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Analysis and Design of Sales Information System Using Personal Extreme Programming (PXP) at Sumber Prima Mitra

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Abstract: *Sumber Prima Mitra currently relies on Microsoft Office such as Microsoft Word and Excel for administration and data storage purposes, as well as using Instagram and WhatsApp as communication and information media. This approach raises concerns regarding data security and the effectiveness of disseminating information about a company's products and services. This research aims to overcome this problem by designing a web-based sales information system that can increase the effectiveness of management and dissemination of information at Sumber Prima Mitra. The method applied in developing this information system is Personal Extreme Programming (PXP). PXP was chosen for its flexible and iterative approach, allowing for continuous customization according to the company's specific needs. This web-based sales information system is expected to provide an efficient platform for managing sales, marketing and promotional data. This sales information system was created using UI/UX as the basis for implementing the system. The UI/UX creation has been adjusted to the needs of Sumber Prima Mitra, so that the implementation of the system is faster and more targeted. With this system, Sumber Prima Mitra is expected to increase productivity, reduce the risk of data loss, and attract more customers through more effective and organized information dissemination.*

Keywords: Information System, Sales, Web, Personal Extreme Programming (PXP)

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1. INTRODUCTION

Information technology has experienced rapid development and is now a vital component in various aspects of life and business.(Putu et al., 2024) These advancements allow work processes to be faster, structured, effective, and efficient. In the business world, information technology is used for various purposes, including information media, marketing, promotion, and data management and communication. (Abdillah, n.d.)(Abdillah, n.d., 2016; Abdillah & Nawangnugraeni, 2023). In the sales industry, especially in the curtain sector, information technology offers many benefits. Sumber Prima Mitra is a company that focuses on selling blinds and window accessories for residential and commercial needs. Although this business has great potential, its current management and service still relies on manual methods, such as the use of traditional documents and communication by phone or email. This approach can lead to a variety of problems, such as slow processes, poorly organized data, and the risk of losing important data. (Lutfina, Zakki Abdillah, et al., 2023)

To increase efficiency and effectiveness in sales management, an adequate information system is needed. Websites are a very important information technology solution for businesses today, because they can make it easier to disseminate information, marketing, and promotion in a more structured and efficient way. Sumber Prima Mitra currently does not have a website that can support its business operations optimally.(Yulistina et al., 2020). This study aims to analyze and design a web-based sales information system for Sumber Prima Mitra using the Personal Extreme Programming (PXP) method. PXP was chosen because of its flexible and iterative approach, which allows for continuous adjustment according to the specific needs of the user.(Melinda & Zein, 2023)

Some of the problems behind this research are:

a) Sumber Prima Mitra does not yet have a website as a means of information, marketing, and promotion.
b) The service process to customers is still carried out manually, which results in a slow process and potential errors.
c) Sales data management is still done manually, risking losing sales data.

The formulation of the problem in this study is:

a) How to design and create a website-based system for Sumber Prima Mitra as a means of information, marketing, and promotion?
b) How to design an information system that can simplify the process of Sumber Prima Mitra's services to customers?
c) How to minimize the risk of losing sales data at Sumber Prima Mitra?

The purpose of this research is to develop a web-based information system (Zakki Abdillah et al., n.d.-b, n.d.-a). which can help Sumber Prima Mitra in managing and running its sales business better. This system is expected to simplify the service process, improve data management, and increase the effectiveness of information dissemination, marketing, and promotion.(Harahap et al., 2022) Thus, Sumber Prima Mitra can increase its competitiveness and attract more customers.

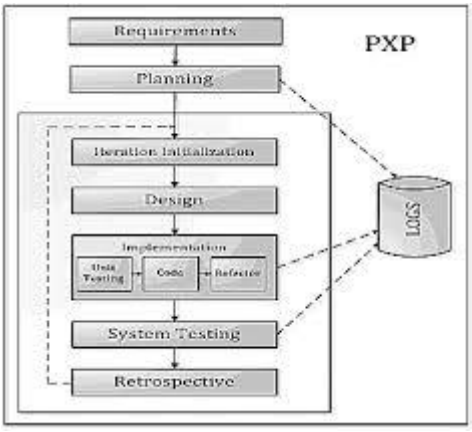
The use of PXP Programming in several previous studies did not include system analysis using flowcharts to determine clear system flow, so that at the system design stage it was still at a manual level. Likewise, several previous studies on the topic of system analysis and design did not have specific methods in their research. So this research uses PXP Programming as a method in system analysis and design which prioritizes flowcharts as an important part of analysis and design.

2. RESEARCH METHODS

In this study, the analysis and design of a web-based sales information system is carried out with a systematic and structured approach.(Fridayanthie et al., 2021) The research methods used include system development, system design, and system testing methods. (P & Abdillah, 2024)

Development Methods

Broadly speaking, the result of this study is the development of a web-based sales information system using the Personal Extreme Programming (PXP) method. (Suprapto et al., 2020) The PXP method was chosen because of its ability to facilitate development by a single developer as well as a more efficient development process. This method applies an iteration-based development approach, which is dividing the creation of the system into small, dynamic parts that allow for iteration and improvement if flaws or errors are found.(Wijaya & Astuti, 2019) The phases in the PXP method are shown in figure 1 below.



