APPLICATION OF BACKEND AND FRONTEND SYSTEMS ON GO-BABY APPLICATIONS in BANDUNG CITY

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APPLICATION OF BACKEND AND FRONTEND SYSTEMS ON GO-BABY APPLICATIONS in BANDUNG CITY

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Abstract

The purpose of this research is that researchers build basic applications in solving problems that occur in housewives and career women, namely GO-BABY Application that provides facilities to find a place in caring for children, and can provide security, education, health and comfort for a child. Applications are built from 2 parts, namely the first part in the society side such as housewives / career women and the second part is the side of the provider of child care services. The application that is built will integrated between applications that are applied in the society and service providers through an Android-based application and web based application. The results of this study will have a direct impact on both housewives/career women, in providing child care solutions that can be trusted while for child care services provider, provide convenience in the administration of child care services.

Keywords: *GO-BABY, Application, Android, Web.*

1. Introduction

The application is a tool in the form of software that contains functional collections that help the needs of the community in various fields as users [1]. The types of applications that exist and develop in the community are data processing applications such as Microsoft Word, Microsoft Excel as a financial data processor, Microsoft Power point for presentation data processing tools, Photoshop for image / video processing, and entertainment applications such as game applications.

The purpose of the application is to provide convenience in carrying out daily life activities. One of the objectives of this research is to build applications, especially to provide facilities for child care services.

The application generated from this research is an application called GO-BABY, where this application has advantages for child care providers in processing administrative services data such as child registration and ordering services online, facility processing/child care services, payment facilities, and scheduling child nurses, making it easier for housewives/career women as users of these services. Customers can interact directly with the manager of child care services through the application, thereby reducing concerns over the services provided, fostering a sense of trust in service providers.

The application consists of 2 parts, namely the admin section as a whole data processor, controlling input data, data security, data provider, data distribution, network data, and data output, while in the user section in providing input data as users of child care services include registration, ordering services, using service facilities, and payment. Both of these parts will become one part in a centralized application consisting of web-based and android-based applications.

A. Problem Of Formulation.

So that the application objectives can be achieved between the needs needed by the society/housewives/career women and care providers, then this research is formulated as follows:

1) *Backend Application*
   Build admin/backend applications or server data processing, where this application produces the main application in processing child care data..
2) *Procedure, System Mechanism, Frontend Application.*
   Establish system procedures and mechanisms in the form of applications for users of child care services. In this study, the objects were housewives and career women.
3) *GO-BABY Application Function.*
   Functions built through the GO-Baby application as a child care information system.
4) *Business and Technology*
   The application of the mechanism of electronic systems and electronic-based business.
5) *Implementation*
   Implementation for creating applications, software and networks..

2. The Material And Method.

2.1. Material

2.1.1. Android

Android is an operating system for mobile device based linux which includes operating system, middleware and application. The android application who developed using java and easily scaled them out to a new platform[1].

2.1.2. Web Service

Web service as a set of program functions to do certain work which in this case is certainly data manipulation - retrieving, adding or changing data [2]

2.1.3. Microservice

An approach to developing applications with a small set of services, where each service runs on its own process. Each service can communicate with a lightweight mechanism[3]

2.1.4. Application *Programming Interface (API)*

Application Programming Interface (API) is part of web services and functions of the overall web service. The API is related to the CRUD command and other logical commands. APIs in research in this framework use RESTFUL technology in the controller class and API data exchange format using JSON.

2.1.5. Framework Architecture

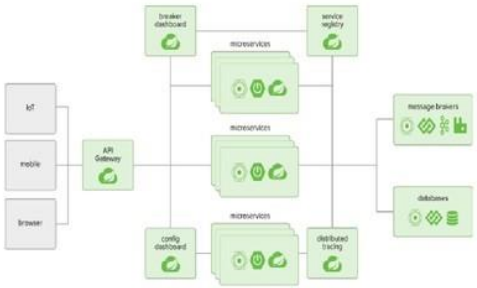

Fig. 1: Framework Architecture

a) Distribution

Distributed systems are not too difficult to program and run properly, because the technology used in the Spring Cloud framework, where there is a Circuit Breaker that is useful for Load Balancing, does not require very expensive hardware. In this case the function can divide the costs on each service dynamically. If there is a system interruption in the service, the Circuit Breaker function can move to the service instance so that the service can still be run and the risk of system failure can be overcome.

b) Eventual Consistency[4]

A centralized register service technology, there are eureka servers where this technology holds all the services listed in the service registry and manages the infrastructure of services and is displayed in the form of a GUI dashboard. These technologies include:

1. The listed service
2. Health status Service
3. Detail Java System-/Environment-/ Spring properties
4. JVM & memory metrics
5. Counter & gauge Metrics
6. Data source Metrics
7. Loger Management
8. Interactions with JMX-Beans
9. Threaddump

2.2. Method

In building this application using the prototype method, and can be explained in Figure 2 below [5].

