Management System Fertilizer Ship Arrival At UPP Semarang Based Website Using Sequential Searching Algorithm

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Abstrak

Perkembangan teknologi pada era saat ini mengharuskan semua orang untuk memahami teknologi informasi dan komunikasi. Dampak yang diberikan pula dapat menguntungkan dalam segala bidang, khususnya bidang perkantoran. Sistem manajemen perkantoran merupakan kegiatan administrasi yang bertujuan untuk memperoleh pengelolaan secara efektif. Berdasarkan hal tersebut pengelolaan data pada PT. Dwimatama Multikarsa Semarang khususnya divisi produksi masih menggunakan cara manual, dengan cara menginputkan satu persatu data pada software Microsoft Excel dan data disimpan pada harddisk atau flashdisk. Dengan cara seperti itu sangatlah tidak efektif, belum lagi jika data mengalami kerusakan seperti hilang atau corrupt. Dengan adanya kendala yang sudah dipaparkan, penulis mempunyai ide untuk merubah sistem pengelolaan dan pengarsipan menjadi komputerisasi. Penulis menggunakan metode sequential searching sebagai pencarian data. Metode ini dapat mempermudah pengguna untuk menemukan data secara cepat dan efektif. Sistem ini juga dibuat menggunakan framework Laravel dengan bahasa pemrograman Hypertext Preprocessor (PHP). Hasil dari penelitian yaitu sistem pengelolaan dan penyimpanan data berbasis website yang terintegrasi dengan database MySQL. Sistem ini dapat memberikan kemudahan dan membantu staff dalam pengelolaan dan penyimpanan secara efektif dan efisien.

Kata kunci— *Sistem Manajemen, Algoritma Sequential Searching, Laravel*

Abstract

The technical improvements of the present era necessitate that everyone understand information and communication technology. The influence can be useful in a range of industries, especially in the workplace. The office management system is a sort of administrative activity aimed at increasing management effectiveness. As a result, data management at PT. Dwimatama Multikarsa Semarang continues to be done manually, particularly in the production department, with data being input into Microsoft Excel software and stored on hard drives or flash drives. In this case, it is ineffective, especially if the data has been lost or corrupted. The author has come up with the idea of computerizing the administration and archiving system in light of the limitations that have been stated. The author uses a sequential searching approach to do a data search. This method will allow users to find information more quickly and effectively. The system was built using the Laravel framework and the Hypertext Preprocessor (PHP) programming language. The study's conclusion is a web-based data management and storage system that uses MySQL databases. Employees can benefit from this technology by being able to handle and save information more effectively and efficiently.

Keywords— *Management Systems, Sequential Searching Algorithms, Laravel*

1. INTRODUCTION

Hardware, software, databases, networks, and other computer-based technologies and telecommunications are all part of information technology [1]. Users utilize information technology as a tool to aid in the processing of information, such as processes, drafting, and storing data in large and small quantities, as it develops. So that employees' performance in processing information can be improved [2].

PT. Dwimatama Multikarsa Semarang is one of the companies that is still constricted in data processing, particularly in the production sector. One of the issues that employees experience is in the management and storage of data that is not managed using a computerized system in the document storage system. So, in the administration of employee data using Microsoft Excel software, not yet at the time of data input, the fields that have been filled in one by one are still being cleaned up. Similarly, when it comes to storage, the data is saved on a hard disk or flash drive held by the employees. Staff frequently confront data corruption, such as missing or damaged data, despite the fact that the data is critical to the company's needs. In the same way, data storage is a stage in the process of transferring data that is no longer valid to different storage devices over time. The purpose of data archiving is to limit the use of primary locations as well as the costs associated with them [3].

In this study, a system was developed that allows users to search for data more quickly while wasting less time. Sequential Searching Algorithm is the approach utilized. This method is a process of looking for data by inputting a keyword, after which the system will begin searching for data from the beginning to the end of the array or list. If all of the data is not obtained in a common format, the data is not successfully located [4]. The advantage of the Sequential Searching Algorithm is that it makes searching big volumes of data faster and more efficient [5].

This system is expected to aid in the effective and efficient management, storage, and search of data. It can also increase data security and make it easier to search for data based on a date range or year that the user specifies. Users who want to use this system must first register or store their email and password on the database server.

2. METHODS

2. 1 Problem Analysis

PT. Dwimatama Multikarsa Semarang was the site of this study. Data processing and storage are issues in this production segment. Staff occasionally face challenges, one of which is the processing of data that is still inserted one by one into Microsoft Excel software, at which point staff must tidy up each column to make it look nicer. Aside from that, the workforce faces a number of other challenges.

