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Web-Based Library Information System Design

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Abstract. Today's libraries need to be combined with technology that can simplify the tasks of librarians who are in charge of managing and serving newcomers. Because the librarian profession is less desirable. The purpose of the design to be designed is to make the librarian profession more attractive to the public. By simplifying the task of a librarian in managing the library, both the recording section and the service to the library. The method used in this study combines conventional methods with existing technology, such as creating a data processing system for outgoing and incoming books, then creating a website so that users can easily get reminders to return books from the library via email or phone number. This system has advantages in terms of book data management which is faster and easier because the data collection uses a system that has been prepared. From the user side, it is also easier to find books, borrow books and return books with the system that has been prepared. The concept of this system is to combine conventional library management systems with existing technology. In the end, this information system can help libraries to facilitate library management. In addition, it can also open and increase public interest in the librarian profession.

Keywords: Library, Information System, Website-based.

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1. Introduction

The library is a media for literacy and learning science or just reading to get information, the place is now not only in schools but there is also a public library that can be accessed by the general public as well. Every library certainly has a large collection of books, starting from learning books, comics, story books and others [1]. As time goes by, libraries are now very outdated in an era where almost everything has been digitized, one of which is the way library

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management is still using conventional or manual methods so that errors often occur in data collection of circulation of books in and out, including borrowing books [2]. Seeing this condition, it is very necessary to have an information design system so that librarian activities carried out by readers and officers are more effective. One of the information systems that can be used is web-based by utilizing it so that everyone can easily access it, so there is no need to install applications to a PC or smartphone.

From this case study conducted by Rosita Cahyaningtyas and Siska Iriyani about the existence of a library information system, they explained that the system can make services more effective and efficient, it is necessary to revamp the service system, which started from a manual and developed into a service system using a special program, so it requires IT-based library information system [3]. One way to implement an IT-based library information system is by digitizing the library information system. According to the case study of Hanifah, H. & Bana Handaga, the process of digitizing the library information system needs to be done to improve the efficiency and effectiveness of the system [4]. That way the system needs design, based on research by Aji Permana, M.Kom, design is an activity that has the aim of designing a new system that can solve the problems faced by the company obtained from the selection of the best alternative system [5]. Another component needed to maximize system design is data and information, which according to Dani Eko Hendrianto, includes data and information, namely the fact that states the existence of an event or event that is factual and numerical which is relatively meaningless to the user while information is the result of processing the data [6]. Simply put, according to Astria Firman et al, it can be said that the data is processed into information. And at the next stage, an information will become data for the creation of other information [7].

The purpose of this research is to design a web-based application that functions to help librarian activities carried out by readers and librarian more effectively and so that librarian activities are easier to access by the public through a digitalization system. The research method used in this research is descriptive research method. The system development method used is the Waterfall System Development Life Cycel (SDLC) model.

2. Method

The research method used in this research is descriptive analysis to convey information through the research design. This system is designed using Visual Studio Code software with the waterfall system development method [8,9]. The usefulness of the waterfall method that makes this method better than other methods is that it allows for departmentalization and control. The process of developing a one-by-one phase model, so as to minimize errors that might occur, starts from concept development, namely through design, implementation, testing, installation, problem solving, and ends with operation and maintenance [10,11]. The waterfall system development method is shown in Figure 1.

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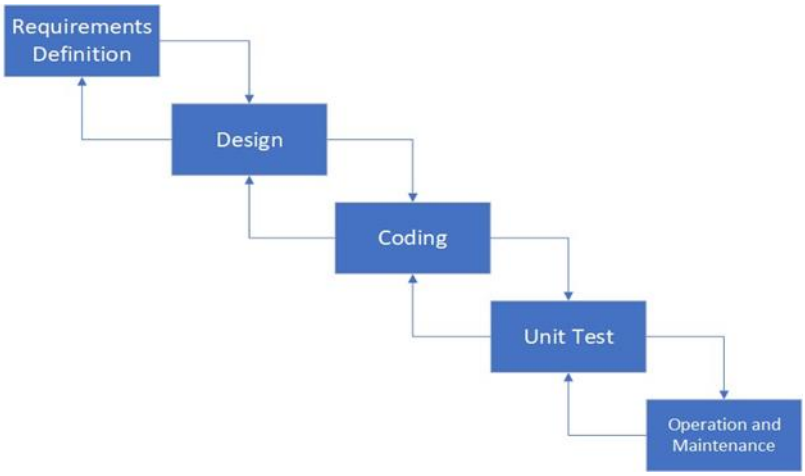

