DEVELOPMENT OF MOBILE APPLICATION STORE ALISHA FANCY SHOP USING PUSH NOTIFICATION SYSTEM AND LOCATION BASED SERVICE (LBS) BASED ON ANDROID

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ABSTRACT

CV.Alisha Kreasi Cemerlang or Alisha Fancy Shop is a store that provides scarf and pashmina and supplies complete Muslim clothing at affordable price. Is one shopping destination in Bandung city

Application of Location Based Service (LBS) and Push Notification on mobile application store Alisha Fancy Shop is to avoid the difficulties of customers in obtaining information on new product promotions, discounts, and events are held, and the search for the location of stores,especially for customers out of town who are visiting Bandung city.Therefore, this research is conducted to implement push notificationband location based service on Android operating system for mobile application store Alisha Fancy Shop.

In this research, the application will be created using Java and Android Studio. The system itself will be using a model oriented of the UML (Unified Modelling Language) object.

In the results of implementation, alpha and beta tested of this research showed that Push Notification and Location Based Service may help customers in gathering some information of the new product, latest discounts, some events, and the nearest location of Alisha shop.

The Key Words : *mobile application store Alisha Fancy, Shop Push Notification, Location Based Service (LBS)*

1. INTRODUCTION

CV. Alisha Kreasi Cemerlang, known as Alisha Fancy Shop is a store that provides a scarf and pashmina and supplies a complete Muslim clothing at an affordable price. Is one shopping destination in the city, because it has designs scarf, pashmina and Moslem exclusive and always up to date. Nowadays Alisha Fancy Shop have 5 stores, 2 stores in the city of Bandung branch, one branch store in Lake City, one branch store in the city of Bogor and one central store, located on Jl. North Salendro 27 Bandung.

Currently the sales process in Fancy Shop Alisha offline form other than by way of direct sales at the store, Alisha Fancy Shop also has a sales website to make the process of online sales. But seeing the development of today's smartphones are growing so rapidly, the Fancy Shop Alisha media eager to add its online sales to be applied to the mobile flat form in order to further improve service for its customers to be more convenient and flexible in the purchase process..

Based on observations conducted in the central shop Alisha Fancy Shop in addition to want to add media sales, problems acquired Alisha Fancy Shop today, namely when customers want to know about the product information is always updated, promotion, or event that is being held by Alisha Fancy Shop , the customer must go to the store to ask for a brochure or ask them directly on the part of Public Relations for the website owned by Alisha Fancy shop just to make the sales process alone is no facility to transmit information such promotion.

Meanwhile, to become one shopping destination, of course, Alisha Fancy Shop should also be able to provide information on the location information stores that can be very easily and quickly obtained by the customer to guide customers to the store Alisha Fancy Shop itself because the information store location is very important for the achievement of that goal. Besides the availability of different stocks in each store to make customers also had difficulty in knowing where the goods are going to store customers are looking for is available.

Based on the above background, the reason how to design mobile applications store in question for one of the technologies that can provide information directly to all customers about promotions and store locations Alisha Fancy Shop to take advantage of the system Push Notification involved in the process of delivering promotional information, products always updated, or event is always held. And LBS (Location Based Service) as a conduit of information regarding the location of the stores are owned by Alisha Fancy Shop

2. LITERATURE REVIEW

2.1 Smartphone Expansion

Smartphone penetration is growing rapidly in Indonesia. According to the company GFK source provider of market information and consumer growth of smartphone users in Indonesia last year reached 70 percent compared to the previous period. [1]

Then how statistics smartphone users in Indonesia, following is the research report from StatCounter website statistical analysis of the mobile users during 2014.

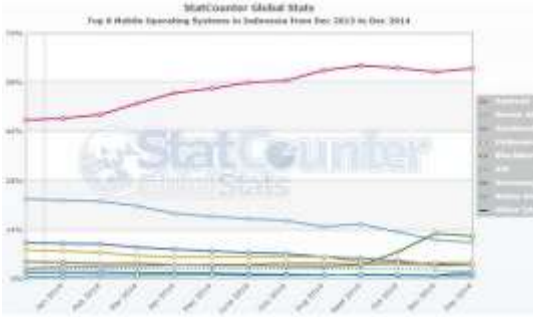


Figure 1,1 Graph Smartphone

2.2 Application

Application is a ready-made program that can be used to execute commands from the user of the application in order to get more accurate results in accordance with the purpose of making the application. [2].

