Development of e-journal system in South Aceh Polytechnic using web based application

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Abstract. Student publication organizing application is an application used to assist officers in the process of managing web-based student publication journals. The mechanism of this research was made iteratively from the process of making software requirements specifications, analyzing system requirements, then proceed to the system design stage, use case and flowchart design, database design, and interface design, then followed by developing applications and closed with testing. The programming languages used are PHP, HTML, and MySQL databases. The results of this study are the document design and application organizing of student publications. The application of this student publication organizing application can improve the quality of the scientific journal organizing process at the South Aceh Polytechnic more systematic and organized to achieve efficiency and improve publication to be global.

1. Introduction

Websites on the internet allow everyone to exchange information in real-time over long distances. Computerization is very instrumental in facilitating relationships, both personal relationships, organization, or on a broader level. The website and internet have become an unlimited source of data and information and can be accessed by everyone.

In Indonesia, many scientific journals are published by universities and other research institutions. However, these journals are only known in a very limited environment such as in the tertiary educational institutions or institutions. By using an internet-based system, information can reach members of the wider community so that this system can be accessed by users from all over the world. For that, we need a system that can help in the process of publishing scientific manuscripts from student thesis so that it can be widely accessed.

At this time, scientific journals that have been done by South Aceh Polytechnic students are not published in the form of web-based information systems but are kept in a library. This can cause problems such as a larger room is required to store those hard copies. Another problem when looking for student publication data when is needed.

Based on these problems, the authors intend to build a Web-Based Student Publication Organizing Application at the South Aceh Polytechnic so that it can be widely accessed in various media publications to express ideas, ideas, or thoughts to the public or the public. The published scientific work of students will create positive encouragement for these students to be more creative in scientific writing.
2. Materials and methods

2.1. Materials

2.1.1. Hardware and Software Demand. In order to support the process of implementing this final project, we need several supporting tools, including the following:

- **Hardware**
  The tools required in this study are computers or laptops with sufficient specifications to run the working software used.

- **Software Demand**
  The working software used in this research is:
  - a) Xampp (available at https://www.apachefriends.org)
  - b) Sublime text (available at https://www.sublimetext.com)
  - c) Google Chrome (available at https://www.google.com/chrome).

2.1.2. Application. According to [1], an application is a collection of program commands that are made for-to do certain jobs (in particular). According to [2], an application program is a ready-made program or program designed to perform a function for another user or application. Applications are also defined as the use or application of a concept that is the subject of discussion or as a computer program created to help people in performing certain tasks.

  Software applications designed for the use of specialized practitioners, this broad classification can be divided into 2 (two) viz:
  - a) Specialist software applications, programs with integrated documentation designed to carry out certain tasks.
  - b) A package application, a program with integrated documentation designed for certain types of problems.

  From the second understanding above it can be concluded that the application is a collection of commands or code that is compiled systematically to run a command given by humans through computer components or hardware used by humans to run application programs so that it can help humans to provide solutions that in line with expectations.

2.1.3. Publication. According to [3], states that "Publication is an activity carried out to provide/disseminate information to the general public utilizing a variety of books, texts, images, audiovisual content, and websites so that the public knows the information provided to consumers so that Promotional activities are expected to be able to influence the community to use them.

  The publication has an important role in the proceeding activity. As the publication acts as a system where this publication that processes information to arrive at the information process can be spread to the public.

2.1.4. Website. According to [4], a website is a collection of several web pages summarized in a domain or subdomain, which is located on the World Wide Web (www) on the internet. A web is usually a document written in HTML format that is always commonly accessed via HTTP. As for the types of web, among others:

  - a) Static website
    Static Websites are types of websites that are not updated regularly. This model website is usually owned by companies that only use the website as a corporate information medium.
  
  - b) Dynamic website
    Unlike static websites, dynamic web content is usually updated regularly by website managers or owners. This web site model is usually widely used by companies or individuals who rely on all their business activities from the internet world.

  - c) Interactive website
Interactive web sites are almost the same as dynamic web sites. The difference is if the dynamic web site content is updated or updated by the manager, the interactive web site is usually updated by the user of the web site. Some examples of interactive websites are social networking sites or media, blogging portal sites, and other sites.

2.1.5. Programming Language. According to [5], programming languages are commands or instructions understood by computers to perform certain tasks. This programming language is a set of syntax and semantic rules that are used to define computer programs. This language allows a programmer to determine exactly which data will be processed by a computer, how this data will be stored/forwarded, and what types of steps will be taken in various situations in detail.

