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An Android-Based Information System for Student Payment Billing

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ABSTRACT
The advancement of information technology has encouraged schools to adopt digital payment systems. This study aims to develop a school billing application based on Android, integrated with the Midtrans Core API as an online transaction solution. The application is designed to simplify the payment process for parents and assist school administrators in recording and monitoring transactions automatically.
The development process follows the Rapid Application Development (RAD) method, consisting of planning, design, rapid construction, and implementation stages. The backend is built using Laravel, while the mobile interface is developed with React Native. System testing is conducted using the Black Box Testing method to ensure that all features work as intended, including login, bill display, payment processing, and transaction reporting.
The results show that the application improves efficiency and transparency in managing school payments. This solution enhances accessibility for parents and supports the digital transformation of school administration systems.

Keywords: School Payment, Midtrans, Android, Laravel, React Native, RAD, Black Box Testing

INTRODUCTION

The advancement of information technology, particularly the internet, has brought significant changes to daily life. The internet is not only a medium of communication but also a tool that supports various activities in society, including financial transactions. The ease of internet access through mobile devices has significantly boosted the number of users. According to research by Faulina et al. (2021), around 70% of the Indonesian population actively uses the internet, and this number continues to grow in line with the rapid penetration of digital technology.

In line with this, digital payment systems have also experienced rapid growth. A survey conducted by PricewaterhouseCoopers (PwC) in 2019 revealed that 47% of respondents in Indonesia had utilized mobile payment methods for transactions (Suryanto et al., 2022). This development is supported by the emergence of various payment gateway services, one of which is Midtrans, which offers secure and integrated online payment solutions. This service enables users to conduct transactions through various payment methods such as bank transfers, e-wallets, and credit cards.

TK Islam Al Husna, an early childhood education institution in Jombang Regency, has taken the initiative to leverage this technological development to improve its school billing services. The previously manual payment system was deemed inefficient and prone to errors. Therefore, by integrating a Midtrans-based payment system, it is expected that parents can make school fee payments more practically, quickly, and securely—without having to visit the school directly.

METHOD

This study employs the Rapid Application Development (RAD) approach, a software development methodology that emphasizes speed and active user involvement in every stage. The fast and iterative process enables the gradual development of prototypes, allowing user feedback to be immediately accommodated. This approach is highly suitable for projects with time constraints and dynamic system

requirements. The research falls under the category of research and development (R&D), aiming to develop a digital school billing application to replace the manual system still in use at the school.

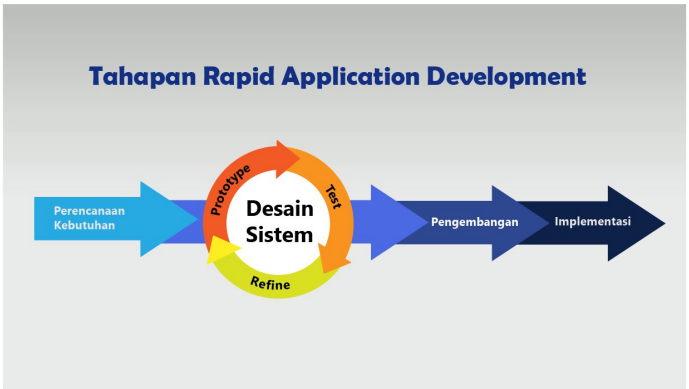

Figure 1. Rapid Application Development

The RAD development stages in this study began with identifying system requirements through interviews and direct observation, which were then summarized in a functional specification document. The next phase involved designing the user interface and initial prototype using tools such as Figma and user flow diagrams. This prototype was directly validated by prospective users to ensure the system aligned with their needs. Once the design was approved, the construction process was carried out by dividing development into two main parts: the frontend, built using React Native, and the backend, developed with Laravel. Integration with Midtrans was implemented using the Core API, enabling the system to accept digital payments directly and automatically record transaction statuses through webhooks.

The final stage is the implementation of the system in the actual user environment. This process includes user training, conversion of old data into the new system, and technical support from the development team to ensure the application runs optimally. A well-executed implementation not only ensures smooth system operation but also enhances user satisfaction and trust in the newly adopted system. By using the RAD method, the development of this school billing application was completed effectively and efficiently, in accordance with the needs of the educational institution under study.

RESULT AND DISCUSSION

The school billing application developed in this study successfully meets the needs of a digital payment system within the Al-Husna Foundation. The application was built with two main components: an Android-based frontend using React Native, and a backend using Laravel integrated with Midtrans as the payment gateway service. All functional testing was conducted using the Black Box Testing method to ensure that each feature operates according to its intended purpose.

