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by Jolene Hardwick

Design Of Web-Based Online Booking Application For Motor Vehicle Repair Using Codeigniter Framework
(Study At One Of The Motorcycle Workshop In Bandung)

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Abstract

This study presents the development and testing of an IoT-based temperature and humidity management system designed for mushroom cultivation. The system effectively utilizes a DHT sensor and a scheduling mechanism to monitor and control environmental conditions. Key findings reveal that the IoT-based control system allows mushroom farmers to access real-time data through a user-friendly web interface and control unit, facilitating immediate adjustments to optimize growth conditions.

Testing confirmed the system's capability to maintain essential temperature and humidity levels: 22–28°C and 80–90% during mycelium development and 16–25°C and 90–95% during the fruiting body stage. These controlled conditions significantly enhance mushroom growth and productivity compared to traditional cultivation methods.

The implementation of this IoT-based system not only improves the quality and yield of mushroom production but also increases operational efficiency for farmers. By integrating modern technology into agricultural practices, this study demonstrates the potential of IoT to transform conventional farming approaches into more effective and sustainable operations.

Keywords : *Repair, Applications, Hardware*

INTRODUCTION

In the contemporary technological landscape, computers are integral to the industrial sector. The evolution of technology has revolutionized company operations, enhancing efficiency and productivity. This necessity arises from the increasing demand for rapid and precise information, as evidenced by the growing number of companies utilizing computer systems. (Miftakhudin & Sifaunajah, 2023) These systems often incorporate applications designed to optimize processes, enabling personnel to operate more efficiently and effectively. (Sari, I. P., Al-Khowarizmi, A. K., Sulaiman, O. K., Apdilah, D., & Fachrizal, 2024)

The incorporation of technology in the workplace has led to substantial improvements in operational efficiency. Organizations currently rely on digital solutions that automate repetitive tasks, manage data, and facilitate communication. (Ramadaniah et al., 2022) This transition not only improves production but also diminishes the probability of human error. Organizations that implement these technical tools discover they can react more rapidly to market fluctuations and client demands, thereby securing a competitive advantage (Ramadaniah et al., 2022).

Firmansyah et al., (2024) asserts that the advancement of science and technology perpetually progresses, enhancing its effectiveness and efficiency over time. This continuous advancement establishes technology as a vital tool for addressing complex challenges

in human society. Industries adopting innovation uncover novel methods to leverage technology for enhanced decision-making and strategic planning. This agility is crucial for succeeding in a swiftly evolving economic environment.

The application of technology encompasses diverse sectors, including manufacturing and healthcare, facilitating enhanced data processing and reporting accuracy. (Bagus et al., 2020) In sectors like finance, technology has transformed the execution and oversight of transactions. Real-time data analysis empowers firms to make informed, prompt decisions, enhancing operational efficiency and elevating consumer satisfaction. The efficacy of these technologies depends on proper installation and user training. (Hardiko & Rohman, 2024; Kusnadi & Putra, 2024)

Notwithstanding the myriad benefits, incorrect utilization of technology can result in considerable difficulties. Organizations that fail to adapt their technological strategies may face persistent challenges that hinder their progress. Insufficient training or reliance on outdated systems can lead to inefficiency and missed opportunities. To optimize technological advantages, enterprises must invest in ongoing education and development, ensuring their personnel are adept at managing the intricacies of contemporary industry efficiently.

Systems and Information

(Jayendra Widayana et al., 2021) states in his book Concept of Information Systems that "A system is a network of interrelated procedures that converge to execute activities or attain specific objectives."

Information is data that has been transformed into a more valuable and significant format for its recipients. Information originates from data, which comprises facts that depict genuine events and real things. Events are happenings that transpire at designated periods (Arnoldus & Suprihadi, 2021; Nugroho & Pungkasanti, 2021)

Booking

Firmansyah et al., (2024) define "booking" as a process of agreement that entails reserving a commodity, whether a product or service, characterized by a mutual understanding between the producer and the consumer regarding the product, albeit a sales transaction remains incomplete. This concept emphasizes the importance of mutual consent between the parties prior to initiating a formal transaction. The booking process serves as an initial step that facilitates communication and ensures the fulfillment of customer expectations while enabling producers to prepare for the delivery of their products or services.

Furthermore, the reservation process is vital to other sectors, such as hospitality, transportation, and entertainment. It enables enterprises to optimize resource management by forecasting demand and obtaining commitments from clients. This proactive strategy not only improves customer happiness but also enables organizations to optimize their operations. By understanding the intricacies of booking, firms can develop more efficient systems that optimize the reservation process, resulting in superior service delivery and strengthened customer relationships.

