

## CHAPTER 3

### RESEARCH METHODOLOGY

#### 3.1 Literatur Study

This study begins with a literature study. The research began with a search of 10 journals related to the Base64 and LSB (Least Significant Bit) algorithms on the internet. In some studies that already exist, the algorithm is implemented in the form of an application program to encrypt data in the form of text. Steps in gathering this journal to contain problems, solutions, results analysis and information sources. From the journal there is a research gap that gave birth to new research.

#### 3.2 Review Proposal

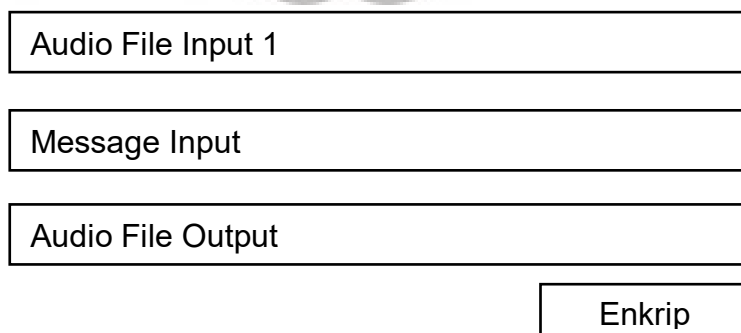
In the review of proposals submitted the topic of the problem raised was already in other studies. So in this study a combination of two existing algorithms was conducted. Base64 and LSB (Least Significant Bit) algorithms are combined to make message encryption into WAV audio files.

#### 3.3 Collecting Data

This research needed data to be analyzed. The data used are text / messages and WAV audio files. WAV audio files can be obtained from the internet, one of them from the site <https://file-examples.com/index.php/sample-audio-files/sample-wav-download/>. WAV audio files that are used there are no restrictions such as duration, file size, and sound quality.

#### 3.4 Design

This is a user display design for encrypting and decrypting messages in WAV audio. The programming language used in making programs is java.



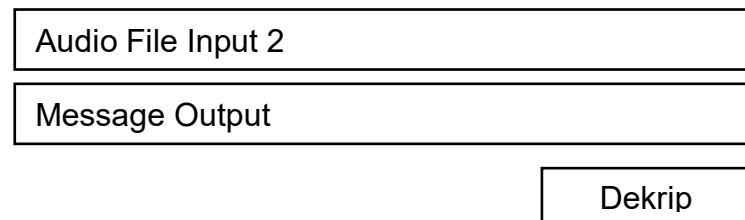


Illustration 3.1: Encryption Decryption Display

Based on the picture above, it has an encryption and decryption function section. The encryption section contained an audio file input 1 used as an input for the WAV audio file to which the message was inserted. Message input as input text / message to be hidden. Audio file output as a place to store the results of encryption. Encrypt button to run the encryption process. While the decryption section contains an audio file input 2 that will be used as an input for WAV audio files that have been inserted messages. Message output will display decrypted message. Decrypt button to decrypt.

### 3.5 Implementasi

In implementing the program with a combination of Base64 and LSB (Least Significant Bit) algorithms, the source code library for WAV is obtained from <http://www.labbookpages.co.uk/audio/javaWavFiles.html>. Text / character messages will be encrypted to Base64. The output of Base64 encryption is in the form of random strings. Random strings will be encrypted into the WAV audio file using the LSB (Least Significant Bit) algorithm. The result of the encryption is a modified WAV audio file that contains secret messages. To do the decryption it needs to do a reverse algorithm from the LSB (Least Significant Bit) algorithm and Base64 results will be the previous text / message character input

### 3.6 Result

This study an analysis was carried out by preparing data in the form of text / message input and WAV audio file size of 1 MB with a duration of 33 seconds. Data is tested on the program, time parameters and the final encryption required. The good end result is getting an unchanged WAV audio file size and unchanging audio quality, and a decryption process that can read the messages inserted in the WAV audio file. The purpose of the data experiment is to see the results of implementing a combination of the two algorithms. Achievements in this research are good final results and time of encryption and decryption.

### 3.7 Report

At this stage of the report, write a report from the process of the initial steps of the study to the end of the study. Also write the workings of Base64 and LSB (Least Significant Bit) for the encryption process, as well as analysis and program results. After writing, suggestions for further research are also needed.

