Designing Website-Based Mobile Application Using Quick Sort And Insert Sort Methods In Assipa Drug Store, Karang Anyar, South Lampung

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Abstract: The implementation of the data sorting methods were in the form of *bubble sort algorithm*, *insertion sort algorithm*, *quick sort algorithm*, *merge sort algorithm*, *heap sort algorithm*, *shell sort algorithm*, *radix sort algorithm*, *tree sort algorithm*, and *maximum sort algorithm*. Assipa Pharmacy was the drug store, which conducted the transactions with more than 100 consumers per day with general purchases (with a green symbol) through a doctor's prescription (with a blue and red circle symbol through the letter K). Assipa Pharmacy had approximately 200 medicinal products with various types of brands. The problem statement of this study was that there was a difficulty on sorting data (e.g., drug products, manufacturers, composition, indications, dosages, drug administration, certain drug interactions) and required a long time in searching this drug data. The objective of this study was to design web-based mobile application using the quicksort and insert sort method in Assipa Drug Store, Karang Anyar, and South Lampung. The website-based mobile application designed on a website containing the data of drug and consisting of a quick sort and insert sort method on the products page so that the data of the drug could been accessed through a desktop or mobile (android). Moreover, the prototype software development method and the programming languages were Java, PHP, HTML, and the MySQL database. This software was tested through a black box with 5 components e.g., function and button testing, interface test, loading performance and behaviour test, structure and database test, and initiation test and termination.

Keywords: Data Ordering, Medicine, Prototype, HTML

1. INTRODUCTION

One of the data processing in a large database or large companies that had not been widely implemented was an effective and efficient data sorting system. Drug stores were able to implement transactions for more than 100 consumers in one day by purchasing drugs from general types of purchases (with a green symbol) to a doctor's prescription (with a blue and red circle symbol bearing the letter K). The drug data belonging to Assipa Pharmacy contained approximately 200 medicinal products with various types of brands including Sanbe, Meprofarm, Erlimpex, Kalbe Farma, Caprifarmindo, Pyridam, Biofarma, and several other types of brands available at these pharmacies.

The arising problem in drug stores was the process of searching for the data with several categories including searching by the drug product names, manufacturers, compositions, indications, dosages, drug administrations, and certain drug interactions. Pharmacy officers had difficulties to sort the data and required a long time to search for the drug data in drug stores because the pharmacy officers had not been able to memorize several data categories when searching with a data sequence system both ascending and descending so that the information was slow to deliver when the consumers or pharmacy owners needed drug information at the pharmacy.

There were two methods generated in data sorting. The methods used in this study were the Quick Sort and Insert Sort algorithms. The formulation of the problem in this study was that how the decision-making processes were implemented during the data searching through several categories e.g., drug product names, manufacturers, compositions, indications, dosages, drug administrations, and drug interactions.

The scope of this research is:
a. Search category in the form of names, manufacturers, drug administrations, dosages, dosages, indications, minimum ages, and compositions.
b. Discussion on the Application of Quick Sort and Insertion Sort Algorithms on Drug Data at the Mobile-Based Assipa Karang Anyar Pharmacy.

The objective of this research was designing and developing a website-based mobile to facilitate pharmacy officers in sorting drug data through the Quick Sort and Insertion Sort methods. The benefit of this research was producing an application that facilitated pharmacists to find and sort drug data quickly based on the required categories.

2.   LITERATURE REVIEW

a. Quick Sort
   Quicksort was a sorting algorithm developed by Tony Hoare. Average ordering performance O (n log n) was for sorted n items. This algorithm was also known as Partition-Exchange Sort or referred to as Divider Substitution Sorting [1]

b. Insertion Sort
   Insertion Sort was a simple algorithm that was efficient enough to sort an almost ordered list

c. Prototype Development Method
   Prototype [3] started with communication between the software development team and the customer. The software development team conducted stakeholder meetings to define and develop the overall goals for the software, to identify any specifications of requirements that currently known, and to describe areas in which further definition in the next iteration was necessary.

3. METHOD

The stages in the Prototype method were:

a. Communication: initial data collection, e.g., communication with clients and users to determine needs.
b. Quick Plan: planning analysis of user needs.
c. Modeling Quick Design: making a design program design.
d. Construction of prototype: making an application based on the modeling design that had been made.
e. Development Delevery and Feedback: producing the device properly so that it was used by the user.