2.3 Mobile Store

M-Commerce is a subset of e-commerce is defined as all activities related to commercial transactions over a communications network with wireless devices or mobile devices. In general, end-user devices that are used in the process of mCommerce include: Mobile, Smartphone, Personal Digital Assistant (PDA). M-Commerce can increase productivity with high-speed data and mobile systems that are cost effective and customer dapaat using m-commerce applications in different places and situations

M-Commerce was born after the e-Commerce which is generally done through the medium of the Internet. M-Commerce birth was mainly triggered by the high penetration rate of mobile phones worldwide. [3]

Excess m-Commerce is as follows:

1. *Ubiquity*; m-Commerce applications can be used wherever the user is located, and in any situation. In other words, M-commerce services are available whenever and wherever it is needed.
2. *Reachability*; through the handset device users can transact and communicate with others who are not affordable because of differences in time and space.
3. *Localization*; m-Commerce provide location information application services needed by the user based on its physical location (location-based services LBS).
4. *Personalization*; m-Commerce applications can only be used by users who own a handset because of differences in the numbering or unique number issued by the telecommunications operator.
5. *Dissemination*; the handset allows users to receive and disseminate information quickly and now (right away).

However, among some advantages as mentioned above, M-Commerce also has some disadvantages:

1. Limitations device.
2. The level of diversity of devices, networks and operating systems is very high, requiring the standardization of inter-vendor platform.
3. The high level of loss / theft of mobile phones
4. Increasing the level of vulnerability to security when data is transferred via the air interface.

2.4 Android

Android is an operating system for mobile devices based on Linux that mencakupsistem operation, middleware and applications. Android provides an open platform for developers to create their applications. [4]

2.4.1 History of Android

Awalnya, Google Inc. membeli Android Inc., newcomers who make software for mobile phones. Then to develop android formed the Open Handset Alliance, a consortium of 34 companies hardware, software, and telecommunications, including Google, HTC, Intel, Motorola, Qualcomm, T-Mobile, and Nvidia. [5]

At the inaugural release of Android, 5 November 2007, along with the Open Handset Alliance Android states support the development of open standards on mobile devices. On the other hand, Google released the Android code under the Apache license, a license software and open standard mobile devices.

In this world there are two types of distributors operating system Android. The first fully supported by Google or Google Mail Services (GMS) and the second is completely free distribution without direct support Google's otherwise known as the Open Handset Distribution (OHD).

Around September 2007 a study reported that

Google filed a patent application mobile phone (Google finally introduced the Nexus One, one type of smart phone GSM using the Android operating system. This mobile phone manufactured by HTC Corporation and available on the market on January 5, 2010) , On December 9, 2008, announced the new members who joined in the work program Android ARM Holdings, Atheros Communications, manufactured by Asustek Computer Inc, Garmin Ltd, Softbank, Sony Ericsson, Toshiba Corp. and Vodafone Group Plc. As the formation of the Open Handset Alliance, OHA announced their first product, Android, mobile devices (mobile) which is a modified Linux kernel 2.6. Since Android release has been carried out various reforms in the form of bug fixes and new feature additions.

The first phone that uses the Android operating system is the HTC Dream, which was released on October 22, 2008. At the end of 2009 is estimated in this world there are at least 18 types of mobile phones that use Android. As it grows, the android version increasingly improved given the rapid technological advances.

At the moment most smartphone vendors already produce smartphones based on Android, vendors that include HTC, Motorola, Samsung, LG, HKC, Huawei, Archos, WebStation Camangi, Dell, Nexus, SciPhone, WayteQ, Sony Ericsson, LG , Acer, Philips, T-Mobile, Nexian, IMO, Asus and many more smartphone vendor in the world that produces android. This is because the android operating system is open source so freely distributed and used by any vendor.

