

CHAPTER 4

ANALYSIS AND DESIGN

4.1 Analysis

Nowadays, most of people use sentence to communicating. The sentence is the smallest unit of language that reveals whole of mind is, either by written or oral [Alwi, 1998]. The sentence is different between one and the other, because the sentence itself has it own structure. It is a part of statement that has a minimal structure of subject and predicate, has intonation and is meaningful [Finoza, 2003]. Subject (S), predicate (P), object (O), description (K) are constituent elements or sintaksis elements (word position or word role) possessed by a sentence. The correct sentence is very important while a scientific writer write a scientific works. And to make the sentence correctly, it is very important to understand those elements in order. Scientific work is an articles of science which presents a fact and written according to a good and correct writing methodology [Arifin, 2003:1]. A correct sentence, must regard to the EYD (*Ejaan Yang Disempurnakan*) rule. Difficulties in analyzing the sentence making a writer in trouble while making a correct sentence.

Fortunately, to help the writer resolving the case above, there is an algorithm that can be used namely CYK algorithm. This algorithm is helping analyzing the sentence to find those constituent elements. If the cyk algorithm is done manually, it needs a lot of time and efforts. It will be more helpful if this algorithm implemented by using an application, so the writer can analyzing sentences instantly. By using this application, the writer can make a correct sentence easily and write a good scientific paper.

For an example to explain the algorithm, this is a matrix table with an input sentence with 6 words :

[0] W1 [1] W2 [2] W3 [3] W4 [4] W5 [5] W6 [6]

Table 4.1: CYK matrix table
TO

		1	2	3	4	5	6
	0	0-1	0-2	0-3	0-4	0-5	0-6
	1		1-2	1-3	1-4	1-5	1-6
FROM	2			2-3	2-4	2-5	2-6
	3				3-4	3-5	3-6
	4					4-5	4-6
	5						5-6

Example sentence:

[0] Anak [1] itu [2] membeli [3] buah [4] di [5] pasar [6]

Table 4.2: Example of sentence to be analyzed

	1	2	3	4	5	6
0	anak	anak itu	anak itu membeli	anak itu membeli buah	anak itu membeli buah di	anak itu membeli buah di pasar
1		itu	itu membeli	itu membeli buah	itu membeli buah di	itu membeli buah di pasar
2			membeli	membeli buah	membeli buah di	membeli buah di pasar
3				buah	buah di	buah di pasar
4					di	di pasar
5						pasar

With the matrix table above, the program analyzing to find the subject, predicate, object, and description. And the matrix table will become like this:

	1	2	3	4	5	6
0	-	S	-	-	-	-
1		-	-	-	-	--
2			P	-	-	-
3				O	-	-
4					-	K
5						-

After analyzing using the CYK algorithm, the matrix has found the subject, predicate, object, and the description. The subject is *anak itu*, the predicate is *membeli*, the object is *buah*, and the description is *di pasar*.

4.2 Desain

Below is the use case diagram.