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With the rise in mobility, there has been a swift expansion in the number of motorbikes and motorcycle servicing workshops. A motorcycle workshop in Bandung provides services for multiple brands and their components. The service queue is disorganized due to the influx of consumers. This workshop offers services, including spare part replacements and routine vehicle maintenance, necessitating a system to improve service quality for consumers.

METHOD
Research methods

This study utilizes secondary data comprising questions and answers. The data sources are derived from interviews and observations. The data is acquired through field investigations, wherein the author visits the DU Rai Raka Motorcycle Workshop in Bandung to gather the requisite information. The data collection methods encompass observation, which entails direct scrutiny of the subjects under investigation in their natural environment, and interviews, wherein the author engages in a question-and-answer session with the Workshop Head and authorized mechanics to obtain the necessary data and information. Furthermore, the author performs a literature review by compiling data previously documented by other researchers in prior studies. The author reads multiple books as references and foundational sources for the final report.

System Development Methodology

OOSE (Object Oriented Software Enggeneering)

OOSE is a software engineering methodology employed to develop software via a sequence of activities. Object-oriented software engineering is a design model utilized in the software development process prior to coding. This approach is increasingly employed and can attain the formality offered by formal specification languages. It utilizes the Unified Modelling Language (UML), a third-generation modeling methodology, and a non-proprietary specification language. UML applies not only to software modeling but also to hardware modeling (engineering systems) and is frequently utilized for business process modeling and organizational structure modeling.

This approach prioritizes use cases. OOSE comprises three phases: requirements and analysis model creation, design and implementation, and model testing. The value of this method lies in its ease of learning, which is attributed to its straightforward notation that encompasses all phases of software engineering.

RESULT AND DISCUSSION
System Analysis and Design
Business Process Analysis

The subsequent outlines the business process flow at a motorcycle repair establishment, commencing from service registration to the repair shop cashier.
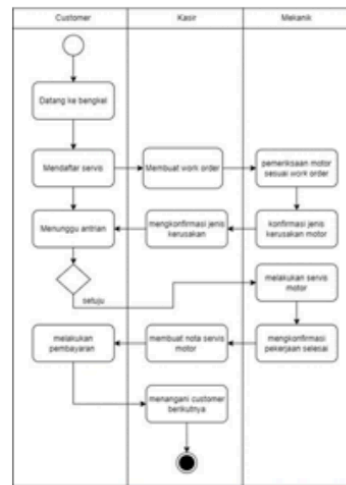
Figure 2. Business Process Analysis
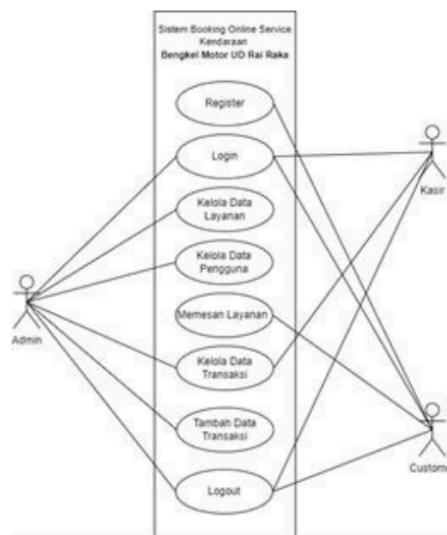
New System Proposal

Usecase diagram

Figure 3. Usecase diagram

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Table Scenario

Admin and Cashier Login

| Use Case	
Use Case Name	Admin and Cashier Login
Description	For admins to manage the workshop service ordering process
Actor	Admin and Cashier
Pre-Condition	The web page displays the login page.
Post-Condition	Entering the Admin dashboard page
Basic Flow	
Actor	System
1. Enter the application	2. Enter email and password
3. Enter email and password	
	4. Perform data checking in the database
	a. if true, will display the admin page
	b. if wrong, then go back to no. 2

Login Customer

| Use Case	
Use Case Name	Customer Login
Description	Customers can order workshop services via the website
Actor	Customer
Pre-Condition	The web page displays the login page
Post-Condition	Enter the customer web page
Basic Flow	
Actor	System
1. Enter the application	2. Display the Login form
3. Enter email and password	
4. Login	
	5. Perform data checks in the database

	② a. If correct, it will display the main page of the application.
	b. If wrong, then go back to no. 1

