# ABSTRACT

2D (dimensional) code can be solution for probems in using barcode. 2D code saves data in vertical and hrizontal directions, so that it has greater informations than barcode in the same space.

In this Final Project is made 2D code encoder and its decoder based on text to image and image to text convert. Input of encoder is a text with ≤ 80 characters length which is consisted of 45 kinds of alphanumeric characters. The text input is represented in binary bits through Reed Solomon encoder and allocated in 23 x 23 dimension matrix. Then, the output of this encoder system is binary image with 26 x 26 pixels dimension which is consisted of finding pattern and data.

2D code decoder works based on image processing. Input of system is binary image 2D code which is taken by digital camera. This input is processed through pre-processing, data initializing, and Reed Solomon error correction. Then, binary bits in image matrix are decoded becoming the early text information. This decoder system can replace the old barcode reader system, because it doesn't need specific tools, as scanner and special software.

In this Final Project is also done the examination to 2D code decoder system with the input is 2D code image that has been in computer file. With error added manually to 2D code image which is saved in extension format *.bmp, be analyzed the influence of using Reed Solomon error correction. Reed Solomon error correction which is used with n=64, k=56, and m=8, becomes the 2D code decoder has ability to correct the error in system ≤ 6.25%.

With the advantages owned by this 2D code encoder and decoder, it can replace the barcode function and its reader system, and this system can be an alternative which is easier and cheaper.



***Key Words* : *2D code, barcode, teks to image, image to text.***