# ABSTRACT

Encryption is a process that changes the information with a certain algorithm so that it becomes a code that is unreadable, only the person who has the key of his interpreter who can read it. The process of encryption and decryption require a high computing capabilities, it does affect the speed and various aspects of performance. If applied in the microprocessor, the issues raised in this study is an encryption algorithm which is most appropriately used for data encryption.

To be able to know which algorithm is more efficient, implemented algorithms Data Encyption Standard (DES) and Advanced Encryption Standard (AES) in Cygwin application. Cygwin applications serve to compile the program. Testing was conducted by creating an encryption program for AES 128 and DES with an x86 assembly language. This project compares the result of the encryption for instruction composition parameters and the computation speed in both programs.

The result obtained AES algorithm requires fewer instructions. With 1537 instructions on the encryption on separate input and output scenario and 1487 instructions on overwrite data scenario. With the most used instruction type in both algorithms are Data Transfer. As well AES compute faster than DES. With the average results on separate input and output scenario the required time is 0.0544653 second.

**Keywords**: *Encryption, AES-128, DES, x86*