2.1.6. PHP. PHP programming is very suitable to be developed in a web environment because PHP can be attached to HTML scripts or vice versa. PHP is devoted to dynamic web development. That is, PHP can produce websites that continually change results according to a given pattern. According to [6], PHP (Hypertext Preprocessor) is a server-side script that is added to HTML. In principle, the server will work if there is a request from the client. In this case, the client uses PHP codes to send requests to the server. The working system of PHP starts with a request that comes from a web page by the browser. Based on the URL or website address in the internet network, the browser will find an address from the web server, identify the desired page, and convey all information needed by the web server. Then the webservice will find the requested file and display its contents in the browser. Browsers who get their contents immediately translate the HTML code and display it.

2.1.7. JavaScript. According to [7], JavaScript is a language in the form of a collection of scripts running on an HTML document. This language is a programming language to provide additional capabilities to HTML by allowing the execution of commands on the side of the user variable or function with the name TEST different from the variable with the name of the test and each instruction ends with meaning on the browser side, not on the webservice side. JavaScript is a language that is "case sensitive" which means naming variables and functions that use uppercase and lowercase letters, for example, semicolons. JavaScript is often included in HTML files or links from HTML files and is run locally by a web browser. This means that the server is free to do something other than processing instructions for each client. Various animations to beautify web pages can be made using JavaScript.

2.1.8. Database. Database or often we know the database is a collection of data that is arranged and stored neatly on a computer and can be processed or manipulated using software or software to be used as information. A database is a collection of information or data stored systematically so that information retrieval becomes easy and fast [8]. A database is a collection or collection of data that is mechanical, shared, formally defined, and controlled centrally in the organization (Everest). Furthermore according to C.J. Date databases are collections of "operational data" that are stored and used by the application system of an organization.

a) Input data is data entering from outside the system
b) Data output is data generated by the system
c) Operational data is data stored on the system.

From the previous explanation, it can be stated that the database is a collection of data that contains information connected that is organized with a particular structure and can be found easily and quickly using the help of a computer.

2.1.9. MySQL. According to [9], MySQL is a database that contains one or some tables. The table consists of several rows and each row contains one or several tables. The table consists of several rows and each row contains one or more tables.
2.1.10. **Sublime text.** According to [10], Sublime Text is an application editor for code and text that can run on various operating system platforms using Python API technology. The creation of this application is inspired by the Vim application; this application is very flexible and powerful. The functionality of this application can be developed using sublime-packages. Sublime Text is not an open-source application and also an application that can be used and obtained free of charge, but some functionality development features (packages) of this application are the result of the findings and have full support from the community and have a free application license.

2.1.11. **HTML language.** According to [11], HTML is a basic programming language used to display information on web pages. HTML documents are composed of elements which are terms for the basic components of HTML forming documents. Some examples of HTML are head, body, table, paragraph, and list. An HTML document has the following structure:

![HTML Structure](image)

**Figure 1. HTML Structure.**

The document is divided into two major parts, namely HEADER (the top) and the BODY (body of the document). Each is marked by a pair of `<HEAD>` and `<BODY>` tags. HEAD section contains the title of the document and other basic information, while the BODY section is the document data.

2.1.12. **CSS.** According to [12], CSS stands for cascading style sheets, is a script used to manage website design. Although HTML can control the appearance of the website, its ability is very limited. The function of CSS is to provide more complete settings so that the website structure created with HTML looks more presentable and beautiful.

2.1.13. **Xampp.** Xampp is an application that can turn our computer into a server. The purpose of Xampp is to create its local network in the sense that we can create an offline website for trial and error on one’s computer. So the function of the Xampp server itself is our website server for how to use it. Called a server because in this case, the computer that we use must provide services to access the web, for that our computer must be a server. Thus, Xampp is an application tool to provide software packages that contain Web Server, Apache, PHP, MySQL configurations to help us in the process of making web applications integrated into one so that it makes it easier for us to create web programs.

2.2. **Methods**
2.2.1. **Workflow.** The workflow of this final project as shown in Figure 2.
2.2.2. Procedure. There are several stages of application development namely:
   a) Data Collecting
      Data collection is carried out through literature studies, namely obtaining data by studying various kinds of literature or references that contain PHP, HTML, website design, and databases which certainly pertain to and support research.
   b) Assessment Stage
      This stage is the stage of determining the important things as the basis of the problem to be analyzed. At this stage, the problems that will be implemented in the system are examined and limited.
   c) Designing
      The system design process and writing detailed design specifications and compiling implementation plans.
   d) Integration and Testing Phase
      The integration phase is the process of combining all the web pages that have been made as a whole. After passing through the integration phase, the application testing phase will be continued thoroughly so that if there are errors an improvement can be made. The testing phase aims to find out whether the application has been made is correct and following the specified characteristics.

