ONLINE BOOKING CHATBOT APPLICATION FOR BLIND PEOPLE USING GOOGLE DIALOGFLOW API AND ONLINE STORE API BASED ON ANDROID

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ABSTRACT

Blind People is a term used for individuals who experience abnormal circumstances or impaired function of the sense of sight. Based on the degree / level of disorder individuals who experience vision abnormalities are classified into two groups: individuals who are totally blind (blind) and individuals who still have some usable vision (Low Vision) [1],Online storeor Online Shop is the place of purchase of goods and services through the Internet.Based on interviews with disabilities supporting the blind, said that during this time blind people still have difficulty in enjoying the online store due to use online store application must use the help of others in using it. Chatbot can serve as a personal assistan that can help users find and read the description. Dialagflow is an artificial intelligence that is devoted to the chatbot and dialagflow is easily customizable with fire google other like text to voice and fire other online stores and therefore using technology chatbot using dialagflow can help blind people in finding items in online stores and book using voice chat sound that can simplify the application interact with and search for items in online stores or place an order online. Testing is done by testing in the field and using a questionnaire for the assessment,

Keywords: Blind, Online Stores, chatbot, Dialagflow

1. PRELIMINARY

1.1 Background

The Blind is a state of individuals who experience abnormal or impaired function of the sense of sight. Based on the degree / level of disorder individuals who experience vision abnormalities are classified into two groups: individuals who are totally blind (blind) and individuals who still have some usable vision (Low Vision). In addition to this definition, the visually impaired can also be sorted by time of occurrence of blindness (blind since birth and blind after birth), the condition of the ability of vision (blind light, blind bit heavy, and blind weight), and by disorders of the eye (myopia, hyperopia, and astigmatism) [1],

Online storeor Online Shop is the place of purchase of goods and services through the Internet. Online shopping or shop online is one form of electronic commerce (Ecommerce) used for vending transaction to the seller or the seller to the consumer, the online store in Indonesia at this time increasingly addressing significant developments.blind people are still experiencing difficulties in enjoying online store due to use applications such as online stores and bukalapak Tokopedia should use the help of others in using it.

Based on the results given questionnaire to blind people with a total of 30 respondents with as many as 13 people were totally blind (Blind) and 17 people were myopic severe (Low vision) in Social Institution Bina Netra (PSBN) Wyata Guna Bandung, the results obtained from blind response with 66% stating that have had difficulty in enjoying the online store due to use online store application should require the help of others in using it. based on an interview to Mr. Riyad he stated he still difficulties in using the online application store because he has low vision in his vision so he had to wait for someone else who is willing to help do a search and read a description of items to be ordered.

Along with the development of mobile technology, especially the Android operating system are much in demand by the world community. Where the operating system is installed on the mobile so that the use of the application can also be used anywhere and anytime. Content required by the user can be accessed easily [2], There is a technology in mobile applications one of which is the chatbot. Chatbot can serve as a personal assistan that can help users find and read the description of one of them is dialagflow technology. Dialagflow is an artificial intelligence that is devoted to the chatbot and dialagflow is easily customizable with fire google other like text to voice and fire other online stores and therefore using technology chatbot using dialagflow can help blind people in finding items in online stores and book using voice chat sound that can simplify the application interact with and search for items in online stores or place an order online.

1.2 Formulation of the problem

Based on the above problems, the issues to be discussed / studied in this research is formulated for Supporting disability blind people are still having trouble making a reservation and purchase online at an online store.

1.3 Purpose and objectives

The purpose of this research is to build an application for the Blind Online Booking chatbot using Google Dialogflow API and API-Based Online Shop Android. While the purpose of this research is to help facilitate a disability support blind people to book and purchase online sector in the online store.

1.4 Scope of problem

In this study, some of the restrictions that the discussion more focused issue in accordance with the objectives to be achieved. The boundary problem in making this application are as follows:

1. Applications are public.
2. Users of this application is the general public disability support blind people.
3. Applications that are built based on Android.
4. Programming language used to use java.
5. The minimum specifications in use is android kitkat.
6. Applications built using database FCM (Firebase Cloud Messaging).
7. Chatbot technology used in this application is Google Dialog Flow API.
8. Online stores that used in this study is bukalapak API.

