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Research paper

Caring of Disabilities Deaf Mute Patient with Talking Devices Application Based on Mobile

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Abstract

The role of nurses in children with difable is to help in communicating so they can interact with others. Deaf mute requires health care and information on health education.This research focused on an application that facilitates Disabilities Deaf Mute Patient to communicate with other by using a mobile phone. This application based on mobile user by typing letters and it will automatically change into the form of voice (text to speech) that have been arranged into a word so can understood by the other person who use the application. This research helps nurses to communicate by using talking tools application. Development of systems using mobile technology by using Java programming language and talking tool. Results of this study was an application of learning system that helps teachers to communicate with their mute children. The application of mute children will be greatly helped in communicating with the interlocutor.

Keywords: *The communications system mute, Mobile Technology, Java Programming, Nurse*

1. Introduction

The role of nurses in deaf mute children is as caregiver, educator ang coordinator. As nursing caregiver, in this role where nurses do and pay attention to the basic needs needed by deaf mute children with doing nursing service delivery. Educator role's, on this role where nurses undertake education and knowledge and practice to deaf-mute children, such as: speech therapy, physiotherapy. Nurses also as coordinator, in this role the existing nurses conduct guidance through planning and organizing of health services (Safitrasari et al. 2012) . Many medias or tools is instrumental for communication, one among them is mobile. mobile is a verbal exchange device that can join human beings with others. cell at the present time may be very needed by all and sundry from kids, young adults, dad and mom and even grandparents have already personal cell. however, the use of high era cellular isn't used successfully, there are nonetheless many those who do now not recognize how use to cellular phones specifically Disabilities Deaf Mute affected person. improvement of era facts raises the improvement of software, particularly desktop packages and the increasing are of mobile technology which can be demand with the aid of humans (Abolfazli, Sanaei, Gani, Xia, & Yang, 2014). Our look at advocates that the majority of troubles stem from the intrinsic characteristics of cell gadgets and the heterogeneity on this surroundings, especially when cloud computing is hired to enhance cellular computing. numerous open problems on RMAs' domination and adoption are presented as destiny studies guidelines. Smartphone have currently received momentous ground in diverse computing-in depth domain names, specially corporation applications, control records structures, education, and healthcare in the direction of surpassing computer systems (Emmanouilidis, Koutsiamanis, & Tasidou, 2013).

Conversation is crucial in every day life, however not all humans can talk verbally well, for example the mute patient. Disabilities Deaf Mute patient use signal language to speak, but no longer every person can apprehend their signal language so that, frequently misunderstandings. They need to write on a media in handing over the sentence that they desired to mention. A mute have barriers in speaking but now not his sight. apart from being a medium of communiqué in the shape of a voice name or textual content message, the mobile improvement also can be filled with a ramification of extra utility application for user comfort.

The goals of this research is to make smooth packages to communicate for mute humans by means of applying the precept of "textual content to speech" the usage of Java language application. packages to change words or terms which can be typed by means of mute humans via cellular keypad and used inside the shape of voice (text to speech), so it helps the patient with Disabilities of deaf mute with a view to communicate along with his interlocutors without the usage of signal language.

2. Materials and Methodes

Materials

The mobile phone human-interface system using a single switch Morse code input device is shown schematically in Fig. 1.

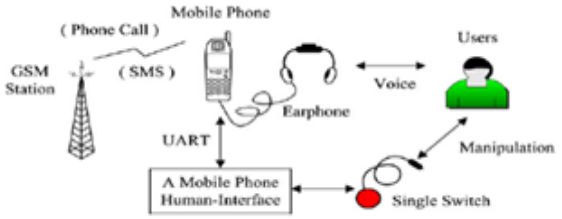

Fig. 1. System schematics of the mobile phone human-interface.

