

## Design and Build a Digital Library Website Using Text to Speech

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### ABSTRACT

*The number of writings such as novels that are interesting and can be published for the public and has a selling point usually can only be read through school wall magazine makes the work less useful and less desirable. In this case on campus, UNWAHA has some wall magazine that contains many interesting writings such as novels, short stories, and others, but the works received less response and interest from students by providing a media or container that is easy and appropriate can be used as a solution to increase the interest of a writer and reader in publishing and enjoying a paper. And the media is Digital Library, a digital library application equipped with a Text to speech feature to attract readers. This research aims to design and build the digital library application on a website basis. The application is built with the Codeigniter framework while the database used is the MySQL. And from the User side of either Author or Reader, they can easily publish their work and they can also enjoy the work easily*

**Keywords:** Codeigniter; Digital Library; Text to speech; Website.

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### INTRODUCTION

Many written works, such as novels or others, have the potential to be read and should be published in general, only to be read and enjoyed through school wall magazines, which are not much in demand by students and even many of these works are damaged. So that the work becomes less useful and less appreciated. In this case, the UNWAHA campus has several wall magazines and reasoning SMEs containing many written works such as novels, stories and others that are interesting but these works are underappreciated and only a few people know about these works (Malik et al, 2018). By providing an easy and appropriate media or container, it can be used as a solution to increase the interest of a writer and increase the value of a written work (Prayitno & Safitri, 2015) and the media is the UNWAHA Digital Library application.

This digital library application is a place that makes it easy for writers to publish their work. And in order to make it easier for users when looking for book data information and research reports on digital libraries, this research makes a web-based Digital Library design (Jumasa, 2019) A digital library application that is equipped with Text to speech features in it.

Listening to stories can provide an opportunity for listeners to imagine by describing an event that occurs in the story (Hasanah & Jaroji, 2016). Therefore, the design of the UNWAHA digital library application using Text to speech to convert story text into sound as a substitute medium in reading (Munawarah et al, 2021). The purpose of this research is to create a digital text to speech library application for web platforms. This application is designed to make it easier for a writer to publish a work and with text to speech features to make it easier for readers to enjoy the work.

### METHOD

#### Research Design

This study uses the Fountain Model for application design. This Fountain model has several advantages, one of which is that the process stages in building applications can be carried out overlapping (Dewanto, 2004 in Ernawati, 2021) and are not focused on only one stage.

Here are the steps in developing an application using the fountain model:

- User Requirements Analysis

Analyzing user needs in accordance with what processes or activities can be carried out by the system (Karina, 2013 in Ernawati, 2021). The results of the analysis of this stage is to develop applications by utilizing text to speech, so an application that is able to read something in the form of text becomes a speech or speech.

- User Requirements Specifications

Users can easily use this application to listen to a written work directly from the website then the user will get output in the form of speech only. The language provided by this application is Indonesian. Users who will use this application a lot and interact directly are people who are blind and illiterate and other visual impairments, with the hope that it will be very helpful.

- Hardware dan Software Requirements

The hardware needed for making a digital library system is the same as in implementing and developing web-based information systems, including computers, keyboards, mice, motherboards, hard drives (Riswandhana, 2019).

The software used includes windows 10 as an operating system, visual studio code for application programming, PHP for programming languages and codeigniter for frameworks.

- Systems / Broad Design (Logical Design)

This stage performs the system design according to the application to be developed. Before making the system design, the researcher first made the workflow of the application to be developed. (Ernawati, 2021).

- Program / Detailed Design (Physical Design)

Before designing the application, the researcher uses a mockup to see an overview of the application to be built. After that, the researcher made the user interface of the developed application.

- Implementation/Coding

After the physical design stage is carried out, the next stage is implementation/coding. In the development of this application using the codeigniter framework with the php programming language.

- Program Testing: System

Testing the system of the developed application using black box testing. The goal is to test whether the application is running according to plan.

### **Research Subject**

- The test subjects in this study are using the blackbox method where the application is tested to see the ease of use.
- The type of data used in this study is qualitative data collected by means of document analysis including analysis of articles and previous research regarding the object of research.

### **Data Collection Techniques**

Data collection is carried out in several ways, namely: literature study and field observations or direct observations.

- Literature review

This method is done by collecting some data related to the discussion in the research, the data is taken from relevant sources such as books, national and international journals.

