

# **DEVELOPMENT OF GAWAAPPS APPLICATION USING REMINDER FEATURES AND ESTIMATOR IN GAWA SEJAHTERA STORES**

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## **ABSTRACT**

Gawa Sejahtera stores selling building materials. This store uses sales grooves that store customer deposit balances first, and then make purchases as needed. But there are problems in the system of deposits that is where the customer save some money before spending into building materials problems that often occur in this deposit system is taking a number of items exceeds customer deposit balances saved, it certainly makes the store suffered losses because they have to bear the debts of customers this is the case because the transaction process calculation taking stuff done in once a week at the end of last week the customer does not know the amount of the remaining balance in the store and customers often have extravagance in the purchase of building materials, Therefore, there is an idea to build applications based on Android which gawaapps with a mobile device that is most widely used. App purchases gawaapps has a function that features material calculations and estimates. The method used to make recommendations based on those materials using reference AHSP work as well as using cloud messaging firebase for the reminder of the application gawaapps, in addition gawaapps applications built with object oriented approach. This application is expected to ease to facilitate the user in knowing estimate of materials used in building a house and know recapitulation of transactions made by pengguna accurately and to facilitate users in making know the balance amount available.

**Keywords** : Gawa Prosperity, Deposit, Firebase Cloud Messaging, Calculate, Estimator

## **1. PRELIMINARY**

### **1.1 Background**

Gawa Sejahtera stores selling building materials. The company started established by H. Rudi Salam and Cicin- Kuraesin in 1991, located in Kuningan Selajambe. Prosperous Gawa store uses two strands of sales that store customer deposit balances first, and then make purchases as needed, after the goods are prepared, the customer can pick up the ordered goods directly to the store or the customer can ask the shop to deliver the goods of the order. Currently Gawa Sejahtera Toko recording

sales transactions, deposit balances, as well as the preparation of reports by hand is using the book.

Based on observation of the store gawa prosperous there are problems in the system of deposits in current operation, the system of deposits is one of the business process where customers save some money before spending into building materials problems that often occur in the system of this deposit is the customer take a number of items exceeds the deposit balances are stored, so customers have a debt to prosper gawa store this happens because in the process of making the counting of transactions in goods done once a week on the weekends. In addition, based questionnaires at Gawa store spread to customers by 30 respondents, 84,

Based on these problems, it takes an application to help customers determine the amount of remaining balances as well as to help consumers shop goods exceeds the balance of deposits in store Gawa, otherwise it easier for customers to help calculate the cost of construction of houses in order to recommend the purchase of building materials and easier for customers to make payments of purchase or deposit balances needs to store Gawa Sejahtera. Thus, this research will focus on building an application entitled "Application Development Features Gawaapps Using Reminder And Estimator In Gawa Sejahtera Store" based on Android. Android

chosen because it is the operating system with an open source license so it can be developed independently by each person to support the activities and daily work, including in the sale of building materials [1]

### **1.2 Firebase Cloud Messaging (FCM)**

FCM is a service used to perform notifications (notifications) on the application based on Android, iOS and web applications. Previous Firebase Cloud Messaging named Google Cloud Messaging or GCM, but now has changed and become greater at Firebase. The main steps to implement the FCM in Android is making project at Firebase and clicking integrasikannya with Android [10].

### **1.3 Calculate Work**

Calculate the work is a feature that allows general users to calculate the use of materials based on an analysis of unit price (AHSP) it is intended to

allow public users can find out the estimated users of materials include foundation work, work bricklaying, work pembesian, work installation of ceiling, jobs paint, installation Works Ceramics, Works Glass Works Replace roof and [5].

### 1.5 Purpose and Objectives

The purpose of the research is done, which is to build Gawaapps Applications Using Features Reminder And Estimator In Store Gawa Sejahtera.

The purpose of this study are:

1. Helping Customers to determine the amount of the remaining balance in the store so help avoid the expenditure of building materials that exceeds the balance in the store.
2. Helps customers find recapitulation purchases at stores gawa prosperous
3. Enable customers to calculate the goods to be purchased so as to prevent waste when customers purchase building materials.