Text To Speech (TTS)

Text to speech is one form of language technology. (Hendriawan, Wijayanto, Paulus, & Taufiq, 2013) Text-To-Speech (TTS) or speech synthesizer is a system that can transform a row of text to speech (voice) as output. Speech synthesizer system in principle consists of two basic parts, namely : (1) The converter section text into phonemes; (2) Part Converter phonemes into words

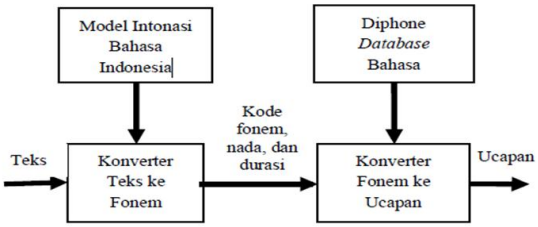

Fig 2. Block diagram of the system's text-to-speech

within the text to voice converter may be used set of rules Finite nation Automata (FSA). In principle the machine TTS (textual content To Speech) is a machine which could do the conversion from textual content to speech. TTS converts text in a language layout (eg Indonesian) into a speech corresponding to the studying of the text in that language. A machine based totally TTS can pronounce any word, and vocabulary isn't restricted. based on those definitions, then a machine like IVR (Interactive Voice reaction) cannot be categorized as a TTS system, as it can simplest say words or sentences with a number of or a mixture of a totally confined, cannot pronounce all of the words or sentences), because the IVR device usually the usage of a tape recorded words or sentences of their entirety.

J2ME programming

The java working in Java programming surroundings use the compiler and interpreter that may run on distinctive systems. Java compiler will remodel the code within the Java language into a byte code. Byte code compilation end result is a hard and fast of commands which can then be achieved thru a pc abstract gadget called the JVM. JVM is likewise often referred to as an interpreter, as it usually translate the codes stored inside the byte code. In J2ME, if the software program work properly, also paintings with other devices. J2ME carry Java into the arena of records, communications and computing gadgets aside from the laptop computer is commonly smaller than a laptop device. J2ME is usually utilized in cell phone, pager, PDA and so forth. J2ME generation also has some obstacles, especially when applied to mobile telephones. J2ME is exceedingly depending on the tool or the tool used, may be in terms of mobile Smartphone brands, in addition to telephone abilities and help to technology (Nyura 2010).

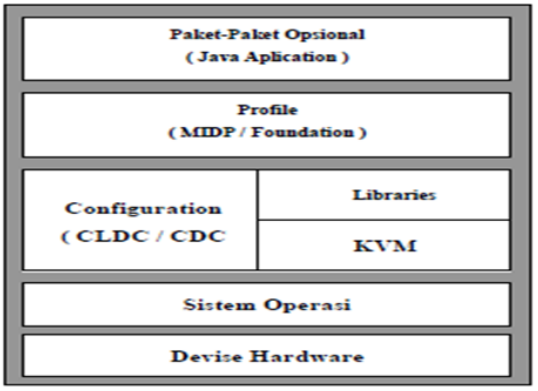

Fig 4. J2ME architecture

Mobile Information Device Profil (MIDP)

Packages that run on a tool that helps MIDP referred to as with MIDlets, or more short MIDlet is an utility created using Java 2 Micro version with the profile of the cell facts device Profile (MIDP). MIDP is dedicated to using the handsets with the functionality of CPU, memory, keyboard, and the layer is restrained, which includes mobile telephones, pagers, PDAs and so on. in the figure under indicates that the applications that support the MIDP device is a MIDlet software that still consists of part of Java 2 Micro edition. (Suteja. R. B, 2008)

Applications that run on a device that supports MIDP called with MIDlets, or more short MIDlet is an application created using Java 2 Micro Edition with the profile of the Mobile Information Device Profile (MIDP). MIDP is devoted to the use of the handsets with the capability of CPU, memory, keyboard, and the layer is limited, such as mobile phones, pagers, PDAs and so on. In the figure below shows that the applications that support the MIDP device is a MIDlet application that also includes part of Java 2 Micro Edition.

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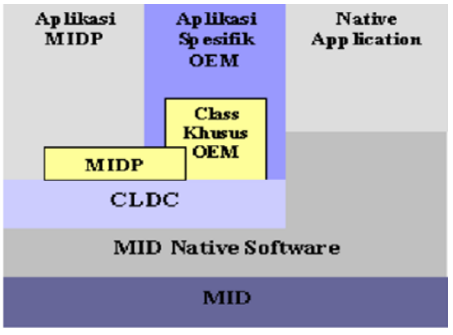

Fig 5. MIDP application architecture

Inside the gadget development, there are range of methodologies, referred to as SDLC (machine improvement life Cycle), which may be implemented including Waterfall, Evolutionary improvement and thing-based totally software program Engineering. the chosen-technique reflects the fulfillment of the gadget. in the waterfall model, the gadget development method cascades from one phase to every other. It comprises six phases, particularly (Ali & Aydah, 2012).

