Asia Information System Journal

DESIGN OF LIBRARY INFORMATION SYSTEM BASED ON FRAMEWORK CODE IGNITER CASE STUDY OF INSTIDLA

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Article Info	Abstract
	In this disruptive era, information systems are a basic need in every field that we do. Almost all jobs have an information system that is used to help complete the work so that it becomes more effective. Libraries process a lot of data that must be processed properly and quickly so that they can provide maximum service to customers. In addition to the information system built to manage all data, information system security must be a major concern so that data can be stored safely and avoid attacks or defacements from irresponsible people. One way to secure the information system that we create is to separate the model view and controller so that the system will be difficult to hack or disable. With the CodeIgniter Framework, it will be easier for us to create a secure website because CodeIgniter has a Model View Controller (MVC) concept.
To cite this article :	

INTRODUCTION

In this disruptive era, information systems are a basic need in every field that we do[1]. With the development of the world of technology, especially website-based technology, the library information system can be facilitated in the registration process as a new member or just to view data or available book catalogues. In making information systems, security is an important thing that must be considered so that the website is not easy to be hacked by other people who want to damage it. By using the framework, we don't need to be busy thinking about the security of the system that we create, because the framework provides features or rules that can secure the website that we create.

The framework can be interpreted as a collection or collection of program pieces that are arranged in such a way that it can be used to help create a complete application without having to create all the code from scratch[2]. Among the many choices of frameworks, CodeIgniter is one of the most widely used frameworks in Indonesia because it is easy to understand and light when used.

The framework provides a complete and integrated library. This element is the most profitable for application developers. For example, the web application framework provides basic libraries related to web services, such as authentication, database access, HTML generation, template engine, session management, caching, searching, email, HTTP, pdf, zip and ajax. The framework also provides extensive tools for libraries that are not yet available or libraries that need to be upgraded.

The amount of data that is obtained and must be displayed in a library, requires us to create a good and safe system to apply in our work environment. The solution to the problem above is to create a website by utilizing the

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CodeIgniter framework which already utilizes the Model, View, Controller (MVC) concept. To make the display better and more dynamic, we can also add jquery to make it more interactive.

Understanding Web-Based Applications

Web programming consists of the words programming and web. Programming itself can be defined as the process or way of making programs using a programming language. The programming language is the language used to give instructions to the computer so that the computer can process data and display information as desired by the programmer. Thus, web programming can be defined as the activity of making programs or web-based applications using certain programming languages so that they can process data and produce information as desired by the web owner.

Model View Controller (MVC)

MVC is a pattern or programming technique that separates application developers based on the main components in an application[3]. The MVC concept was introduced to make it easier for web-based application developers in developing their applications. To understand development methods for object-based programming (OOP).

In general, the purpose of a web application is to display the information requested by the user. The user sends a request through the browser to the web server, the web server will process the request then the results will be sent back and displayed in the web browser. Based on the above mechanism, website applications can be divided into three parts:

1. the section that serves to interpret requests from users.
2. the part that models the problem domain or business logic.
3. the section that manages the views that will be sent to the user.

MVC is an archetype that separates the three parts of the program into three separate objects. This is done so that the program is easier to develop or add new components or new plugins that will be included in the website. With this MVC pattern, website templates will be easier to adjust to your needs and more dynamic. Changes to the user interface will not affect other parts of the website because they are already separated. Applying a method like this allows us to work in workgroups more easily and quickly. Interaction between the three parts of the program

Along with the development of programming techniques, currently, many applications are being developed to facilitate developers in making a website application. There are many conveniences offered by the application, for example, it provides a variety of ready-to-use plugins and libraries so that developers don't have to bother building web applications from scratch. When using MVC-based applications, programmers must follow the rules provided in it[4].

In web application programmers who use PHP sometimes, all three parts of the program are mixed into one part. Web applications are a part that changes very often. Such as changes in appearance, layout, adding menus and many more that have nothing to do or have no impact on the logic of the web application. By mixing the three parts, every time a change is made to the display, there may be a need for changes to the logic. this increases the possibility of errors in the application.

The controller is the recipient of incoming requests (HTTP requests). The controller is the part that regulates the relationship between the model part and the view part, the controller functions to receive requests and data from the user and then determines what will be processed by the application. The view is the part that handles presentation logic. In a web application, this section is usually an HTML template file, which is managed by the controller. The view serves to receive and represent data to the user. This section does not have direct access to the model section.