Not only the operating system in smartphones, Android is now a major competitor of Apple in the Tablet PC operating system. The rapid growth of Android in addition to the factors mentioned above is for Android itself is a platform that is very complete both the operating system, applications and tool development, market android applications and support very high from the open source community in the world, so that Android continues to grow rapidly both in terms of the technology and in terms of the number of devices that exist in the world's.

The development version of Android from version 1.1 to 4.0

1. Android version 1.1

On March 9, 2009, Google released the Android version 1.1. Android version is equipped with an aesthetic update to the application, alarm clock, voice search (voice search), sending messages to Gmail, and email notifications.

2. Android version 1.5 (Cupcake)

In mid May 2009, Google released a mobile phone using Android and SDK (Software Development Kit) with version 1.5 (Cupcake). There are several updates including the addition of several features in the mobile version is the ability to record and watch videos with the camera mode, upload video to YouTube and pictures to Picasa directly from the phone, support bluetooth A2DP, the ability to automatically connect to a Bluetooth headset, animated screen, and keyboard on the screen that can be adapted to the system.

3. Android version 1.6 (Donut)

Donut (version 1.6) was released in September by displaying the search process better than before, the battery usage indicator and control applet VPN. Another feature is the gallery that allows the user to select the photos to be deleted; cameras, camcorders and interface the gallery; CDMA / EVDO, 802.1x, VPN, Gestures, and a Text-to-speech engine; ability to dial contacts; change text to speech technology.

4. Android version 2.0/2.1 (Eclair)

On December 3, 2009 launched the Android phone with version 2.0 / 2.1 (Eclair), changes made to the hardware optimization, improved Google Maps 3.1.2, UI changes with the new browser and support for HTML5, list of contacts, support for camera flash 3 , 2 MP, digital zoom, and Bluetooth 2.1

5. Android version 2.2 (Froyo: Frozen Yoghurt)

In May 2010, the Android version 2.2 Rev 1 was launched. Android is very much on the market, one of which is used in the Samsung FX tab which is already on the market. Features available in the android version of this already complex are:Kerangka aplikasi memungkinkan penggunaan dan penghapusan komponen yang tersedia.

1) Dalvik virtual machine optimized for mobile devices.
2) Graph: graph in 2D and 3D graphics based on the OpenGL libraries.
3) SQLite: for data storage.
4) Supports media: audio, video, and various image formats (MPEG4, H.264, MP3, AAC, AMR, JPG, PNG, GIF).
5) GSM, Bluetooth, EDGE, 3G, and WiFi (hardware independent.
6) cameras, Global Positioning System (GPS), compass, and accelerometer (hardware dependent).

6. Android version 2.3 (Gingerbread)

Android version 2.3 was launched in December 2010, things are revised from the previous version is the capability as follows:

1) SIP-based VoIP

2) Near Field Communication (NFC)
3) Gyroscope and sensor
4) Multiple cameras support
5) mixable audio effects
6) Download manager

7. Android version 3.0/3.1 (Honeycomb)

Released in February 2011 as an android version 3.0 revision 1 and android version 3.0 revision 2 has been released in July 2011.

8. Android version 4.0 (ICS: Ice Cream Sandwich)

Announced on October 19, 2011, bringing the features of Honeycomb to smartphones and added new features including unlocked by face recognition, data network usage monitoring and control, integrated social networking contacts, enhancement of photography, searching for emails offline, and share information using NFC , The first phone that uses the operating system is the Samsung Galaxy Nexus.

2.5 Push Notification

Push notification types of messages sent from the application to the device, most commonly used by mobile applications to provide information relating to its users. Push notification appears as a message notification on the home screen of the device. Users do not need to open or run an application to receive a notification from the application. Push notification is available for all operating systems: iOS, Android, and more. [6]

2.5.1 Google Cloud Messaging

GCM (Google Cloud Messaging) is a service that works on Android to run a Push Notification. GCM services on Android is run by an application that runs in the background and called Google Play. This service will wake the relevant application when you receive a new notification and will display a notification in the Android notification panel. [7]

Google Cloud Messaging (GCM) is a free service provided by Google. With GCM we can transmit data from the server through the GCM are transmitted to the client in this case android devices. This service can make sending notifications messages of 4KB.



