PAYMENT POINT ONLINE BANK APPLICATION (PPOB) USING WEB SERVICE IN PT. SUKSES MITRA MANDIRI BASED ON ANDROID

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ABSTRACT

Seeing the development of technology in the field of mobile based on Android at this time**,**make PT. Success Mitra Mandiri which specialized in tour & travel planning to develop business opportunities by building an online bank payment point application (PPOB). PPOB an online payment mechanism that facilitates a wide range of transactions in one integrated system. Based on the results of observations and interviews with the company PT. SMM is found that the problems that many complaints by agents PPOB namely the difficulty in every transaction because the SMS format that can sometimes feel difficult to make the agent forgets the transaction code. Not only limited to that,

Utilization of technology to be used is to utilize the web service technology, Web service is a set of application logic and its objects and methods thatits located on a server connected to the Internet so it can be accessed using the HTTP protocol and SOAP (Simple Object Access Protocol). The goal of this technology is to facilitate multiple applications or components to interact with other applications within an organization and outside the organization using the standard that is not bound platform (platform neutral) and is not bound by a programming language used (language-neutral).

The software is built used to provide convenience to the agents and the public in dealing with one another. Based on test results using black box testing methods and acceptance can be concluded that the software has been built to provide convenience to the dealer when the transaction without having to use complicated formats and society in the transaction without having to go and queue up at the counter.

Keywords: payment point online bank, PPOB, Web Service, Transaction, Android.

1. PRELIMINARY

As the development of the mobile world is always up-to-date where the use of the technology is so rapid. It can be seen from a wide range of applications offered, including education, entertainment, social media, gaming, and business.

PT. Success Mitra Mandiri (PT. SMM) is a company engaged in the field of tour and travel and established in 2009 located in Jakarta. PT. SMM has a division related to transport and tourism, namely sales of airline tickets. In performing servicing activities at this time, PT. SMM only accept reservations by phone, sms, e-mail, web, and whatsapp.

Expanding technology in the field of mobile based on Android at this time**,** make PT. Sukses Mitra Mandiri which specialized in tour & travel planning to develop business opportunities by building an payment point online bank application (PPOB). PPOB an online payment mechanism that facilitates a wide range of transactions in one integrated system. Based on the results of observations and interviews with one high-ranking PT. SMM is Adhi Akbar as directors of companies and speakers at the office of PT. SMM was found that the problem of the many complaints by agents PPOB namely the difficulty in every transaction because the SMS format that can sometimes feel difficult to make the agent forgets the transaction code. Not only limited to that,

Of the problems it found a solution by developing an application PPOB that can help society to the effectiveness of the time and cost in meeting the financial transactions such as electronic pulses, payment of utility bills token (PLN), payment of monthly electricity (PLN), bill payments speedy internet and telephone home, bill payments taps. It is expected that people find it easy to make payments manually in a sense came to where payment of bills and pay at the counter. So that it often affects the long queue, of course, time consuming and inefficient.

As for the operating system on a smartphone device that is selected in this PPOB build applications using the Android operating system because it is based on interviews with PT. SMM, the

company wants PPOB applications running on the Android operating system with a judgment based on the data from International Data Corporation (IDC), which analyzes smartphone OS market share that at this moment the android has a market share of 86.8% of all smartphones activated in the world to-quarter this 3 2016 [1],

Based on the problems derived from PT. Sukses Mitra Mandiri, the author tries to build an application PPOB where every transaction can be used on an Android-based smartphone, the transaction results can be printed in the form of invoices, registration and verification directly from the smartphone. Therefore appointed theme and the title of " Payment Point Online Bank Application (PPOB) Using Web Service In PT. Sukses Mitra Mandiri Based on Android".