As a result, researchers have come up with the notion of developing a system that can handle and store data as well as do data searches. On the other hand, if the staff requires data at any moment, they can conduct a simple search within the system. Researchers concentrated on building data search strategies in addition to developing the system. The search approach used by the researchers is sequential searching. The sequential searching strategy was chosen since it can assist in quickly locating information regarding data stored in the database [6].

2. 2 System Architecture

The term "system framework" or "system architecture" refers to how pieces are defined in greater detail and neatly organized [7]. The existence of a representation of the system

architecture seeks to understand the management of the system so that it may be used to its maximum potential [8].

This study's draft Report Archive Management adapts to the architecture depicted in the graphic below.
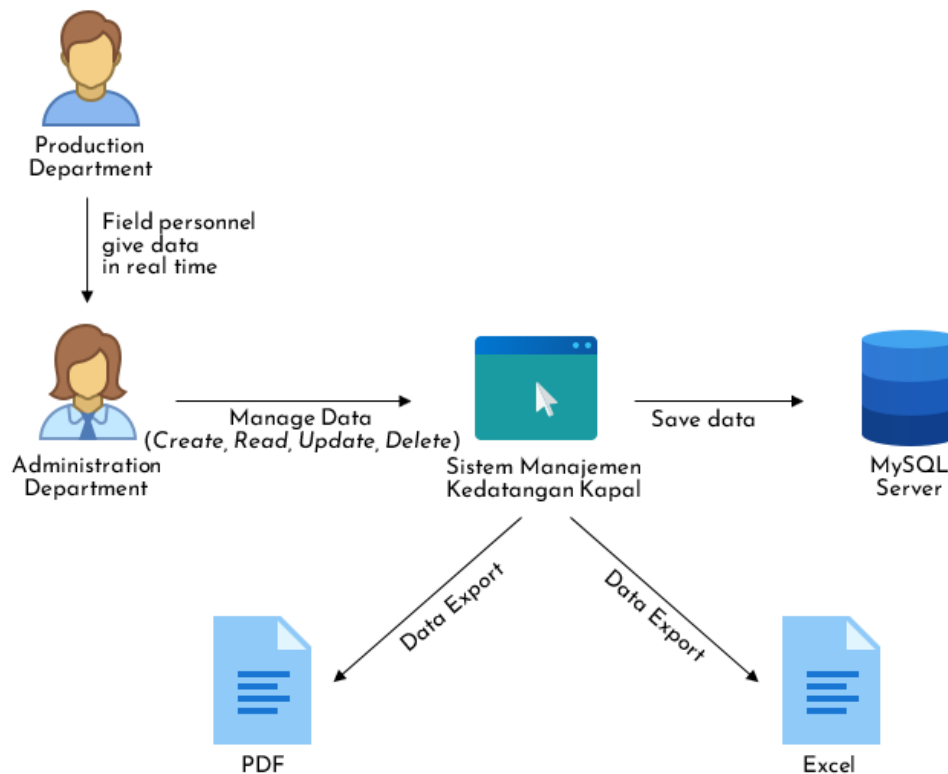

Figure 1 Ship Arrival Management System Architecture

In the picture above can be explained that:
1. Production department employees are responsible for recording data such as fertilizer arrival, fertilizer in bag, fertilizer in bulk, and so on.
2. The staff then reports to the administrative staff on the data that was previously recorded.
3. After the data is received by the administration, the staff enters it into the management system and processes it until it becomes a report. The administrative staff's role is limited to managing and storing data in the database server, which in this case is MySQL Server. Create, read, update, delete, filter, and export are some of the features available on this system.
4. In addition, if the staff need a report at any moment, they can easily export data from the system. Administration employees can export data in either pdf or excel format.

2. 3 Data Type

Primary Data and Secondary Data are both required for this investigation. Primary data is information gathered directly from a source as a research object, such as observational data from numerous reports examined during the study period. Secondary data, on the other hand, is information gathered in an indirect manner, such as through journals and books. As a source of information and theoretical help in the development of journals.

2. 4 Data Collection Method

The author collects the essential information using two methods, (1) Observation, this activity is carried out directly by looking at the conditions in the environment around PT. Dwimatama Multikarsa Semarang and the process of workmanship of the admin staff in conducting data processing. In this way, the author will gain an overview of the data processing process and will be able to analyze the advantages and disadvantages of the methods used to find the solution needed. (2) Interview, The author conducts a question and answer session with the admin staff and head of production at the PT. Dwimatama Multikarsa Semarang location.

