ONLINE BOOKING SOFTWARE DEVELOPMENT barbershop in BANDUNG USING GLOBAL POSITIONING SYSTEM TECHNOLOGY MOBILE AND WEB SERVICES PLATFORM ON ANDROID

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ABSTRACT

Hair care became one of the main factors that is often considered the appearance of men. This was strengthened by increasing the salon business for men or commonly known as barbershop. Nevertheless the barbershop customer does not escape from the problems that are less enjoyable as the queue waiting time is so long while potential customers are being squeezed in time or a busy man. In addition, for increased customer visits, we need a media that can touch lagsung barbershop potential customers directly.

Based on this, it can be concluded the need to build software that can help customers' problems barbershop barbershop and entrepreneurs who are already in the mentioned previously. The software is built to be run on a media that is easily accessible and taken anywhere as a smartphone. ID Barbershop is an online booking software running on mobile devices. Barbershop ID software built using an object-based modeling for mobile systems. Platforms used for mobile systems is an android, considering that Android currently has the most users in the world. In addition to supporting software performance better, the software ID Barbershop utilize third-party technologies such as GCM (Google Cloud Messanging) to run a Push Notification technology and Google Place for the availability of location data barbershop.

Based on test results using black box testing methods can be concluded that the software ID barbershop Barbershop, enables customers to cut waiting time in the queue in a shop by way of online booking in accordance with the desired time by prospective customers.

Keywords: Barbershop, Barber, Online Booking, Android

1. INTRODUCTION

Introduction of this study is to discuss about the rising barbershop underlying business of the needs of men's problems neatness, style, style is also increasing. As a sample ARFA Barbeshop located in Yogyakarta in 2014 had a total of 37 outlets Barbershop outlets, were higher when compared with the data in 2013 that only has as many as 18 outlets [1].

However, customers barbershop does not escape from the problems that lack such a fun time waiting queue so long to get a turn, while potential customers are being squeezed in time or a busy man other than that based on interviews with one of the business owners barbershop needed breakthrough prospective customers can directly touch the barbershop that leads to an increase of visitors. The increase in visitors this can provide positive results for business owners barbershop thus increasing turnover or revenues barbershop itself. Furthermore, based on the results of the survey that was carried out 20 of the 30 people who are users of the service barbershop agreed that information on the detail information barbershop in the form of operating hours barbershop, list of services, price services, the number of queues and address or location barbershop a problem for customers who want to use barbershop services.

Based on these survey results, customers who wish to use the services of a shop must first seek information about a shop trying to reach. While the information available on the internet is very diffuse and unfocused. The information didapatpun not necessarily in accordance with the conditions of the customers concerned. The problem will be compounded if the customer wants to use the service barbershop is a busy man (mobile people) who do not have a lot of time allocation to queue up at the barbershop.

In addition, based on the results of interviews that have been done with the author terdahap one business owner barbershop barbershop conclude for now will require the media to increase their turnover in which this can happen if the average number of visitors also increased barbershop.

Based on the problems that have been described, it can be concluded the need to build software that can provide more information on the service barbershop in the city of Bandung and can do an online booking for a shop that is applicable in the mobile device. The platform is being used as a pilot project this software is an android with the consideration that the current android has a market share of 70% of all smart devices that are enabled [2]. With the development of this software is expected

to be the perfect solution to support the increase in terms of understanding the information we barbershop in Bandung.

1.1 Barbershop History

Men care services has existed since 2000 years ago. The practice of cutting hair in men (barbershop) originated from the Macedonian region around 400 BC and then spread to Egypt and other regions. The word "barber" comes from the Latin word "barba" meaning beard. The first nation that claims the most expert in hair cutting services are the Romans around 296 BC. However, both the Romans and Egyptians, Barbershop has reputasiyang less well for those elite upper class at that time had a personal barber. At that time, the beard on a man becomes a symbol of strength and intelligence should be treated properly and regularly.

Modern Barbershop started up around the beginning of the 20th century in the United States. In 1920 "Associated Master Barbers of America" and "Nacional Association of Barber School" into two formal organization governing the profession. Speed and efficiency are also getting better shave along with the development of technology, for example with the use of a variety of electronic tools such as the Clipper and blowdryer pandukung [5].