1.1. Application

Applications are a subclass of computer software that utilize the capabilities of the computer directly to a task that the user wants. Usually compared to the software system that integrates a variety of computer capability, but indirectly implementing the ability to do a task that benefits the user. An example is Microsoft Office and OpenOffice.org, which incorporates a word processing application, spreadsheet, and several other applications. Applications in a package usually has a user interface with the same making it easier for users to learn and use each application [2],

1.2. Payment

Payment in Indonesian dictionary meaning as payment. In the website of Bank Indonesia (BI) that the payment (payment)can be defined as the transfer of value between the two sides (simply we use the term buyers and sellers), which simultaneously occur the movement of goods and services [3],

The system of payments made by the public today is more likely to use the system directly (direct payment) or indirectly (indirect payment). Direct payment in question is the transaction between the two parties through direct face to face. Indirect payment is the occurrence of the transaction through an intermediary bank without meeting face to face, in the form of account internet banking, SMS banking, etc. [3],

1.3. Payment Point

Payment point is a functioning banking services to serve people who want to make regular payments such as payment of electricity bills, telephone, water, and prepaid card payments. Payment point is the place or counters that accept payments for customers by an individual or business entity that has been working in partnership with the Collection Agent. Payment point is also called a deposit account and the account is defined as conditional. Non-binding nature of banks to perform obligations to certain individuals or institutions who gave the mandate [4],

1.4. Payment Point Online Bank (PPOB)

Payment Point Online Bank is an integrated system of hardware and application software systems, data communications networks and reconciliation of data so that it can function as a media interaction system anything online bill payment with the bank as well as a container organizer customer funds to be forwarded to its partners [5], through the system PPOB, the general public can freely open checkouts for the purpose of service closer to the counter PLN, Telkom, taps, and others to the public as customers. With the system PPOB, it is expected that state-owned enterprises as one of the State Owned Enterprises can provide new business opportunities for the community to help reduce unemployment, and economic empowerment small in area as one of the government programs,PPOB system itself is a development of SOPP (Semi Online Payment Point), where transactions take place in the spring Online, and has a delay (lag time) so update data and financial flows require time. While on PPOB system, all takes place online, where the transaction manually only occur on the customer and PPOB booth, so the update data and financial flows take place in real time (www.payment-nusantara.com).

1.5. Web Service

Web service is a set of application logic and its objects and methods that its located on a server connected to the Internet so it can be accessed using the HTTP protocol and SOAP (Simple Object Access Protocol) [6], In use, the web service can be used on only to check the user data that is logged on to a website or to be used in online banking transactions are complicated. The goal of this technology is to facilitate multiple applications or components to interact with other applications within an organization and outside the organization using the standard that is not bound platform (platform neutral) and is not bound by a programming language used (language-neutral). This can occur due to the use of XML standards supported by many large companies in the world, which is used to exchange data. Other than that, the use of SOAP makes the methods of the objects that exist in a web service can be accessed from other applications such as the application to access the local method.

1.6. JSON

JSON (JavaScript Object Notation) is a lightweight data interchange format, readable and writable by humans, as well as easily translated and made (generated) by the computer. This format is based on part of the programming language JavaScript, Standard ECMA-262 3rd Edition -

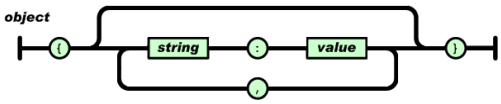
December 1999. JSON is a text format that is independent of any programming language because it uses a style of language that is commonly used by programmers family C including C, C ++, C # , Java, JavaScript, Perl, Python and others. Because of these properties, making it ideal as a JSON data-exchange language[7], JSON is made of two structures:

1. Set of name / value pairs. In some languages, this is stated as an object (object), record (record), structure (struct), dictionary (dictionary), the hash table (hash table), keyed list (keyed list), or associative array [3].
2. Terurutkan value list (an ordered list of values). In most languages, this is expressed as an array (array), vector (Vector), lists (list), or sequences (sequences) [3].

These data structures referred to as a universal data structure. Basically, all modern programming languages support this data structure in the form of the same or different. It deserves to be called so because the data format is interchangeable with programming languages are also based on this data structure. JSON using the following forms:

1. objects

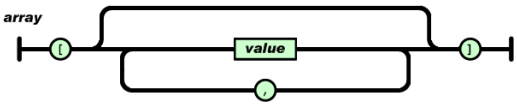
The object is a pair of name / value is not terurutkan. The object begins with {(brace) and ends with} (curly brackets). Each name is followed by: (colon) and each name / value pairs are separated by, (comma).



Picture 1 JSON objects

2. array

Array is the set of values terurutkan. An array begins with [(open square brackets) and ends with] (brackets lid). Each value is separated by, (comma).



Picture 2 array JSON

3. Value

Value (value) can be a string in double quotes, or a number, or true or false or null, or an object or an array. These structures can be nested.

