

Application of Stemmer Algorithm to Determine Dhomir Mustatir in a Kalimah Fi'il

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Abstract

The nahwu subject is one of the subjects that form the basis of the world of Islamic boarding schools. Nahwu becomes the foundation for students in studying the yellow book. In the science of nahwu, there are several basic chapters that must be understood by students, one of which is the Dhomir Dhomir chapter, which is one of the chapters in the science of nahwu that must be studied for students in Islamic boarding schools. In the dhomir chapter, students will learn about a pronoun consisting of 14 dhomirs. Dhomir learning is usually done using the word-by-word memorization method, in this memorization, there are still many students who have difficulty finding changes in the form of one word into another so that it will hinder the learning process of the students. Based on this problem, the writer takes the title of applying a stemmer algorithm to determine dhomir mustatir in a sentence of fi'il. This study produces an application that can determine a pronoun or dhomir in a fi'il sentence with 14 applicable dhomir rules. From the test results obtained a percentage of 97% of the level of system compatibility with the form of word changes or dhomir.

Keywords: application, stemmer algorithm, dhomir.

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1. INTRODUCTION

The science of nahwu is one of the subjects that must be known and understood by every santri at madrasah diniyah and in boarding schools because nahwu science is the foundation or basis for reading a yellow book as well as the basis for learning about the order or vocabulary in Arabic. The knowledge of nahwu consists of several chapters of learning and one of the most important chapters is the dhomir chapter.

Dhomir is a pronoun in Arabic vocabulary. In dhomir learning techniques generally use vocabulary memorization techniques, while dhomir itself consists of 14 changes and in the vocabulary itself there are still several solutions such as fi'il which is broken into 3 parts, namely fi'il mudhori ', fi'il madhi and fi The 'il amr and dhomirnya will also vary in each fi'il so

that some students or students who study Dhomir still have difficulty in determining dhomir from one pronoun to another, as a result, the learning process and understanding are often hampered by students or students must first search one by one in the correct order from one dhomir change to another.

Based on these problems, the authors took the research title "Application of stemmer algorithms to determine dhomir changes from a fi'il sentence. With this dance application, it is hoped that it can help in finding and determining Dhomir changes from one form to another so that it can accelerate the process of understanding and memorizing students or students in the Dhomir chapter.

2. .RESEARCH METHODS

2.1. Dhomir

Dhomir is a pronoun from isim dhahir which denotes at

- a. Mutakallim (one who spoke or the first)
- b. Mukhatab (the person spoken to or the second person)
- c. Ghaib (person / something that is talked about or in the third person)

Dhomir is divided into two parts

- a. Dhomir muttasil

Dhomir which cannot be made muftada 'and cannot be located after lafadz in free time except dharurat.

Dhomir muttasil is divided into 2 parts:

1. Dhomir bariz

Dhomir whose lafadz has a form (obviously)

2. 2. Dhomir mustatir

Dhomir whose lafadz has no form and is not pronounced but is in thought (preserved or invisible). Dhomir Mustatir has 2 laws, namely compulsory and jawaz.

- b. b. Dhomir munfasil

Dhomir that can be made muftada 'and can accompany lafadz at free time and dhomir munfasil must be dhomir bariz [1].

2.2. Algoritma stemmer

The porter stemmer algorithm is a process of determining basic words through the elimination of affixes or affixes, ambiguous and confusing words can occur due to inconsistent morphological rules in Indonesian grammar [2]. Algorithm or stages in the Indonesian language Porter Stemmer are the elimination of particles in a word, for example -lah the word is, -is it in your word, eliminating the possessive pronoun or pronoun contained in a word, for example - you in your book word, -Ku, omit the prefix one if the prefix one is not detected, then go to the

stage of deleting the second prefix, and if there is, then go to the stage of removing the second prefix and the final stage of removing the 2nd prefix then proceeding to the step to deleting the suffix and deleting the suffix, if not found then the word is considered as the root word (root word) [3].

