

CHAPTER 3

RESEARCH METHODOLOGY

3.1 Literature Study

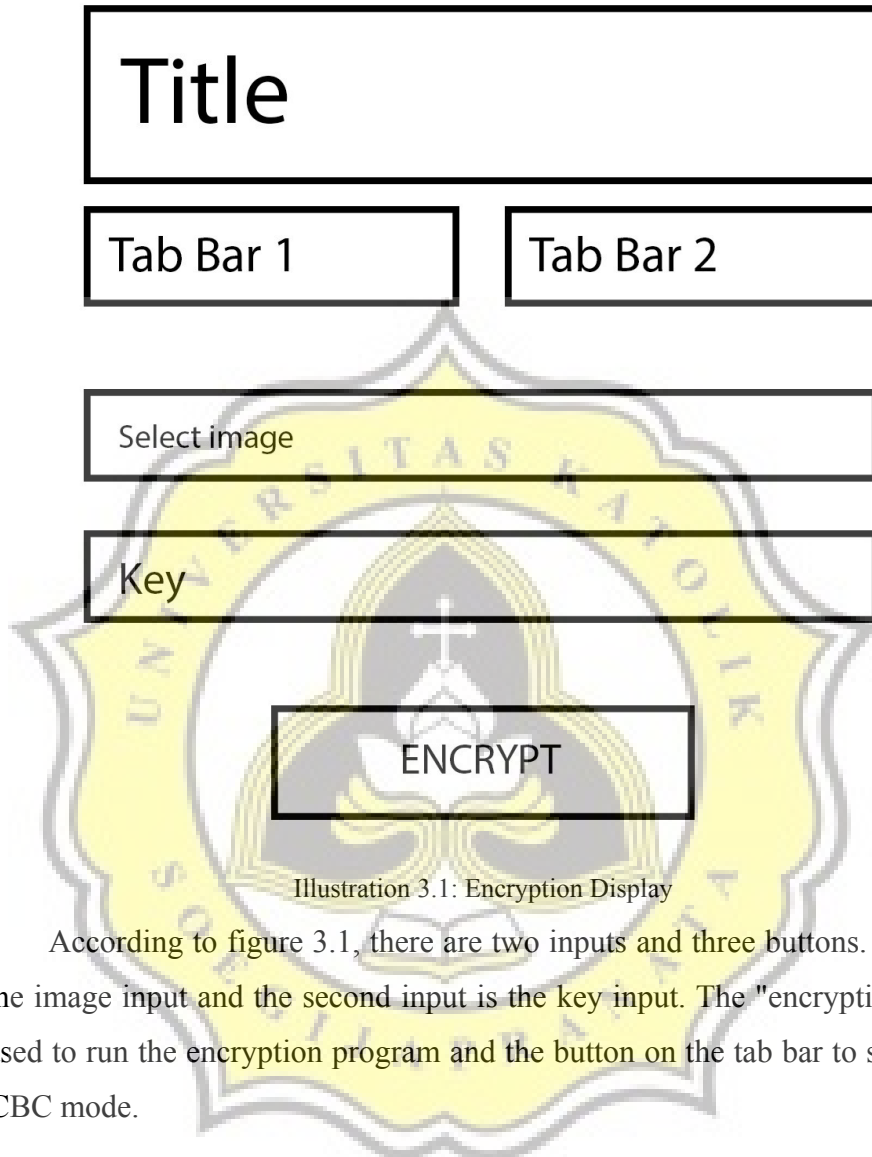
This study is started by conducting a literature study. The research began by searching eight scientific journals related to the DES algorithm or encryption on Android published on the internet. Some of the contents of scientific journals are about applied algorithms in applications and applied encryption and decryption to data in the form of files.

3.2 Collecting Data

The data used in this study are from the results of trial images in the format jpg, jpeg and png. The image has a maximum resolution of 387x791 pixels. These images are obtained from the internet and has been tested ten times.

3.3 Analysis

These are the analysis of the design of the user interface for encryption of ECB and CBC DES mode



According to figure 3.1, there are two inputs and three buttons. First input is the image input and the second input is the key input. The "encryption" button is used to run the encryption program and the button on the tab bar to select ECB or CBC mode.

These are the analysis of the user interface design for ECB and CBC DES mode decryption



Illustration 3.2: Decryption Display

According to figure 3.2, there are two inputs and three buttons. The first input is ciphertext and the second input is the same key when doing encryption. The "decrypt" button is used to run the decryption program and the tab bar button is used to select ECB and CBC modes.

3.4 Implementation

For implementing the program in the ECB DES mode algorithm, the code used is the modified code whereas the CBC DES mode algorithm is obtained from the library sourced from https://pub.dev/packages/flutter_des. This research uses dart programming language for the process of encryption and decryption of images. The result of encoding the base64 image is a string. The string will be the plaintext that will be encrypted with a key that has a size of 8 bytes. The result of

the encryption is in the form of ciphertext. The ciphertext is decrypted with the same key when encrypting. The result of the decryption is decoded base64 so that it becomes an image again.

3.5 Testing

In testing process, the data used is image data that has a maximum resolution of 387 x 791. Testing process is done 10 times with different images and resolutions. Tests carried out with a Pixel 3 emulator with Android system version 8.1.0 with 1 GB RAM. The time from the encryption and decryption test is recorded and then compared. After that, an analysis is made and draws conclusions. Report is written from the problem to draw conclusions, which are written in the form of project reports.