- Field observation

At the observation stage, the researcher made several observations at the places and sources that became the focus of the study.

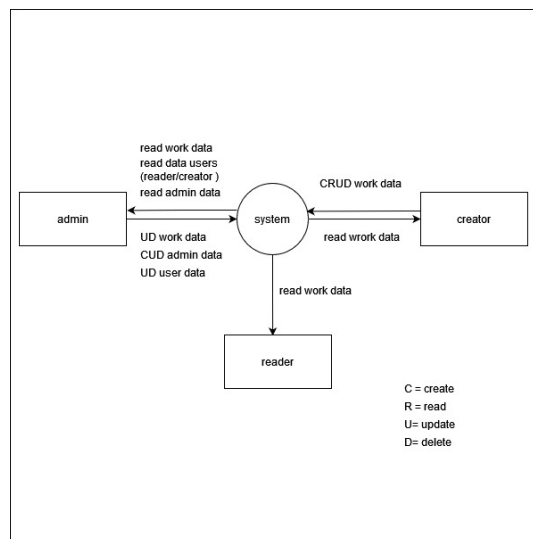
## **RESULT AND DISCUSSION**

### **Design**

Design and build of a digital library website using text to speech through the stages of development or making an application from a previously created system design. The results of the application design that have been made are as follows:

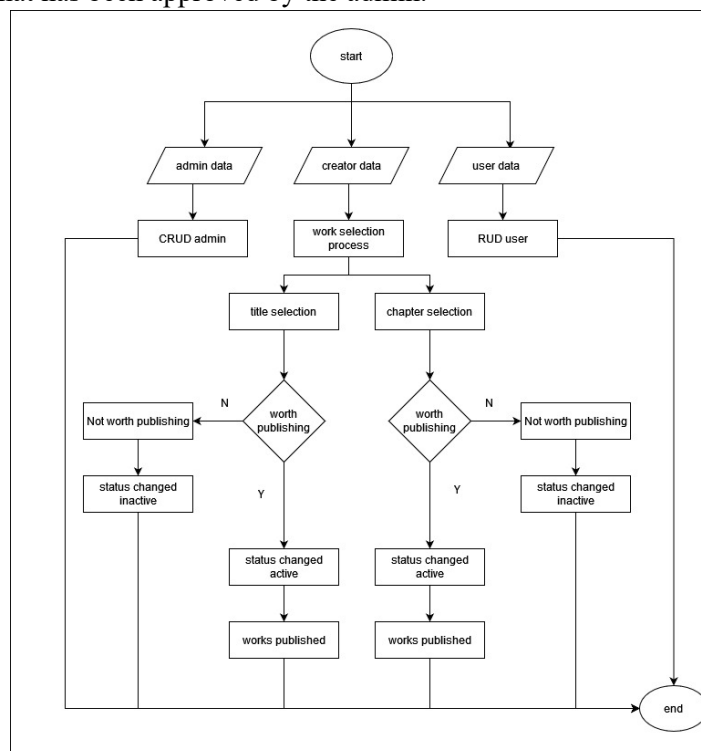
#### Systems / Broad Design (Logical Design)

The workflow of the developed application is divided into 4 parts, namely DFD to know the system data flow, admin workflow, creators and readers.



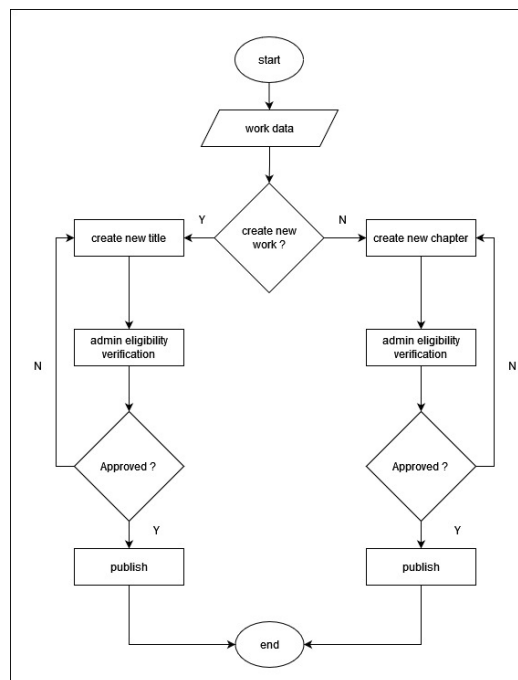
**Figure 1. DFD**

From the diagram above, it can be seen that in this system there are 3 users, namely admin, creator, and reader. Admin can perform CRUD process on admin data, RUD on user data, RUD on works and read on all data, be it user, admin, or work data. Meanwhile, creators can only CRUD on work data. Readers can only read work data that has been approved by the admin.