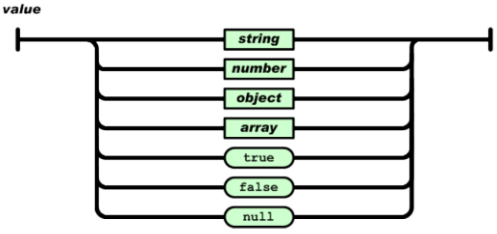


Figure 3 Value JSON

4. String

String is a collection of zero or more Unicode characters, wrapped in double quotes. In the string can be used backslash escapes "\" to form a special character. A character representing a single character in the string. String is very similar to C or Java string.

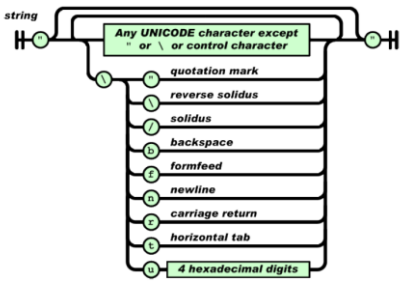


Figure 4 String JSON

5. number

Figures are very similar to the numbers in C or Java, except the octal and hexadecimal formats are not used.

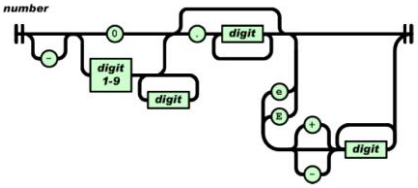


Figure 5 Figures JSON

1.7. Android

Android is an operating system for mobile phones (mobile) such as smartphones and tablet computers. Android is an operating system for teleponseluler based on Linux, which includes an operating system, middleware and applications Android operating system based on Linux which is open (open source) for developers to create applications and develop Android with tools provided the Android SDK (Software Development Kit) and API (Application programming Interface) using the Java programming language[8], Developed by Google Inc., HTC, Intel, Motorola, Qualcomm, T-Mobile, and Nvidia joined in the Open Handset Alliance (OHA). With the aim of supporting an open standards on mobile devices. Code released by Google for Android under the Apache license, a license software and open standards for mobile devices.

1.8. SHA-1 (Secure Hash Algorithm-1)

SHA-1 is the algorithm used to encrypt the data, usually the algorithm used to scramble the password into barusin random code-code that is not readable. Sha1 offers another alternative in information encryption algorithm. sha1 produce 40bit encryption code, so sha1 gives more randomization, and the opportunity to re-decryption larger. SHA-1 is an improved version of SHA-0, and is the version most widely used today in securing electronic transactions on the Internet, together with the MD5 method.

1.9. Blackbox testing

Blackbox testing methods focus on the functional needs of the software troubleshooting. Trial

blackbox trying to find errors in several categories, including:

1. The functions that are incorrect or missing
2. errors interface
3. Errors in data structures or external database access
4. error performance
5. Initialization and termination errors

Blackbox testing technique consists of 10 types including Equivalence Partitioning, Boundary Value Analysis / Limit Testing, Comparison Testing, Sample Testing, Robustness Testing, Behavior Testing, Requirements Testing, Performance Testing, Endurance Testing, Cause-Effect Relationship Testing. One of them will be discussed is the Equivalence partitioning.

1.10. Testing Questionnaire

The questionnaire is a list of statements that should be filled by people who will be evaluated (respondent). The method used in this study was a questionnaire on Likert scale. In a Likert scale, respondents were asked to read carefully any statement which is presented, then he was asked to assess these statements.

Degree assessment of respondents to a statement divided into 5 categories are arranged in stages, ranging from Disagree (ST), Less Agree (T), Simply Agree (N), Agree (S), and Strongly Agree (SS). Or can be otherwise. Statement of each questionnaire are based on the aspects studied. Scoring weights that are used can be seen inTable 0.3 Free scoring

Table 0.3 Free scoring

type Statement	The weight of opinion				
	SS	S	N	T	TS
Positive	5	4	3	2	1
Negative	1	2	3	4	5

Scores are computed in each statement is then multiplied by the respective weighting according to the scenario of questionnaires that have been made. After that the entire weight of the total answer right then divide by the total respondents who will be the average value. The average value of this is taken as a reference attitude whereby if the average value of less than 3, it means respondents are negative and if the average value is more than or equal to 3, it means respondents are positive about the objectives to researchers accomplish , For more details can be seen in the formula below.