The model is a representation of the business processes in each software application. The model is the part in charge of processing raw data into data that contains the meaning desired by the user. Models usually relate directly to the database to manipulate data, and handle validation from the controller section, but cannot directly relate to the view section.

Framework

According to Basuki (2010) that the framework can be interpreted as a collection or collection of program pieces that are arranged

or organized in such a way that they can be used to help build applications without having to create all the code from scratch[2].

Currently, there are many PHP frameworks, including Zend, PHP Cake, Trax, Symfony, Codeigniter and so on. Of course, each framework has its advantages and disadvantages. The advantages that can be obtained from the use of frame morph are:

Website application development time is much shorter.

Website application code becomes easier to read because it is small and basic, the details are the code from the framework.

Websites become easier to repair because there is no need to focus on all components of the website code, especially the framework system code.

There is no need to create a website application supporting code such as database connection, form validation, GUI, and security.

The developer's mind becomes more focused on the code flow of the website, what is displayed and what services are provided from the website application.

If teamwork is done, it will be more focused because the framework system requires regular code placement. Like a separate database retrieval section with a display settings section for visitors.

CodeIgniter

CodeIgniter is a framework that is used to create a web-based application that is compiled using the PHP language. In CI there are several kinds of classes (classes) in the form of libraries and helpers. Both serve to help programmers

Programmer in developing the application[5]. Codeigniter is an open-source PHP framework developed by EllisLab. This framework already supports the MVC concept that distinguishes between display logic, so that application processing can be broken down into several more specific parts. In addition, Codeigniter has also provided various libraries that are ready to use and allow the process of creating web applications to be faster.

Libraries

According to Sulistyo Basuki, a library is a room, part of a building or a building itself that is used to store books or other publications which are usually stored according to a certain arrangement for use as reading material, not

for sale. The library is held not to stand alone but to stand with a certain body or institution which can be called a work unit. In a library, library materials are available not only available in the form of books, but also in the form of magazines, newspapers, maps, globes and pictures that can be used as sources of information for anyone who needs them.

INSTIDLA

The subject of this study was observations made at the INSTIDLA library. This study used a technique in the form of collecting information in the form of questionnaires that were distributed. The information in this study is poured from ideas that have been developed by researchers. Coupled with the results that researchers get in the College library whose suggestions/solutions are poured in the results and discussion section[6].

METHOD

3.1   Data Collection Method

This study uses qualitative research methods. The purpose of using qualitative methods is to better understand and conduct literature studies by collecting sources in the form of the internet and other sources of information as the basis for the preparation of this journal.

3.2 System Development Method

Referring to Prihatna's opinion At this stage there are the following steps[5]:

1. System Analysis

This step is an analysis of system requirements. Data collection in this stage can be done by conducting a research, interview, or literature study. The system analyst will dig up as much information as possible from the user so that a computer system will be created that can perform the tasks desired by the user.

2. System Design

In this stage, the design and modelling of the system architecture focus on the design of data structures, software architectures, interface displays, and program algorithms. The system design is divided into several parts, namely: DFD, Database and User Interface.

3. Program Coding

At this stage, the process of translating the design form into a machine-readable code or form/language. The coding stage can be done

after the system planning, system analysis and system design stages are completed. In this study, the system was created using the PHP programming language and using the MySQL database. After the system is successfully built, testing is carried out to ensure its reliability of the system.

4. Integration & Testing

At this stage, the modules that have been made are combined, and this test is carried out to find out whether the software made is following the design and whether the functions of the software have errors or not.

5. Operation & Maintenance

This is the last stage in the waterfall method. Software that has been run and carried out maintenance. Maintenance includes fixing errors not found in the previous step. Improvement of the implementation of the system unit and improvement of system services as a new requirement.

RESULTS AND DISCUSSION

Navigation is the structure or flow of a program which is the design of relationships and work chains and several different areas and can help organize all elements of website creation. Determining the page navigation structure should be done before creating a website[7].

This navigation structure is needed to determine the flow of the visualization from start to finish, where the main view contains guides and links that link to the next page. So that users will easily use the desired page[8].