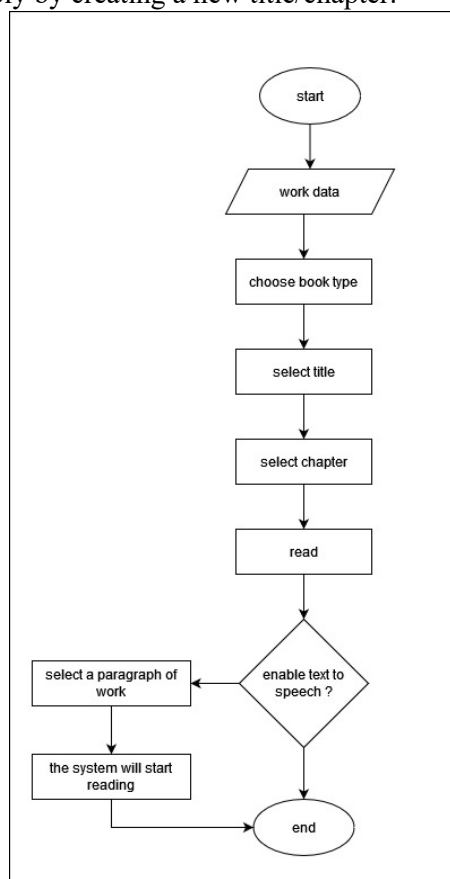
**Figure 2. Flowchart admin**

In the Figure above, it is explained how the admin workflow starts with logging in as an admin, then the admin can see all the data displayed, namely admin data, creator data and user data. Admin can do CRUD on admin data. Furthermore, the admin creator data can see the data of the work that has been submitted, both approved and rejected. Admin can also select the appropriate title and chapter / chapter on a work that has been submitted. If the work is feasible, the admin will publish the work. And the admin user data can view, change, and delete user data.



**Figure 3.** Flowchart creator

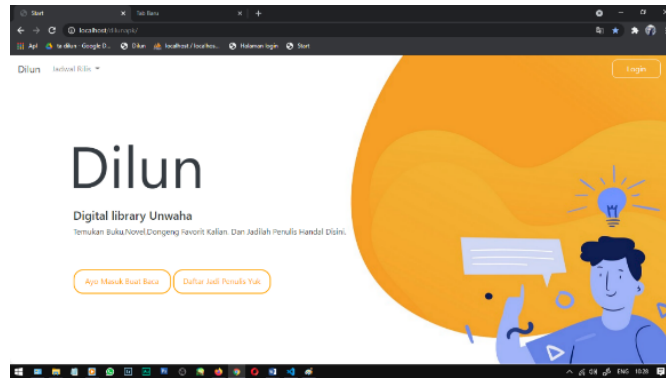
The creator's workflow is explained in the creator's flowchart, where a creator can see the work that has been created. Before creating a chapter the creator must submit the title and description of his work to the admin which will later be selected by the admin and if appropriate the title will be published and the creator can create a new chapter. And the new chapter will later be resubmitted to the admin to see the feasibility of the chapter, if it is feasible, the chapter will be published by the admin. For works that are not suitable for creators, they can re-apply by creating a new title/chapter.



**Figure 4.** Flowchart reader

In the flowchart above, it is explained that the reader can immediately see the work data that has been approved by the admin. Starting from choosing the type of book you want to read, then selecting the title of the book and then selecting the chapter you want to read after that if the reader wants to activate the text to speech feature, the reader can select the part that the system wants to read and the reader can press the play button to start and the text to speech system will be active.