1.2 *Booking*

According to the author of the booking (booking) is a process such as ordering a product agreement both goods and services. Meanwhile, according to Indonesian dictionary ordering is "a process, act, how to order (place, items, etc.) to others."

1.3 Information Systems

The system is a collection of components of the model equipment Requirements, function and interface. Information Systems is a regular combination of any of the human resources, hardware, software, data, and network. The life cycle of a system include [6]:

1. Investigation
2. Analysis
3. Design
4. Implementation
5. Maintenance

1.4 Component Information System

1. *component Input*

Representing the amount of data entered into the information system. The inputs including methods and media to obtain data to be included, which can be basic documents.

2. Process Components

Consisting of a combination of procedures, logic and mathematical models will manipulate the input data and data stored in the database in a certain way to produce output (output) is desired.

3. Component Output

Product information system is the output that is the information and documentation that can be used for all levels of management and all users of the system.

4. Component Technology

Technology is a tool-box in information systems. Technology used to receive input, run the model, store and access data, generate and transmit output and help control the overall system.

5. Hardware Components

Hardware plays an important role as a vital equipment for the information system used to store and process information.

6. Software Components

Software serves as a collection of computerized commands that are useful for processing, calculating and manipulating data taken from the hardware to create an information.

7. Component Database

The database is a collection of data relate to each other, are stored on the computer hardware and software used to manipulate it. Database management commonly known by the name of DBMS (Database Management System).

8. Control Components

Control Department designed and implemented to maintain the system of things that can cause damage, such as natural factors of temperature, water, fire, dust, viruses, sabotage / hijacking, and so on.

1.5 Android

Android is a Linux-based operating system designed for touch screen mobile devices such as smart phones and tablet computers. Android was originally developed by Android, Inc., with financial support from Google, which then bought it in 2005. The operating system was released officially in 2007, in conjunction with the establishment of the Open Handset Alliance, a consortium of companies hardware, software, and telecommunications that promotes open standards mobile devices. The first Android phone went on sale in October 2008 [7].

1.6 Android

Android application consists of some basic functions such as editing a note, play music files, sound an alarm, or open the phone contacts. Those functions can be classified into four different android components as shown in, the classification is based on the basic java classes used [8].

Table 1 Android Application Components

Functionality	Java Base Class	Examples
Focused thing a user can do	*Activity*	*Edit a note, play a game*
Background process	*Service*	*Play music, update weather icon*
Receive messages	*BroadcastReceiver*	*Trigger alarm upon event*
Store and retrieve data	*ContentProvider*	*Open a phone contact*

Each application must have used at least one of these components, but there are some components that require lists specified permission before use as components Service, BroadcastReceiver. ContentProvider [7].

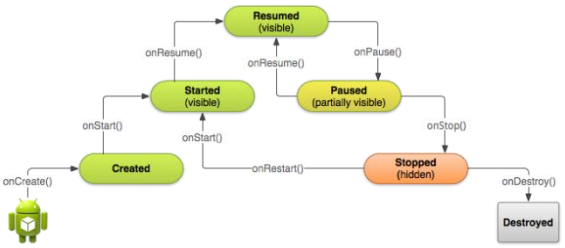


Figure 1 Life Cycle Android

There are several states in the life cycle android that occur as illustrated in Figure 1 Lifecycle Android [8], but only a few of those who become static state include:

1. Resumed

Resumed occur when the application runs after a paused state. This state will run the command program written in onResume method () (Google Inc., 2014).

2. Paused

In this state the activity that occurs temporarily suspended but is still visible to the user because there is a process that has a higher priority such as phone calls. Applications can not run any command or displaying anything in this state (Google Inc., 2014).

3. Stopped

In these circumstances, the application really is not displayed and are not visible to the user but still leaving the service dibackground (Google Inc., 2014).

State such as Created and Started temporary and the system quickly run the next state by calling the callback the next life cycle. That is, once the system OnCreate () is called, quickly the system will call the method OnStart (), followed by onResume krmudian () (Schwarz, Dutson, Stelee, & To, 2013).

1.7 Web Services

Web service is a software component that is selfcontaining, 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.

The figure below illustrates the building blocks of web service which provides the facility of remote communication between the two applications is a web services layer architecture.

1. Layer 1: The Internet protocol standard that is used as a means of transport is HTTP and TCP / IP.

2. Layer 2: Simple Object Access Protocol (SOAP) based on XML and is used to exchange information between a group of services.