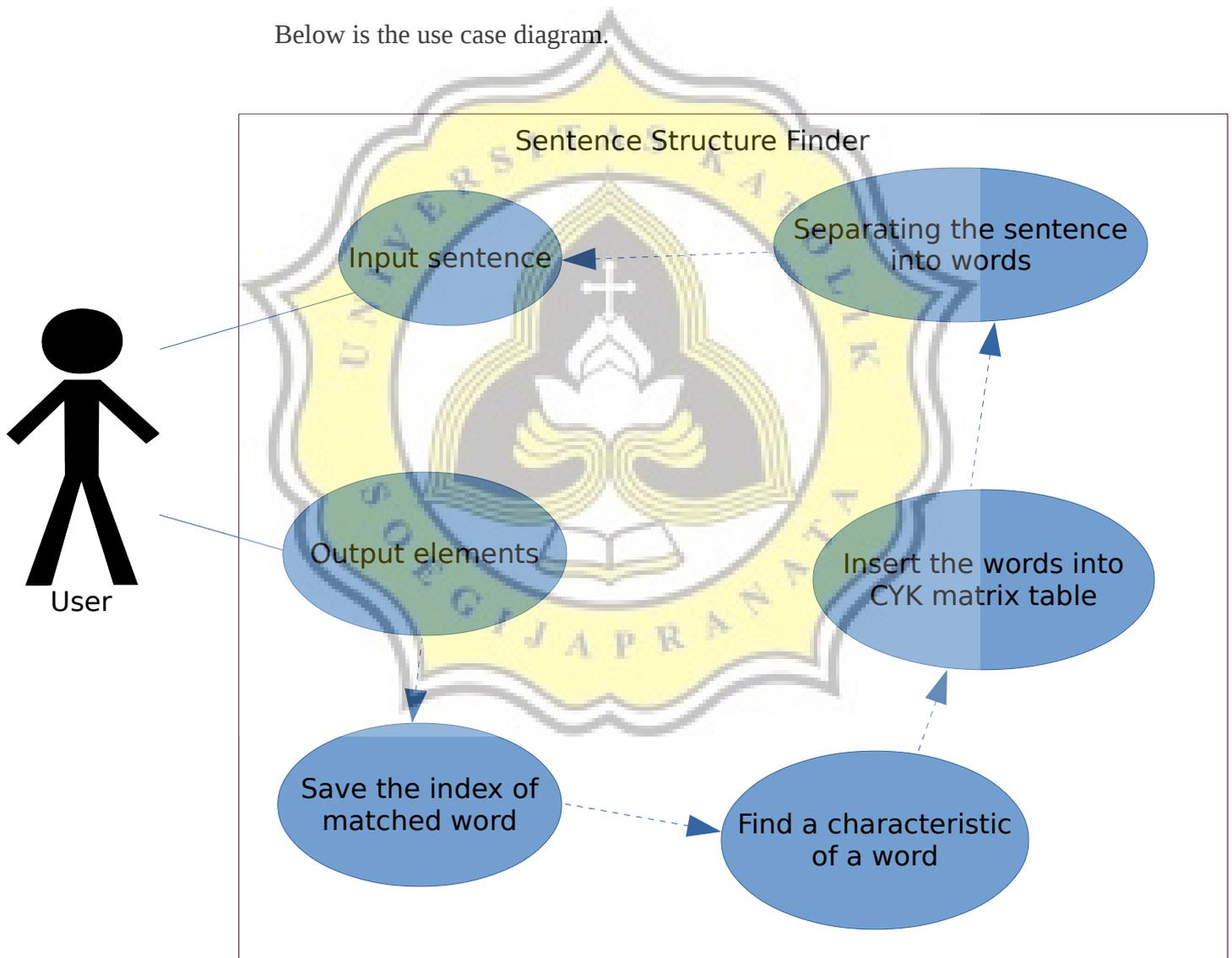


Illustration 4.1: Use Case Diagram

The process of the program is started after the user already entered a sentence. The sentence will be separated into words. Then the words will be inserted into

CYK matrix table. After that, the program finding the characteristic of a word. After found it, the index will be saved. In the end, those elements will be displayed.

Separating the sentence into words has a process and explained below.



When the insertion process, there is several things to do.

