the Indonesian Bird Lovers website can continue to develop and make a positive contribution to conservation efforts and knowledge about birds in Indonesia.

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How to cite this article: Nurfadilah, M. A., Faizah, N., & Rakryan WP, R. (2024). Designing the Indonesian Bird Lovers Website using Bootstrap PHP and MySQL with the Content Management System (CMS) Method. *Journal Web Information Systems (JWIS)*, 1(1), 26–34. <https://doi.org/10.59431/jwis.v1i1.137>.