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Design of the Backend API Payment Gateway System Implementation to Minimize Fraud Levels and Ease of Payment Transactions at the Hattrick Online Game Cafe

Wisnu Sukma Maulana
Informatics, Faculty of Industrial Technology, Gunadarma University, Indonesia

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Corresponding author*:
wisnu_maulana@staff.gunadarma.ac.id

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Abstract: Hattrick Online Game Cafe has branches in two cities, namely Pemalang and Depok. In addition, this cafe operates almost 24 hours a day, seven days a week, with cashier operations conducted on a rotating schedule of morning and night shifts. Furthermore, payment transactions are still conducted using cash. These conditions have led to several challenges, such as the inability to monitor financial transactions in real time, which could result in fraud or manipulation of cash flow. Another challenge is the need for meticulous attention to detail in calculating payment amounts and cash refunds given by customers to cashiers. Cashier staff may make errors due to fatigue during their shifts, and there is also the need for cash inventory counts as a means of refunding in payment transactions. Finally, the main challenge is the need for transparent and precise financial reports for the café owner as a means of accountability to investors who have and will invest capital in the development of the Hattrick Online Game Café business. Therefore, research on the design and implementation of a backend API Payment Gateway system as a payment transaction tool for customers at the Hattrick Online Game Café is expected to address all these issues.

Keywords: System, Backend, API, Payment Gateway, Fraud, Payment.

INTRODUCTION

Hattrick Online Game Cafe is a business that combines entertainment activities such as PlayStation rentals, PC games, private rooms for enjoying streaming media such as YouTube, Netflix, movies, and so on, and a mini restaurant that sells food and drinks to support the entertainment so that customers or visitors can enjoy entertainment with full energy. Hattrick Online Game Cafe has two branches, namely on Jalan Sudiro Damayasa, Pemalang City, Central Java Province, and also on Jalan Limo Cinere, Depok City, West Java Province. This cafe has operational hours almost 24 hours a day, with a small possibility of closing or taking holidays since the number of visitors increases on national holidays. With these operational hours, cafe staff such as cashiers are also rotated or *shift*

morning and night shift. In terms of cashiers, this cafe still uses a manual or cash payment system, so stock is required at certain times. *Intake* incoming and outgoing money and providing small change as a means of change if there is an overpayment by customers or visitors.

Given all these conditions, cafe owners and management often struggle to prepare real-time financial reports because they need to summarize all existing finances. Suspected fraud or discrepancies between cash amounts are often discovered. *Cash flow* with cashier reports. Furthermore, the cafe owner or management must put in extra effort to monitor reports from two branches located far apart, in Central Java and West Java. Consequently, the cafe owner struggles to provide transparent and precise financial reports to investors who have or will invest in the cafe's business development.

Referring to the problems that exist, it is necessary to have a plan for the use of payment media *online* or *digital* This makes it easier for customers and cafe owners or management to operate the cafe. One system that is widely used by both large and small businesses today is the cashier system. *Backend* API *Payment Gateway*. *Payment Gateway* can provide a variety of online or digital payment method options ranging from inter-bank transfers, debit/credit cards, to QRIS which is currently one of the GPN (National Payment Gateways) (Sari, N. P., & Wahyuni, S. ,2020).

LITERATURE REVIEW

Information Systems

Information systems are a work system whose activities are specifically for processing information using technology and humans (Alter, S, 2008). In addition, the information system has the following functions:

1. Data Collection : Entering raw data from various sources.
2. Data Processing : Transforming raw data into useful information.
3. Data Storage : Storing data and information for future use.
4. Information Distribution : Distributing information to certain parties.

Backend

The backend is the part of a software system that is responsible for business logic, database management, and server-side integration (Hazzan, O., & Tomayko, J. E., 2005). In more detail, the backend includes:

1. *Server*: Handle requests from the frontend and send the necessary data.
2. *Database*: Store and manage application data.
3. Business Logic: Processing data and performing complex functions, such as user authentication, calculations, etc.
4. API (*Application Programming Interface*): Facilitates communication between the frontend and backend.