In this paper, we discuss two navigation structures, namely admin and visitors. This can make it easier for us to organize all inner pages by giving hyperlinks. The navigation structure in this application is mixed. To see the activities of each user of the system can be seen in the following table:


Gambar 2 : Navigasi Pengunjung
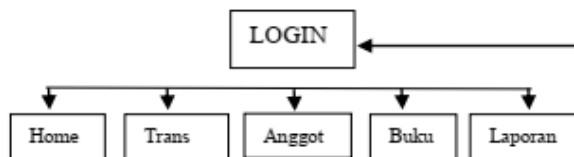
In this paper, we discuss two navigation structures, namely admin and visitors. This can make it easier for us to organize all the inner pages by giving hyperlinks. The navigation structure in this application is mixed. To see the activities of each user of the system can be seen in the following table:

Pengguna	Proses	Aktifitas
Admin	Menginput buku	Menginput data buku
	Menginput Anggota	Menginpu Anggota perpustakaan
	Melakukan Transaksi	Melakukan Transaksi baik peminjaman maupun pengembalian
	Laporan	Menampilalkan rekapitulias laporan periode dan bulanan.
Pengunjung	Mengisi data Kunjungan	Mengisi data keperluan saat kunjungan.
	Mencari Buku	Melakukan pencarian buku yang akan di pinjam

Relational Model

The basic concept of a database is a collection of records or chunks of knowledge. A database has a structured description of the types of facts stored in it, an explanation called a schema. There are many ways to organize schemas, or model the structure of a database, which are known as database models or data models. Modal which is commonly used today is the relational model, which according to the term represents all information in the form of interconnected tables where each table consists of rows and columns (the actual definition uses mathematical terminology). In this model, the relationship between tables is represented by using the same value between tables[9].
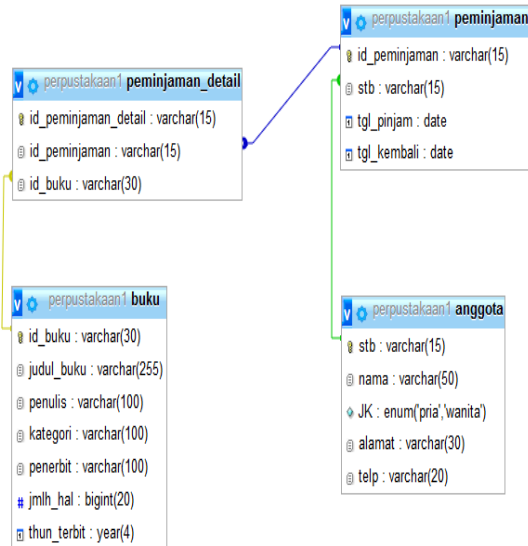
Implementation

The front page is used by visitors to fill in their data when visiting the library, this page can also be used to write impressions and also suggestions for library improvement both in terms of services and facilities[10].
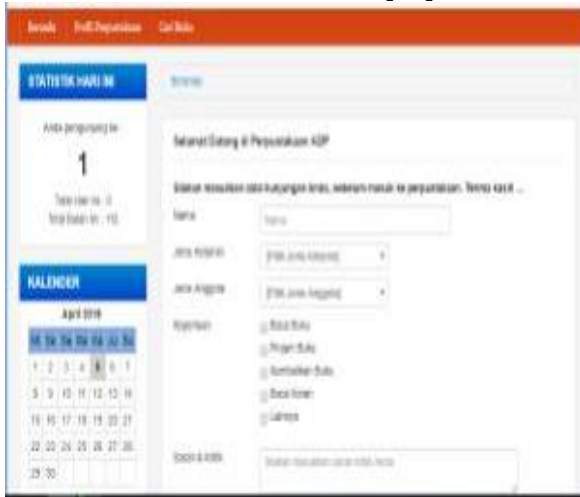

Figure 5: Page For Visitors

The book data search page is used to make it easier for visitors to find books or journals to read. In addition to making it easier to find books, this facility can also show the location of the book or journal to be searched.
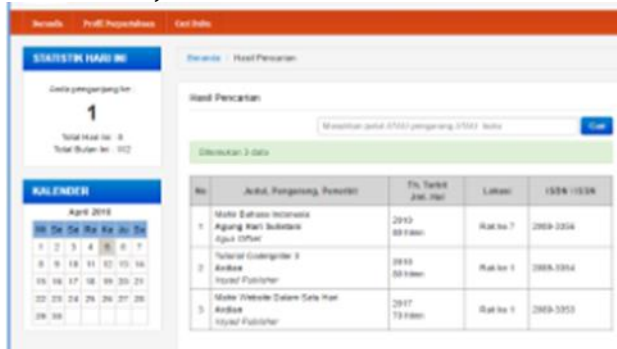