2.3. Php

PHP or which stands for Hypertext Preprocessor is a programming language that is used to build a dynamic website. PHP is integrated with HTML code, which means different conditions, HTML is used as the builder or foundation of the web layout framework, while PHP functions as a process, so that with PHP, a web will be very easy to maintain. PHP runs on the server-side, so PHP is also known as the Server Side Scripting language, which means that in every / to run PHP, it is mandatory to need a webserver to run it. PHP is open-source, so it can be used free of charge and is cross- platform, which can run on Windows and Linux operating systems. PHP is also built as a module on the Apache webserver and as a binary that can run as CGI [4].

In November 1997, PHP / FI 2.0 was released. In this release version, PHP has begun to be implemented in the C program, as well as modules which of course can significantly improve PHP. In 1997, a Zend company rewrote the PHP interpreter to be cleaner, better, and certainly faster. In 1998, the Zend company released and formalized the PHP interpreter as PHP 3.0. It was in this year that the abbreviation PHP was changed to PHP: Hypertext Preprocessor. In 1999, Zend re-released and formalized the PHP interpreter as PHP 4.0. The PHP 4.0 version was the most widely used version at that time. Because of the high speed and of course, building the web can also be more complex. June 2004, Zend re-released version PHP 5.0. Wow a very big impact happened because the paradigm has changed to an object-oriented programming language (OOP).

There are several advantages of the PHP programming language, namely:

- a. Easy to learn
- b. Cross-platform
- c. Free
- d. Has a fast access rate
- e. Supported by various web servers
- f. Supports databases.

2.4. Flowchart

Flowcharts are problem-solving steps that are written in the form of certain symbols that will show the flow of a program logically. Besides being needed as a communication tool, this flow chart is also needed as a documentation tool [5].

2.5. DFD (Data Flow Diagram)

Data flow diagrams (data flow diagrams - DFD) are diagrams that use symbols to present entities, processes, data flows, and data storage associated with a system. Entities in DFD are external objects in the system being modeled [6].

2.6. ERD (Entity Relation Ship)

Entity Relationship Diagram (ERD) is a diagram used to design tables which will be implemented in the database. ERD is formed based on 3 elements, namely entities, attributes and relationships [7].

2.7. Perancangan Sistem

1. Flowchart.

Figure 1 is a flowchart design of the application made.

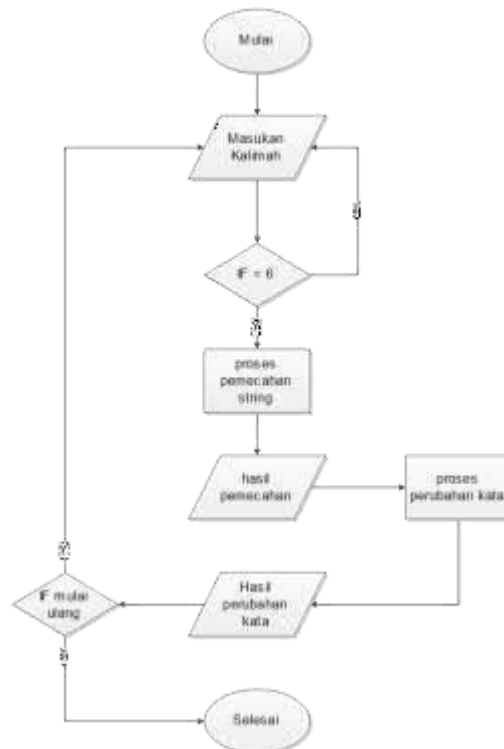


Figure 1. Flowchart

2. DFD (Data Flow Diagram)

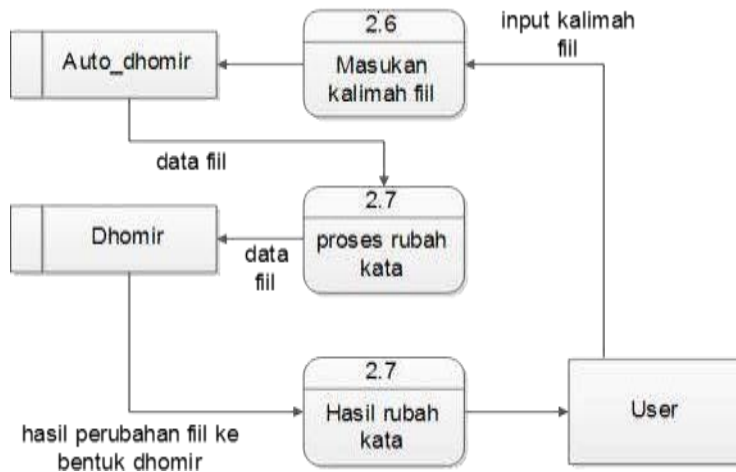


Figure 2 below is the DFD design of the application that was made.