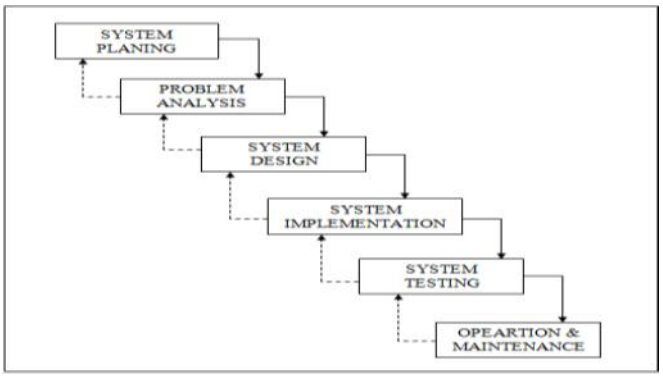

Fig. 6. System schematics of the mobile phone human-interface.

Unified Modelling Language (UML)

Object-orientated analysis turned into assisted by means of use of sophistication-221 duty-Collaboration (CRC) playing cards (Beck and Cunningham, 1989) and desk top simulation. through using actual bodily objects as tokens for software program items, the CRC approach assists significantly in priming the programmer's intuitions regarding what items to define and what homes and features they have to have. because of the CRC technique, the subsequent types of UML diagram(Booch et al., 1998; Fowler, 2004; object management organization, 2011) had been constructed in visible Paradigm (2010) : a) elegance Diagram, specifying the entities inside the system, their capabilities and relationships to each other ; b) interest Diagram - specifying the behaviour of the system; c) communique Diagram, specifying how the entities in the device are related, or how they have interaction; d) kingdom machine Diagram, specifying how activities within the gadget trade the entities within the system. b) to d) are all examples of what are extra generically termed UML behaviour diagrams, whereas a) is a UML shape diagram. (Zhang, Williams, and Gatherer 2016)

Methods

One of the methods used is System Development Life Cycle (SDLC).

1.System Planing

in this section, direct observation changed into performed started from amassing recording data of college students and problem instructors. Observations also covers the equipment used for this in aid of the software, the employees involved, and methods, in addition to the form of facts that is processed. observation end result are summarized and analyzed to look the weaknesses, strengths, opportunities, and threats of the modern-day application hobby. for that reason truely illustrated the opportunity of the factors that must be developed toward computerization top-quality. assignment Initiation and planning is movement prefix (initialization) and develop a plan for the assignment development. project Initiation and making plans is motion prefix (initialization) and develop a plan for the venture development.

2.Problem Analysis

This section is split into three sub-phases, which includes a sub-segment of determination or the dedication (willpower) criteria of computer-based programs in order to be evolved, sub-phase modeling (structuring), and designed a laptop-primarily based application model as an alternative for Disabilities Deaf Mute patient.

Requirement Structuring, this phase sub pastime must be supported through library studies strategies (Library research), in this section we ought to structuring or modeling to application development and layout sports. This calls for deep knowledge of modeling techniques and tools used on the whole graphical modeling device this is the Unified Modeling Language (UML). tool graphical model in order to be used is the Use Case Diagram, pastime Diagram, elegance Diagram, sequence Diagram, thing Diagram, Deployment Diagram, opportunity era and selection design create design options according with the wishes of the consumer to be compared and selected in accordance with the price, human resources and current technical.

3.System Design

developing the set of rules underlying the program which is designed and prepared the records to be designed in a new program into an digital database. in this segment also set the form of software software as a way to use the institution of object oriented Programming language, with MySQL database, and the gadget software program is J2ME and use the text to speech.

4.System of Implementation

on this segment, the logical specification of the program and database of fourth outcomes section is converted into element programming language (coding application) and the manufacture of disbursed databases. The software used for programming is object-orientated Programming (java) and text to speech. in this section of trying out became also performed simultaneously to all resources. The checking out segment is split into two elements, namely inner checking out and external trying out. 1) inner testing objectives to illustrate that each one statement already done testing, some of precise facts provided to test processing and the outcomes received. in the test document, there are several such things as tests hyperlinks inside every page and other documents. 2) external examinations meant to locate errors and ensure output is generated as expected. all through device trying out, the machine is used experimentally to make sure that the software program that made no fail, run according with the specifications and desires of the person. a few customers are also blanketed to test the machine so that the analyst can see the workings of the software program in methods now not precise, in order that it is able to find hidden mistakes before the program is applied.