FIgure 2.1 Google Cloud Messaging

2.6 Location Based Service

Location Based services or location-based services is a general term used to describe the technology used to locate the devices we use. LBS are two main elements: [4]

1. *Location Manager* (API *Maps*)

Providing tool / source for LBS, Application Programming Interface (API) Maps provides the facility to display, manipulate maps / maps with these types of features such as satellite view, street (street), or a combination thereof. This package is at com.google.android.maps.

2. *Location providers* (API *Location*)

Providing search technology to use location device / devices. Location API associated with GPS data and real-time location data. API location is on a package that is in the package android.cocation android. By Location Manager, we can determine our current location, track movement / migration, as well as proximity to a specific location by detecting the displacement.

2.6.1 Google Direction API

Google Direction API is a service to calculate directions between locations using an HTTP request. Direction can assign the origin, destination and waypoints either a text string (eg, "Chicago IL" or "Darwin, NT, Australia") or as longitude / latitude. Or you can also use a series of waypoints multiside [5].

The service is generally designed to calculate the direction of the static (known in high level). Addressing to the placement of application content on a map, the service is not designed to respond in real time to the user input, for example. For the calculation of the dynamic direction (for example, the user interface elements). [5]

2.7 Web service

Web service is a software component that is self-containing, self-describing modular applications that can be published, allocated and executed on the web. Web services is a technology that converts Internet capabilities by adding a web transactional capabilities, the ability of the web to communicate with the pattern of program-to-program (P2P). The focus of the web has been dominated by the communications program-to-user interactions with business-to-consumer (B2C), while transactional web will be dominated by the program-to-program interaction with business-to-business. Below are the building blocks of web service which provides the facility of remote communication

between the two applications is a web services layer architecture. [8]

a. Web service is a software component that is self-containing, self-describing modular applications that can be published, allocated and executed on the web.
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d. Below are the building blocks of web service which provides the facility of remote communication between the two applications is a web services layer architecture. [8]



Gambar 2.2 Web Service Block

2.8 JSON

(JavaScript Object Notation) Format Adalah Data pertukaran Yang Ringan, Mudah dibaca Dan Ditulis oleh Manusia, Serta Mudah diterjemahkan Dan Dibuat (menghasilkan) Komputer Oleh. Format Penyanyi Dibuat berdasarkan Bagian Dari Bahasa Pemprograman JavaScript, Standar ECMA-262 Edisi ke-3 - Desember 1999. JSON format yang merupakan Teks Yang TIDAK Bergantung pada bahasa pemprograman apapun KARENA using hd bahasa Yang Umum digunakan Oleh programmer Keluarga C termasuk C, C ++, C # , Java, JavaScript, Perl, Python dll. Oleh KARENA Sifat-Sifat tersebut, menjadikan JSON yang ideal sebagai bahasa pertukaran-data. JSON Terbuat Dari doa Struktur [9]:

1. The 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.
2. List the value terurutkan (an ordered list of values). In most languages, this is expressed as an array (array), vector (Vector), lists (list), or sequences (sequences).

These data structures referred to as a universal data structure. Basically, all modern programming languages support in the form of a data structure that is 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 menggunakan bentuk sebagai berikut:

1. Object

Object is a pair of name / value is not decomposed. 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).

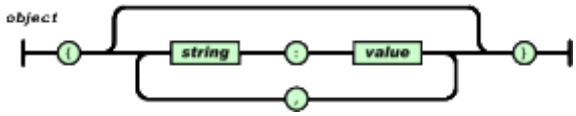


Figure 2.3 Object Writing

2. Array

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

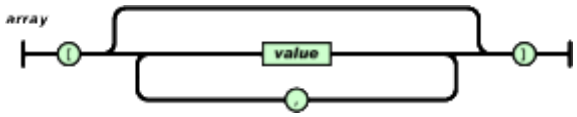


Figure 2.4 Array Writing

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[9].