$$\overline{X} = \frac{\sum Total}{n},$$

Where,

$\overline{X} \geq 3$ *positive attitude*

$\overline{X} < 3$ *negative attitude*

Information :

$\overline{X}$ = Average

$\sum Total$ = *total value after multiplied by the weighting*

n = total respondents

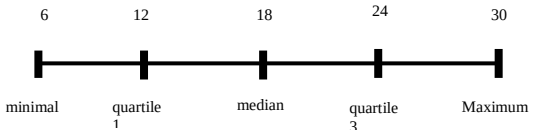
Example, suppose the questionnaires filled out by 5 respondents regarded as samples with the results shown in the following table. What is the score of the smallest and largest to one respondent, and the total of all respondents.

Table 1 Scores Results Item Question Of All Respondents

No. respondents	Item / Item Questions						Total
	1	2	3	4	5	6	
1	5	3	4	1	2	2	18
2	4	2	4	2	4	1	17
3	5	3	3	1	3	2	17
4	4	3	4	1	2	2	16
5	4	3	3	2	3	1	16
Total							84

Based on these data, the steps that can be taken to determine
how the attitudes of respondents to the quality of each product are:

1. Specifies the maximum score, which is the biggest answer scores at times a lot of items.
   5 x 6 = 30
2. Determining the minimum score, the score at the time the smallest answer many items.
   1 x 6 = 6
3. Determining the value of the median, which is the sum of the maximum score with a score of at least halved.
   (30 + 6): 2 = 18
4. Determining the value of quartile 1, which is the sum with a median score of at least halved.
   (6 + 18): 2 = 12
5. Determining the value of quartile 3, which is the sum of the maximum score with a median divided by two. (30 + 18): 2 = 24.
6. Make a scale that describes the minimum score, score first quartile, median, third quartile and maximum score.



Information :

- Category attitude is very positive, that is the area bounded by the third quartile and maximum score. (Quartile 3 = x = maximum score).
- Category positive attitude, which is the area bounded by the median and quartiles 3. (Median = x <Quartile 3).

- Categories negative attitude, which is the area bounded by the first quartile and median. (Quartile 1 = x <Median).
- Category attitude is very negative, which is the area bounded by the minimum score and quartile 1 (minimum score = x <kuartil1).

record :
Range on the scale above only lead to 4 categories attitude, this is because the scale of Likert attitude does not allow any statement neutral item (undecided). So the statement in the Likert scale only two, namely, positive item statement and statement of negative items [4].

7. Look limits - limits the scores for each category of attitude. Based on the earlier scale image, the range of scores from all four categories are:

Table 2 Category Score Range Of Attitude

Very Positive Attitude	Quartile 3 ≤ x ≤ Maximum Score	24 -30
Positive attitude	≤ x ≤ Median Quartile 3	18-24
Negative attitudes	Quartile 1 ≤ x ≤ Median	12-18
Attitudes Very Negative	Minimum score ≤ x ≤ Quartile 1	6-12

8. Make a frequency distribution table each respondent attitudes towards the quality of the product.

Table3 Frequency Distribution Table

Category attitude	Category scores	Frequency	Percentage (%)
Attitude Very Postfix	24 -30	-	-
Positive attitude	18-24	1	20%
Negative attitudes	12-18	4	80%
Attitudes Very Negative	6-12	-	-
		5	100

Based on the table above shows that the attitude of each respondent about the quality of the product, distributed in the category of a very positive attitude and a positive attitude 80% 20%. The percentage gives the sense that as many as four people (80% of all respondents), and as many as 1 person (20% of all respondents) considered negative attitude towards the quality of products produced Yag.

2. ISI RESEARCH

2.1. Problem analysis

Analysis of the problem is the stage to collect and determine the problem which is the core of the idea of software development. People feel difficulty in paying monthly bills due to the very long queues so it takes a lot, besides the selling agent pulses, had difficulty in making payment transactions because the pulses are so long format could allow an error occurred in the transaction

2.2. System Architecture Analysis

The analysis aims to identify the system architecture architecture that will be built based on mobile subsystem.

a. Mobile

The mobile platform is one of the subsystems are selected for the development of this software. Architecture software on the mobile platform illustrates how the software interact with each other as illustratedFigure 6 mobile platform software architecture, The image depicts the overall architecture of the system on the mobile platform.