Figure 2. DFD (Data Flow Diagram)

3. ERD (Entity Relationship Diagram).

Figure 3 below is an ERD or database design that is used in compiling the application, there are several tables including question tables, conclusion tables, solution tables, autocomplete tables and dhomir tables.

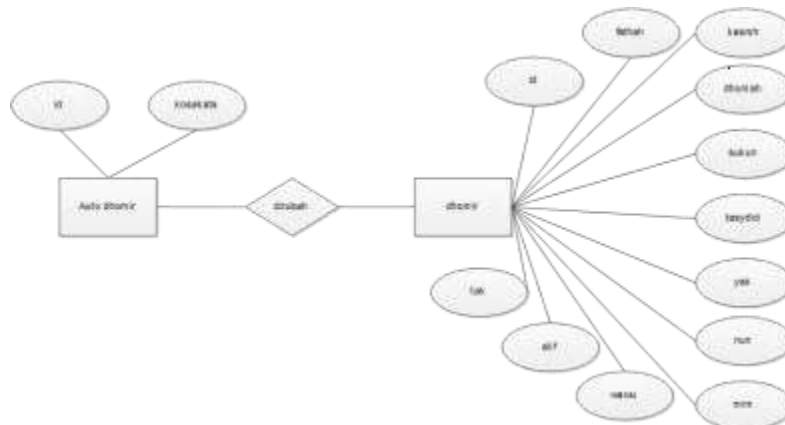


Figure 3. ERD (Entity Relationship Diagram).

3. RESULTS AND DISCUSSION

3.1. Implementation.

a. Home pages

Figure 4 is the dashboard page when entering the application. Dashboard contains navigation buttons to start the system, calendar, number of mufrodhat or Arabic vocabulary and several other features.



Figure 4. Page of Home

b. Form input kalimat.

Figure 5 is a display of the input form of a sentence or Arabic word to start the expert system to determine the sign of I'rob. The sentence or word that is entered must be a fi'il sentence or verb. The form has provided several choices of sentences or words to make it easier to write them.

Figure 5. Form input kalimat

c. The Result of Changing the Pronoun Page

Figure 6 contains questions that are aimed at analyzing what I'rob signs correspond to the words entered. The question page contains questions, sentences or words that have been input, and an explanation of the questions that are given, with this explanation can make it easier for users to understand the meaning of the questions asked.



Problema	20 Jawaban	Problema	Jawab
أنا	أنا	أنا	أنا
-	أنا	أنا	أنا
أنا	أنا	أنا	أنا
-	أنا	أنا	أنا
أنا	أنا	أنا	أنا
أنا	أنا	أنا	أنا
أنا	أنا	أنا	أنا
أنا	أنا	أنا	أنا
أنا	أنا	أنا	أنا
أنا	أنا	أنا	أنا
أنا	أنا	أنا	أنا
أنا	أنا	أنا	أنا
أنا	أنا	أنا	أنا
أنا	أنا	أنا	أنا
أنا	أنا	أنا	أنا

Figure 6 Question Page

d. Auto dhomir Page

Figure 7 contains the results of the analysis of the questions that have been answered along with the results of the I'rob sign, explanations and other examples of sentences that are the same as the results of the analysis that have been obtained, with the information and examples it is hoped that it can provide an understanding of the I'rob sign has been successfully analyzed.



3.2. Expert Validation Testing

Figure 7 contains the results of the analysis of the questions that have been answered along with the results of the I'rob sign, explanations and other examples of sentences that are the same as the results of the analysis that have been obtained, with the information and examples it is hoped that it can provide an understanding of the I'rob sign has been successfully analyzed.