2. 5 System Development Methods

This system was built utilizing the waterfall approach of system development [9]. The waterfall technique is a method that divides activities into logical steps. Starting with the analytical stage and progressing through design, application, testing, and control until the system is ready for use [10]. The advantage of the waterfall method is that the completed system can be developed again under particular conditions, removing any development constraints [11]. There are various stages to using the waterfall approach. Here's a quick rundown of the various stages of use.
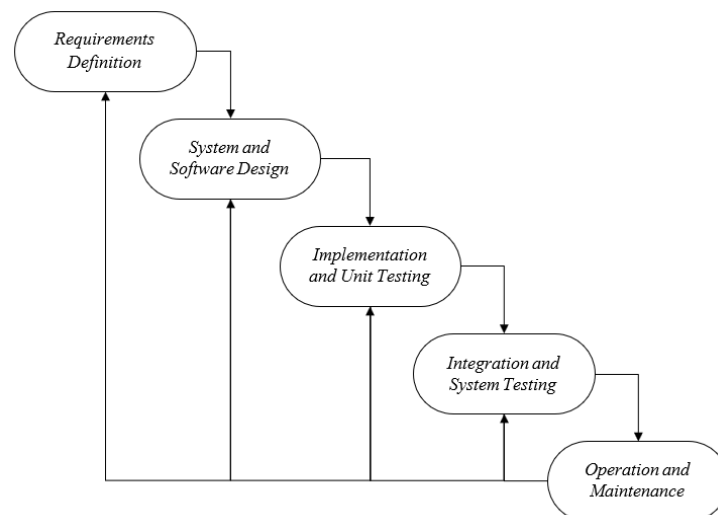

Figure 2 Waterfall Method

System development methods used to create this system using waterfall method :
1. Requirement Definition
    At this point, the author investigates the needs of Fertilizer Ship Arrival Management System users and conducts a review of the present situation prior to the implementation of the new system.
2. System and Software Design
    The design of components of the Fertilizer Ship Arrival Management System, such as the use of the unified modeling language (UML) system and user interface design, is done at this stage.
3. Implementation and Unit Testing
    The construction, testing, and analysis of the fulfillment of criteria as requested by the user began at this point.
4. Integration and System Testing
    At this step, the system is tested by focusing on system functions to ensure that any commands submitted into the system produce the expected output.
5. Operation and Maintenance

At this level, data in the application must be maintained on a regular basis.

2. 6 Algorithm Sequential Searching

The Sequential Searching algorithm is a simple search method in which the system compares one by one from index 0 to index n to discover a value from within the list. This algorithm is part of the basic algorithm family. The benefit of utilizing this approach is that it is very simple to locate the data to be searched, which can be found not only by number type (integer), but also by float data type or other data type. The following are the stages of using the Sequential Searching Algorithm:

1. The system will read the data array.
2. The system will then determine the data to be searched.
3. The system will compare data from first to last order automatically.

If the data was found during the search, the system will display the data that was found. If the data cannot be discovered, the system will compare the data until it is completed. Sequential Searching Algorithms in Order:

a. $z <- 0$.
b. Data found <- false.
c. During (data not found) and ($z < N$) proceed to the next step.
d. If (Data [z] = primary key) data found <- true.
e. If (data not found) $z <- +1$.
f. If (data found) z is the index of the data searched.

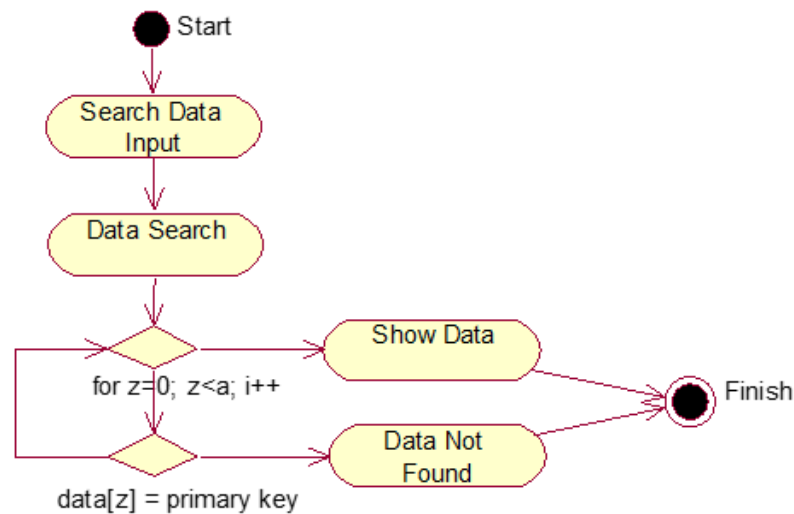In the form of a flow chart, below is a summary of the Sequential Searching Algorithms sequence.