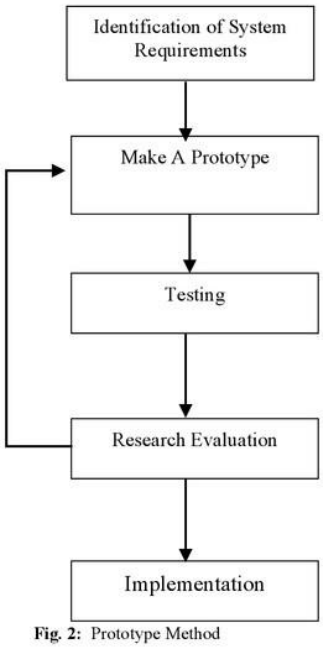

Fig. 2: Prototype Method

3. Result And Discussion

3.1. Build a backend application

1. Backend Analysis

Figure 3 is a service registered in the spring registration, and is the health status of the registered service along with the details in the eventual consistency.

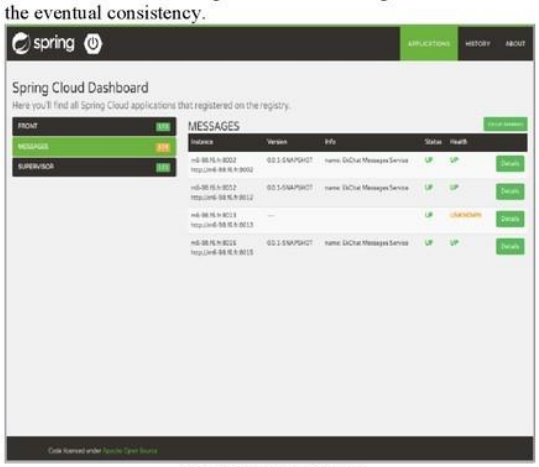

Fig. 3: Backend Analysis

2. Display status Circuit Breaker Service

This function displays how microservice works, sharing service load, and possible system failure solutions. Circuit Breaker is a function that helps in switching ports, when a microservice fails the system, the Circuit Breaker will move to the second microservice instance and microservice will continue to run properly. The function can be seen in figure 4.

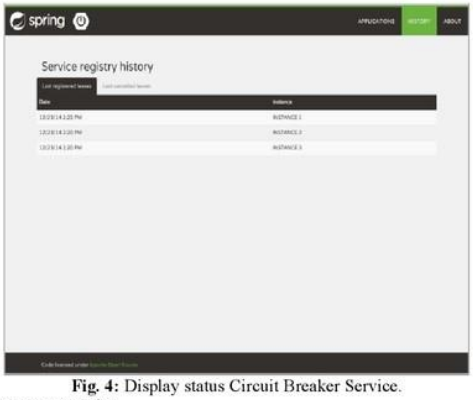

Fig. 4: Display status Circuit Breaker Service.

3. Instant Service

When each service is run. Spring cloud will create 2 instant service so that if there is a failure there will be a second instant. This is where the function of the circuit breaker plays a role, and administrators are more free to correct system failures in the first instant service without having to disrupt the service. Instant service process in Figure 5.

Fig. 5. Instant Service

4. Detail Java System- / Environment- / Spring properties / JVM & memory metric

Fig. 6: Detail Java System.

5. API Testing & Documentation Swagger.

Swagger is an Open API in the form of documentation of a collection of APIs used for testing and documentation, when integrating development microservices with user applications. Swagger in the form of a web GUI is very helpful in developing system development because it is facilitated with the request param and JSON body features, displaying service responses from easily readable backends. To access the microservice API in the swagger there are several conditions as well as the user application, depending on the microservice that was built. The following description of the process in figure 7.

