PENCHUN RUKSPOLMOUNG : DATA ERROR DETECTION AND CORRECTION.

THESIS ADVISOR : ASST. PROF. WEERA RIEWPITUK, D.Ing.

ASST. PROF. WANCHAI RIEWPAIBOON 135 PP. ISBN 974-576-926-6

This study in Code Theory was to find the characteristic of each code and improve the ability in correcting errors. Because codes are important in communication system, consists of a Source that generates data or information and then transfers this data or information through a channel to a Receiver. This transfer of data or information may be disturbed by many kinds of noise. So the receiver may receive incorrect data or information. Consequently, we should use Error Control Code in an Encoder and Decoder to protect data or information from error that may occur during transmission by identifying and correcting errors at the receiver. This will give us data integrity and improve performance of the communication system.

The first step in conducting the research was to study the mathematic theory of several kinds of codes and then selecting examples of codes for testing performance. Because the ability to detect and correct errors of each code is different. So researching to compare performance of codes by simulating the encoder and decoder with error rate of 10^{-3} to 10^{-5} bits, that usually found in general systems, was done. Then improving the effectiveness of codes by using statistics of error occuring in channels and calculating data bits from all possible codewords was carried out. That made codes can correct more error, approximately 25 percent.