Figure 3 Activity Diagram Sequential Searching Algorithm
Sequence

2. 7 Activty Diagram

A approach of describing procedural logic in some problems is the Activity Diagram. If there is a branching problem, an activity diagram is shown with several directions of activities in the system being developed, starting from the next start point and terminating with an end point [13]. The activity diagram for the data search process is shown below.
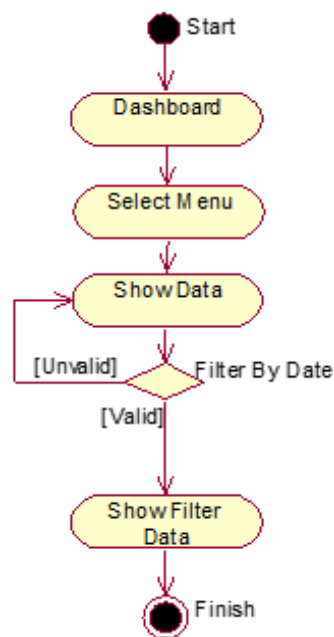
Figure 4 Activity Diagram Sequential
Searching Algorithm Stages

The following is the procedure for the activity diagram stage:
1. Start.
2. The system is now on the dashboard page.
3. The user picks a system menu.
4. The system presents a list of data that has previously been entered and stored in the database server. There is also a search box on this page.
5. The system shows a list of data that has already been entered and stored in the database server. There is also a search box on this page.
6. In the lookup box, the user specifies the date format.
7. If the format is determined to be valid, the system will display the results in date format.
8. If the format is determined invalid, the data is not displayed by the system.
9. Finish.

3. RESULTS AND DISCUSSION

3. 1 System Requirements Analysis

Activities for system needs analysis are carried out to aid in the analysis of a system that is required. There are two sorts of system requirements, which are as follows:

3. 1.1 System Functional Requirements

This system has functional requirements that specify which stages the system can perform. The system's functional requirements are as follows:
1. The system must allow the user to log in.
2. The data that is already available should be visible to the user.
3. The user must be able to input or contribute new data.
4. Data should be editable and deleteable by the user.
5. The user must be able to filter data based on the date or year.

6. The user must be able to export data from the system to an Excel file.

The Sequential Searching algorithm is a form of data searching that searches data from the beginning to the end. A data search tool is available in each menu of the Ship Arrival Management System, as shown below.

3. 1.2 System Non-Functional Requirements

The system's non-functional needs are those that are concerned with the system's behavioral features. This study is carried out to determine the specifics of the system's requirement. Hardware analysis (Hardware), software analysis (Software), and user analysis (User) are all part of the need specification process.

3. 2 Sequential Searching Algorithm Implementation

The Sequential Searching algorithm is a form of data searching that searches data from the beginning to the end. A data search tool is available in each menu of the Ship Arrival Management System, as shown below.
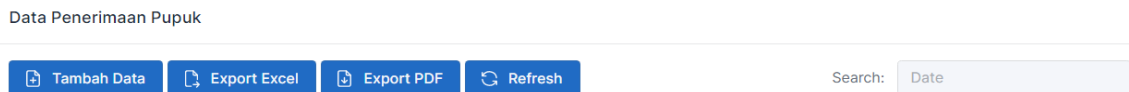

Figure 5 Data Lookup Column Display

This data search option employs the Sequential Searching Algorithm, and it will function well if you specify the date, month, and year you wish to search based on the ship's arrival date. If the user's data is found, the system will display the desired information as seen below.