### 1.6 Research Methods

Framework for research to be conducted can be seen in Figure 1 below:

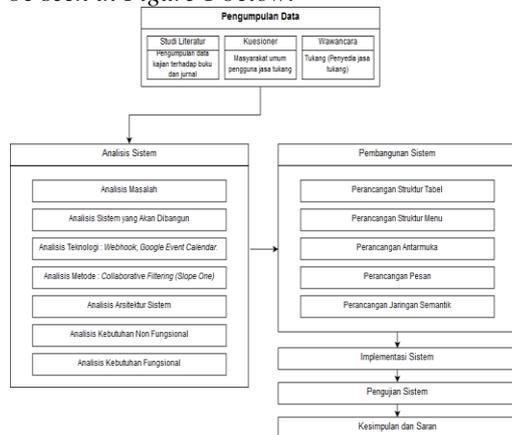


Figure 1. Framework Research

### 1.7 Software Development Methods

The method used in the making of this software is the Waterfall model. As for the stages through which the process can be seen in Figure 2 below [6]

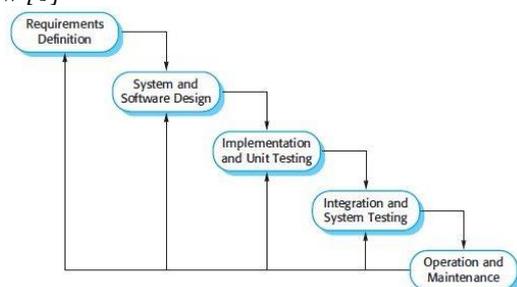


Figure 1. Software Development Methods

## 2. RESEARCH CONTENTS

### 2.1 System Architecture Analysis

Analysis of system architecture was designed in order to describe a system sends data requests and how the system is sent in response to the data

requested so as to users of the system. The user uses the hardware in the form of smartphones as a medium for accessing the application. An overview of the system architecture that is being studied can be seen in Figure 3 below:

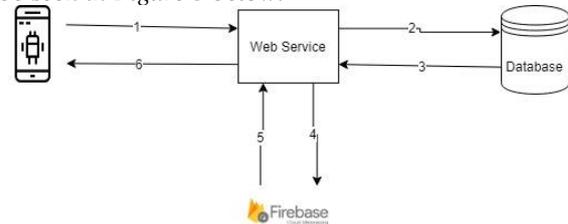


Figure 3. System Architecture

### 2.2 Problem Analysis

Analysis of the problem is the stage of elaboration of the problems that exist before the application is built and aims to help the development of this application. As for problems that can be inferred from the identification of the problem is as follows:

1. Customers trouble knowing the remaining balance in the store so that customers frequently exceeded spending account balances at the shop it would make the customer has a debt to the store gawa prosperous happens because in the process of counting of transactions carried out within a week once at the weekend.
2. Customers difficult to obtain balance information in the shop due to transaction history gawa prosperous only using note as proof of the transaction and calculated within a week once so as to determine the use of the deposit is very difficult in the recapitulation.
3. Customers often experience the extravagance in the purchase of building materials that cause overruns in building houses and wastefulness unused building materials.

### 2.3 Analysis technology used

#### 2.3.1 Firebase Cloud Messaging (FCM)

Push Notification is implemented using Firebase Cloud Messaging (FCM) on features built notification. The notification feature include:

1. Provide reminders to customers when they make a deposit balances, make a purchase.
2. Provide a reminder to shop Gawa prosperous when there are customers who make a deposit balances, make a purchase.

The use of cloud messaging firebase make the delivery of information can be done quickly with virtually no cost

(When the Internet connection is not counted) although notification is not received in time [10].

Application of cloud notice in academic information systems can produce good results, where parents can obtain the latest information about the activities of their children to college directly their smartphone [10].



## 2.7 Use Case Scenarios

Use case have a scenario where every part of the use case shows the process of what happens in each part within the use case. the user gives commands to each section and what response was given by the system to the user after the user gives commands to each of the parts use case [8].