Figure 1. Waterfall Development Life Cycle

This research method describes the research findings based on the data obtained from the analysis at the beginning then a detailed research phase will be carried out. In this waterfall method, the specifications for designing devices and user needs will go through validation tests and a sequential flow process until implementation into the system. The stages in the waterfall method are, Requirement Definition or needs analysis, an application design consists of a system that functions to performs and interfacing, therefore analysis is needed to avoid problems. Design, at this stage a software must have an interface that needs to be prepared in system design. Next is Coding, this time we use the JavaScript programming language. After that there is a Unit test process in which tests are carried out in terms of logic and functionality to minimize errors. And in this last flow is Operation and Maintenance, in this section we will publish the web that we created to the client, besides that we will do monitoring and improvement so that all features function properly.

3. Results and Discussion

3.1. Identifying Requirement

The web for the library information system that will be designed serves to make it easier for both the librarian and the user. In this study, a simple research was conducted to find out what was needed in the website to be designed. This website provides a feature to find out the data of books and members in the library. In addition, there is a statistics feature that functions to find out what books are most interested by users and also a visitors statistics feature that functions to find out the number of visitors per day to per year which is depicted in the form of a diagram. And a book return feature is also available on this website so that the librarian will know who borrowed and what books were borrowed. The menu structure of the Library Information System website is shown in Figure 2.

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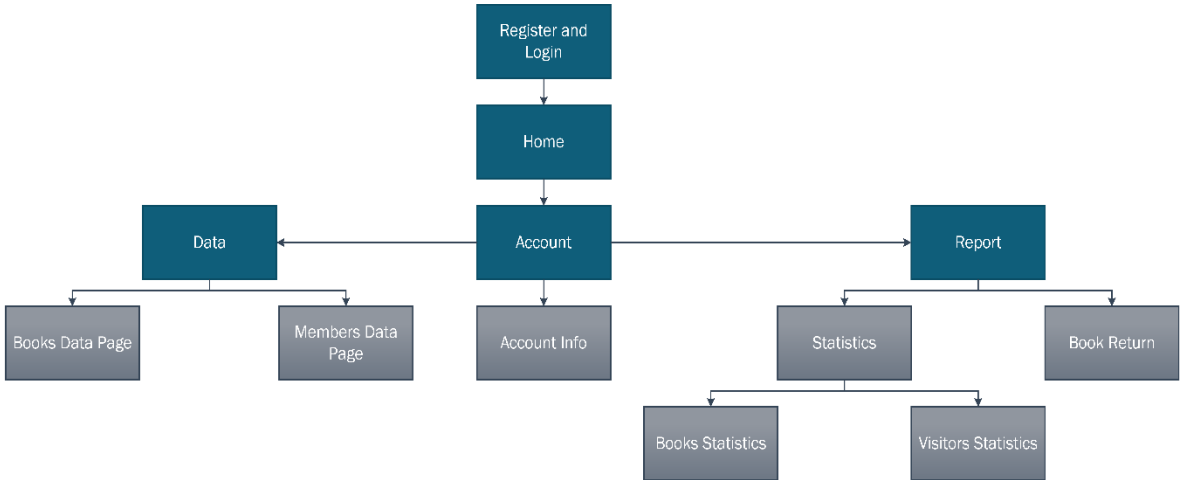

Figure 2. Website's Menu Structure

Figure 2 illustrates the design of the menu structure of the library information system website that will be designed. The main part of this website is the home menu which contains 3 sub menus, the data menu, the account menu, and the report menu.