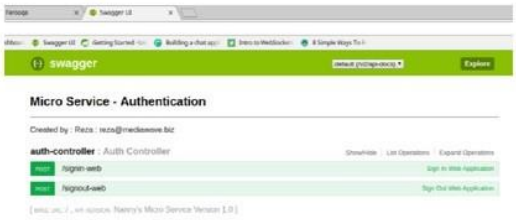

Fig. 7: API Testing & Documentation Swagger.

The picture above is the display of Swagger and the Authentication API from Microservice that was built. There are two API functions with the POST method along with the description in figure 8.

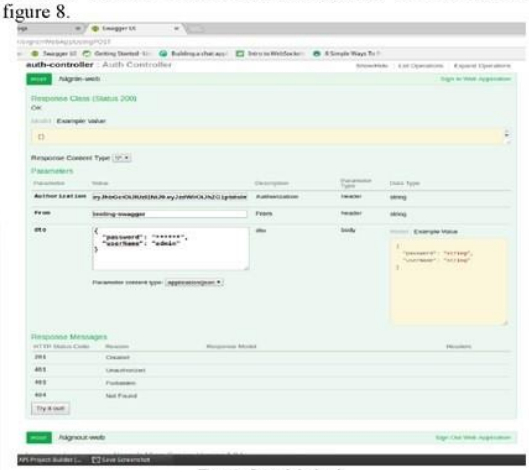

Fig. 8: Post Method.

To access the API, it is made easier by requesting a body that has the form of a JSON structure and request param in the form of a text field, this is very helpful for the frontend in application development and testing, moreover the frontend gets any information. The components that must be included in accessing the API are such as request header Authorization, From, Request Body with JSON Object structure, request method, response body structure, response code, response header along with request URL that is accessed as shown in figure 9.

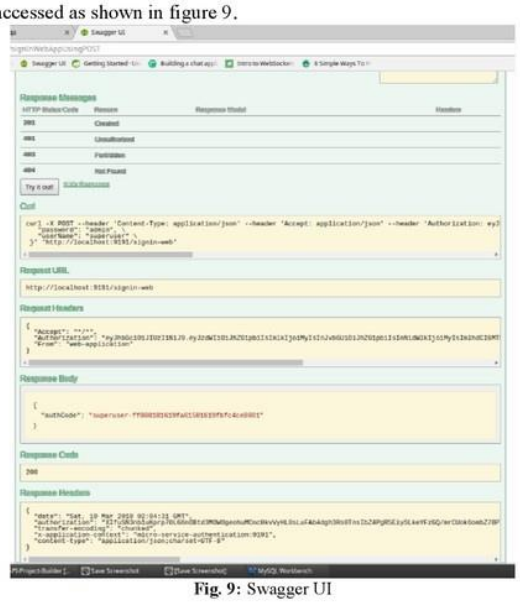

Fig. 9: Swagger UI

3.2. User application procedures and mechanisms

1) GO-BABY Application Procedure proposed for users.

The procedure of usage Applications GO-BABY as follows:

a) Consumers install applications on their mobile devices.
b) After installation is complete, consumers who do not have an account are required to process registers contained in the register menu.
c) After verification of account registration is received, the next step is to log in.
d) The login process is successful, so the consumer has already done the process of selecting the package menu for the selected child care service.
e) Continuing the request process to the baby sister (as the perpetrator of child care services), this is done randomly, based on the willingness of nurses to take the request, otherwise the nurse can ignore requests from consumers.

2) The mechanism of the GO-BABY Application proposed for users.

Fig. 10: Mechanism of the GO-BABY Application

The procedures contained in the mechanism are as follows:

a) Mobile devices owned by users of child care services and nurses through the GO-BABY application
b) All data that includes the use of applications will be stored in a centralized database through cloud computing.
c) GO-BABY application is connected with google map to determine the location of child care services and nurses based on the closest distance.
d) GO-BABY application provides services for service users, providers of child care services.
e) Or you can use the balance filled online.
f) Payments can be made by cash. The service provider also uses mobile devices that are connected to the GO-BABY application
g) If GO-BABY service users find it difficult to contact through social media, service center and web media.

