# Design of Attendance System for Pemalang Diskominfo Employees Using Design Thinking Method

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ARTICLE INFO      ABSTRACT

Employees are an important part in carrying out the obligations of the Pemalang Regency Communication and Information Office (Kominfo). However, the management of employee data for recording attendance at the Communication and Information Office of Pemalang Regency is still processed manually, so this makes the management of the attendance process considered ineffective and inefficient. So to overcome these problems, it is necessary to create an employee attendance system that can manage employee attendance data at the Communication and Information Office of Pemalang Regency. The attendance system was designed with the aim of simplifying the process of managing employee attendance data and making attendance data more precise. As for the data collection method used in making the system in the form of a qualitative method, namely interviews. In the implementation, interviews were conducted by consulting and conducting direct questions and answers with the field supervisor regarding the system requirements to be made. The design of this system uses the design thinking method. The design thinking method is carried out sequentially from one stage to another. There are five stages in the design thinking method: empathy, determination, ideas, prototypes, and testing. From making a system with this method, an employee attendance system design is comfortable to see and easy to use in all circles.

## 1   Introduction

In the current era, the process of changing global systems has been limited, now with the development of information and communication technology, the information obtained by the public has become limitless. Not only in urban areas, but residents in remote rural areas also participate in choosing development progress to improve the welfare of the community in the field of information and communication technology.

The development of industrial revolution 4.0 resulted in crucial changes in conveying additional information for workers and employees regarding technology and information skills. This is in tandem with technological developments that must be balanced with the skills of human resources in managing news (Budiman & Akhlis, 2021). The method to be used is the design thinking method. The method itself has five stages, namely empathize, define, ideate, prototype, and test. Based on the results of empathy, observation, and identification (empathize stage) within the Department of Communication and Information of Pemalang Regency, we made direct observations of the attendance list management process carried out at the workplace. In this process, we encountered various problems related to attendance list management at the Pemalang Regency Communications and Information office.

Of the several methods that have been collected, we chose to use the design thinking method, based on the reason that it is very useful in solving very complicated or unknown problems, by rearranging the problem from the point of view of people in all walks of life, forming a lot of

inspiration and ideas in the session. brainstorming, and adopting an approach to making initial designs and conducting trials. Design Thinking also includes an iterative or continuous process of experimentation, such as sketching, initial design, testing, and the process of creating inspiration and concepts. Through design thinking, the continuity of a system can be extended (Budiman, Subhan, & Efrilianda, 2021).

An iterative process can be interpreted as we are trying to understand the user, challenging assumptions, and redefining the problem in an attempt to identify other strategies and solutions (Sugianto, Abidin, Putra, & Budiman, 2021). This method presents a solution-based approach to solving problems, or it can be interpreted as a method that means a way of thinking and working and a set of exclusive methods. Therefore, in making this field work practice project, the author raised the title "Design of the Pemalang Diskominfo Employee Attendance System with Design Thinking Method", in which the design of this system will be applied using the Design Thinking method and used to create a web-based employee attendance system.

## 2     Theory Basis

### 2.1   System

Sutabri (2012) explains that a system is a group of elements that function together to achieve predetermined targets and relate to each other. According to Jogiyanto (2005) the system is defined as an element that becomes one and connects which aims to produce the goals that have been designed. It depicts realistic events and units, such as objects, real and happening groups of people, and places. Meanwhile, McCloed (2001) states that the system is a collection of elements that are connected with the same result. The system is also included in the performance network connected procedure to continue the performance or target.

### 2.2   Information

According to Romney and Steinbart (2015) in their book entitled Accounting Information Systems explains information is data that has been processed to provide results and revise the decision-making process. Meanwhile, according to Gelinas (2012) in his book entitled Accounting Information Systems defines information as having a role, namely data that is generated in a form that functions for decision-making activities.

### 2.3   Information Systems

O'Brien and Marakas (2013) describe information systems as a structured combination of various hardware, software, communication, a group of people, and data resources that transform, disseminate, and collect information.