3.2. Developing the Initial Prototype

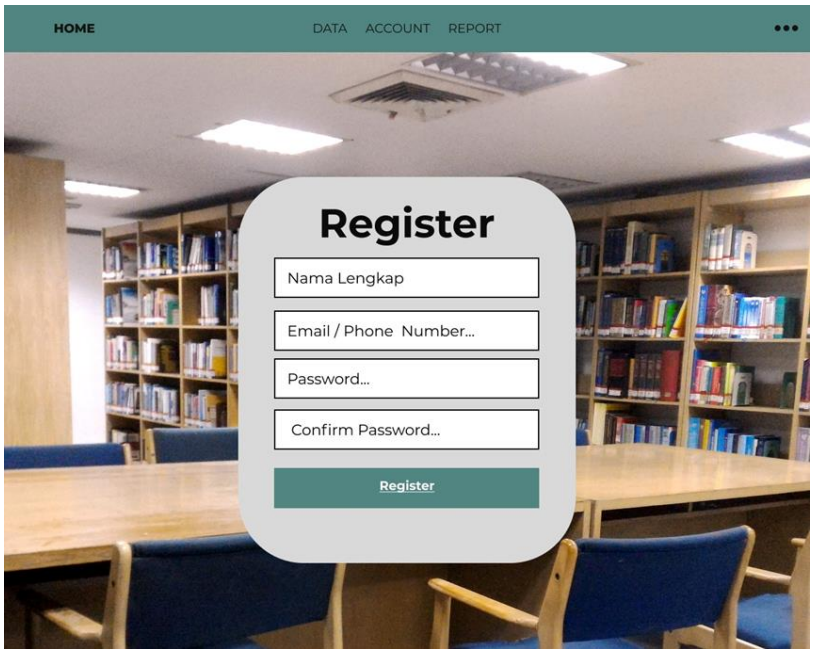

Figure 3. Register Page

In Figure 3 above is a register display or you could say to register an account if the user does not have an account, in this register to fill the data in registering an account is the user's full name as the account profile name, email or phone number that is still connected, password or password and confirm password to make sure the password is correct.

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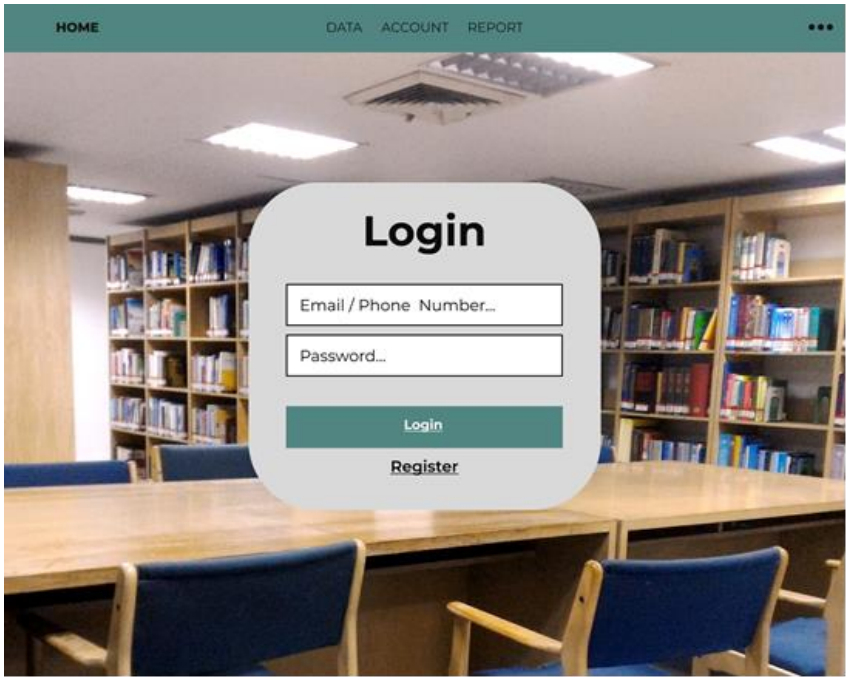

Figure 4. Login Page

Figure 4 shows the Login page. The user wants to login first using an email or phone number and entering a password.

3.3. Testing the Prototype

After the initial prototype has been successfully created, as an initial stage of discussion from the developer to the user, prototype testing is carried out to test the initial prototype that has been made in the previous stage.