API

An API is an interface used to expose software functionality to other applications or services, especially in distributed systems and architectures. *Microservices* (Sill, A., 2016). APIs, or Application Programming Interfaces act as intermediaries, allowing applications to share data, functions, and resources in a structured way. Architecture *micro service* API-driven is a software development approach in which applications are built as a collection of small, independent, and loosely coupled services.

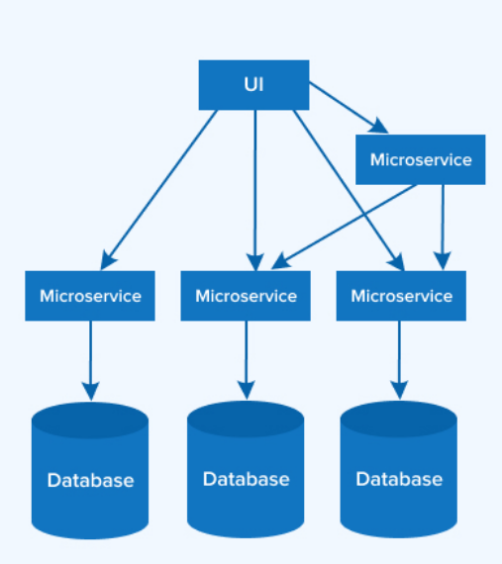


Figure 1. Microservices Architecture (Shah, Vishal., 2020)

Payment Gateway

Payment Gateway acts as an intermediary between a merchant's website and a financial institution, facilitating the secure transfer of payment information (Laudon, K. C., & Traver, C. G., 2021). A payment gateway is responsible for securing and processing payment information (such as credit or debit card details) provided by customers, then

forwarding it to the relevant financial institution for authorization and settlement of the transaction. In simple terms, this is how a payment gateway works. *Payment Gateway* are as follows:

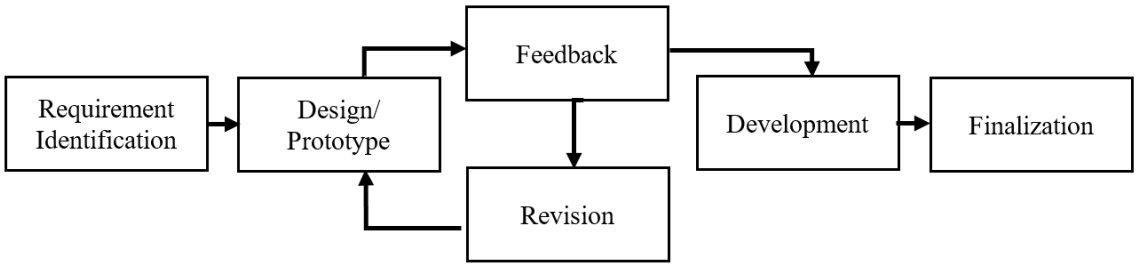
1. The buyer makes a purchase in the seller's app with his payment information.
2. *Payment gateway* process information data connected to the seller's system.
3. Transaction authorization is done by means of *Payment Gateway* forward the information to the relevant financial institution for authorization.
4. Confirm the transaction if authorization is successful then the payment gateway informs the seller and buyer that the transaction has been successful.

In general, that *Payment Gateway* is a service that facilitates online payment transactions between buyers and sellers. In Indonesia, there are various payment gateway options that support various payment methods, such as credit cards, bank transfers, e-wallets, and others. Some examples *Payment Gateway* Popular in Indonesia are Midtrans, DOKU, Xendit, Faspay, and iPaymu.

Figure 2. Some Providers *Payment Gateway* in Indonesia (Team, Marketing, 2024)

RESEARCH METHOD

The methodology used in the research on designing the use of the system *Backend* API *Payment Gateway* for payment transactions at the Hattrick Online Game Cafe using the Prototyping development type, it is carried out in several stages. This is the type *prototyping*. Prototyping is a software development model in which a prototype (an initial approximation of the final system) is built, tested, and then refined until an acceptable form is achieved (Pressman, R. S., 2010).