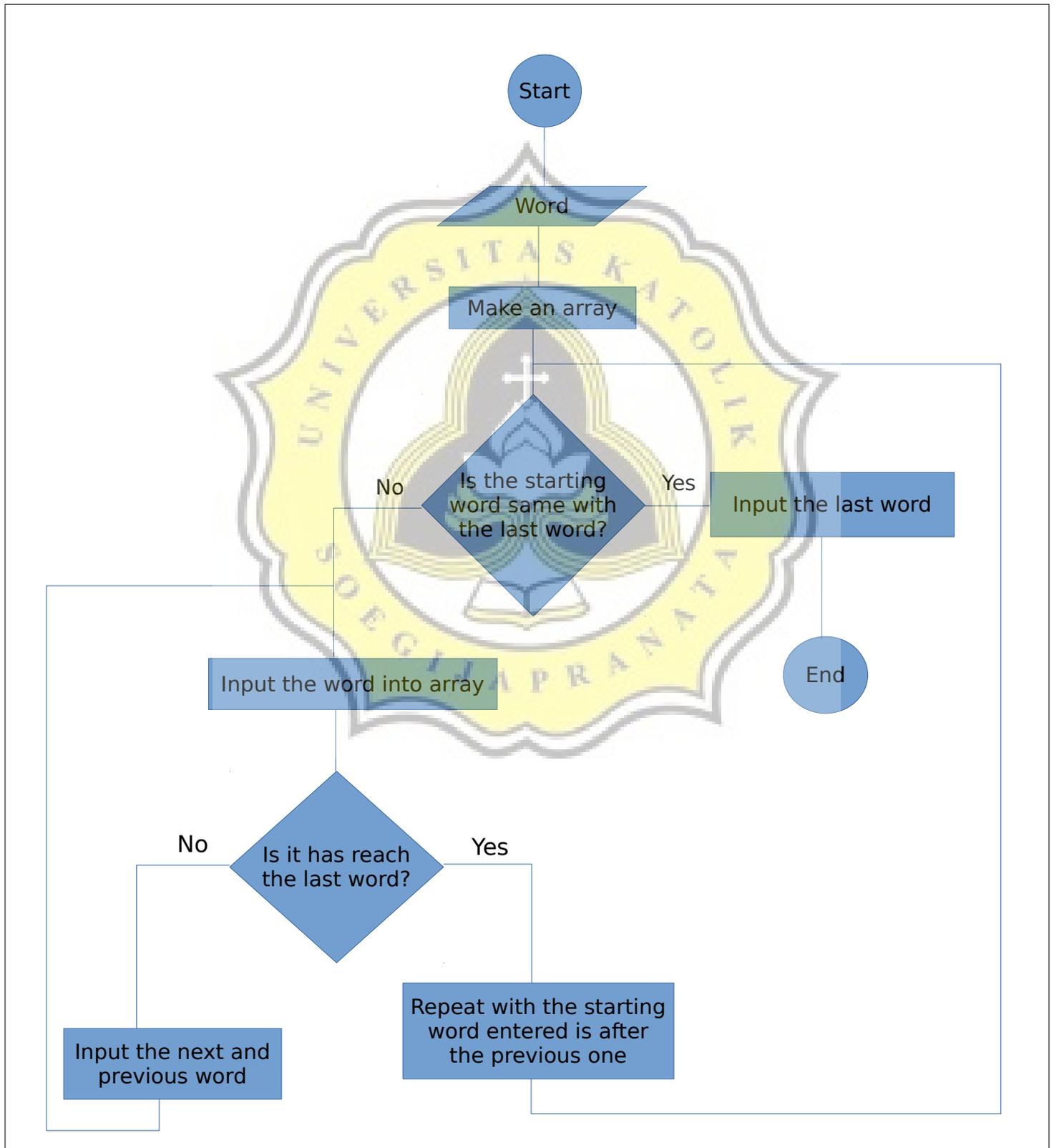
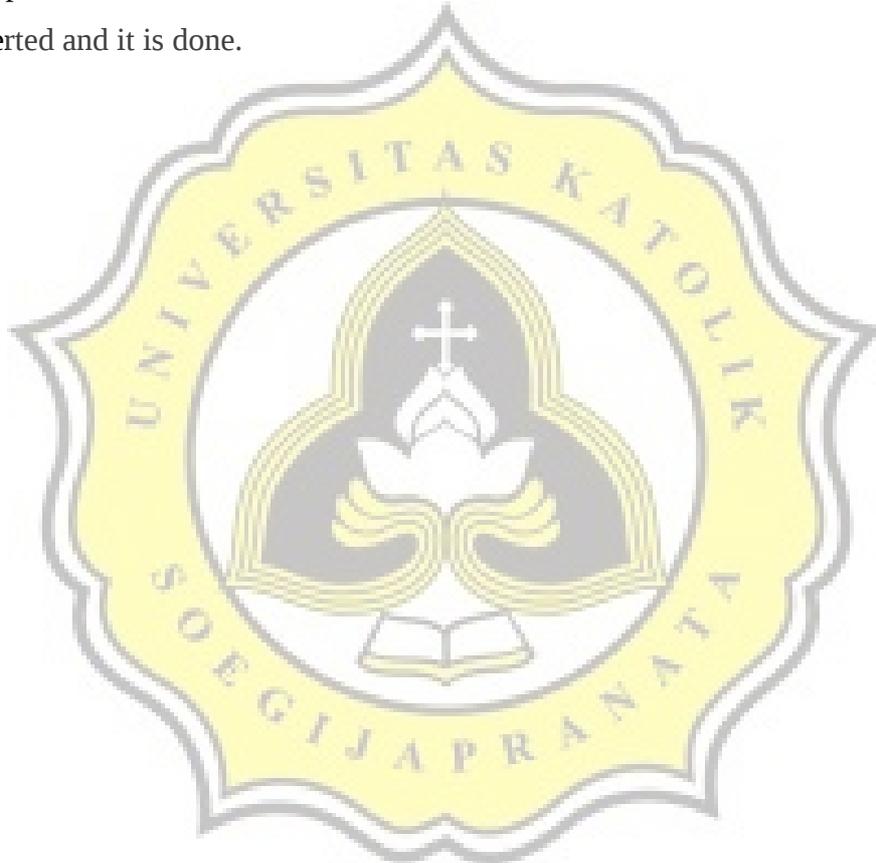


Illustration 4.2: Inputting into matrix table flowchart

From the flowchart above, the program will start the insertion with making an array. After that, the program will decide is the starting word same with the last word or not. If it is different, the word will be inserted into array. Next, it check if it has reach the last word. If it has not, it will input the next and previous word, and if it has reach, the program will repeat with the starting wotd enterd is after the previous one. And back to before, if it is the same, the last word will be inserted and it is done.