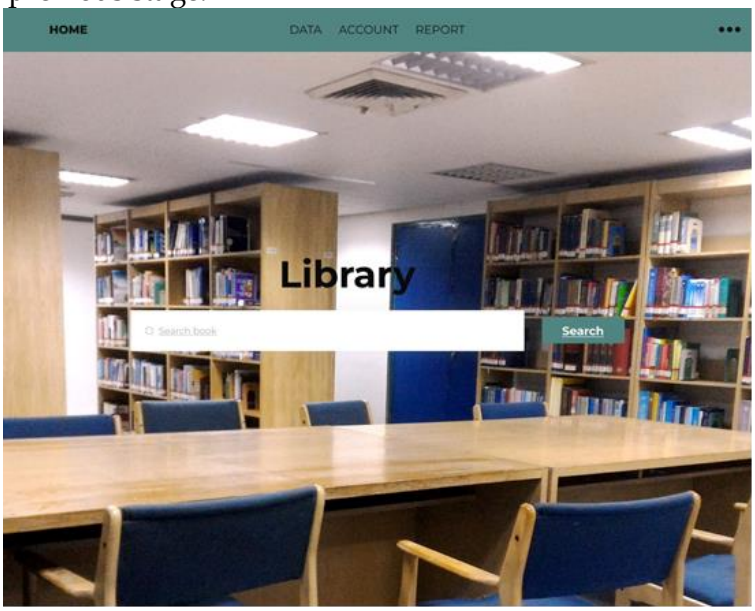

Figure 5. Home Page

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Figure 5 shows the home page of the library's website. On the Home menu, the user can access or search for the desired book in the search field.

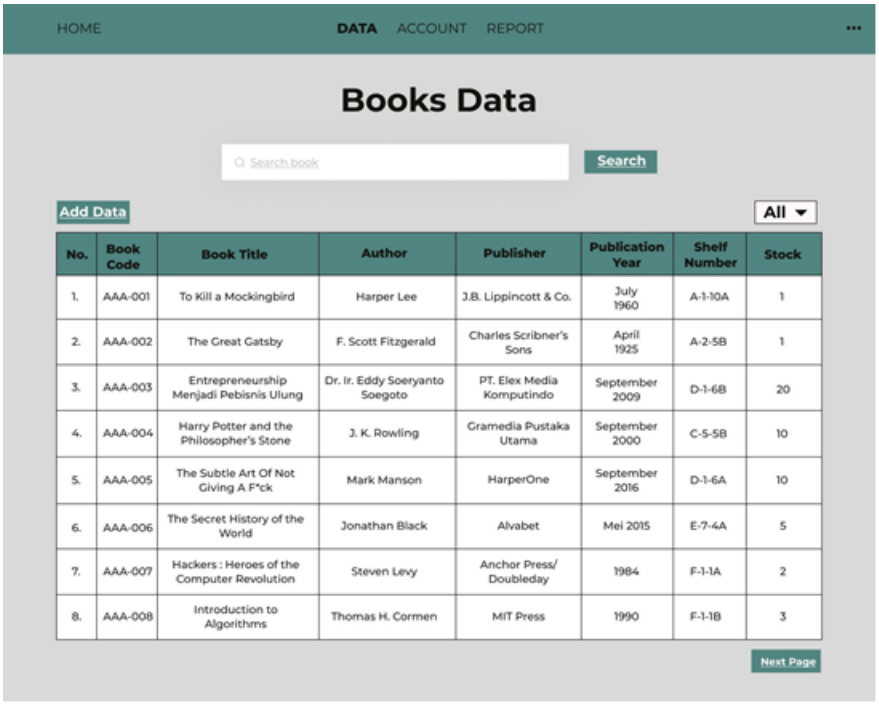

Figure 6. Books Data Page

Figure 6 displays the Books Data Page of the library's website. In the Books Data menu, it displays book data that has been added to the system such as book code, book title, book author, book publisher, book publication year, shelf number or bookshelf number and book stock. Here the user can also add book data by clicking "Add Data".