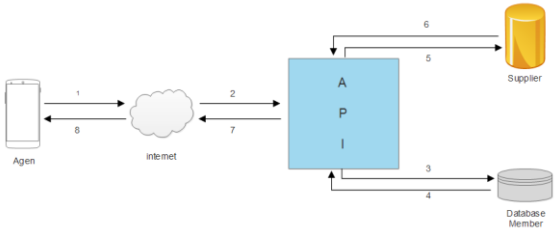


Figure 6 mobile platform software architecture

Below is a descriptionFigure 6 mobile platform software architecture :

1. Users perform a data request to the API over the internet.
2. Then the API receives a request data requested from the user and then validating membership to the member database if the user is already registered or not.
3. If the user is not registered then the API will send a response to the user to register beforehand and if the users are already registered but there is an error in the validation process then the API will tell you that the validation fails.
4. If registered then the process is returned to the API to further make the request data to the system supplier. Inside this process all transactions take place such as the purchase of electronic pulses, post-paid electricity bills payment (PLN), the token electricity (PLN), water bills (PDAM), as well as bill payment Telkom (telephone and speedy).
5. After the system supplier to respond to the API to further restore the data requested in the form of JSON then processed to user devices based on Android.

2.3. Functional Needs Analysis

Functional Needs Analysis system will be discussed in this research is the analysis of the functional needs of mobile and web admin.

1. Mobile Use Case Diagram

Mobile Use Case Diagram is a model to describe the behavior (behavior) software to be created. The following isFigure 7 Use Case Diagram,

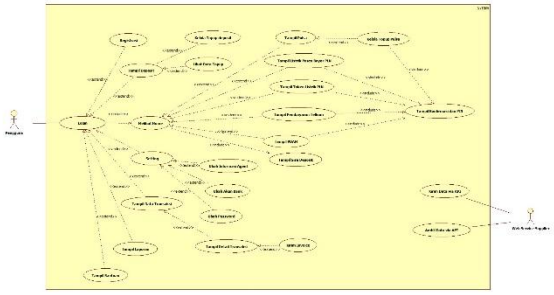


Figure 7 Use Case Diagram

2.4. Design Data

Here is the data from the design software built

1. Relationship diagram

The following isFigure 8 Diagram Relationships of software built.

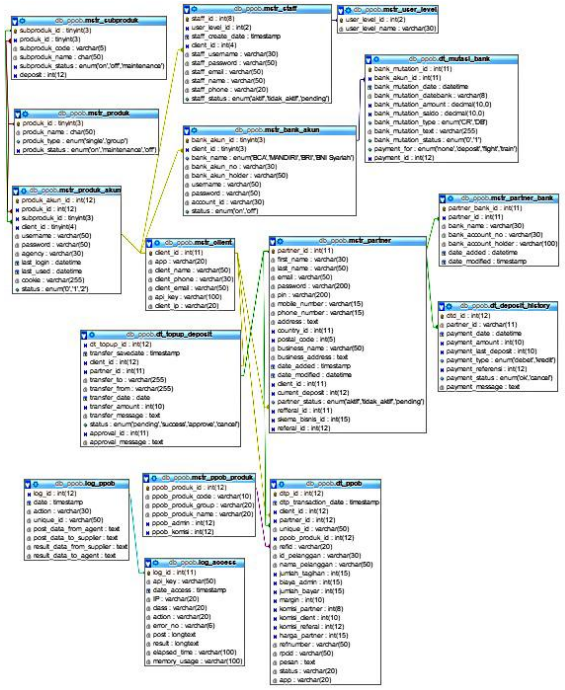


Figure 8 Diagram Relationships

2.5. System implementation

Implementation of the system is done with this by describing the implementation environment where the system will be planted or installed. Then, by making the implementation descriptions of the data used during system development.