Hypertext Preprocessor (PHP) is open source and is included in a web server-side programming language. Then PHP is a type of script that is interrogated using HTML and is located on the server. Usually used to produce dynamic web pages. Dynamic means that the page to be shown is designed on the previous page that has been submitted by the client. This results in the news that the client can always be up to date. All PHP scripts are executed on the server where they were launched. (Anhar, 2010).

### 2.4   Website

A website is a series of pages that are related to other files such as images and videos that are related to each other. A site is generally located in a specific place, such as a web server that can be used by others via a non-internet network and also an internet network via a URL. A website that can be opened publicly by the internet is known as the World Wide Web (WWW). On the website, there is one page known as the homepage. The homepage is the first page that is reviewed when someone accesses a website (Jhonsen, 2004: 8).

WWW is a network system based on client-server, its function is to use the HTTP (Hypertext Transfer Protocol) and TCP/IP (Transmission Control Protocol/Internet Protocol) protocols as the basis. Because all these systems have a close correlation, it is currently difficult to distinguish between HTTP and WWW (Purnama et al., 2013).

The web should be a collection of plain text that is programmed and combined using instructions using a web programming language. The web programming languages used to produce a website are HTML, XHTML, and PHP. A web programming language script is then interpreted by the browser itself so that it can show a more comfortable view. Registered web pages can be visited via a network communication protocol which is considered to use HTTP (HyperText Protocol). There is a protocol that can produce a website that has more network security types that can use the HTTPS network communication protocol.

The internet can be defined as a computer network that has wide coverage and is popular throughout the world, which connects users of a computer from one area to another in the world. Initially, the internet only had a function for the benefit of the military, namely to send a message via satellite objects. But the technology eventually developed and spread. News that is operated through the internet can be opened to all corners of the world in just minutes or even seconds.

## 3    Presence

According to the Big Indonesian Dictionary (KBBI), presence has the meaning of a noun that has a definition, namely presence. Presence is something that was developed from English, namely present term which has the same meaning, namely presence.

### 3.1    CorelDraw

CorelDraw is an application specifically designed for the needs of image and vector editing. This application was released in January 1989 by a software development company based in Ottawa, Canada called Corel. In 1987, Corel had plans to create a vector design software that would be used for Windows and Mac OS operating systems. Then Corel brought 2 programmers named Michel Bouillon and Pat Beirne to start building the software, and in 1989, introduced a graphic design application made by Corel using the name CorelDraw.

Over time, CorelDraw announced that the application could only be used for the Windows operating system. This is because the target market for the CorelDraw application for Mac OS is not selling well among its users. Caused the discontinuation of the CorelDraw for Mac application as well as developer focus for Windows only.

In addition, this application can also run on the Linux operating system, but it must use additional software, for example Wine application. The application can only launch CorelDraw version 9 on Linux (Prabandari, 2021).

### 3.2    Design Thinking

The method used in the process of making the author's website design is the design thinking method, the method itself is a collaboration that collects a collection of inspiration from disciplines to provide a solution. This method not only focuses on what is reviewed and enjoyed but also focuses on the user experience. This method is used to find the most effective and efficient solution to solve a complex problem. The thinking applied is comprehensive thinking to accept a solution (Septiyan. 2017). Based on Stanford D. School (2021), design thinking is divided into 5 stages, namely:

#### 3.2.1    *Empathize (Empathy)*

Empathize or empathy is a core process because problems that arise must be resolved in a human-centered way, this method seeks to understand the problems experienced by users so that we can feel and find solutions to these problems, in this method, several things must be done, namely interviews, observations, and combining observation and interviews (Budiman et al., 2020).

In the first stage, observations and interviews were carried out with several employees at the Department of Communication and Information of Pemalang Regency. This observation is carried out to determine the design that is expected to realize this employee attendance system.