5.System Testing

in this phase the software program installation gadget or operating gadget and alertness programs are newly created, as well as offer quick education to potential customers. but within the implementation section of this time spent is tremendously quick, so we need a plan to increase the time.

6.Operation and Maintenance

Phase treatments achieved after the software program has been used by the user or the consumer. At this level, the system of monitoring, evaluation, and alternate (development) when needed. The modern-day version of the software program or with estab-renewal for documentation, education and guide. changes will be made if there is an errors, so the software have to be adjusted again to accommodate the converting needs of the preferred user.

3. Result and Discussion

Use Case Diagram

Use case diagrams are used to describe the interaction between the users of the system (actor) to the case (use case) adjusted measures (scenario) that have been determined.

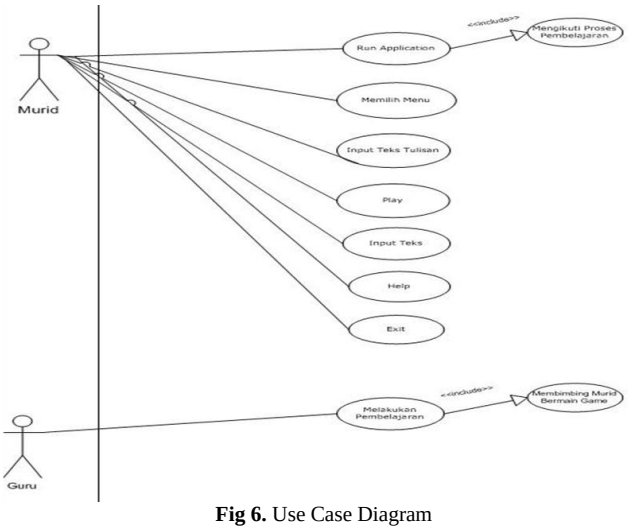

Fig 6. Use Case Diagram

Activity Diagram

Student activity started from entering application then from inputting text (article), clicking the play button and listening output of voice / speech. Students can also find out how to use the application through help menu and exit menu.

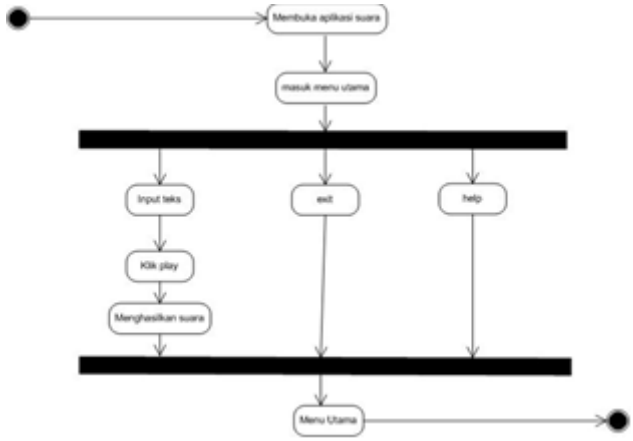

Fig 7. Activity Diagram

Class Diagram

Class diagram provides a view widely from a system by showing its classes and their relationships. Static class diagram, illustrating the relationship what happened. Fig 8 The following is a class diagram of the expert system to support definite conclusions using the web. Each class has an attribute to identify the type and content of applications. Classes are interrelated to indicate system activity that will generate information.

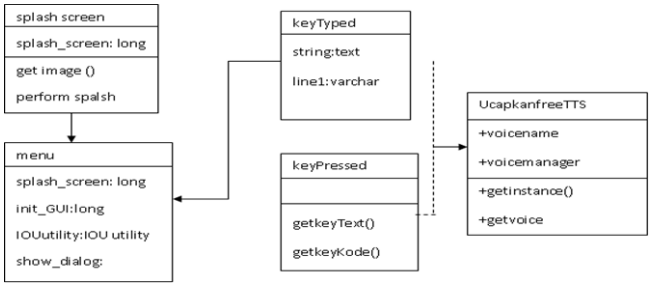

Fig 8. Class Diagram

Sequence Diagram

In Fig 9 is a Sequence Diagram depicting mute students order activity in the use of voice tools. Starting from the entrance application then performs inputting text (article), click the play button and the note on the check and normalized per syllable then "fie wav" will be played and the result is a voice / speech that can be heard by the students, and then exit the application with the menu exit.