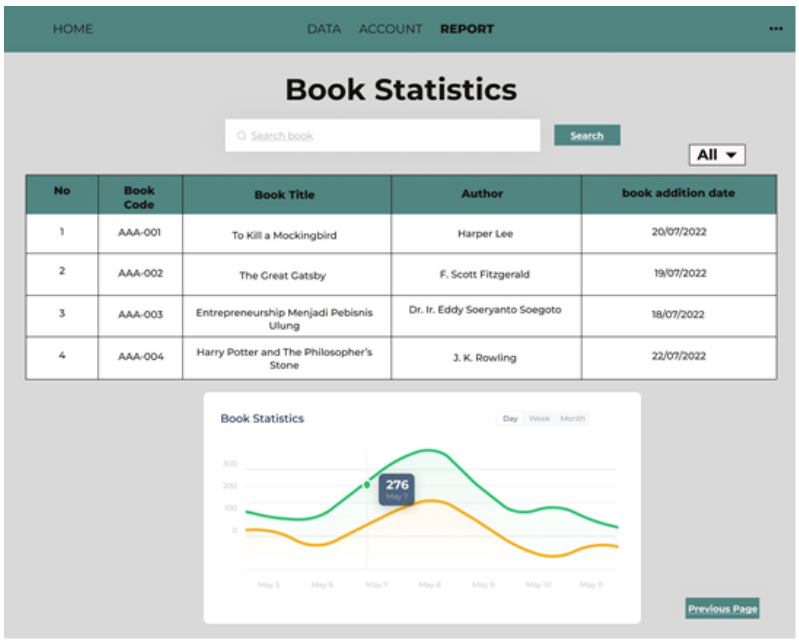

Figure 7. Book Statistics Page

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Book Statistics is a menu to display some books that are often read and borrowed with statistics below it per day, per week and per month.

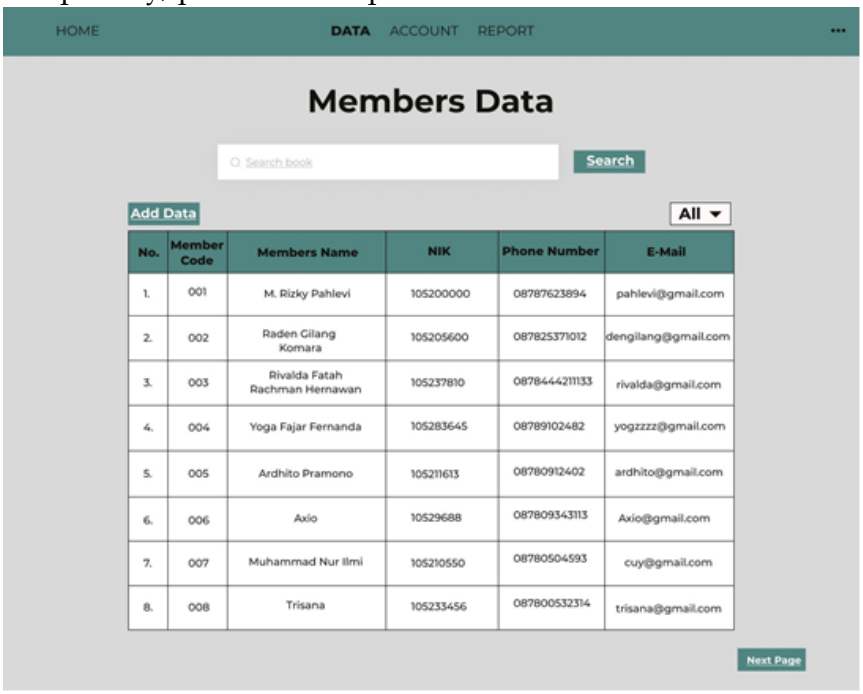

Figure 8. Members Data Page

Figure 8 displays the Members Data Page of the library's website. The Members Data display shows several users who have registered to become members to make it easier to borrow books, including member code, member name, NIK, phone number and E-mail.