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Fi'il Amr	Fi'il Mudhori'	Fi'il Madhi	Dhomir
-	يُؤَدِّهِ ۚ	أَدَّاهُ ۚ	هُوَ ۚ
-	يُؤَدِّهِ ۚ	أَدَّاهُ ۚ	هُوَ ۚ
-	يُؤَدِّهِ ۚ	أَدَّاهُ ۚ	هُوَ ۚ

-	تُذَّهَبُ	ذَهَبَ بَابُ تَا	هَيَّ
-	تُذَّهَبُ هَيَّ	ذَهَبَ بَابُ تَا	هَمَا
-	يُذَّهَبُ هَيَّ	ذَهَبَ بَابُ تَا	هَهُ
هَيَّ ذَهَبَ بَابُ	تُذَّهَبُ	ذَهَبَ بَابُ تَا	أَوَّ تَا
هَيَّ هَيَّ ذَهَبَ	تُذَّهَبُ هَيَّ	ذَهَبَ بَابُ تَا	أَوَّ هَيَّ تَا مَام
هَيَّ هَيَّ ذَهَبَ	تُذَّهَبُ هَيَّ ذَهَبَ	ذَهَبَ بَابُ تَا	أَوَّ هَيَّ تَا مَام

-	سَّحَابٌ سَهْوٌ	سَّحَابٌ سَّحَابٌ	هَـ مَا
-	سَّحَابٌ سَهْوٌ سَّحَابٌ	سَّحَابٌ سَهْوٌ سَّحَابٌ	هَـ مَّ
-	سَّحَابٌ سَهْوٌ	سَّحَابٌ سَّحَابٌ	هَـ يَـ
-	سَّحَابٌ سَهْوٌ	سَّحَابٌ سَهْوٌ	هَـ مَا
-	سَّحَابٌ سَهْوٌ	سَّحَابٌ سَهْوٌ	هَـ هَـ
سَّحَابٌ سَهْوٌ	سَّحَابٌ سَهْوٌ	سَّحَابٌ سَهْوٌ سَّحَابٌ	أَـ وَ تَـ
سَّحَابٌ سَهْوٌ	سَّحَابٌ سَهْوٌ	سَّحَابٌ سَهْوٌ سَّحَابٌ	أَـ وَتَـ

			أَـ مَـ
سَّحَابٌ سَهْوٌ سَّحَابٌ وَتَـ	سَّحَابٌ سَهْوٌ سَّحَابٌ	سَّحَابٌ سَهْوٌ سَّحَابٌ	أَـ وَتَـ مَـ

ا ُ لَج ُ س ُ ي	ا ُ لَج ُ س ُ ي	ا ُ لَج ُ س ُ ي	ا ُ لَج ُ س ُ ي
ا ُ لَج ُ س ُ ي	ا ُ لَج ُ س ُ ي	ا ُ لَج ُ س ُ ي	ا ُ لَج ُ س ُ ي
ا ُ لَج ُ س ُ ي	ا ُ لَج ُ س ُ ي	ا ُ لَج ُ س ُ ي	ا ُ لَج ُ س ُ ي
-	ا ُ لَج ُ س ُ ي	ا ُ لَج ُ س ُ ي	ا ُ لَج ُ س ُ ي
-	ا ُ لَج ُ س ُ ي	ا ُ لَج ُ س ُ ي	ا ُ لَج ُ س ُ ي

ق َ ا ر َ 3

Fi'il Amr	Fi'il Mudhori'	Fi'il Madhi	Dhomir
-	ق َ ا ر َ	ق َ ا ر َ	ه َ و َ
-	ق َ ا ر َ	ق َ ا ر َ	م َ ا َ ه َ
-	ق َ ا ر َ	ق َ ا ر َ	م َ ه َ
-	ق َ ا ر َ	ق َ ا ر َ	ي َ ا َ ه َ
-	ق َ ا ر َ	ق َ ا ر َ	م َ ا َ ه َ