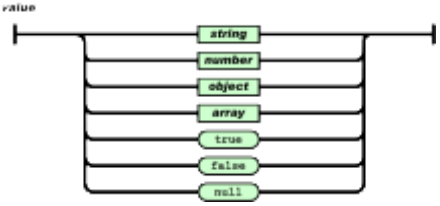


Figure 2.5 Value Writing

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.

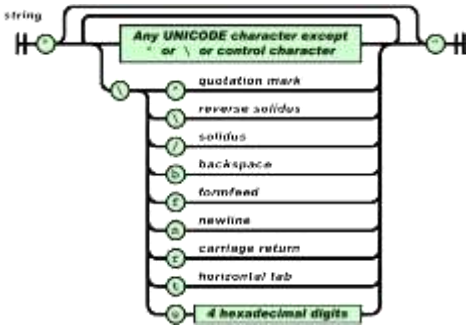


Figure 2.6 String Writing

5. Numbers

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

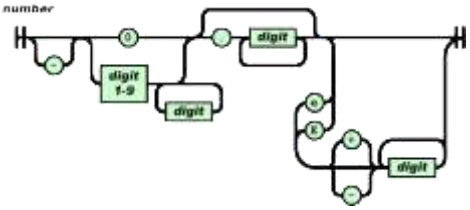


Figure 2.7 Numbers Writing

3. RESEARCH CONTENT

3.1 System Analys

Development of mobile application store Alisha Fancy Shop utilize push notification and location based service (LBS) based on android is an online store based mobile application created in addition to the sale of media Alisha Fancy Shop in the process of buying and selling online that were previously only based websites. In addition to the process of buying and selling online, this application is also built to facilitate Alisha Fancy Shop in promotion and bookmark locations of the stores owned by Alisha Fancy Shop. In promoting the application can provide information about new products, discounts, event competitions and other events. The promotion will be delivered systems on the applications installed on your android phone subscribers in the form of a notification or message that tells when there is an event that is being held by Alisha Fancy Shop. As for the locator, this app provides information such as the location of the nearest store from the customer's shoes are as well as providing a path or track information that must be traveled to get to that location.

The following analysis of the existing system in the development of mobile application store Alisha Fancy Shop utilize push notification and location based service (LBS) based on android:

1. Conducting the process of buying and selling online on your android phone.
2. Provide notification or notification directly promotional information about existing Alisha Fancy Shop.
3. Provide information on store locations Alisha Fancy Shop customers' closest position to be and the path that must be traveled to get to the store.
4. Mobile systems store Alisha Fancy Shop berbasisis android application form internet connected and integrated with a system that has gone before.

3.2 Ongoing Analysis System

Alisha online sales system architecture Fancy Shop are currently running.

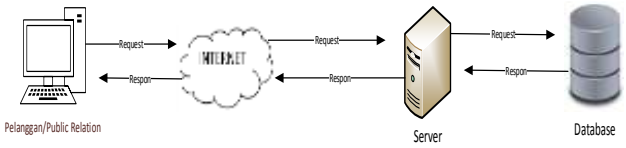


Figure 3.1 The System Architecture Ongoing

The interface and scenario of the online sales system Alisha Fancy Shop is running.



Figure 3.2 System Interface ongoing

3.3 Architecture Design Analysis System

Analysis of system design architecture aims to identify the architecture that will be built on two websites and mobile systems.Arsitektur *Website*