Result

This research produced an Android-based application designed to simplify the process of school billing and payments digitally. The application involves two main user roles: parents/guardians who make payments, and school administrators who manage student data, billing information, and transaction reports. The system was developed using the Rapid Application Development (RAD) method, allowing for a fast and iterative development process based on direct user feedback. The main features of the application are as follows:

1. Login Page

Users, both administrators and parents/guardians, can access the system using their respective account credentials. The login process is carried out through secure authentication to restrict access exclusively to authorized parties.

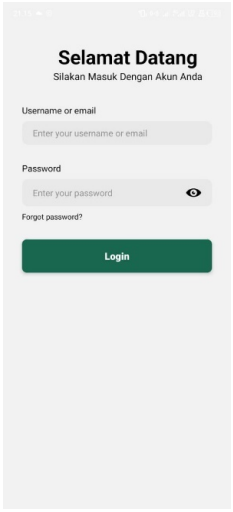

Figure 2: Login Page

2. Home Page

After a successful login, parents or guardians are directed to the application's main page, which displays general information related to the student. This includes the student's identity details and a summary of the most recent active school bill. The home page serves as a quick overview, helping users stay informed about their child's billing status at a glance.

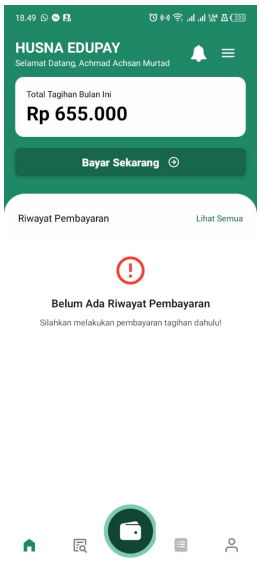

Figure 3: Home Page

3. Billing Menu

This feature presents a list of school bills created by the admin and automatically linked to the corresponding student's account. Parents or guardians can view detailed information about each bill, including the bill name, amount due, and payment status. This menu allows users to monitor and manage their child's school financial obligations efficiently.

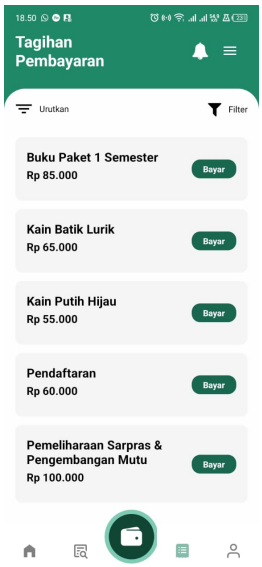

Figure 4: Billing Menu

4. Payment via Midtrans

The payment integration is implemented using the Midtrans Core API with the Snap redirect method. When users select the "Pay Now" option, the system redirects them to the Midtrans payment page. Upon successful transaction, the payment status is automatically updated through a webhook sent by the Midtrans system to the application's backend. This ensures real-time synchronization of payment data and enhances transaction accuracy.

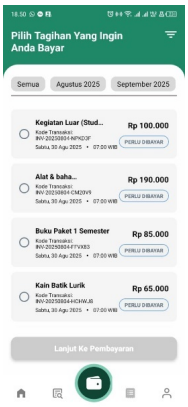

Figure 5. Payment Menu Page

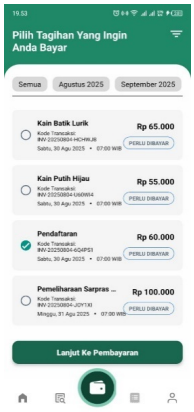

Figure 6. Bill Selection Page

Figure 7. Payment Detail Page

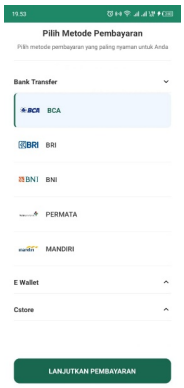

Figure 8. Payment Method Selection Page

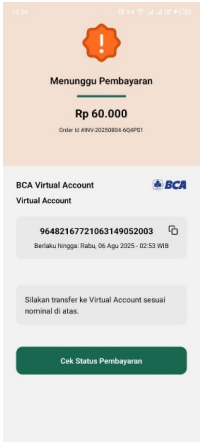

Figure 9. Payment Pending Status Page

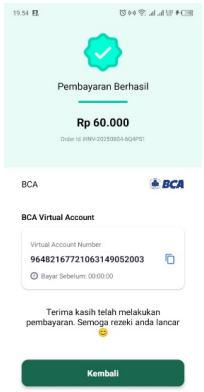

Figure 10. Payment Success Page

5. Payment History

Users can access a complete list of all payment transactions they have made. The information displayed includes the payment date, transaction amount, and payment status (e.g., successful, pending, or failed). This feature serves as a financial record for users, ensuring transparency and allowing parents or guardians to track their payment history at any time.