	ارَاتَا	
-	قَرَرَان	ه
رَرَقَا	قَرَرَات	تَوَا
رَقَا	قَرَرَاتَا	تَوَاتَا
رَقَا	قَرَرَاتَا	تَوَاتَا
رَقَا	قَرَرَاتَا	تَوَاتَا
رَقَا	قَرَرَاتَا	تَوَاتَا
رَقَا	قَرَرَاتَا	تَوَاتَا
رَقَا	قَرَرَاتَا	تَوَاتَا
-	قَرَرَاتَا	تَوَاتَا
-	قَرَرَاتَا	تَوَاتَا

نظَر

Fi'il Amr	Fi'il Mudhori'	Fi'il Madhi	Dhomir
-	يَرِي	وَرِي	ه

-	هَ مَما وَيَّ ضِلَّ نَحْنِ	-
-	هَ مَما وَيَّ ضِلَّ نَحْنِ	-
-	هَ مَما وَيَّ ضِلَّ نَحْنِ	-
-	هَ مَما وَيَّ ضِلَّ نَحْنِ	-
-	هَ مَما وَيَّ ضِلَّ نَحْنِ	-
أُ أُوو	أُ أُوو أُ أُوو	أُ أُوو

رَر	رَر	رَر	رَر
أُ أُوو ضِلَّ	أُ أُوو نَحْنِ	أُ أُوو لَمْ	أُ أُوو تَوْت
أُ أُوو ضِلَّ	أُ أُوو نَحْنِ	أُ أُوو مُ	أُ أُوو تَوْت مُ

-	يَ لَضُّ مَوْن	لَضُّ مُمْ وُ	هَمْ
-	يَ لَضُّ مُمْ	لَضُّ مُمْ تْ	هَيْ
-	يَ لَضُّ مُمْ هَ	لَضُّ اَوَّ مَّ	هَ مَا
-	يَ لَضُّ مُمْ هَ	لَضُّ مُمْ هَ	هَمْ هَمْ
و لَضُّ مُمْ	يَ لَضُّ مُمْ	لَضُّ مُمْ تْ	أَوَّ تْ
اَوَّ لَضُّ مُمْ	يَ لَضُّ مُمْ	مُمْ مَّا تْ لَضُّ وَّ	أَوَّ وَّ مُمْ
اَوَّ لَضُّ وَّ	يَ لَضُّ مُمْ	مُمْ مَّا تْ لَضُّ وَّ	أَوَّ وَّ مُمْ
اَوَّ لَضُّ مُمْ يَ	يَ لَضُّ مُمْ	لَضُّ مُمْ مَّا	أَوَّ وَّ

اَ لُ ضُنْ أَمْ	اَ لُ ضُنْ أَمْ	أَمْ تَ لُضْ أَمْ	أَ وَتَ أَمْ
اَ لُ ضُنْ هَ	اَ لُ ضُنْ هَ	تَ مَ هَ لُضْ	أَ وَتَ هَ

		أَ	
-	اَ لُضْ أَمْ	أَمْ مَتَ	أَ وَأَ
-	وَأَ لُضْ أَمْ	لُضْ أَمْ	وَأَ خَ هَ

From the results of expert validation testing that has been carried out using 5 samples of the sentence fi'il with 34 word changes in each sentence, the percentage of system suitability can be calculated using the formula:

() Ket :

P = system percentage

X = total score

xi = maximum score

then the calculation of the system suitability percentage is as follows:

() = 97 %

Based on the above calculations, a percentage of 97% is obtained for the conformity of the system with the existing dhomir mustatir.

4. CONCLUSION

Based on the results of the research that has been done, it can be concluded that are as follows:

- a. The application is built using a web programming language by implementing a stemmer algorithm to break and change strings in accordance with applicable dhomir mustatir.
- b. The test results that have been done with the example of the case of the kalimah fi'il which are converted into the dhomir mustatir through this application get a percentage of 97%. Thus the application can be said to be feasible to be applied and used in the learning of nahwu science in the dhomir chapter.

5. SUGGESTION

- a. Applications can be developed again using other programming languages and with other development methods.
- b. Applications can be expanded again by adding another chapter of Dhomir. Like dhomir muttasil and dhomir munfasil.

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