2. Theoretical Basis

2.1 Tunantra

The Blind is a state of individuals who experience abnormal or impaired function of the sense of sight. Based on the degree / level of disorder individuals who experience vision abnormalities are classified into two groups: individuals who are totally blind (blind) and individuals who still have some usable vision (Low Vision). In addition to this definition, the visually impaired can also be sorted by time of occurrence of blindness (blind since birth and blind after birth), the condition of the ability of vision (blind light, blind bit heavy, and blind weight), and by disorders of the eye (myopia, hyperopia, and astigmatism) [1], Blind People is a term for someone who discount the obstacles in sight. The cause of the inability of view it could be due Due to various factors, including:

1. Congenital birth
2. Disease
3. Accidents

2.2 Application

Definition of general application is enabled tools specifically applied and integrated according to the capabilities it has, the application is a computer device that is ready to use by the user [3],

2.3 *chatbot*

*chatbot*have the ability to mimic human speech and can offer personalized service. Chabot is divided in two types first is a web-based chatbot running in the cloud and can be accessed through a web interface. The second is a self-contained boot chat application that can be accessed on a computer [4],

2.4 *Dialogflow* API

*Dialogflow*API is a platform for developing the chatbot based on natural language. A very important concept like Intense and Contexts are used to model the behavior of the chatbot. That is for mapping between what the user entered and the response or action to be taken by the bot. The context is used to distinguish user input that may have a different purpose depending on user input in the previous [4],

3. SYSTEM PLANNING

3.1 Analysis System

Is a decomposition analysis aims to identify the issues contained in the system and determine the needs of the system to be built. In the analysis phase of this system contained therein analysis includes the analysis of problems, the analysis of the system is built, the analysis of the technology used, the analysis of non-functional requirements and functional needs.

3.2 Problem analysis

In the analysis of this issue will be outlined problems that existed before the application is built and aims to help the chatbot Application Development Online reservations for the Blind Using Google Dialogflow API and API-Based Online Shop Android. The problems that exist include disabilities Supporting blind people are still having trouble making a reservation and purchase online at an online store, so that the system will be built easier for blind people to make reservations and purchase online independently.

3.3 Architecture analysis

The analysis aims to identify architectural architecture to be built. The system is built with a single sub-system that is mobile. Mobile systems to function as the system used by the users to send and receive voice data from Dialogflow API in the smartphone, and then processed into commands sent to bukalapak API. As an overview of the system architecture to be built this application as follows:

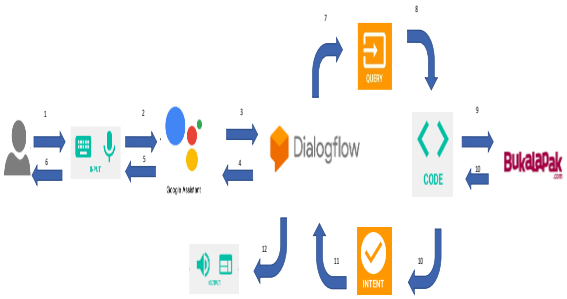

Figure 1 Architecture Analysis

1. *user* using the voice as an input.
2. *Google asisstant* responds to sound as input.
3. Response from google assistant forwarded to dialogflow.
4. Response dialogflow into a command that will be forwarded to the source code in the wake.
5. In the wake of the source will perform the function for connecting to the application using the API bukalapak bukalapak.
6. *FIRE* bukalapak responded and forwarded into intent.
7. *Intent* serves to translate the response is sent into a topic and forwarded to dialagflow API.
8. *Dialogflow* API generate a topic that is sent intent.
9. A topic that has to be generated and sent into the output dialogflow be output to the user.

3.4 Software Requirements Specification

Software requirements specification consists of Software Requirements Specification Functional (SKPL-F) and the Software Requirements Specification-Non-Functional (SKPL-NF). Below is a table of SKPL-F and SKPL-NF.

Table 1 Functional Specifications Software Requirements

code SKPL	Software Requirements Specification
SKPL-F-01	The system provides the facility to call google asisstant home.
SKPL-F-02	The system provides the facility of voice sound to call the online booking application
SKPL-F-03	The system provides the facility to convert voice to text
SKPL-F-04	The system provides the subject with a voice
SKPL-F-05	The system provides the facility to respond to text Dialogflow sent by the user
SKPL-F-06	The system provides the facility to connect to bukalapak use API bukalapak.
SKPL-F-07	The system provides the facility to bring up a sub-topic Dialogflow.
SKPL-F-08	The system provides the facility to convert text to voice.
SKPL-F-09	The system provides the facility of voice sound to the user selecting a sub topic with sound.
SKPL-F-10	The system provides the facility to respond Dialogflow text that is sent by the user
SKPL-F-11	The system provides the facility for voice voice said search keywords.
SKPL-F-12	The system provides the facility to send the search keywords used dialogflow
SKPL-F-13	The system provides the facility bukalapak API to search merepon sent by the user
SKPL-F-14	The system provides the facility to choose the voice sounds no choice and send messages using voice commands
SKPL-F-15	The system provides the facility Dialogflow to respond to respond to commands.
SKPL-F-16	The system provides the facility to book via the API bukalapak through dialogflow

Table 2 Software Requirements Specification Non-Functional

code SKPL	Software Requirements Specification
SKPL-NF-01	The system was built specifically for the user
SKPL-NF-02	The system can be accessed for 24 hours without stopping
SKPL-NF-03	Minimal system built android operating system version 4.4 Kit Kat to the top
SKPL-NF-04	Systems built with hardware specifications that meet the minimum standard requirement
SKPL-NF-05	The system is built to the specifications of the software that meets a minimum standard requirements
SKPL-NF-06	The system was built using Dialogflow API to get a quick response.