3. Layer 3: Web Service Definition Language (WSDL) is used to describe the service attribute.

4. Layer 4: Universal Description, Discovery and Integration, which is a central directory for a description of the service.

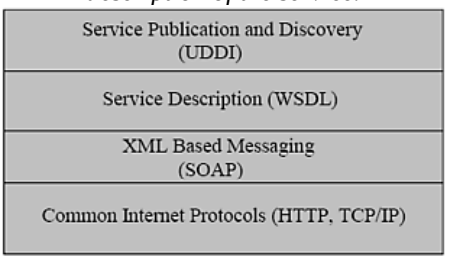


Figure 2 Block Building Web Services

1.8 API (Application Programming Interface)

Application programming interface (API) a documentation consisting of the interface, functions, classes, structures, and so on to build a software. With the API, then allows the programmer to "unload" a software, can then be developed or integrated with other software. API can be regarded as an application interface with other applications that allows programmers to use the system function. This process is managed by the operating system. The advantage of this API is to allow an application with other applications can connect and interact with each other [12].

1.9 GPS (Global Positioning System)

GPS stands for Global Positioning System, a navigation system using satellite technology that can receive signals from the satellite. This system uses 24 satellites that transmit microwave signals to Earth.

This signal is received by a receiver (receiver) on the surface, where the GPS receiver will collect information from GPS satellites, such as:
1. Time. GPS receiver receives timing information from the atomic clock that has a very high accuracy.
2. Location. GPS provides location information in three dimensions:
a. Latitude
b. Longitude
c. elevation
3. Speed. When on the move, GPS can indicate the switching speed information.
4. Directions trip. GPS can show the direction of the goal.
5. Save location. Places you've been or want to visit can be stored by the GPS receiver.
6. Komulasi data. GPS receiver can keep track of information, such as total travel that has been done, the average speed, highest speed, lowest speed, time / hours to the destination, and so forth [13].

1.10 *Java Script Object Notation (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 the programming language whatsoever for using a style that is commonly used by programmers family of C including C, C ++, C # , Java, JavaScript, Perl, Python etc. Because of these properties, making it ideal as a language exchange JSON-data.

2. CONTENTS OF RESEARCH

2.1 System Architecture Analysis*The analysis aims to identify the system architecture to be built based on the architecture of mobile systems.*
The mobile platform is one of the systems chosen for the development of this software. Architecture software on the mobile platform describes how the software interact with each other as illustrated in 2-1 Software Architecture. The image depicts the overall architecture of the system on the mobile platform.

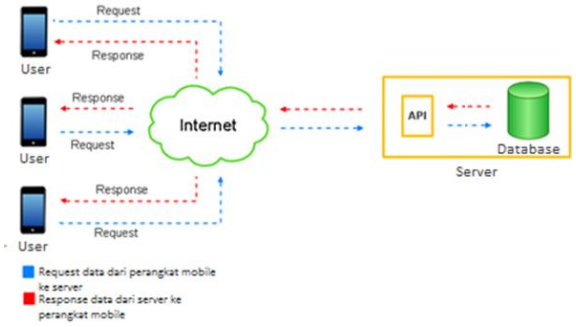


Figure 2- 1 Software Architecture

Below is a description of Software Architecture Figure 2-1 On Android Platform:
1. The mobile device user request data to the server via the API.
2. The server receives the data request and determines the type of request that is requested.
3. If the server receives a request, the location data request will be forwarded to the google servers place.
4. If the server receives a request of the image data, the data request will be redirected to the server.
5. If the server receives text data requests, the server will immediately take the existing data in the database.
6. After the server receives the data requested data will be returned in the form of JSON for processing the user's mobile device.

2.2 Software Requirements Specification
Software requirements specification requirements are divided into two functional and non functional requirements. Functional requirements can be seen in Table 2.1 Functional Requirements Specification.