1. Specifications Hardware Requirements

Here are the hardware requirements specification used in the development of this software:

Table 4 Hardware Software Development Environment

Computer	Android
1. Processor Core i7 Quad-core 3.0 GHz	1. 1.2 GHz Dual Core Processor
2. Computer with Integrated VGA 2 GB	2. Android devices with 3 GB RAM
3. Computers with screen resolution of 1366x768	3. Android device with a screen resolution of 1080x1920
4. Computer with 4 GB RAM	

Here are the minimum hardware specifications to access the system:

Table 5 Environment Minimum Hardware

website	Android
1. 2.2 GHz Dual Core Processor	1. 1.0 GHz Dual Core Processor
2. VGA computer with 512MB onbar	2. Android devices with 1 GB RAM
3. Computer with a screen resolution of 1024x720	3. Android device with a screen resolution of 854x480
4. Computers with 1 GB RAM	

2. Software Requirement Specification

Here are the software requirements specification used in the development of this software are:

Table 6 Software Software Development Environment

website	Android
1. Operating System Windows 7 Pro 64bit	1. Operating System Android 5.0.1 Lollipop
2. Sublime Text Editor Code 3	2. Integrated Development Environment (IDE) stuido Android 2.1.1
3. Web Server XAMPP 1.8.1	3. Android Framework SDK
4. Google Chrome Web Browser 49.0	4. Sublime Text Editor Code 3

Here are the specifications of the software to access the system:

Table 7 Minimum Environmental Software

website	Android
1. The operating system (platform independent).	Android OS 4.4 KitKat
2. Mozilla Firefox 20.0 web browser, Google Chrome 30.0.1750.154	

2.6. Implementation Interface

Here is a mobile subsystem interface implementation.

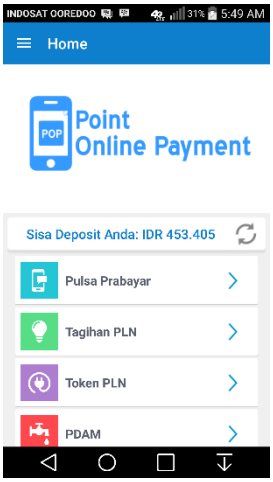


Figure 8 Interface Home

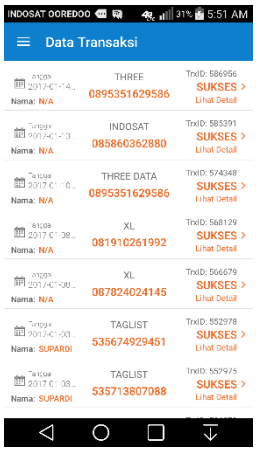


Figure 9 Interfaces Page Data Transactions

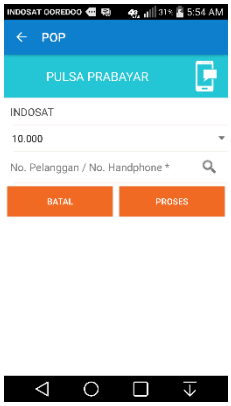


Figure 10 Interface Electronic Toll Purchase



Figure 10 Interface Payment Transactions

2.7. Testing Systems

The software testing is a stage to find the mistakes and shortcomings in software built so they can know whether the software meets the criteria in accordance with the purpose or not.

1. Conclusion Alpha Testing

Based on the results of software testing that is done it can be concluded that the software on android platform built already running as expected both in terms of process validation and error handling.

2. Beta Testing Results

From the results of the calculation details of the questionnaire can be concluded that the first objective of providing convenience services to agents in the transaction so as to minimize the error in the transaction.

Then the second goal which facilitate the public in making payments without having a long queue at the checkouts.

From the results of the calculation details of the questionnaire can be concluded that the first objective that provide convenience to the public time to pay monthly bills that have an average value of 4.045 PPOB where software is considered positive and helpful for the community and the agency.

3. Conclusions and recommendations

3.1. Conclusion

Based on the results of testing on the software that is built it could be concluded as follows:

1. The software is built to provide convenience to the agent when transacting without having to use SMS format.
2. The software is built Provide convenience to the public in transact without having to go and queue up at the counter.

3.2. Suggestion

The software is built is a product-focused domain payment transactions, therefore there are some suggestions that can be used as an alloy of

software development towards the better to support growth in users and content on this software.

As for suggestions for the development of this software are as follows:

1. Developing postpaid toll payment feature, BPJS health, and finance companies so that more users can be helped.
2. Developing software for support on other platforms like iOS because currently only supports software is built on android platform.

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