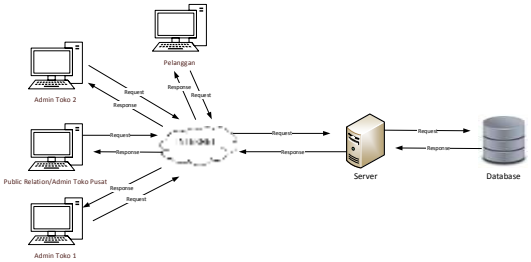


Figure 3.3 Web architecture is to be set

2. Arsitektur *Mobile*

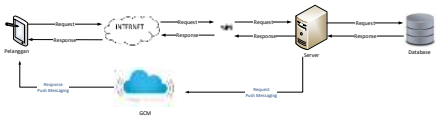


Figure 3.4 Mobile System architecture to be built

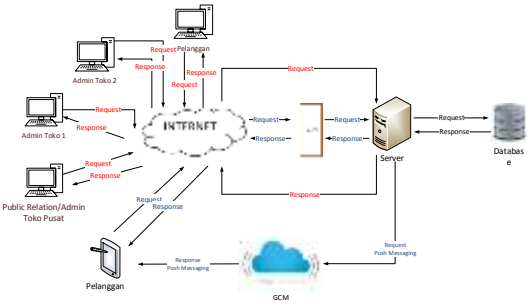


Figure 3.5 The overall architecture of the system is to be set

3.4 Functional Analysis

Use case diagram is a model for the behavior of information systems that will be create.

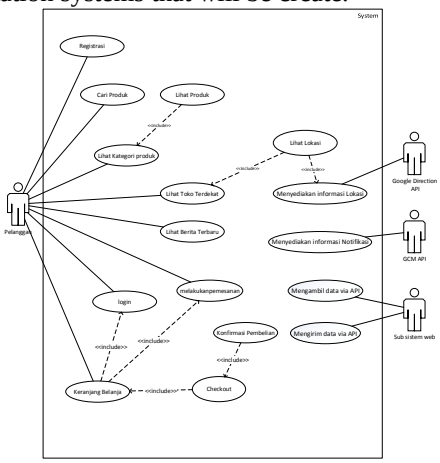


Figure 3.6 Use Case System

4. TESTINGAND IMPLEMENTATION

4.1 Interface Implementation

Implementation of the interface is the look-see of the instructional media applications and troubleshooting

Perancanagan Interface interface is a plan overview of the programs that appear on android devices aimed at giving an overview of the application to be built.



Figure 4.1 SplashScreen Interface



Figure 4.2 Login Interface



Figure 4.3 Register Interface



Figure 4.4 Halaman Utama Interface



Figure 4.5 Menu Utama interface Before Login



Figure 4.6 Menu Utama interface After Login



Figure 4.7 Category Interface



Figure 4.8 Search Interface



Figure 4.9 Product Detail Interface



Figure 4.10 Toko Terdekat Interface



Figure 4.11 Look Location



Figure 4.12 Keranjang Belanja Interface



Figure 4.13 CheckOut Interface



Figure 4.14 Konfirmasi Interface



Figure 4.15 Berita Terbaru Interface



Figure 4.16 Notification Interface

4.2 System Testing

4.2.1 Alpha Test

In Alpha testing, testing done of Black Box testing

No	Component Tested	Method of Test	Expected results
1	Koneksi	*Blackbox*	succeed
2	Login	*Blackbox*	Succeed
3	Register	*Blackbox*	Succeed
4	Kategori	*Blackbox*	succeed
5	Pencarian	*Blackbox*	succeed
6	Detail Produk	*Blackbox*	succeed
7	Toko Terdekat	*Blackbox*	succeed
8	Keranjang Belanja	*Blackbox*	succeed
9	Check out	*Blackbox*	succeed
10	Konfirmasi	*Blackbox*	succeed
11	Berita Terbaru	*Blackbox*	succeed
12	Notifikasi	*Blackbox*	succeed
13	Logout	*Blackbox*	succeed

Table 4.1 Alpha Test Result

From the results of tests performed, it can be concluded that the system is running as expected and functionally is able to produce the expected output.

4.2.1 Beta Test

From the testing that has been done Conclusion The results of beta testing is done by distributing questionnaires to customers is that the mobile application store built to help enable customers to receive promotional information such as their new products, discounts, or events are held, enabling customers to search for and find a store The closest customer is located and can help find the availability of products in stores

5. PENUTUP

From the discussions that have been described, it can be deduced that:
1. Mobile Application Store Alisha Fancy Shop Android based can be built for customers Alisha Fancy Shop many who use Android Smartphone and Smartphone type most widely used.
2. Mobile Application Store Alisha own android-based Fancy Shop can assist customers in determining the nearest store location of your customers are located, provide information on the latest products, discounts and events held and assist

customers in finding information on availability of stock of products to be purchased in stores owned by Alisha Fancy Shop.



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