Table 2.1 Functional Requirements Specifications

SKPL Code Software Requirements Specification	*SKPL Code Software Requirements Specification*
SKPL-F-001 mobile	*SKPL-F-001 mobile subsystem provides the facility for users to register into the system.*
SKPL-F-002	*SKPL-F-002 mobile subsystem provides the facility for users to log into the system.*
SKPL-F-003	*SKPL-F-003 mobile subsystem provides the facility for users to see a list Barbershop provided in the application.*
SKPL-F-004	*SKPL-F-004 mobile subsystem provides the facility for users to see details of the Barbershop list provided in the application.*
SKPL-F-005	*SKPL-F-005 mobile subsystem provides the facility for users to make booking Barbershop desired.*
SKPL-F-006	*SKPL-F-006 mobile subsystem provides the facility for users to select the desired service.*
SKPL-F-007 date and time desired.	*SKPL-F-007 mobile subsystem provides the facility for users to choose staylist, the date and time desired.*
SKPL-F-008	*SKPL-F-008 mobile subsystem provides users the ability to see detail review of bookings, as the name Barbershop selected, the desired time, the service desired,*

SKPL Code Software Requirements Specification	*SKPL Code Software Requirements Specification*
	stylist is in want, and priced according to the type of service selected
SKPL-F-009	*SKPL-F-009 mobile subsystem provides the facility for users to change the type of service, stylist, date and time and the selected Barbershop*
SKPL-F-011	*SKPL-F-011 mobile subsystem provides the facility for users to change the type of service, stylist, date and time and the selected Barbershop*
SKPL-F-012	*SKPL-F-012 mobile facilities Subsystem reminders (reminders) for users booking details Barbershop*
SKPL-F-013	*SKPL-F-013 mobile subsystem provides the facility for users to provide a review of the Barbershop had in booking*

2.3 *Non-Functional Requirements Specifications*

Analysis of non-functional requirements on these systems include software analysis, analysis of hardware and thought.

1. Product Requirement
Here is a non-functional requirements based on product classification Requirement.
a. SKPL-NF-001 system is built in the form of mobile applications.
b. SKPL-NF-002 system is built using a minimal version of the android operating system 4.1 Jelly Bean and is built with the minimum software requirements
a) Operating System (platform independent)
b) Web server version 1.1.7 XAMPP up as a web server
c) The code editor such as notepad ++
d) Integrated development environment (IDE) in the form of Android Studio
e) Android Development Tools 23.0.0 version as Android Studio plugins
f) Android Software Development Kit as a framework android

c. SKPL-NF-003 system is built using the device camera
d. SKPL-NF-004 system is built with hardware specifications that meet minimum standards requirements such as:
a) Computer with VGA on board 512 MB
b) screen with a resolution of 1024x600
c) Computer with 2 GB ram
d) android device with 512 ram
e) android device with a resolution of 320x480

2. Organisational Requirements
Here is a non-functional requirements are based on the classification Organisational Requirements SKPL-NF-005 Design of the user interface on the software that will be built referring to the design guidelines of google android.

3. External Requirement
Here is a non-functional requirements based classification External Requirement.
a. SKPL-NF-006 system does not allow content that contains elements of racism, pornography and norms of decency.
b. SKPL-NF-007 software is built must generate a standard file format (.json) that can be used by external interested parties.

4. Non-Functional Requirements Analysis Tool Thought
Analysis of non-functional requirements the thought is the limitations of the services and functions required of a system in terms of the thought. In this study are grouped into five categories: User Knowledge and Experience, User Job and Task Characteristic and User Physical Characteristic.

2.3 Data Analysis
Analysis of the data used in this study is the Object *Relational Mapping (ORM). Object relational mapping mapping the tables in the relational database with an existing entity class in object-oriented programming language.*
Scans taken ORM will require a bridge in the form of JSON data format that can connect ORM with existing physical database on a server. The structure of the JSON data format used in this study is divided into three object data, the data arrays and null data.
Data Objects
Format in Table III.7 Structure Data Objects JSON is used when data is received from the server is a single data or in the form of an object.

Tabel** Error! No text of specified style in document**.1 The structure of the JSON Data Objects

The structure of the JSON Data Objects
{ *"key" : "value"* *}*

Data Array
Format in Table III.8 JSON array data structure used when data is received from the server is a single data or in the form of an object.