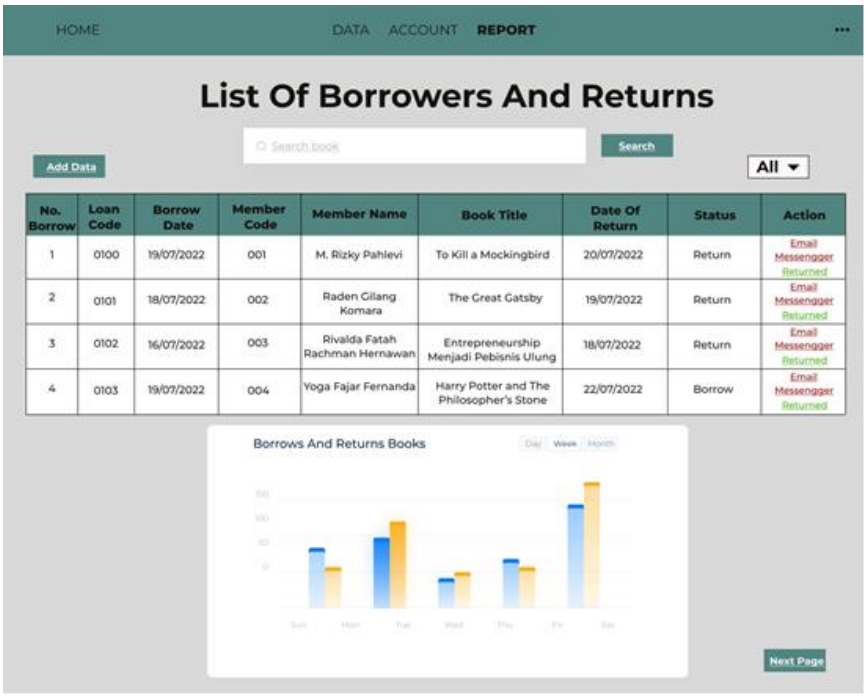

Figure 9. List of Borrowers and Returns Page

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Figure 9 shows the List of Borrowers and Returns Page. If a member has borrowed a book, it will input anyone who borrows which includes the loan code, borrowing date, member code, book title, return date, status and action. Not only borrowing that is input here but those who have returned will also be inputted by changing the status that was originally "Borrow" to "Return". Below it is also a graph of the borrowing per day, per week and per month.

3.4. Revising and Enhancing the Prototype

Figure 11 displays the Account Info Page of the library's website. In Account Info, data from the account is listed such as User Name, E-mail and user password, the user can also log out of the account. But if the user forgets their password or E-mail, there is no option to change their password and E-mail. Then it will be a revision of this prototype that must be updated.