3.5 *Use Case* Diagram

*Use case*diagram provides a way to describe the external view of the system and its interactions with the outside world. Here is the use case diagram for the application Online booking:

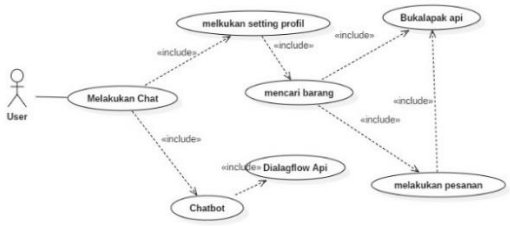

Figure 2 Use Case Diagram

4 IMPLEMENTATION AND TESTING

4.1 System implementation

Implementation of the system is a translation stage design based on the analysis results into a particular programming language and application software built on the real environment. Implementation and testing system aimed to find out the results of the system built. Implementation of the system starting from the installation of applications by users and used by the user to place an order online.

4.2 Implementation interface

Implementation of the interface contains explanations of each display software that is being built. The implementation of the software interface is built consisting of interface or file names that represent them as follows:

Table 3 Table Interface Implementation

Menu	Description	File name
Home	The main view	Mainactivity.java
Settings	Page to fill in your name, address and phone no users	Setting_activity.java
Search	Displaying the search results	Pencarian_activity.java

4.3 Results Interface Implementation

Implementation of data is an implementation based interface design made previously for more details can be seen in the image below:

a. display Home

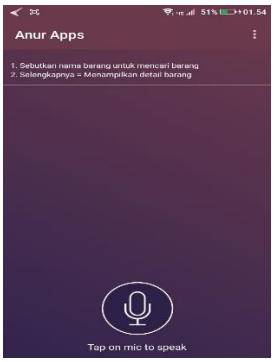

Figure 3 Display Home

b. settings settings

Figure 4 Setting Setting

c. Search result

Figure 5 Results

4.4 Beta Testing Results

Beta testing which is part of acceptance testing or User Acceptance Testing (UAT) is testing conducted objectively conducted directly by users of the application. Beta testing is done using data processing techniques were questionnaires. Here is the question posed to the blind:

Scale Questionnaire answers

Table 4 Scale Answers Questionnaire

Information	Scale Answers
Strongly agree	SS
Agree	S
Doubtful	R
Disagree	TS
Strongly disagree	STS

After determining points kosioner question then the next step there is weighting scale of answers in advance [5], For more details, here score weighting of each answer:

Table 5 Score Questionnaire Answers

scale Answers	Information	Score
SS	Strongly agree	5
S	Agree	4
R	Doubtful	3
TS	Disagree	2
STS	Strongly disagree	1

Here are the results of questionnaires obtained from 30 respondents:

Table 6 Results of the questionnaire can be used without the help of others

No.	Question	SS	S	R	TS	STS
1	Can be used without needing the help of others	15	9	4	2	0
2	With the application can help blind people to find stuff in the online shop	21	6	2	1	0
3	With the application can help blind people in making reservations online shop	18	11	1	0	0

The following is a calculation of the percentage of the results of the questionnaire to the blind:

1. Can be used without needing the help of others

Table 7 Results of the questionnaire blind first question

No.	Information	Respondents answer	Score
1	Strongly agree	15	75
2	Agree	9	36
3	Doubtful	4	12
4	Disagree	2	2
5	Strongly disagree	0	0
Total		30	125

From the result of table 4:13 percentage value can be calculated as follows:

$$\text{Average} = \frac{\text{Total score}}{\text{number of Respondents}}$$

$$\text{Average} = \frac{125}{30}$$

Mean = 4.16

The results of the first questions to get the percentage of 4.16 out of 5 with the data of 50 respondents. Here is a picture of the results of the assessment questionnaire to blind the first question is:

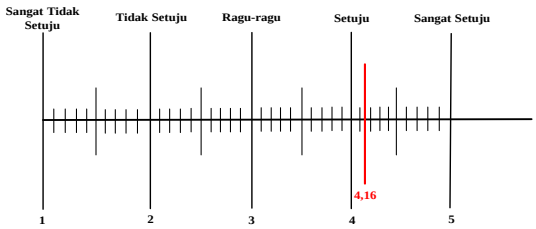

Figure 6 Assessment Questionnaire blind first question

2. With the application can help blind people to find stuff in the online shop

Table 8 Results of the questionnaire blind second question

No.	Information	Respondents answer	Score
1	Strongly agree	21	105
2	Agree	6	24
3	Doubtful	2	6
4	Disagree	1	2
5	Strongly disagree	0	0
Total		30	137

From the result of table 4:14 percentage value can be calculated as follows:

$$\text{Average} = \frac{\text{Total score}}{\text{number of Respondents}}$$

$$\text{Average} = \frac{137}{30}$$

Mean = 4.56

The results of the first questions to get the percentage of 4.56 out of 5 with the data of 30 respondents. Here is a picture of the result of the blind assessment questionnaires to the second question is:

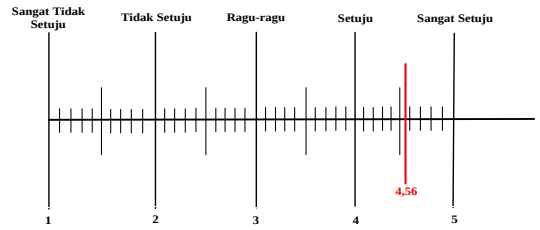

Figure 7 Assessment Questionnaire blind second question

3. With the application can help blind people in making reservations online shop

Table 9 Results of the questionnaire blind third question

No.	Information	Respondents answer	Score
1	Strongly agree	19	95
2	Agree	11	44
3	Doubtful	0	0
4	Disagree	0	0
5	Strongly disagree	0	0
Total		30	139

From the result of table 4:15 percentage value can be calculated as follows:

$$\text{Average} = \frac{\text{Total score}}{\text{number of Respondents}}$$

$$\text{Average} = \frac{139}{30}$$

Mean = 4.63

The results of the first questions to get the percentage of 4.63 out of 5 with the data of 30 respondents. Here is a picture of the results of the assessment questionnaire to blind the third question is:

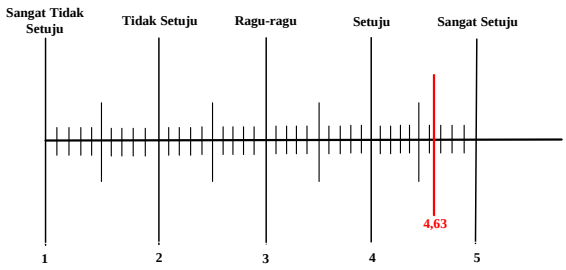

Figure 8 Assessment Questionnaire blind third question

4.5 Conclusion Testing Results

Based on test results, it can be concluded that the online booking application that is built to function properly and can help blind people in the search for goods and order goods in the online shop without the need of help from others.

5 Conclusions and recommendations

5.1 Conclusion

Based on the results of beta testing in the previous chapter, it could be concluded as follows:

Table 10 Results Questionnaire

No.	Question	Score	result
1	Can be used without needing the help of others	125	Strongly agree
2	With the application can help blind people to find stuff in the online shop	137	Strongly agree
3	With the application can help blind people in making reservations online shop	139	Strongly agree

From Table 5 it can be concluded that the online booking application for the visually impaired can receive and fulfill the original purpose of application development is to help facilitate a disability support blind people to book and purchase online sector in the online store.

5.2 Suggestion

Blind online booking application development aimed to help ease the disability support blind people to book and purchase online sector in the online store. Therefore, given suggestions for the development of this application is an online store that can be integrated more than one and this application can run in the background without having to open the application in advance like google asisstant with this feature is expected to further facilitate the user who bears the blind.

BIBLIOGRAPHY

[1] S. Mambela, "OVERVIEW OF THE PROBLEM OF PSYCHOLOGICAL AND SOCIAL ISSUES INDIVIDUAL blind," Buana Journal of Education, pp. 65-73, February 2018.

[2] I. Afrianto, "APPLICATION DEVELOPMENT AID IN memorization of Qur'an BASED MOBILE," Journal of Scientific Computing and Informatics (KOMPUTA), vol. Vol.2 No.2, no. 8, p. 1, 2013.

[3] H. Abdurahman and AR Riswaya, "APPLICATION FOR PAYMENT LOAN BANK CREDIT Yudha Bhakti," Computech & Business Journal, Vol. 8, No. 2 ,, pp. 62-63, December 2014.

[4] D. Dutta, "Developing an Intelligent Chat-bot Tool To Assist High School Student Learning For General Knowledge Subjects," Georgia Institute of Technology, vol. I, no. 1, pp. 1-13, 2017.

[5] PD Sugiyono, METHODS OF EDUCATION, Bandung: Alfabeta, 2016.