The stages carried out with the Prototyping type are as follows:

1. Identify Needs

   Developers and users discuss to identify system needs and goals.
2. Initial Design

   Developers create an initial prototype, which may be a sketch, a paper model, or a simple digital prototype.
3. Testing and Feedback

   Users test prototypes and provide feedback on features, functionality, and design.
4. Prototype Revision

   Developers revise the prototype based on user feedback.
5. Further Development

   The process of repeated testing and revision until the prototype reaches a level of user satisfaction.
6. Final System Development

   Once the prototype is approved, the final system is developed based on the verified prototype.

RESULTS AND DISCUSSION

Discussion and results of system usage design *Backend* API *Payment Gateway*with the Prototyping development type carried out in several stages as follows:

1. Identify Needs

   The data requirements obtained from the Hattrick Online Game Cafe are summarized in the table below.

Table 1. Hattrick Online Game Cafe Operational Transaction Data as of July 2025

Branch	PlayStation (Unit)	PC Game (Unit)	Private Room (Unit)	Cafe Resto (Table)
Pemalang	20	0	5	8
Depok	5	15	3	5
Average Total Transaction (Day)	30	20	12	60
All Total Transactions	122			

The data from the table shows that 122 payment transactions can be recorded in a single day for both branches combined. Therefore, the total payments for Hattrick Online Game Cafe in one month (30 days) of operation are approximately 3,660.

2. Initial Design

The initial design or plan can accommodate the recording of payment transactions of more than three thousand data in one month and also takes into consideration that it can be monitored in real-time and accessed by the cafe owner or management easily from any location, namely by using a technology-based system. *Mobile* And *website*.

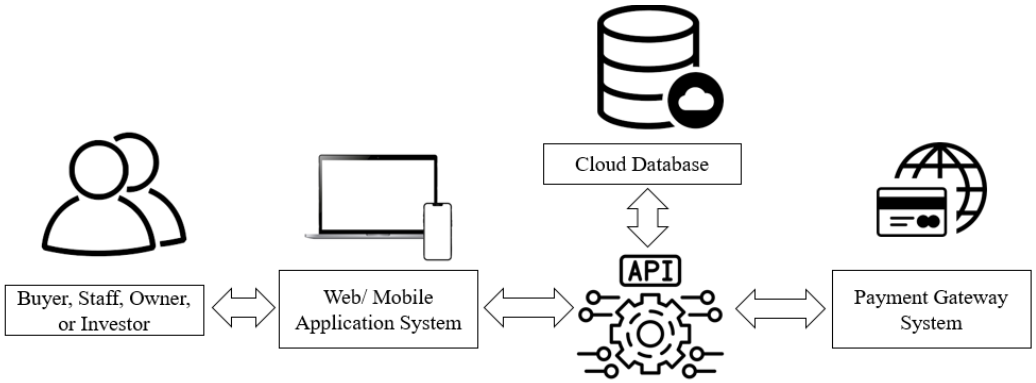


Figure 4. System Plan *Backend* API *Payment Gateway* Cafe Game Online Hattrick

Besides that, the use of *cloud database* This is necessary to facilitate the processing of all incoming data, which will be used for financial reporting. In this case, the

API acts as a connecting medium between the payment system and reports at the cashier. *cloud database*, and also the system *Payment Gateway*.

3. Testing and Feedback

Feedback from users, specifically the management of the Hattrick Online Game Cafe, was collected at the Depok branch. Trials were conducted using both dummy and operational data. The testing used a UAT document (*User Acceptance Test*) as a reference in getting feedback from users of the application (Rahman, M. M., & Ripon, S., 2016)

Table 2. System Testing *Backend* API *Payment Gateway* Cafe Game Online Hattrick

UAT Also	Test Scenario	Cycles	Status
UI/UX Design	Admin: 1. Category 2. Product 3. User Role 4. Report Cashier 1. Open Bill 2. Split Bill 3. Payment Bill 4. Discount Bill	3	Passed
Dummy Data	1. QRIS 2. Bank Transfer 3. eWallet	6	Passed
Operational Data	1. QRIS 2. Bank Transfer 3. eWallet	3	Passed

4. Prototype Revision

Improvements or revisions to the initial design are inevitable due to feedback received during the UAT process. All revisions are conducted with a focus on two aspects: UI/UX and functionality.