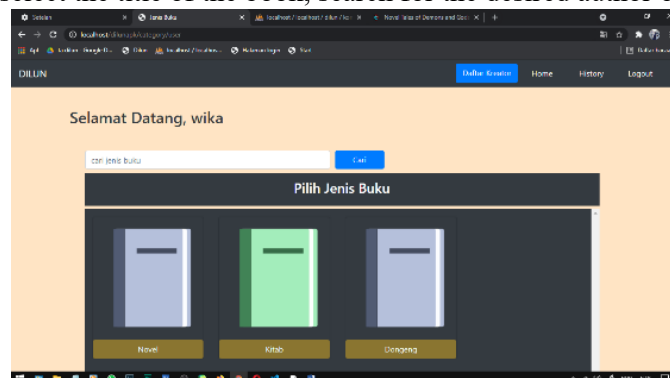
## Result



**Figure 5.** Start Page

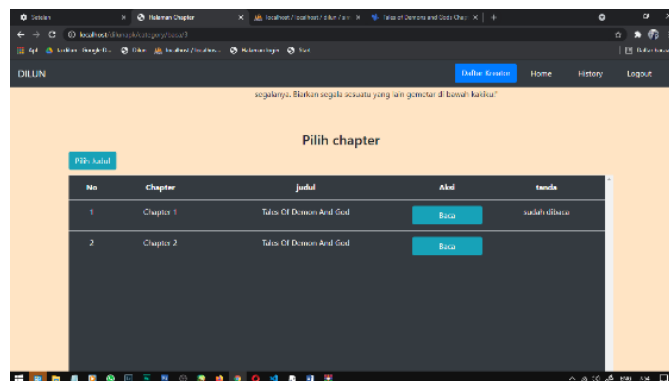
The display on the start page (Figure 5) has several buttons, namely the register button which functions to enter the register page and the login button to enter the login page. In the navbar there is a release schedule menu that serves to view information about the novel's release schedule. The next page displays a list page where there is a form filled with user data, such as name, username, email, and password. If it has been filled in, the user can press the register button and a notification will appear that the registration has been successful and the user can login. The next page displays a login page which contains 2 forms, namely email and password, on this page the user is divided into 2, namely as admin or reader. After filling out the form the user can press the login button.

Menu page (reader) / Select the type of book in this application is made so that readers can directly choose the type of book they want to read in this case, namely novels (Figure 6). On the select book type page, users can search and select the title of the book, search for the desired author or genre.

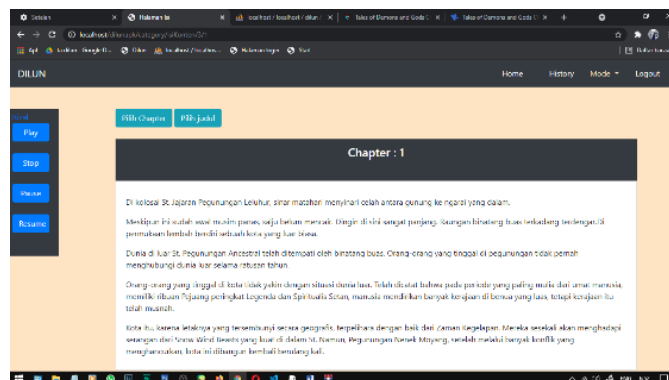


**Figure 6.** Select Book Type Page

Figure 7 shows a chapter page that contains a description of the novel that has been selected and there are chapters that registered readers can choose from. The next page is the reading page, the reader can directly read the novel that has been selected (Figure 8).