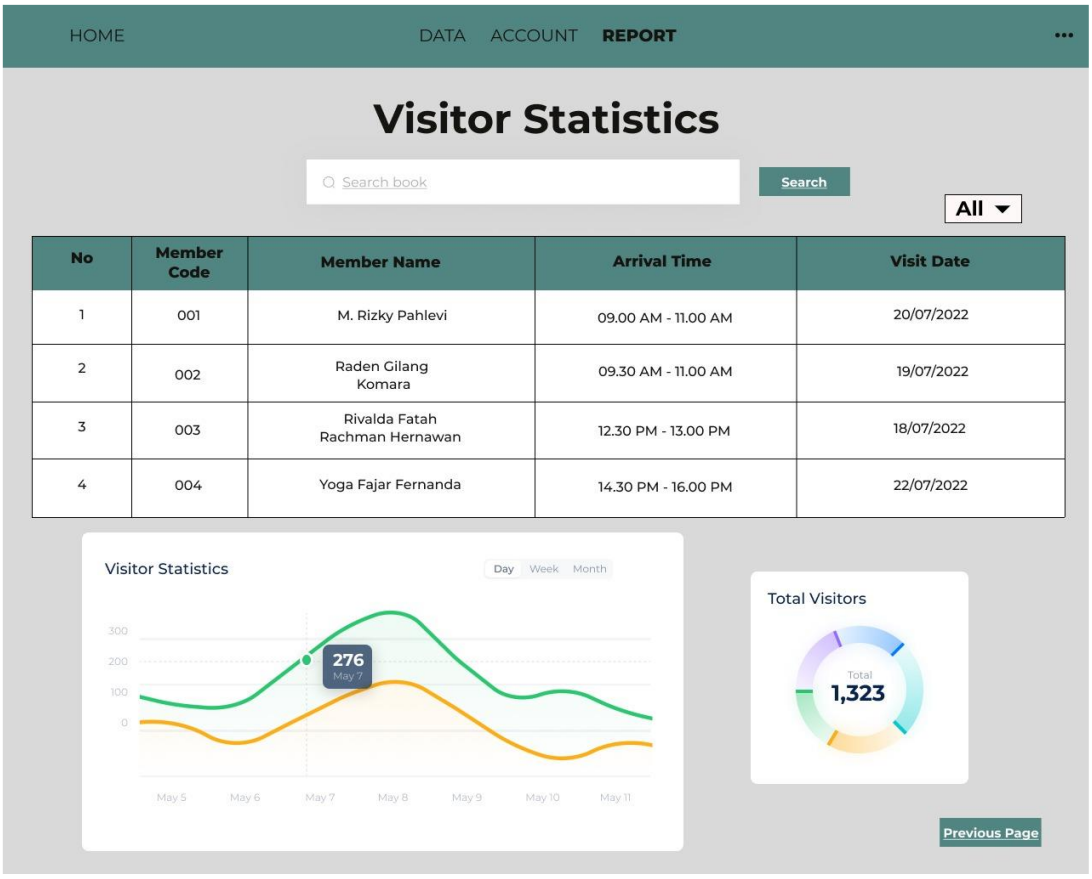

Figure 10. Visitor Statistics Page

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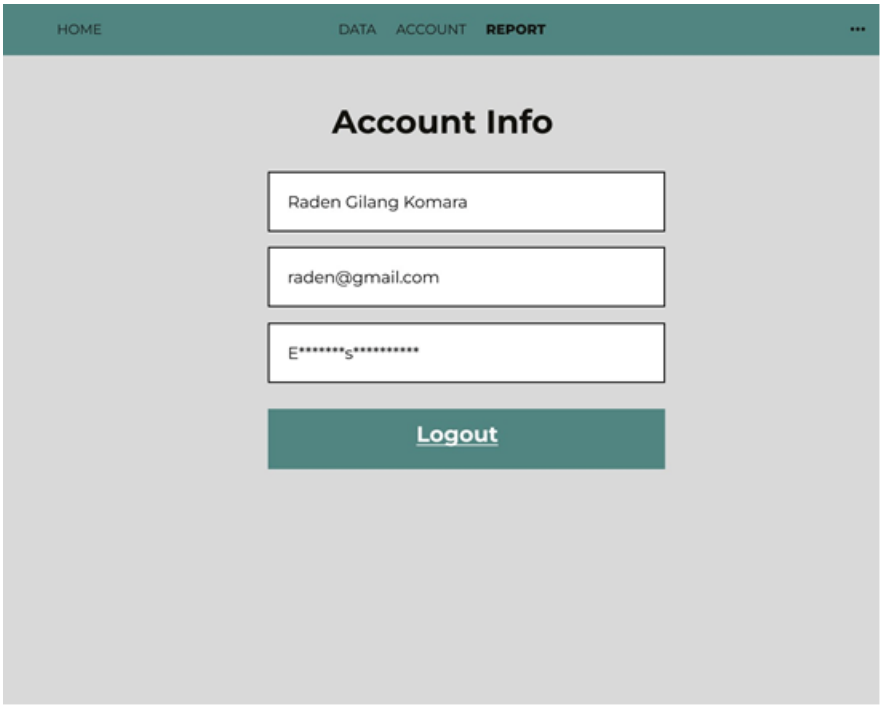

Figure 11. Account Info Page

4. Conclusion

This website-based Online Library application is designed to make it easier for librarians to record incoming books and library visitors, which is much more effective than using conventional methods. By using this method, it will be much safer because all the data entered will be stored in the system and will not be lost, while for borrowing books manually if the data is lost it will harm the library and do not have strong evidence. The available features are also very easy to use such as displaying book data, library visitor charts, frequently read books and more.

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