Use Case	doing Purchase	
iteration	SKPL - F - 08	
Interest in context	Users make purchases	
preconditions	Form of payment shown	
Success End Condition	Displaying messages successfully	
Failed End Condition	Displays an error message	
Primary actor	Customer	
triggers	Users press the buy button	
Scenario	Step	Action
	1	The user selects a menu cart
	2	The system displays the menu cart
	3	The user selects a menu Pay
	4	The system displays the purchase form
	5	Users fill in the purchase form
	6	Users choose the buy button
	7	System validate user input
	8	The system displays a successful message
exceptions	Step	Branching action
	2.1	Data basket is empty
	2.2	Data basket filled
	7.1	Blank purchase form
	7.2	Purchase form filled

Table 2, Use Case Scenario Make Purchases

## 2.8 Class Diagram

The class diagrams a model of some class that describes the relationship between classes, including associations and generalizations. Here is the class diagram of the system built.

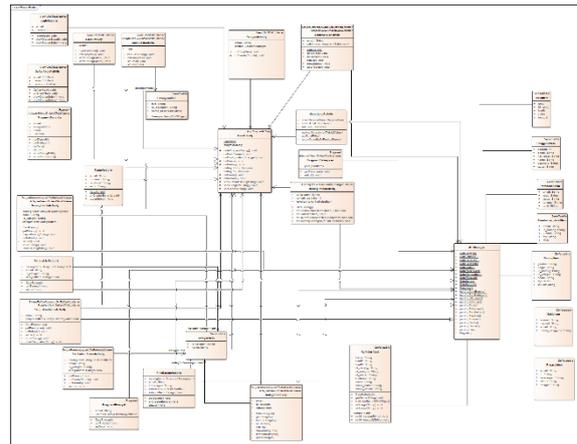


Figure 5. Class Diagram

## 2.9 Sequence diagram

The diagram sequence illustrates the objects that interact with each other in which the message was sent. Sequence Diagram is also a dynamic model that describes the behavior of the object, in this study sequence diagram is divided into two parts: sequence diagrams and sequence diagrams officers customers. Here is a sequence diagram Gawaapps built this application.

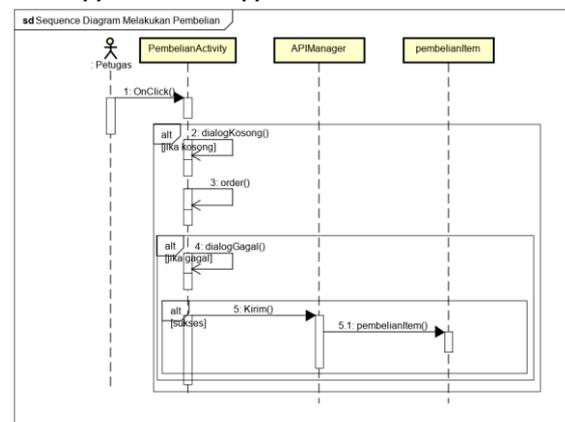


Figure 6. Sequence Diagram Make Purchases

## 2:10 Design System

### 3.10.1 Relation Scheme Design

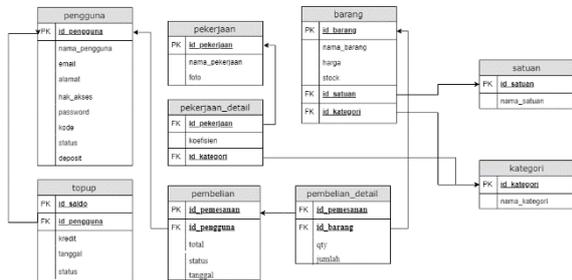


Figure 7. Relation Scheme Design

### 2.10.2 Menu Structure Design

The menu structure is the menu structure which is then applied to the system that was built with the aim to make it easier to see the menus that can be accessed in the application. Here's a menu structure that has been built. Here is a picture that is the structure of the menu system of the customer