Activity diagram

Admin and Customer Login
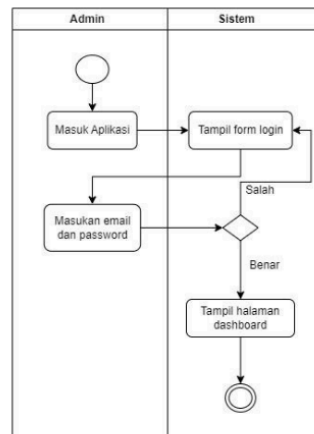
Customer Login
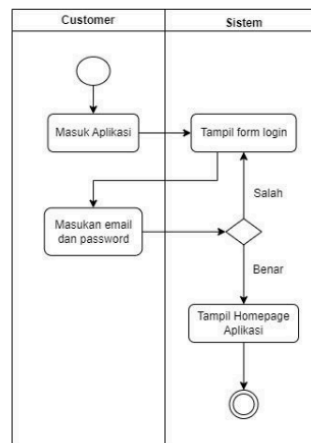
System Design

Database Design
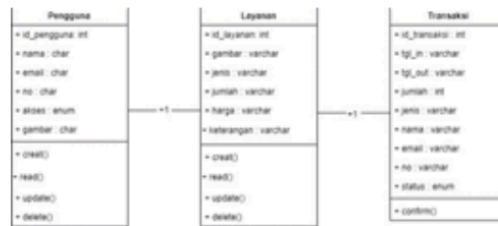
No,	Field	Type	Information
1.	Service_id	INT(11)	Primary key
2.	picture	VARCHAR(100)	
3.	type	VARCHAR(30)	
4.	Amount	VARCHAR(10)	
5.	Price	VARCHAR(10)	
6.	Information	VARCHAR(10)	

Interface Design
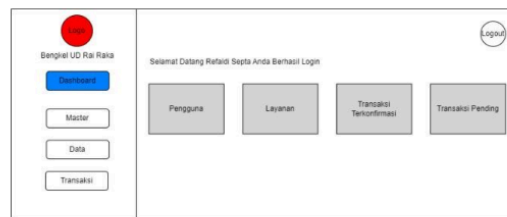
Figure 3. Admin Dashboard

Figure 4. Application Homepage

System Implementation

The system implementation phase involves detailing an application system to ensure its readiness for operation.
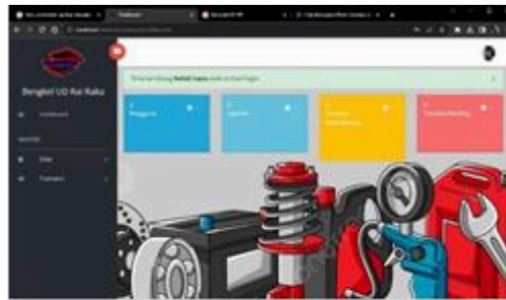

Figure 5. Login Page View

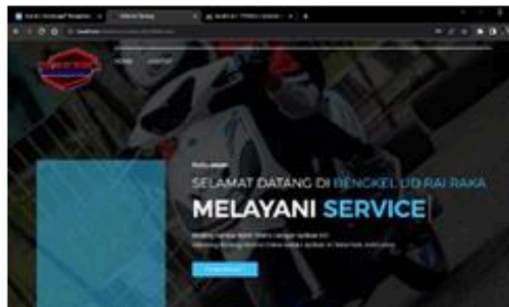

Figure 6. Home Page/Dashboard View

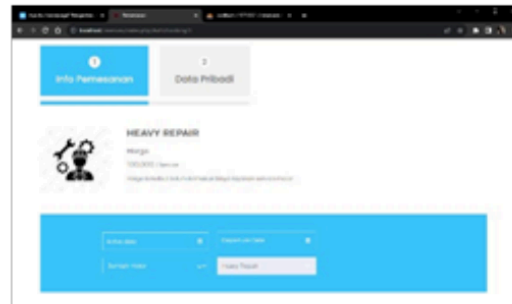**Figure 7. Application Homepage View**

Figure 8. Service Order View

CONCLUSION

The findings of this research demonstrate that the application created utilizing the OOSE method enables consumers to book services online without queuing at the workshop while also providing access to their service history. This program serves as a conduit for facilitating motorcycle services between the workshop and clients via Android smartphones. This online motorbike service booking application is secure for customers, guaranteeing the protection of personal data by retaining only full names and phone numbers without storing any additional information.

Future researchers are advised to enhance or develop service features, including a more dynamic application interface, automated payments, service schedule reminders, and arrival notifications for the workshop. It is advisable to have functionalities that facilitate contact between clients and workshop proprietors, such as chat options, along with capabilities for procuring spare parts or other motorbike accessories.

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