To find a characteristic, below are the process

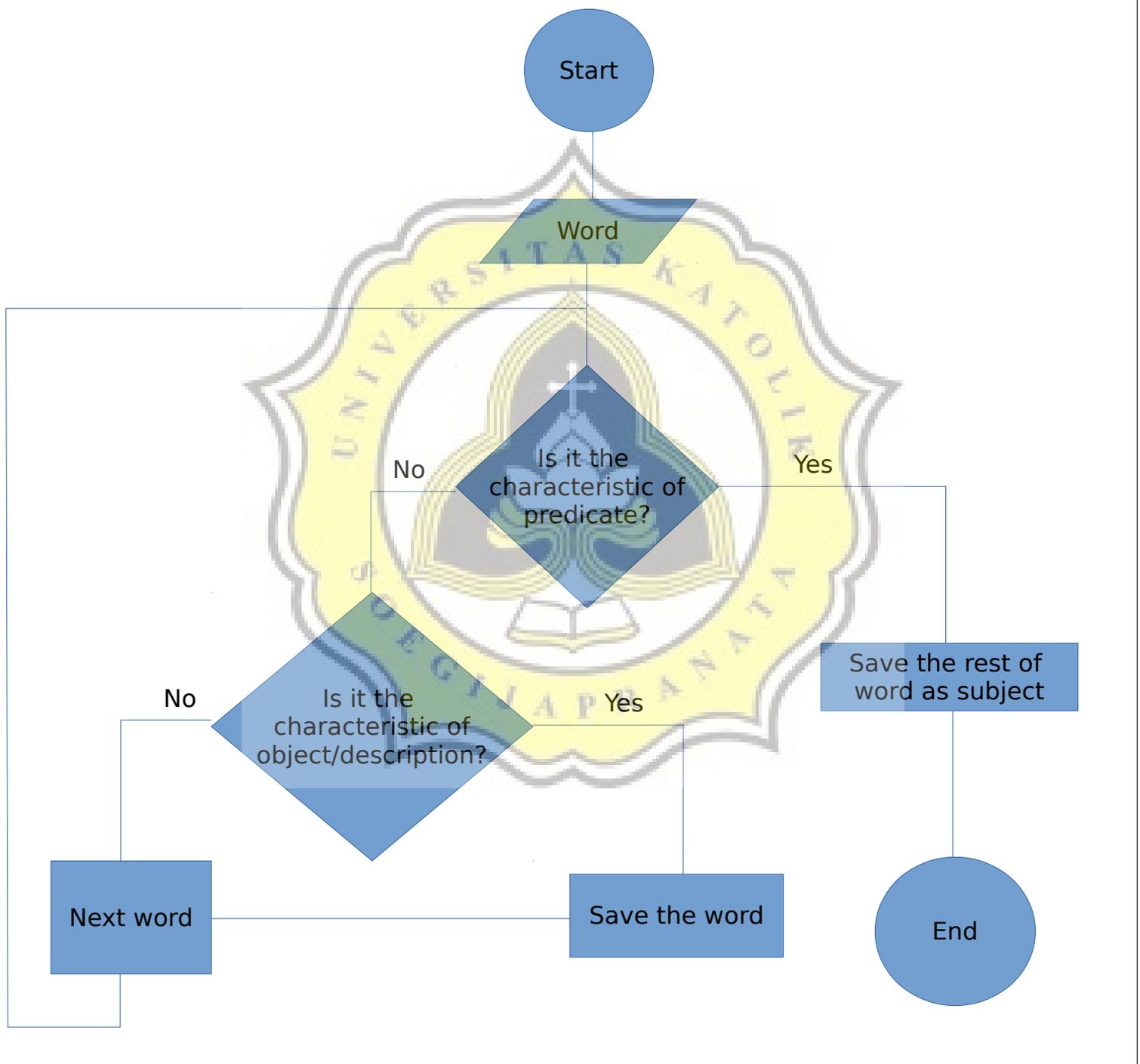


Illustration 4.3: Finding the characteristic

To find the characteristic, it start with deciding whether it is the characteristic of predicate or not. If it is, the program will save the rest of word as subject and then it end. If it is not, it will check is it the characteristic of object/description or not. If it is, it will save the word then go to next word. If it is not, it will directly go to next word and repeat to the check of predicate process.