Figure 6 Display Data Found

If the data you're looking for isn't found, the system won't reveal it to you, as demonstrated below.
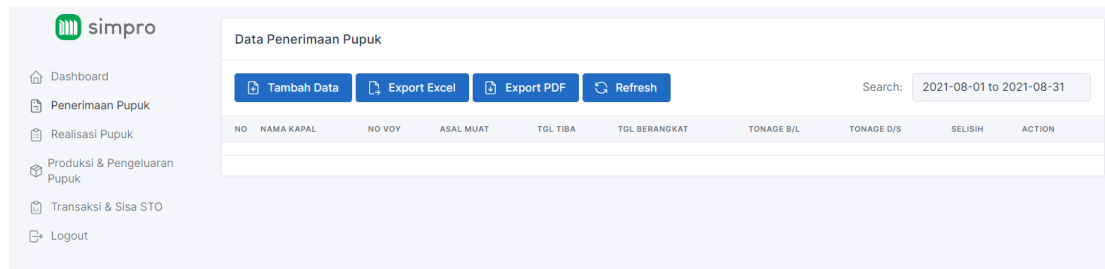
Figure 7 Display Data Not Found

This data search function, which employs a Sequential Searching Algorithm, operates in real time, making it easier to locate information. The system will become more concise as a result of this algorithm. The syntax for applying the sequential searching algorithm in the Laravel framework is as follows.

```
Public function cariData() {
    $row = DB::table('penerimaan');
    if (request()->get('daterange')) {
        $date = request()->get('daterange');
        $date = explode(" to ", request()->get('daterange'));
        $datestart = $date[0];
        $dateend = ($date[1]?$date[1]:$date[0]);

        $row->where('tgl_tiba',">=",$datestart);
        $row->where('tgl_tiba',"<=",$dateend);
    }
}
```

Figure 8 Laravel Framework Implementation of Sequential Searching Algorithm

The data is obtained from the receiving table, then the system receives a request from the data search feature field based on the supplied date duration, and the system reads and retrieves an array of date durations after the user enters the duration of the date, if true, the system will display the expected data; if false, the system will not display the data and will instead display blank pages.

3. 3 Steps of Use Sequential Searching Algorithm

Here are the stages of using Sequential Searching Algorithm:
a. The system gets a request from the data lookup feature field.
    `$date = request()->get('daterange');`
b. The system reads an array of data.
    `$date = explode(" to ", request()->get('daterange'));`
c. The system retrieves an array of dates.
    `$datestart = $date[0];`
d. The system will adjust the correctness of the data whether the data sought is correct or incorrect.
    `$dateend = ($date[1]?$date[1]:$date[0]);`

3. 4 System Black Box Testing

A software quality test that focuses on program functioning is known as black box testing. Incorrect functions, interface errors, data structure errors, performance errors, initialization and termination errors are all targets of black box testing [12]. The system's testing

phase seeks to determine if the system's components are functional. The majority of the UI components that were evaluated were buttons and hyperlinks.

The system's testing phase seeks to determine if the system's components are functional. The majority of the UI components that were evaluated were buttons and hyperlinks.

Table 1 System Black Box Testing

No	Case Test	Step Test	Results Expected	Results Obtained	Description
Login					
1	Testing login button	Input email and password	Return to the dashboard page.	Successfully navigated to the dashboard page.	Successful test.
Menu Page					
1	Testing add data button.	Click button add data.	Go to the page with the data entry form.	The data entry form page was successfully completed.	Successful test.
2	Testing export button.	Click button export.	Data that has been exported in excel/pdf format should be saved.	The exported data was successfully saved in excel/pdf format.	Successful test.
3	Testing refresh button.	Click button refresh.	Go to data page.	The data page was successfully input.	Successful test.
4	Testing search button.	Select by date, then press enter.	Displaying data according to your preferences.	Choosing data and presenting it successfully.	Successful test.
5	Testing edit button.	Click the edit button after selecting one of the data points.	Go to the page where you may modify your data.	The data edit form page was successfully completed.	Successful test.
6	Testing delete button.	Select one of the records, then press the delete key.	If you click the agree button, the data will be erased; if you click the cancel button, the data will be returned to the data table.	The delete data notification has been successfully displayed; if you click the agree button, the data will be successfully destroyed; if you click the cancel button, the data will be successfully returned to the data table.	Successful test.

4. CONCLUSIONS

Based on the findings of the research conducted on PT. Dwimatama Multikarsa Semarang in the development of a web-based management system, it can be concluded that the

Management System of The Arrival of Pupuk Pusri Ship that has been developed can provide convenience for PT. Dwimatama Multikarsa Semarang, particularly in the production division, in data collection and report generation effectively and efficiently. This system's algorithm is capable of performing well and in accordance with the plan. This system will be more real-time in terms of storage, processing, and processing aspects.

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