The ideas and inputs received are as follows:

1. A modern, simple, and comfortable interface to use.

2. Use color combinations that do not collide.

3. The colors used must contain elements of the Pemalang Service or Regency.

There are several inputs from some employees at the Pemalang Regency Kominfo Service, one of which is modern, simple, and comfortable as well as easy to use. In detail, the appearance must be elegant but not have features that are difficult to understand, because the Pemalang District Communication and Information Office itself has employees of various ages.

Then the color to be used. In the process of observing and interviewing, we got the results that employees want colors that are comfortable to look at and not flashy, and these colors must represent the colors of Pemalang Regency and the colors of the Ministry of Communication and Informatics themselves.

### 3.2.2 *Define (Designation)*

Define have terms that the process of analyzing and understanding the results that have been done on the process. *Emphasized* process of understanding the various insights that can be generated through the stages of empathy, with the result being to execute certain statements as a focus for research.

At this stage, we determine the right theme within the Pemalang Regency Communications and Information Office, which is to determine the design and colors that will be used on the appearance of the present system. After we conducted interviews with 10 employees of the Pemalang Regency Communications and Information Office, 7 of them chose a combination of black, blue, and white colors, choosing blue as the dominant color.

### 3.2.3 *Ideate (Idea)*

Ideate is a transition stage that originates from the design of the problem and then leads to problem-solving, including in this ideate process will focus on forming new views to become the basis for producing a design that will be designed.

Referring to the previous stage, namely Define, the inspiration to be designed is lifted according to the core of the design determination, namely the selection of colors and themes from the present system.

### 3.2.4 *Prototype (Prototype)*

The prototype is known as an initial design of a product to be designed, to track fault points from the beginning and generate various new options. In its application, the initial design will be tested on the user to produce appropriate reactions and feedback to make a more perfect design.

We made 2 flowcharts, namely the user as supporting material for the present system display for employees, and the admin as a reference for the admin presence system display. The system flowchart is designed as follows:
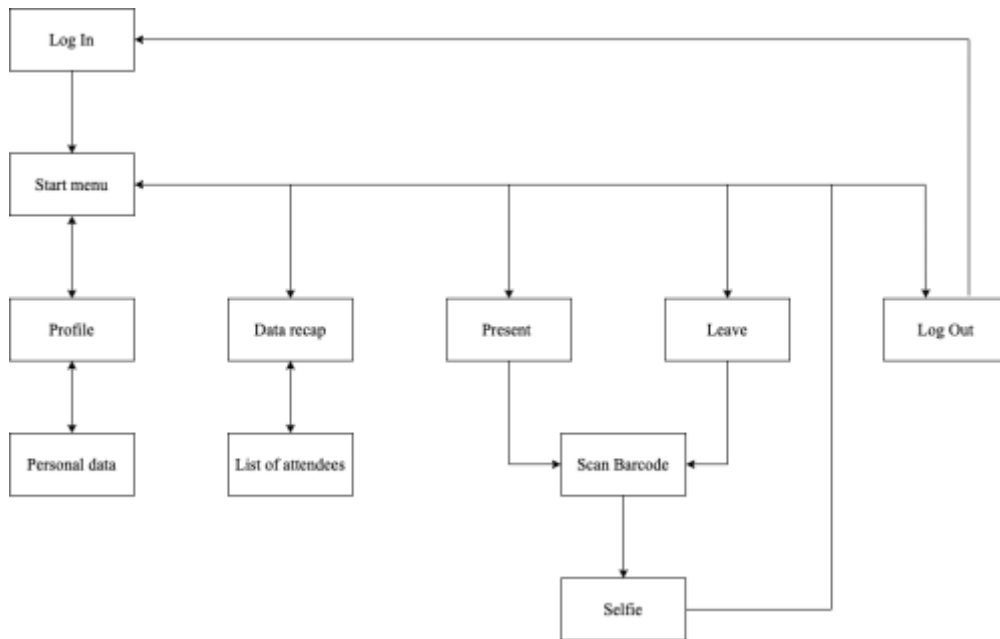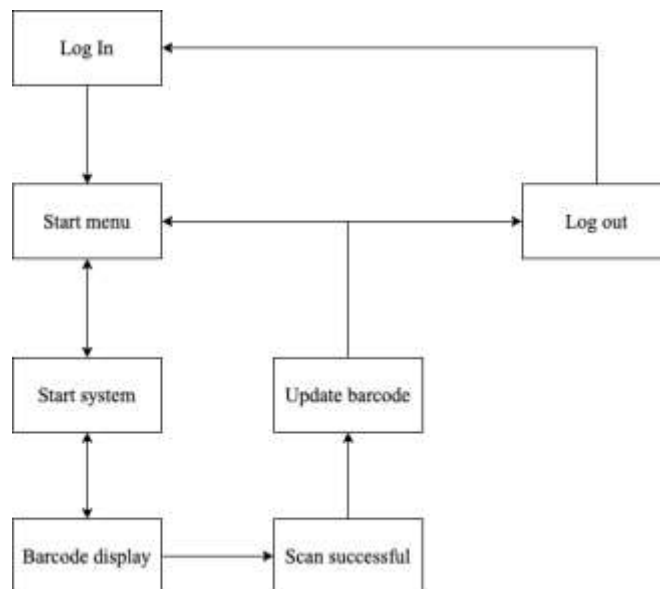
**Figure 1.** User Design Flowchart