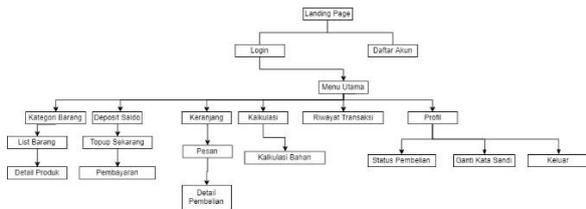


Figure 8. Structure of Menu Customer

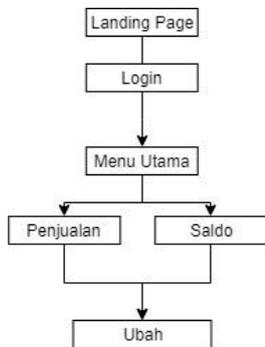


Figure 9. Menu Structure Officers

### 2.10.3 Interface Design

The design of the user interface is part displays are expected to be applied to the application's built Gawaapps. Here is a picture of the user interface displays the services that will be used as a description of the system built.

<p><b>M05</b></p>	<ul style="list-style-type: none"> <li>• Click the button to get to the M09 Basket</li> <li>• Click the button to get to the M08 Topup</li> <li>• Click the reload button to refresh the balance</li> <li>• Click the button to the bill for M30</li> </ul>
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- Click the Home button to get to the M05
- Click the Button Box for heading M14
- Click the Calendar button to get to the M18
- Click the Profile button to get to the M19

- Screen Size: Customize
- Font Color: Adjust

Figure 10. Interface Home

**M16**

- Click the Back button to get to the M14

- Screen Size: Customize
- Font Color: White

Figure 3.11 Calculation Interface

## 2:11 System Implementation

### 2.11.1 Implementation interface

Interface implementation is the implementation phase of the analysis results into the programming language that creates a real look in the application form. Here is the implementation of the application interface is built.

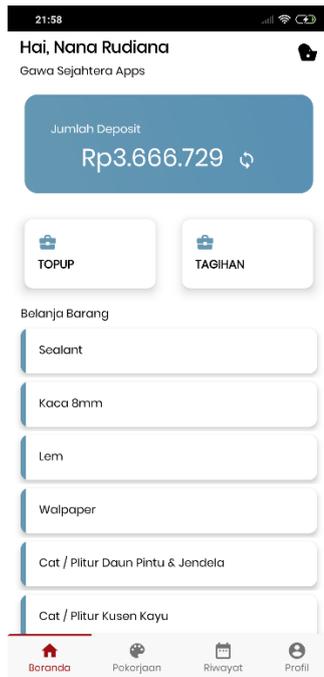


Figure 12. Home Interface

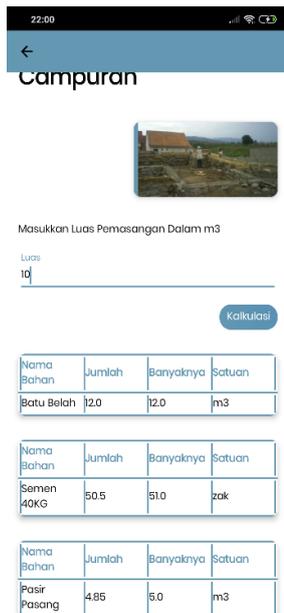


Figure 13. Calculation Interface

### 2.11.2 Technology implementation

Implementation of the technology is the stage of implementation of the results of analysis technologies into a programming language. Here is the implementation of technology applications are built.