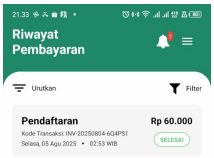

Figure 11. Payment History Page

6. Admin Dashboard Panel

Through a web-based backend interface, school administrators can manage student data, add or edit billing information, and monitor payment reports submitted by parents or guardians in real time. This dashboard supports centralized and efficient management of school administrative data, enabling accurate tracking of transactions and streamlined oversight of the overall payment system.

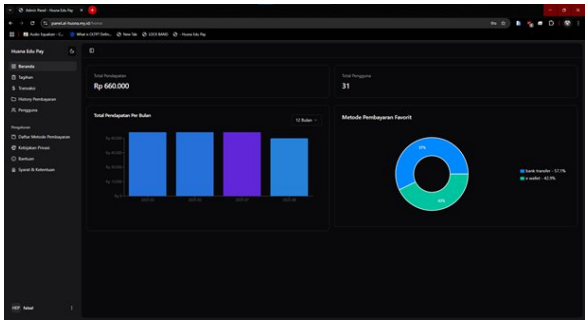

Figure 12. Home Page

This is the first page accessed by the admin upon successful login.

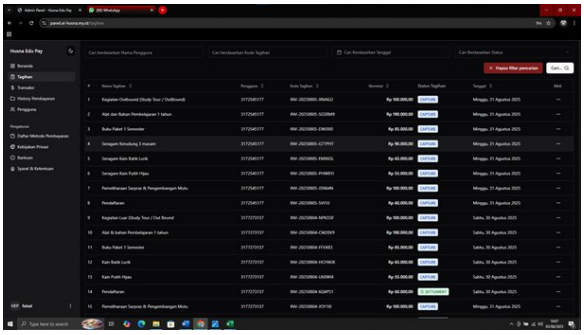

Figure 13. Billing Page

This page displays all student bills and can be accessed by the admin to create new bills, edit existing ones, and mark payments as completed.

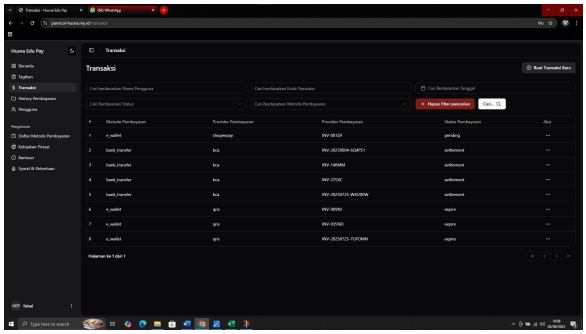

Figure 14. Transaction Page

This page is used to view detailed billing transaction information for all student payments..

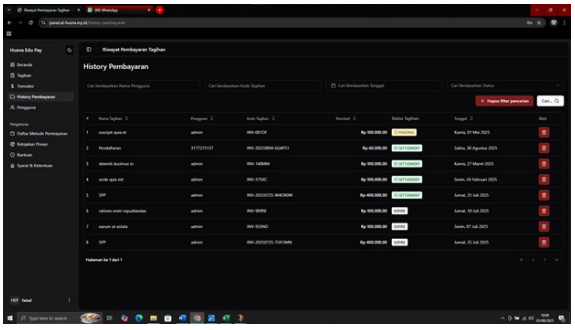

Figure 15. Payment History Page

This page is used to view the payment history, showing whether payments have been completed or are still pending.

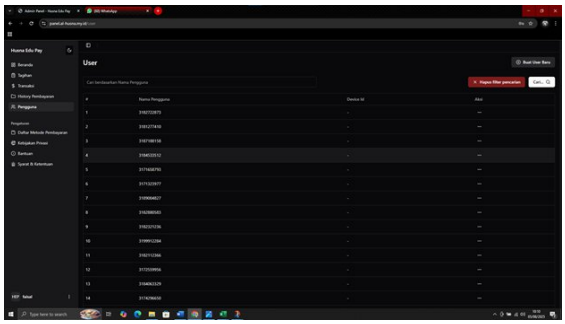

Figure 16. User Page

This page is used to create new users, as well as edit existing usernames and passwords.