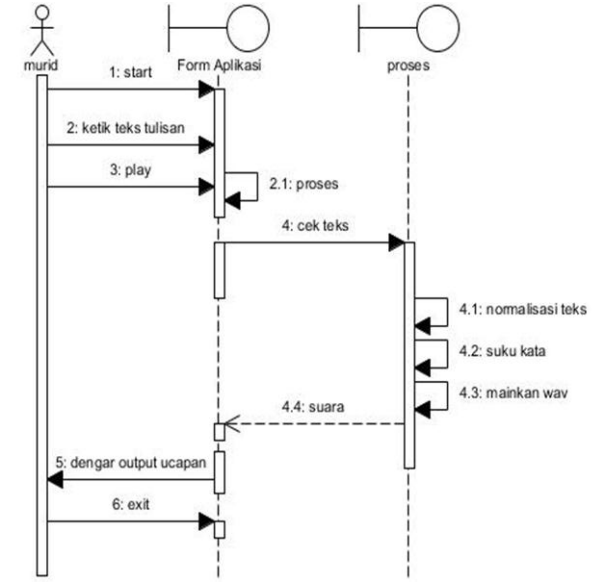

Fig 9. Sequence diagram

Implementation System

The main menu window will appear as a whole. The main menu consists of several menu that has been active or ready to be used to process the data.

Fig 10. Application view

Fig 11. Display Login

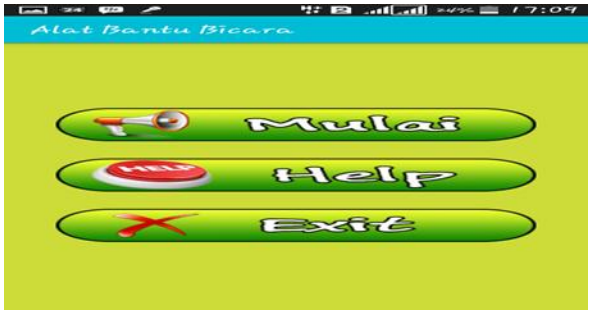

Fig 12. Display Main Menu

Fig 13. See How to Use Application

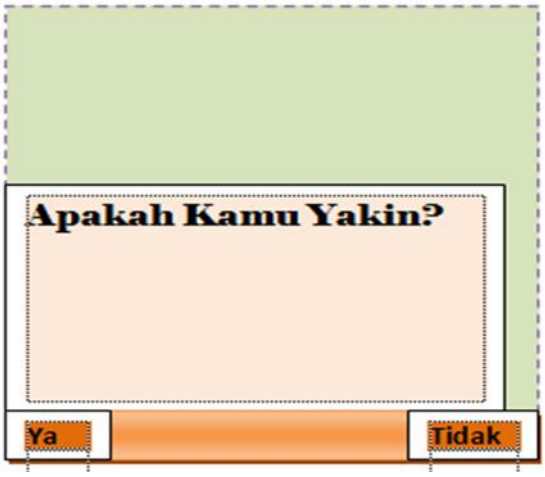

Fig 14. Output Produce Sound

Fig 15. Display Form text input

Syntax Program Fig 15 to display the following text Input Form

```
<?xml version="1.0" encoding="utf-8" ?>
<RelativeLayout
xmlns:android="http://schemas.android.com/apk/
res/android"
xmlns:tools="http://schemas.android.com/tools"
android:layout_width="match_parent"
android:layout_height="match_parent"
android:paddingBottom="@dimen/activity_vertic
al_margin"
android:paddingLeft="@dimen/activity_horizont
al_margin"
android:paddingRight="@dimen/activity_horizon
tal_margin"
android:paddingTop="@dimen/activity_vertical_
margin"
tools:context="slb.alatbantubicara.MainActivity"
android:background="@color/accent">
- <LinearLayout android:orientation="vertical"
android:layout_width="match_parent"
android:layout_height="match_parent"
android:layout_centerVertical="true"
android:layout_centerHorizontal="true"
android:gravity="center_vertical">
 <ImageButton
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:id="@+id/tmulai"
android:layout_gravity="center_horizontal"
android:src="@drawable/btn_mulai"
android:background="@color/accent" />
 <ImageButton
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:id="@+id/thelp"
android:layout_gravity="center_horizontal"
android:background="@color/accent"
android:src="@drawable/btn_help" />
 <ImageButton
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:id="@+id/texit"
android:layout_gravity="center_horizontal"
android:src="@drawable/btn_exit"
android:background="@color/accent" />
 </LinearLayout>
 </RelativeLayout>
```