4. RESULT ANDDISCUSSION

a. Data collecting Method

To obtain the data related to the virtual application of natural tourism tours in the city of Bandar Lampung, the authors collected data through a list of questions, observations, documentation and library research. The following was an explanation of the stages of data collection above, among others:

1) A list of questions
2) Observation
3) Documentation
4) Library Research

b. Design Logic

The design logic contained Unified Modeling Language (UML) modeling, e.g., use case diagrams, class diagrams, and activity diagrams. The following was the explanation of each diagram used as follow:

1. Use case diagram

Use Case Diagram used for sorting data using the quick sort and insert sort methods, seen figure 1.
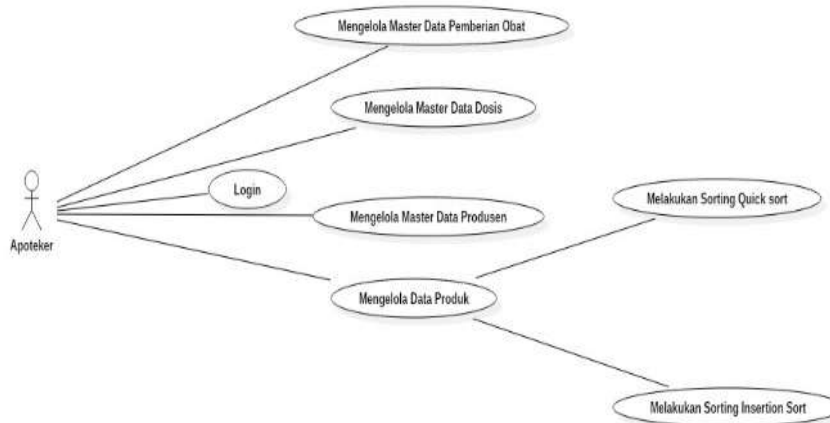

Figure 1.Use Case Diagram Application data sorting using methods
Quick sort and insert sort

2. Class Diagram

Class diagram designed to sort the data using the quick sort and insert sort methods, seen in figure 2.
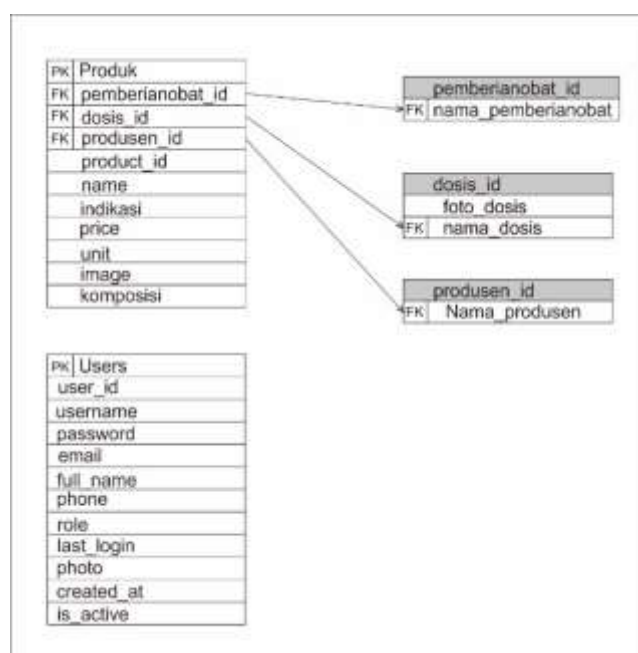
Figure 2. Class Diagram

3. Activity Diagram
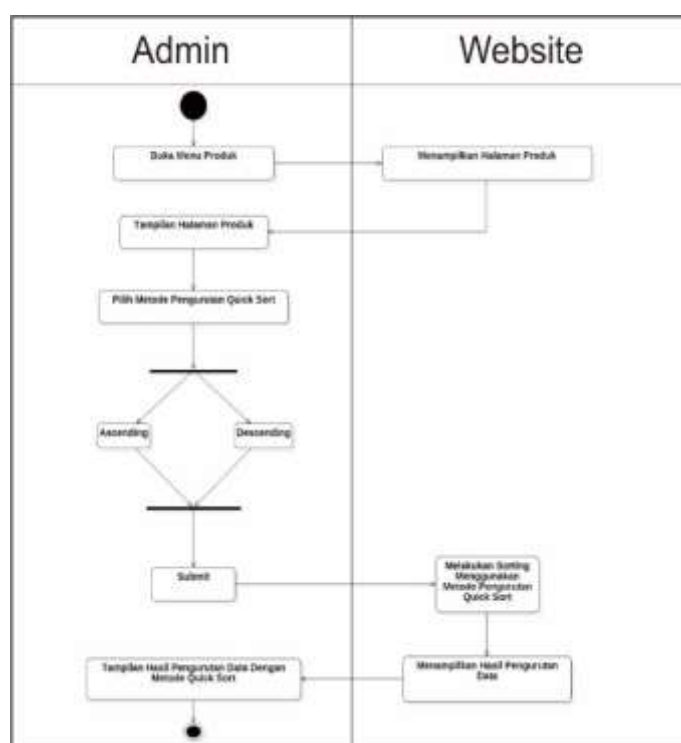   Activity Diagram was used to the quick sort and insert sort, seen figure 3.