Picture 1.
PXP Method

1. *Requirements and Planning* In this phase, data collection or system needs are carried out through discussions with stakeholders. In the context of this research, discussions were held with related parties from the Sumber Prima Mitra company to understand the specific needs of the sales information system. The results of the requirements phase are then represented in the form of user stories. User stories are simple descriptions of the features to be developed, viewed from the user's point of view. The format for writing user stories follows the pattern of "As an [actor] I want [action] so that [achievement]".

2. *Iteration Initialization and Design* This phase marks the beginning of each iteration. The duration of each iteration can vary depending on the complexity and scope of the project. At this stage, the iteration begins with the selection of user stories from the backlog that will be worked on during the iteration. Preparation includes setting iteration goals, organizing resources, and preparing work plans. The system design is carried out using Unified Modeling Language (UML) to visualize the structure and functionality of the system. UML diagrams used in this phase include:
   a) ***Use Case Diagram***
      Describe the interaction between the user and the system and the main functions that the system must provide.
   b) ***Class Diagram***
      Presents the data structure of the system, including classes, attributes, and relationships between classes.
   c) ***Activity Diagram***
      Model the flow of a process or activity in a system.
   d) ***Squence Diagram***
      Indicates the sequence of interactions between system components during a given process.
3. *Implementation and Refactoring* In this phase, system development is carried out based on the design that has been made. Code development is done with a paired programming approach to ensure code quality. During implementation, system components are integrated and tested in accordance with *Acceptance Tests* which has been prepared previously. Refactoring is done to improve and improve the quality of the code. This activity involves:
   a) **Code Optimization**
   b) Improve code efficiency and readability and remove unnecessary code.
   c) **Defect Repair**
      Address any issues or defects found during testing or user feedback.
   d) **Feature Customization**
      Make changes or additions to the feature based on feedback and test results.

Test Methods

In this study, a web-based sales information system will be tested using two main testing methods: Black Box Testing and White Box Testing. Both of these methods will ensure that the system functions properly and meets all the requirements and specifications that have been set.(Lutfina, Setiawan, et al., 2023) The following is an explanation of the test methods applied:

a) ***Black Box Testing***

Black Box Testing assesses the functionality, usability, security, and performance of the system regardless of its internal structure, using test scenarios to ensure features are functioning within specifications, the interface is easy to use, the system is safe from threats, and optimal performance under load

b) ***White Box Testing***

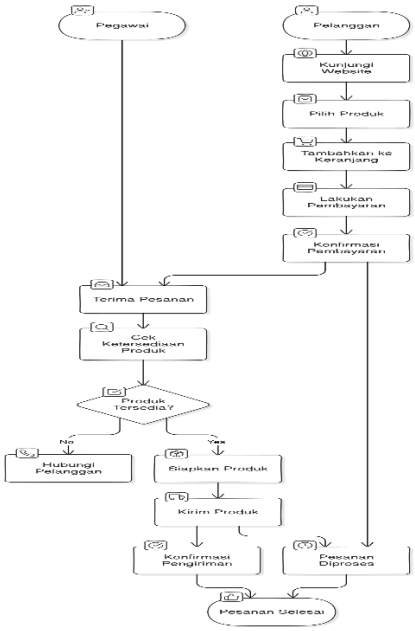
White Box Testing examines the internal structure and source code through testing of units, integrations, paths, and conditions to ensure every piece of code is working correctly. The testing process includes planning, implementation, evaluation, and improvement to ensure the system functions according to technical specifications and user requirements

Analysis and Planning

System analysis is the decomposition of an information system that is intact into a component to identify and evaluate a problem so that it can find solutions to improve it. (Utami & Zein, 2023)System analysis contains an explanation of the analysis of the process and system that is running as well as an analysis of existing problem solving.

Running System Analysis

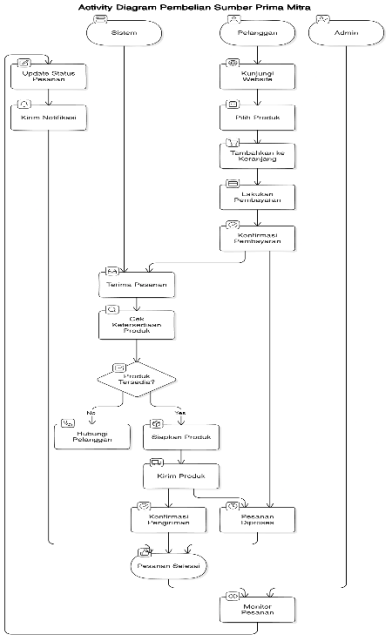
A running system is a process that shows the journey of data or documents in a system or the process of entering and exiting files that occurs in a running system.(Melinda & Zein, 2023) The following is the system that runs on Sumber Prima Mitra which is illustrated through the activity diagram:



Picture 2.
Flowchart of the Walking System

Proposal System Analysis

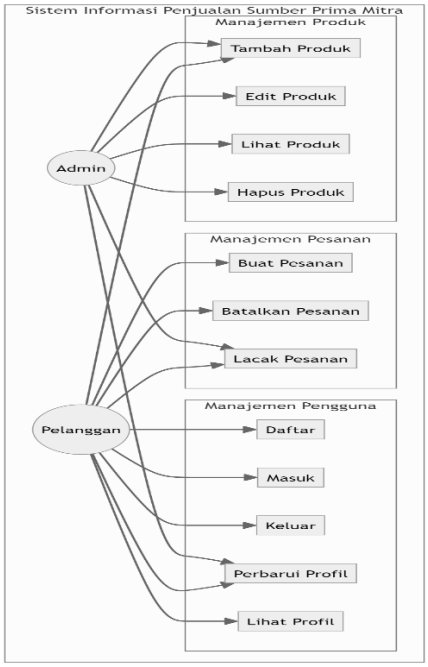
From the flow of the running system, problems are found that require a new system that can be developed with better information technology.(Arif et al., 2023) Here is an Activity Diagram that illustrates the system proposed by the author:



Picture 3.
Flowchart Analysis of Proposed System

Use Case Diagram

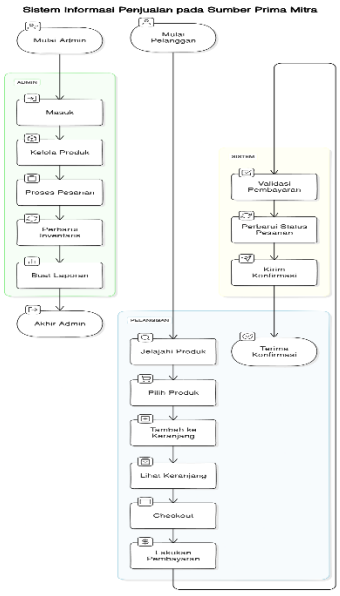
The following is the Use Case Diagram of the system to be created:



Picture 4.
Use Case Diagram

Activity diagram

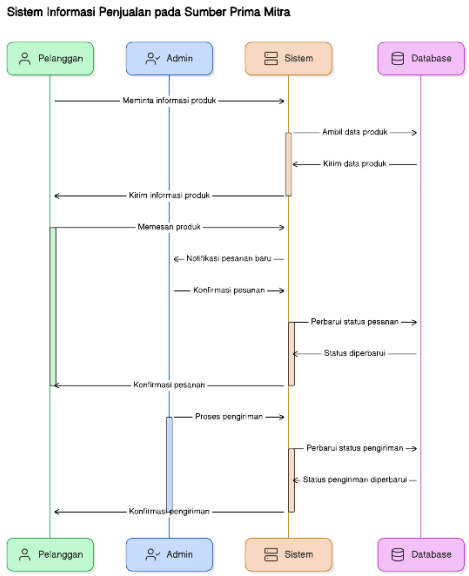
The following *is an activity diagram* with the system to be created:



Picture 5.
Activity Diagram

Sequence diagram

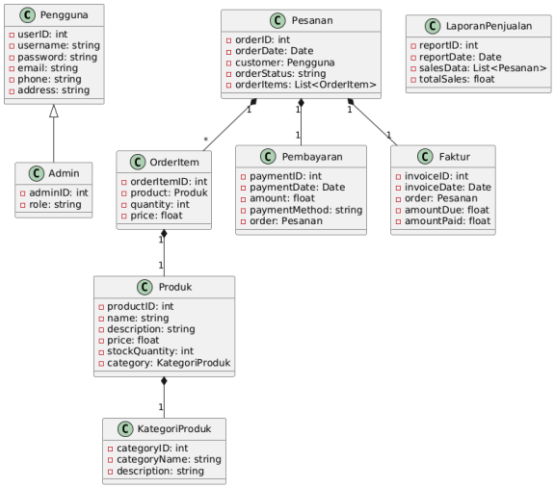
The following *is the sequence* diagram of the system to be created:



Picture 6.
Sequence Diagram

Class diagram

The following *is the class diagram* of the system that will be created:



Picture 7.
Class Diagram

5. CONCLUSION

This research successfully designed and developed a web-based sales information system for Sumber Prima Mitra using Personal Extreme Programming (PXP). The system is designed to address various problems faced by companies such as reliance on manual methods and the risk of data loss. Here are the main conclusions of this study:

1. Efficiency and Effectiveness: The developed web system improves efficiency in sales and customer service data management, as well as speeds up processes that were previously manual.
2. Data Management: The system provides more structured and secure data management, reducing the risk of losing important data.
3. Dissemination of Information: The new website allows for more effective dissemination of product and service information, expanding the reach of marketing.
4. Flexibility: The PXP method provides flexibility in system development, allowing for customization as per the company's specific needs.
5. Increased Productivity: This system is expected to increase operational productivity by simplifying and speeding up the work process.

Implementation of this system will be measurable and fast, because the use of flowcharts in system analysis and design can facilitate implementation. With the PXP Programming method, it can meet user needs, so that the implementation of the system can be right on target.

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