CHAPTER 3
RESEARCH METHODOLOGY

This Project has 4 major steps :

1. Making the input

This step is to make the user interface for the user to input the text. In the input people must type the text manually because there is some rule to be obeyed. People must differentiate the "Ē" and the "Ĕ" to get the correct output. After input, the system divide the text by its space between words to get the words and store the words into array. Then the system can decide the classification.

2. Classification using Finite State Automata (FSA)

Based on "Pedoman Umum Ejaan Bahasa Jawa Huruf Latin yang Disempurnakan" (Arifin, 2006), there are 7 rule to break a word in javanese language.

1. If in the middle of the word there is two vowels in sequence, the word break between the vowels.
2. If in the middle of the word there is a consonant between two vowels, the word break before the consonant.
3. If in the middle of the word there is a combination of consonant letters that symbolize a consonant phoneme, the consonant letters are not separated so that the breaking is done before or after the consonant letters.

   Ex: Bang-sa, go-dhong.
4. If in the middle of the word there is two consonant in sequence and not a group of consonant letters, the word break between the consonant.

   Ex: Pan-ti, sir-na, mum-pung

5. If in the middle of the word there is two consonant insequence and group of consonant letters, those consonant are not seperated.

Ex: ka-wruh, ke-plok, mi-tra

6. if in the middle of the word there is three consonant and not a group of consonant letters, the word break between the first consonant and the second consonant.

Ex: gam-blang, am-byur.

7. If the word consist more than one element and the element can be combine with the other element, the word break

a) between the element

b) on the combined element according the rule 1 to 6.

Ex: foto-kopi, fo-to-ko-pi.

There is 11 syllabels structure pattern (V, VK, VKK, KV, KVK, KVKK, KKV, KKVK, KKVKK, KKKV, KKKVK) described with FSA will look like this diagram :

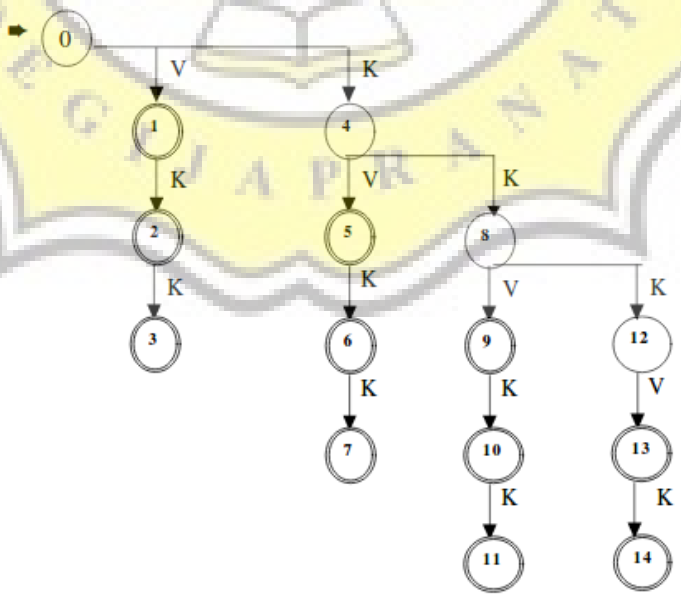

Illustration 3.1: Diagram FSA

This step is to classify the syllabels from the text input. First we check the first letter from the word. If the first word is vocal, the system use the vocal method And if the first is consonant, use the consonant method. In these methods, the system break and classify each word. The system will check the following letter to determine which rule to break the word. After the system break the word, the output from these methods store again to array to check the output sound.

3. Soung output

This step is to determine the sound output. The output of this system is a .WAV file. The audio file obtained by recording our voice. After got the array from classification, the system will search the audio database to get the same output. From the classification, then the system play each audio same with each syllabels to be the output. To combine the WAV file, the system use java library called “Javax.sound.example”

4. Analysis

To analyze this project, we compare if the word has many syllabels, is the word work much slower or not. We compare the text length too to check how much time it take to break a long text. To compare this project, author uses different input to see the time different between short input and long input.