#### 2.11.2.1 Firebase Cloud Messaging

```

1. showNotification (getActivity
   () "Notification", "Your balance is now:" +
   FormatRupiah.format (Double.parseDouble
   (userItem.get (0) .Status)), intent);
2.
3. public void showNotification (Context context,
   String title, String body, Intent intent) {
4. NotificationManager notificationManager =
   (NotificationManager) context.getSystemService
   (Context.NOTIFICATION_SERVICE);
5.
6. int notificationId = 1;
7. String channelId = "Channel-01";
8. String CHANNELNAME = "Channel Name";
9. int importance =
   NotificationManager.IMPORTANCE_HIGH;
10.
11. if (Android.os.Build.VERSION.SDK_INT > =
   android.os.Build.VERSION_CODES.O) {
12. NotificationChannel mChannel
   = new NotificationChannel (
13. channelId, CHANNELNAME, importance);
14. notificationManager.createNotificationChannel
   (mChannel);
15. }
16.
17. NotificationCompat.Builder mBuilder
   = new NotificationCompat.Builder (context,
   channelId)
18. .setSmallIcon (R.mipmap.ic_launcher)
19. .setTitle (title)
20. .setBody (body);
21.
22. TaskStackBuilder stackBuilder =
   TaskStackBuilder.create (context);
23. stackBuilder.addNextIntent (intent);
24. PendingIntent resultPendingIntent =
   stackBuilder.getPendingIntent (
25. 0,
26. PendingIntent.FLAG_UPDATE_CURRENT
27. );
28. mBuilder.setContentIntent (resultPendingIntent);
29.
30. notificationManager.notify (notificationId,
   mBuilder.build ());
31. }

```

Figure 14. Implementation Firebase Cloud Messaging

#### 2.11.2.2 Calculations Calculation Method Works

Implementation of the work in the application gawaapps calculations can be seen below:

```

1. public void calculation (final String param_Luas) {
2. String url = AppConstans.data_kalkulasi;
3. Map <String, String> params = new HashMap <> ();
4. params.put ("Id_pekerjaan",
   PekerjaanItem.id_pekerjaan);
5.
6. APIManager.DataKalkulasi (this, new OnApiListener () {
7. @Override
8. public void onApiStartLoad (String url) {

```

```

9.  showProgressDialog ();
10. }
11.
12. @Override
13. public void onApiSuccessLoad (String url, String
message, Object object, int resultNumber) {
14.  hideProgressDialog ();
15.  kalkulasiItems = (ArrayList <KalkulasiItem>) object;
16.  Locale localeID = new Locale ("In", "ID");
17.  NumberFormat formatRupiah =
NumberFormat.getCurrencyInstance (LocaleID);
18.  for (int i = 0; i < kalkulasiItems.size (); i++) {
19.  double value = Double.parseDouble (kalkulasiItems.get
(i) .koefisien) * Double.parseDouble (param_Luas);
20.  kalkulasiItems.get (i) .hasil3 = String.valueOf
(value);
21.  }
22.  for (int i = 0; i < kalkulasiItems.size (); i++) {
23.  double value = Double.parseDouble (kalkulasiItems.get
(i) .koefisien) * Double.parseDouble (param_Luas);
24.  kalkulasiItems.get (i) .hasil2 = String.valueOf
(Math.ceil (value));
25.  }
26.
27.  setList ();
28.  }
29.
30. @Override
31. public void onApiErrorLoad (String url, String message)
{
32.  hideProgressDialog ();
33.  }
34. }, url, params);
35. }

```

**Figure 15. Implementation Calculate Works**

**2:12 Testing Systems**

System testing is the stage to find the mistakes and shortcomings in the software that is built so that it can be known whether the software has achieved the objectives or not. Tests conducted on Gawaapps applications will use alpha testing strategy (black box) and beta testing.

**Table 3. Selecting Functionality Testing Results Work**

Cases and Test Results (Data True)			
Data Input	Expected results	Observation	Conclusion
Jobs: Jobs Size: 10	Successfully perform calculations materials	The system displays the data material calculations	be accepted

**3. COVER**

Based on test results GawaApps application on android platform it could be concluded as follows:

1. GawaApps application can simplify their users know the balance amount available in stores Gawa Sejahtera.
2. Applications can determine recapitulation GawaApps transactions that have been carried out by accurately pengguna
3. GawaApps application can help users in knowing the estimated materials used to build houses.

The advice against GawaApps application development are as follows:

1. Develop a platform that can support applications where currently only supports android platform.
2. Adding features not only on the materials used but the following calculation handyman services.

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