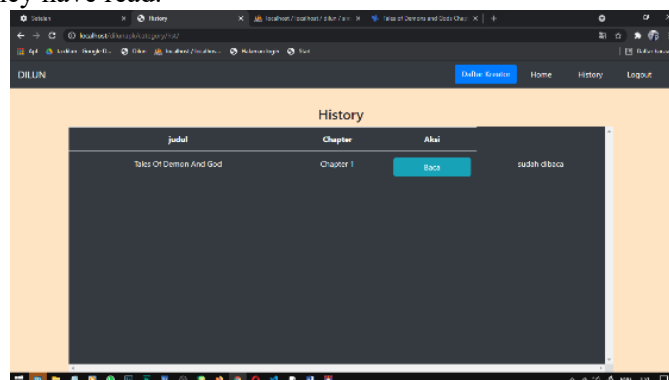


**Figure 7. Chapter Page**

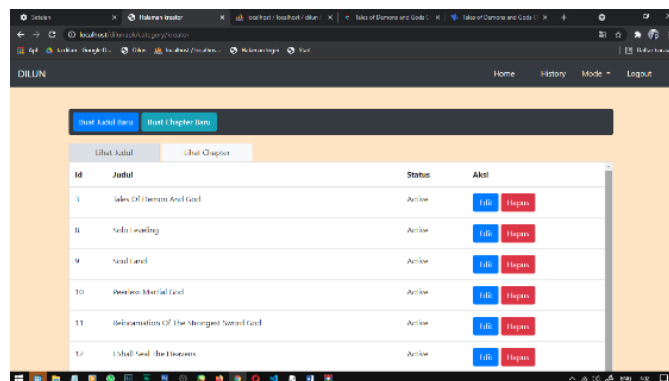


**Figure 8. Read Page**

The history page (Picture 9) provides access for readers to read the novels and chapters that have been selected on the Chapters page and there is a text to speech menu located on the left with play, stop, pause, resume buttons. The use of this menu requires the reader to block or select which part he wants to read by text to speech and press the play button, to stop the reader can press the stop button to stop and pause to pause. And a resume button to continue reading. On the history page, readers can see data on novels and what chapters they have read.

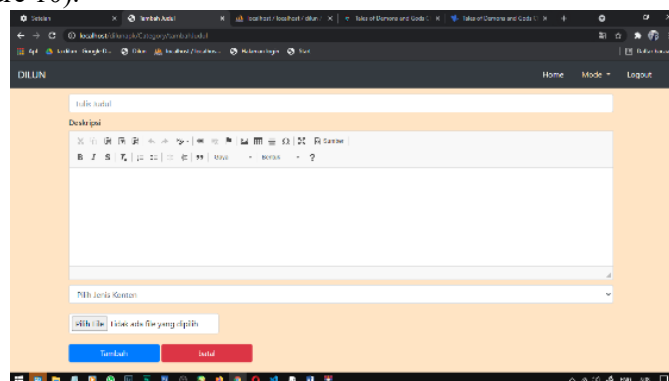


**Figure 9. History Page**



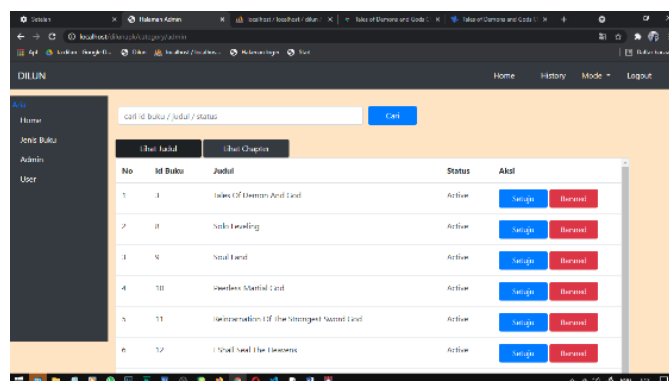
**Figure 10. Creator Page**

On this page, readers who have become creators will be shown a menu containing information about any works that have been approved by the admin or works that are still in the review stage that have been written by the creator (Figure 10).



**Figure 11. Add title page**

Add title page here, there is a form containing the title, description, and cover of the work. Before creating a chapter creators are required to make a title first and submit it to the admin for review (Figure 11). On the creators page, creators can start writing their story for each chapter. After that the creator sends the story to the admin for review, then the story will enter the creator's page and there is the status of the work.



**Figure 12. Admin Home Page**

Figure 12 shows the admin home page where there are two menus containing the task of reviewing the review and chapter review. Admins are required to be able to see the works one by one and determine the eligibility status of the works that have been submitted by the creator. then go to the Add Book Type page, on the Book Types page there is a menu to see what types of books are available on the Dilun website and here the admin can add new types of books according to the type of book submitted.

The next screen is the admin page which gives admins access to see which members have become admins. This page also allows an admin to delete or dismiss other admins according to the rules that have been set. Admins can also add new admins from users who have submitted and meet the available criteria.

## CONCLUSIONS

Based on the research conducted by the researcher through the analysis conducted in the previous chapters, it can be concluded several things as follows:

- Creators can easily publish their written works directly on the digital library web application. And the results of the paper will be assessed for feasibility by the admin and this helps the curator in developing his written work.
- For readers in the web digital library, the text to speech feature converts story text into sound as a substitute medium for reading. By selecting the desired text and pressing the play button, readers can activate this feature.

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