***Tabel** Error! No text of specified style in document..2 Struktur JSON Data Array*

Struktur Data Array
{ *"result" : "value",* *"item" : [{ "key" : "value" },{ "key" : "value" }]* *}*

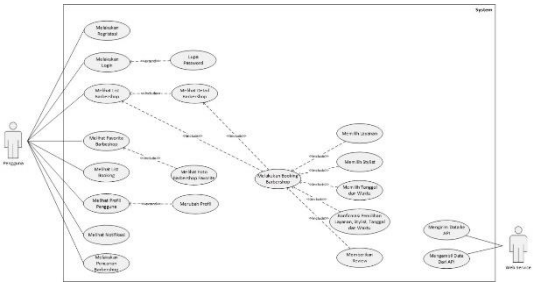
Data Null
Format in Table III.9 StrukturJSON Null data is used when data is received from the server is a single data or in the form of an object

***Tabel** Error! No text of specified style in document..3 Struktur Data Null*

Struktur Data Null
{ *"result" : "value",* *"message" : "value",* *"status_code":value* *}*

2.4 Analisis Kebutuhan Fungsional Mobile

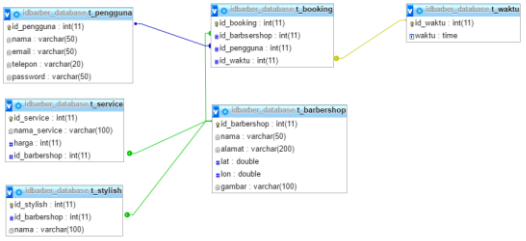
1. Diagram Use Case
Use Case Diagram is a model to describe the behavior (behavior) software that will be created. Here is Figure III 4 Use Case Diagram. Connectedness owned line use case Send the data via API and Retrieve the data via the API is not illustrated to improve the readability of the diagram.



***Gambar** Error! No text of specified style in document.-1 Use Case Diagram*

2.5 Perancangan Data

Here is the data from the design software built:
Relationship diagram
Here is a diagram of Figure III-18 Relation of software built.



2.6 testing Systems

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

1. Test Plan
System testing will be performed divided into two stages. The first phase of testing focused on the functionality of the software that is built using blackbox testing method. The second phase of testing will focus on the assessment of software that is built, the method of data collection is done is given questionnaire to 30 residents of Bandung.
2. Scenario Testing
Test scenarios will be presented in a sequence of tests to be performed on the software built. Scenario testing software that will be built is divided into two scenarios functionality testing and beta testing scenarios.
a. Scenario Testing Functionality
Here is the scenario testing functionality is divided into two phases.
In this test all the features of the mobile software that is built to be tested using the method of blackbox. Below is a table that describes the functionality to be tested.
Table IV.5 Mobile Scenario Testing System

Kelas Uji	Poin Pengujian	Jenis Pengujian
Login pengguna	Input data login	*Black Box*
	Validasi login	*Black Box*
Daftar pengguna	Input data registrasi	*Black Box*
	Tekan tombol daftar	*Black Box*
Lihat Profil	Tekan tombol profil	*Black Box*

1. ClLOSING

Based on the discussion of the analysis, design, implementation to the stage of testing, and therefore it can be deduced as well as suggestions for application ID Barbershop in order to achieve better utilization.

3.1 Conclusion

Based on the results obtained from studies conducted in the preparation of the final project refers to the purpose of research, it can be concluded.

1. Users can get information register barbershop in the city as well as information services are focused in just one application.

2. Users can come according to a predetermined time itself, for their online booking system so no need to queue a turn.

3. Users get a recommendation from a nearby barbershop position of the user is located.

4. Facilitate reached a barbershop location destination for their navigation systems which are built in an application which became a reference source in the search for the address barbershop.

5. Users can search for a shop recommended based on the results of a review of customers who already use the barbershop.

6. In addition, Based on the results of interviews with one of the barbershop business owners, it can be concluded that the applications built Barbershop Virgo can help in increasing the number of visitors so that it can automatically increase the amount of revenue (turnover) in Virgo Barbershop.

The results of testing the application to increase the number of visitors and turnover barbershop has been made but is not valid, it is because the author only apply to the beta test of the barbershop, the Virgo Barbershop barbershop existing 25 in the city of Bandung.

3.1 Suggestion

These applications need more development, therefore, there are some suggestions that can be used as an alloy of software development towards the better to support the growth of users on the application of this Barbershop ID. As for suggestions on the development of application ID Barbershop is as follows:

1. Development of business salon and spa in the city of Bandung, currently only supports barbershop business only.

2. The use of popular media SSO login.

3. Develop software in terms of performance and user experience better.

4. Develop a platform that can be supported by the software, since currently only supports android platform.

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