**Figure 2.** Admin Design Flowchart

1. *Low Fidelity Prototype*

*Low fidelity Prototype* provides an overview of system design with low precision in the form of composition, structure, *layout*, navigation, and content organization created using black and white color.

2. *Mid Fidelity Prototype*

*Mid fidelity prototype is* made based on a low *fidelity prototype validated*. *prototype* This has a color and an element that has been designed with a measurable level of precision and accuracy.

3.  High Fidelity Prototype

The high fidelity prototype is based on the validated mid-fidelity prototype. This prototype already has the right color, accurate size, precise distance, and element objects have been designed with the right level of precision and accuracy.

**3.2.5** *Test (Trial)*

Tests are carried out to produce various kinds of user feedback from various final formations that have been determined at the prototype stage that has been described. This stage is final, but it is a life cycle, as a result, there may be iterations and repeats in the previous design stage if there are errors.

After going through the design process, several employees were taken for observation and re-interviews related to the design of the employee attendance system. From all inputs and suggestions from employees, it can be concluded that the attendance system is suitable for use in all circles.

## 2.  Results and Discussion

In the evaluation stage, checks are made on all displays and functions made in making the system. The main thing that becomes the focus in this evaluation stage is the attendance or attendance list input section. Is the presence system appropriate or not. If it is felt that there are still things that are not appropriate, then the appearance and attendance system will be improved.

The things that were tested included the functions of buttons and icons in the attendance system, the ease of entering attendance on the system, the attendance recap table to make it easier to process attendance data or attendance lists, the ease and simplicity of operating the attendance system, and the suitability of using text color and type. letters in the attendance system. The test results show that the system can be accessed quite well and smoothly, but there are still some obstacles that must be fixed.

## 3.  Conclusion

Based on the practice carried out during the FieldWork Practice at the Department of Communication and Informatics, Pemalang Regency, it is known that the stages of the process of making the employee attendance system are by making a design first. In this stage, some *software*, references, and data are needed so that later the system design can be well received. *The software* or application used is Corel Draw X7. After the design and design are ready, programming is carried out for making the system as a whole including the display (user interface) both *front end* and *back end.*

The results of the discussion above conclude that the employee attendance system can be used as a system to process attendance data or employee attendance lists at the Pemalang Regency Kominfo Service. With this system, employees at the Pemalang Regency Kominfo Service can register attendance using the system easily. This proves that the employee attendance system can be used easily and efficiently in assisting the attendance process or attendance list at the Pemalang Regency Communications and Information Office.

With the development of this employee attendance system, it is hoped that it can be used to facilitate data processing and input of attendance lists so that the attendance process becomes faster. In addition, it is hoped that other researchers can develop a similar system with more up-to-date so that the results provided are more optimal.

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