- UI/UX aspects (*User Interface/ User Experience*)

  The UI/UX or interface display is revised to be compatible with mobile, tablet and laptop devices (Nielsen, J., & Norman, D. A., 2002)

Table 3. System UI/UX Revisions *Backend* API *Payment Gateway* Cafe Game Online Hattrick

Device	Screen Size	Revision
Mobile	5 – 7 Inches	8
Tablet	7 – 10 Inches	5
Laptop	11 – 15 Inches	3

- Functional Aspects

  The revised functions are divided into*dashboard*cashier and admin. *Dashboard* what is meant is the division of function pages based on *role* of the system.

Table 4. System Function Revision*Backend* API *Payment Gateway* Cafe Game Online Hattrick

Dashboard	Function	Revision
Cashier	Login, Product, Bill	7
Admin	Login, User Role, Product, Category	5

5. Further Development

   Process *development*(development) of the system is carried out by implementing API integration *Payment Gateway* into the payment system of Hattrick Online Game Cafe. *Development* it is programmed and tested from the start *sandbox environment* until *live environment* (Garfinkel, T., & Rosenblum, M., 2003).

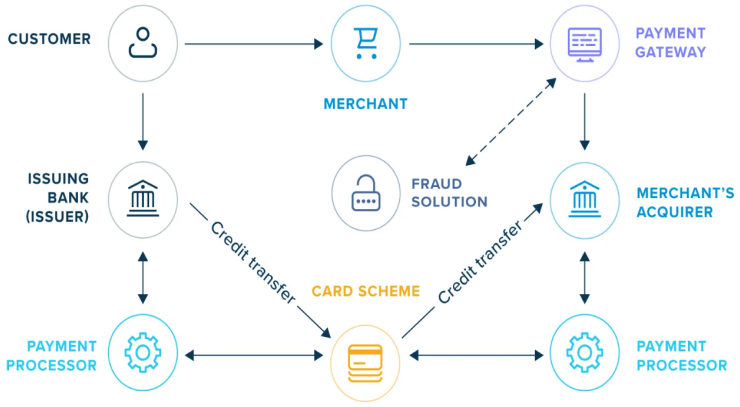


Figure 5. One of the Process Flows*Payment Gateway*with Payment Method via Credit/Debit Card (Bennett, Nadja, 2022)

6. Final System Development

   System finalization is carried out after all stages are declared complete. This system finalization still eliminates several functions. *Payment Gateway* There are existing methods such as credit card payment methods which are relatively rare or even not used by customers or the market of the Hattrick Online Game Cafe.

   The application handover process involves granting full admin access to the application to the owner or management of the Hattrick Online Game Cafe. In addition, system maintenance is ongoing, with regular checks to ensure the system runs smoothly.

CONCLUSION

System usage *Backend* API *Payment Gateway* on an application as a means of payment fully supports *real-time*. Payment options provided by *Payment Gateway,* This can make it easier for customers or visitors to the Hattrick Online Game Cafe by providing them with funds. Cashiers and cafe management no longer need to stock up. *intake* cash *cashflow* Daily because all payments are made cashless. Due to the cashless nature of the service, the cafe management also doesn't provide change to cover overpayments from customers or visitors.

Inaccuracy in recording transactions that may occur due to *human error* such as fatigue during rush hour or early morning can be minimized with the system *Payment Gateway* Cafe owners can view financial report summaries without having to make a direct visit to Central Java or West Java because the necessary documents can be *generate by system* easily whenever and wherever you are.

As input for this research, researchers need all efforts from other researchers or prospective researchers so that the design of the use of the system can be implemented. *Backend* API *Payment Gateway* can be used or developed further not only in one business but can also expand to other business ventures such as MSMEs nationally.

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