3.3. Functions *in the GO-BABY Application*

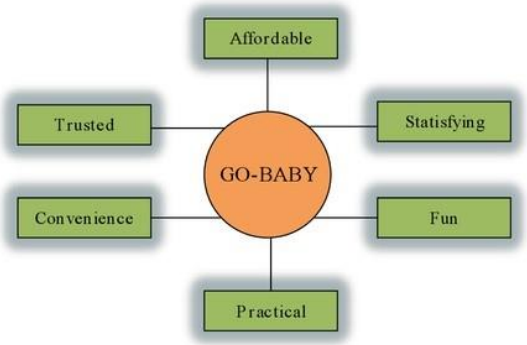

Fig. 11. Functions in the GO-BABY Application.

1) Affordable
The service provided to the community is a service at a price that is not expensive, which is adjusted to the level of income of housewives / career women.

2) Trusted
Child care services provide a sense of trust in the services provided with responsible service and with a sincere heart, this is the motto for providers of child care services to produce quality child care services.

3) Convenience
Mother and child which is deposited must feel comfortable in any conditions that occur with them. The Ministry was given maximum must be preauthorised with the completeness of facilities fully equipped by child care providers.

4) Practical
The use of child care services can certainly be obtained very easily. in the sense of technology that supports access technology quickly to be implemented in mobile applications. The application created supports various types of mobile owned by service users, with superior application responsiveness.

5) Satisfying
The principle given to the community is how to satisfy the users of child care services with the facilities provided.

6) Fun
Child Care Services implements the DAY CARE method, which means that children are entrusted from 1 to 5 years of age to get extra service, where they can gather and play with other children. They will get the same education, health, and security as their parents.

3.4. *Application of Electronic Business and technology based Application Mechanisms*

In Figure 12 figure describes an overview of the functions of the business and the technology applied to device applications.

Fig. 12: Business and Technology[6]

1) *Business Strategy and Solutions*
   Business strategies are needed so that public trust, especially for career women / housewives as service users to use the GO-BABY application as a solution[7].
2) *Technology for consumers.*
   Technology in providing child care services is tailored to the needs and ease of application, in this technology through applications applying GUI-based program guidelines[8]
3) *Knowledge Management.*
   Time application management, service provider management, and users are implemented through an integrated service system in the application to be built

3.5. Implementation Plan

Implementation is the process of implementing program design that has been made in previous research or other forms such as applications, information systems and programming that have been made. The results of this implementation stage produce a data processing system that can run well. Thus, it can determine whether the Child Care Information System in the City of Bandung is in accordance with the expected goals.

3.5.1. Limitation of Implementation

Through a plan for implementing a computerized system, namely so that the system is ready to operate. Then it is necessary to hold activities for implementation. The steps to implementing the system are making programs, testing programs, training and making documentation.

3.5.2. Implementation of Software/Application

To support the continuity of information systems designed, this system requires software. Software or application is used to support the performance of the operating system and database. The software used is as follows:

a) *Operating System* : Microsoft Windows XP,Vista,7,8
b) *Browser* : Internet Explore, Mozilla Firefox, Opera, Google Chrome
c) *Web Server* : XAMPP version > 1.4
d) *Adobe Reader*
e) *Visual Studio*

3.5.3. Implementation of Hardware

To support the implementation of application, the information system for caring for children requires a computer as a server that makes it easy to run the application program, with the following specifications:

a) Server
   1. Using a minimum of an Intel Pentium Core i5 processor.
   2. Using at least 6 Gb of RAM.
   3. Availability of Hard Drive as a storage medium, at least 1 Tb.
   4. Monitor, Mouse, Keyboard as interface equipment.

b) Client
   1. Using an Intel Pentium Dual Core IV 2.0 GHz processor or the same level
   2. Using at least 1 Gb of RAM.
   3. Availability of Hard Drive as storage media, at least 100 Gb
   4. Monitor, Mouse, Keyboard as interface equipment.
   5. Printers
   6. Android devices at least OS version 4.1 (Jelly Bean)
   7. Latest Google Play Service Updates for Android

c) Network
   1. Switch HUB 8 port 10/100 Mbps
   2. Lan Cards
   3. UTP cable
   4. Conector Rj 45
   5. Modem as an internet network.

4. Conclusion

So that the application called GO-BABY application has the goal of building functionality as a backend application, frontend applications, procedures and mechanisms, and service functions provided by go-baby applications that can be integrated with technology-based electronic business. Applications require several supporting devices such as the application of hardware, software and network requirements to provide convenience services in child care services for the society and providers of child care services..

Acknowledgement

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