Discussion

The results showed that the application of mobile-based talking tools is able to be applied in communicating with the deaf mutes of the patient. A total of more than half of nurses can understand the workings of this mobile-based app. nurses are able to provide support to improve the communication of children with difable to be more active. Family support is also required to avoid communication barriers. Nurses should be able to facilitators and provide health education to deaf mute children in order to achieve optimum health status (Pendergrass, Let al, 2017) . By using this mobile application nurses or teachers will be more intense communicating to provide information about health education.

4. Conclusion

After examining and analyzing, can be concluded of the performance result system that is tools voice application of the research results can help mute students to communicate during

learning and communicating with nurses, teachers or other persons who are not mute by reducing the use of sign language or write in a media and it is the already effective the use of mobile as a tool for mute students sound.

References

[1]Abolfazli, S., Sanaei, Z., Gani, A., Xia, F., & Yang, L. T. (2014). Rich mobile applications: Genesis, taxonomy, and open issues. *Journal of Network and Computer Applications*, *40*(1), 345–362. http://doi.org/10.1016/j.jnca.2013.09.009

[2] Ali, F. A. B. H., & Aydah, S. M. (2012). Development of Prototype Chat System Using Mobile Platform for Disable People. *Procedia - Social and Behavioral Sciences*, *57*, 33–39. http://doi.org/http://dx.doi.org/10.1016/j.sbspro.2012.09.1154

[3] Emmanouilidis, C., Koutsiamanis, R. A., & Tasidou, A. (2013). Mobile guides: Taxonomy of architectures, context awareness, technologies and applications. *Journal of Network and Computer Applications*, *36*(1), 103–125. http://doi.org/10.1016/j.jnca.2012.04.007

[4] Hendriawan, A., Wijayanto, A., Paulus, S. W., & Taufiq, M. (2013). Portabel Text to Speech yang Terintegrasi dengan Telepon Seluler untuk Tunawicara.

[5] Nyura, Y. (2010). Pembuatan Aplikasi Pembelajaran Bahasa Inggris Pada Handphone dengan J2ME Yusni Nyura. *Pembuatan Aplikasi Pembelajaran Bahasa Inggris Pada Handphone Dengan J2ME*, *5*(3), 18–27.

[6] Pandergrass, L, Nemeth, L, Newman,SD, Jenkins CM, & John, EG. 2017. Nurse practitioner perceptions of barriers and facilitators in providing health care for deaf American Sign Language users: A qualitative socio-ecological approach. Journal of the American Association of Nurse Practitioners 2017 vol: 29 (6) pp: 316-323

[7] Safitrasari, Dwia, Fakultas Ilmu, Sosial Dan, Ilmu Politik, Program Sarjana, and Ilmu Kesejahteraan. 2012. "UNIVERSITAS INDONESIA DUKUNGAN SOSIAL OLEH PERAWAT TERHADAP ANAK PENYANDANG CACAT GANDA DI WISMA TUNA GANDA- PALSIGUNUNG DUKUNGAN SOSIAL OLEH PERAWAT TERHADAP ANAK PENYANDANG CACAT GANDA DI WISMA TUNA GANDA-." Indonesia University.

[8] Suteja. R. B. (2008). Sistem Email Client untuk Mobile Device berbasis pada Teknologi Java. *Media Teknika*, *8*(1), 20–26.

[9] Zhang, L., Williams, R. A., & Gatherer, D. (2016). Rosen's (M,R) system in Unified Modelling Language. *BioSystems*, *139*, 29–36. http://doi.org/10.1016/j.biosystems.2015.12.006