2.2.3. Database developing. The database is a collection of data consisting of one or more tables that are interconnected with each other, where the user has the authority to access data that is in the table. To design a database must have high accuracy so that the database is designed to avoid data duplication. Database created using MySQL. The following database tables are created using the facilities of Xampp.
a) Admin Table

| Field Name | Type Data |
|------------|-----------|
| Admin_id   | Int (9)   |
| Email      | Varchar (99) |
| Password   | Text      |
| Name       | Varchar (99) |
| Photo      | Varchar (220) |

b) Journal Table

| Field Name              | Type Data |
|-------------------------|-----------|
| Journal_Id              | BigInt (20) |
| Study Program_Id        | Tinyint (2) |
| Journal_Title           | Text      |
| Seo_Journal             | Varchar (225) |
| Jurnal_Outhor           | Text      |
| Jurnal_Abstract          | Text      |
| Keyword                 | Text      |
| Year                    | Char (4)  |
| Hits                    | Char (10) |
| Upload_Date             | Date      |
| Journal_Pdf             | Text      |

c) Study Program Table

| Field Name               | Type Data |
|--------------------------|-----------|
| Study Program_Id         | Tinyint (2) |
| Study Program_Name       | Varchar (225) |
| Seo_tag                  | Varchar (225) |

The use case or use case diagram is modeling for the behavior (behavior) of information systems that will be created. The use case describes an interaction between one or more actors with the information system to be created. Roughly speaking, use cases are used to find out what functions are in an information system and who has the right to use those functions. The terms for naming use cases are names that are defined as simply as possible and can be understood. There are two main things in use cases, namely defining what is called an actor and use case [14, [15]. The following is the form of use case design:
Figure 3. Use case

A flowchart is an illustration in the form of a graphic accompanied by steps and a sequence of procedures from a program. Flowcharts can help the process of analysis, design, and coding to solve problems into smaller parts for operation. Information designed to facilitate data organizing is done by drawing a flow chart or called a Flowchart. Another understanding Flowchart can be said to be a diagram with graphical symbols that states the flow of processes that display some of the steps that are symbolized or can be interpreted as a graphical depiction of the steps or sequences of a program procedure that has a certain function. Flowchart function is used to provide an overview of a production process so that it is easy to understand and easily seen based on the sequence of steps from one process to another. [16, [17]].

Figure 4. Flowchart
3. Results and discussion

3.1. User homepage
This page will appear when the application is first run by the user.

![User homepage](image)

**Figure 5. User homepage**

This page is a form of the initial appearance of the application organizing student publications. On this page, there are several menus including Industrial Engineering, Information Engineering, Computer Engineering, Mechanical Engineering and in it, there is a publication.

3.2. About us page

![About us page](image)

**Figure 6. About us page**

This page serves to provide information to visitors about the website owner, purpose, usability, and what visitors can get when visiting this website page.

3.3. Archive page

This page contains journal archives that have been uploaded to the student organizing publication website. On this page, you can also download the desired journal.
3.4. Contact us page

This menu displays the contact, email, and address of the manager of this website. This page is also an option for visitors who want to ask about this website or other matters.

3.5. Application details page

This page contains the author, year, abstract, keywords, and category of the uploaded journal. And on this page, there are also buttons to download the full version of the journal.
3.6. Dashboard page
This page is the main page of the administrator who is responsible for managing matters relating to the organizing website of this student publication.
3.7. Page add publication
This page is a page for inputting student journals, which after input will appear on the user page. There are also some fields such as title, study program, author, year, abstract, and keywords.

![Figure 11. Page add publication](image)

3.8. Publication data page
On this page contains publication data that has been inputted and on this page, there is also a menu for editing and deleting publication data. Display the publication data page as shown below:

![Figure 12. Publication data page](image)

4. Conclusions
From the results of the analysis and design of this student publication organizing application, it can be concluded:
a) With this student publication organizing application it can facilitate storing student publication data.
b) This application makes it easy to search for student publication data when needed.
c) This application only displays journals/papers originating from South Aceh Polytechnic students.

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