Figure 6: Search

The login page is used specifically for employees or administrators to enter the library information system. To be able to enter this system, you must enter the correct username and password to enter the system.
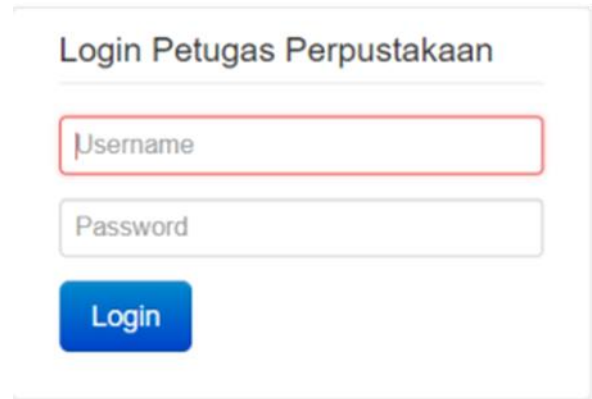

Figure 7: Login Page

The borrowing page is a page that is used for the process of borrowing books for members carried out by officers. On this page the clerk inputs books or journals borrowed by visitors.

Figure 8: Loan page

The book page is used to display all the book data in the library. This page can also be used to add book data or edit and delete it. This page can only be opened by admins or officers.

CONCLUSION

From the research and discussion above about the implementation of MVC with the CodeIgniter framework in library information systems, some conclusions can be drawn as follows:

1. By implementing MVC, the system built by Aksan will be more secure because the user is not in direct contact with the database.
2. The Codeigniter framework is one of the frameworks that have speed in processing data or displaying the results of user requests.
3. By using the framework, the system can be continuously developed.
4. The system has a clear flow that allows it to be developed together (teamwork).
5. With the library web application, it can ease and streamline the performances of staff in the library section, both in the member registration process and the transaction process for borrowing and returning books at the library.
6. The process of borrowing and returning books is more efficient and less time-consuming and minimizes the possibility of a loss of transaction data caused by damage or loss of transaction documents.

REFERENCES

[1] M. el-K. Kesuma, E. Octafiona, and R. P. Sari, "Development Of Module Sharaf Using A Deductive Approach In The Diniyyah Putri Lampung Boarding School," *An Nabighoh*, vol. 23, no. 1, pp. 1–16, 2021, doi: https://doi.org/10.32332/an-nabighoh.v23i1.2190.

[2] A. Basuki, *Membangun Web Berbasis PHP Dengan Framework Codeigniter*. Yogyakarta: Lakomedia, 2010.

[3] Y. K. Ardhana, *Pemrograman PHP: Codeigniter Black Box*. Jakarta: Jasakom, 2013.

[4] C. Supaartagor, *PHP Framework For database Management on MVC Pattern*. Thailand: Ubon ratchathani University, 2011.

[5] Riyanto, *Membuat Sendiri Aplikasi E-commerce dengan PHP dan MySQL Menggunakan Codeigniter dan Jquery*. Yogyakarta: Andi, 2011.

[6] M. el-K. Kesuma, I. Yunita, J. Fitra, N. A. Sholiha, and H. Oktaria, "Penerapan Slims Pada Layanan Sirkulasi Di Perpustakaan Instidla," *Al Maktab.*, vol. 6, no. 2, pp. 103–114, 2021.

[7] H. Prihatna, *Kiat Praktis Menjadi Webmaster Profesional*. Jakarta: PT. Elex Media Komputindo, 2005.

[8] H. A. Q. Yahya, "Rancang Bangun Aplikasi Perpustakaan Menggunakan Framework Codeigniter (Studi Kasus Sdn Cibubur 05)," *J. Sist. Inf. Dan Sains Teknol.*, vol. 2, p. 2, 2020.

[9] S. Binarto, *Tips & Trik Membuat Program Penjualan Menggunakan Visual Basic 6.0*. Jakarta Selatan: Mediakita, 2012.

[10] M. el-K. Kesuma, I. Yunita, and F. Meilani, "Penerapan Aplikasi SLiMS Dalam Pengolahan Bahan Pustaka Di Perpustakaan Perguruan Tinggi," *J. Adab.*, vol. 23, no. 2, pp. 248–254, 2021, doi: http://dx.doi.org/10.22373/adabiya.v23i2.10346.