Discussion

System testing was conducted using the Black Box Testing method for each feature. The results are as follows:

Table 1 System Testing Table

No	Feature Tested	Test Step	Expect Result	Test Result
1	Login	User enters valid account	Successfully logs into the application	Match
2	Login	User enters an invalid account	System displays a a login error warning	Match
3	Billing Menu	User accesses the billing menu	Displays a list of bills according to user data	Match
4	Payment Process	User select a bill the clicks “Pay Now”	App redirects to Midtrans snap payment page	Match
5	Payment Completion	User completes the payment transaction	Bill status automatically updates to “Payment Successful”	Match
6	Payment History	User opens the payment history meu	Displays previous payment history	Match
7	Admin Login	Admin logs in using valid credentials	Enters the Admin Dashboard	Match
8	Student Data Input (Admin)	Admin adds new student data to the system	Data is correctly stored in the database	Match
9	Student data update (Admin)	Admin edits student data	Database updates data correctly	Match
10	Billing Input (Admin)	Admin creates and manages student bills	Bills appear on respective student account	Match
11	Payment Report (Admin)	Admin accesses payment transaction reports	Payment history report is displayed correctly	Match

Based on the results of functional testing using the Black Box Testing method, it can be concluded that the application has successfully met all the functional requirements as previously designed. All main features run properly and produce outputs that align with the specifications. No errors or bugs were found that disrupt the application's workflow, either from the perspective of the parent users or the school administrators.

CONCLUSIONS

This research successfully developed a school billing application based on Android that supports the digitalization of financial administration processes in schools. Payment processes that were

previously done manually can now be carried out online in a faster and more organized manner. Integration with Midtrans also worked as expected. Users can make bill payments through various digital payment methods, such as e-wallets and virtual accounts, with the system automatically updating payment status using webhooks.

The testing results using the Black Box Testing method showed that all application features functioned properly. Features such as login, billing list, payment, transaction history, and admin dashboard operated according to the predefined specifications. The testing also confirmed that the application runs stably and meets functional requirements, with no critical errors or bugs found during the testing process. Both parents and school administrators can use the application smoothly according to their respective roles.

REFERENCES

Basri, F. (2024). Perancangan Aplikasi Pembayaran Digital Berbasis Midtrans. Jurnal Teknologi Informasi & Sistem Informasi, 12(2), 115-123.

Faulina, N., dkk. (2021). Analisis Penggunaan Internet di Indonesia: Tren dan Dampaknya. Jurnal Teknologi dan Informatika, 10(2), 45-53.

Febriyanto, A., et al. (2019). Analisis Integrasi Midtrans Sebagai Payment Gateway pada E-Commerce di Indonesia. Jurnal Sistem Informasi, 8(1), 34-41.

Gani, A. (2018). Internet Sebagai Sarana Komunikasi Global. Jurnal Teknologi Informasi, 6(1), 15-22.

Habibi, R., & Karnovi, R. (2020). Pengantar Teknologi Aplikasi Mobile. Bandung: Informatika.

Joni Karman. (2019). Sistem Operasi Mobile: Android & Perkembangannya. Surabaya: Cipta Media.

Kumala, D., & Mutia, I. (2020). Payment Gateway dalam Sistem E-Commerce Indonesia. Jurnal E-Bisnis, 7(1), 67-75.

Laravel. (2024). Laravel 10.x Documentation. Retrieved from https://laravel.com/docs

Midtrans. (2023). Midtrans Core API Documentation. Retrieved from https://docs.midtrans.com/

Midtrans. (2023). Payment Gateway for Indonesia. Retrieved from https://midtrans.com/

Nugroho, A. (2021). Rekayasa Perangkat Lunak: Software Engineering (4th ed.). Yogyakarta: Andi Publisher.

Pressman, R. S., & Maxim, B. R. (2021). Software Engineering: A Practitioner's Approach (9th ed.). New York: McGraw-Hill Education.

Purwanto, A. (2021). Metodologi Penelitian Kuantitatif Untuk Bidang Teknologi Informasi. Bandung: Informatika.

Rahimi, A. (2020). Pengelolaan Data dengan MySQLi pada Aplikasi Berbasis Web. Jurnal Ilmu Komputer, 5(1), 23-30.

React Native. (2023). React Native Documentation. Retrieved from https://reactnative.dev/docs

Ridho Nastainullah. (2020). Desain Kolaboratif Berbasis Cloud Menggunakan Figma. Jakarta: Penerbit Ilmiah.

Santosa, A., & Nugroho, B. (2021). Rapid Application Development: Pendekatan Efektif untuk Pengembangan Perangkat Lunak. Jurnal Teknologi Informasi, 8(2), 88-95.

Sommerville, I. (2022). Software Engineering (11th ed.). Pearson Education.

Suryanto, D., dkk. (2022). Tren Digital Payment di Indonesia: Studi Kasus PwC 2019. Jurnal Ekonomi Digital, 9(1), 12-19.

Wahana, A. (2022). Pemanfaatan React Native dalam Pengembangan Aplikasi Edukasi Berbasis Android. Jurnal Sistem Informasi, 11(1), 22-30.

Yasin, K. (2019). Dasar-dasar Pemrograman Aplikasi Mobile. Yogyakarta: Deepublish.