Figure 3. Data Sorting Activity Diagram

4. Main Menu Form Display
   Main Menu Form display was seen on Figure 4.

Figure 4. Main Menu Login Form Display

5. The Add User Data Interface on Mobile was seen below in figure 5.
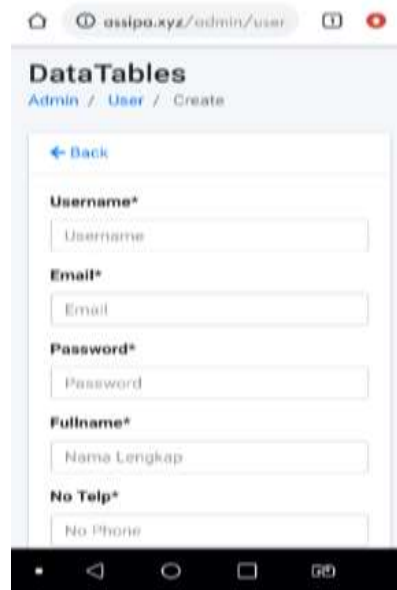

Figure 5. Add Mobile User Data page

6. The Interface Display of the Master Data Page of Drug Administration on Mobile seen below in figure 6.

Figure 6. Page Views of Mobile Drug Administration Master Data

7. The Sort Result Page Interface Using the Quick Sort Mobile displayed below in figure 7.
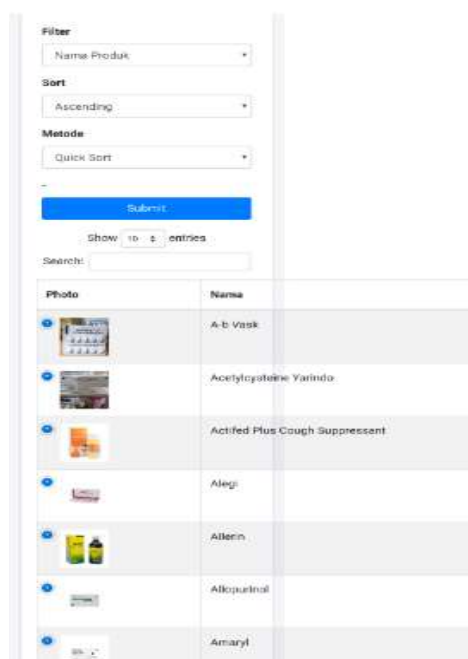

Figure 7. Page View of Sort Results Using the Quick Sort Mobile Method

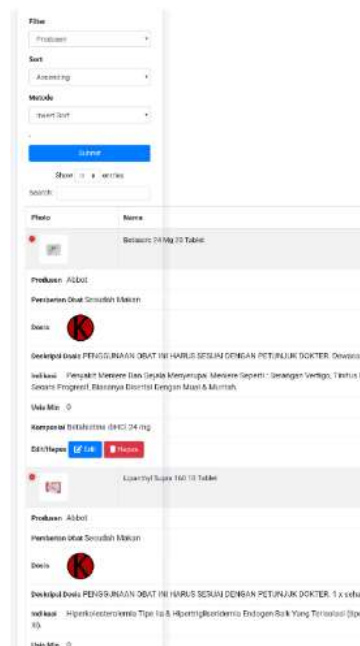8. The Sort Result Page Interface Using the Insert Sort was displayed below in figure 8.

Figure 8. Sort Result Page Views Using the Insert Mobile Sort Method

5. CONCLUSION

The conclusions of this study were:

a. This application was able to assist pharmacy officer in finding drug data based on drug descriptions e.g., indications, drug administrations, and dosage explanations
b. The website-based mobile was available for sorting data through the Quick Sort and Insert Sort methods.
c. Based on the results of the Black box testing, several component - Google Chrome, Vivo, and Microsoft Edge browser - were successfully tested

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