

# Department of Computer Engineering

# BLG 351E Microcomputer Laboratory Experiment Report

Experiment No : 3

Experiment Date : 05.11.2015

Group Number : 2

Group Members :

ID Name Surname

040100055 Emir Bilgin

150120121 Hüseyin Tosun

150120251 Cem Yusuf Aydoğdu

Laboratory Assistant : Atakan Aral

#### 1 Introduction

In this experiment, we will implement a simple encryption technique, namely bit-wise encryption, by manipulating the bits of the data (plain text). When manipulating the bits of the plain text, XOR and permutation operations are widely used and the cipher text is generated. Decryption of the cipher text makes use of the same operations (but backwards) here to get the original plain text back.

### 2 REQUIREMENTS

#### 2.1 PART1

stab \$09

oraa \$09

eora \$11

staa \$12

swi

In part 1, we implemented the bit-wise encryption algorithm.

ldaa \$10 ;Loading numbers to accumulator A and B Idab \$10 anda #%00001111 Eliminating the 4 higher bits (Acc A) ;Rolling the 4 lower bits to left (Acc A) rola rola rola rola andb #%11110000 Eliminating the 4 lower bits (Acc B) ;Rolling the 4 higher bits to right (Acc B) rorb rorb rorb rorb stab \$09 ;Operations to calculate 'A OR B' oraa \$09 ;Transfer A to B tab anda #%10101010 ;Encryption technique rora andb #%01010101 rolb

:Conclude the test

#### 2.2 PART 2

In part 2, we implemented a decryption program for the bit-wise encryption algorithm.

ldaa \$12

eora \$11 ;cipher text key

tab ;Transfer A to B

anda #%00001111 ;Eliminating the 4 higher bits (Acc A)

rola ;Rolling the 4 lower bits to left (Acc A)

rola

rola

rola

andb #%11110000 ;Eliminating the 4 lower bits (Acc B)

rorb ;Rolling the 4 higher bits to right (Acc B)

rorb

rorb

rorb

stab \$09 ;Operations to calculate 'A OR B'

oraa \$09

tab ;Transfer A to B

anda #%10101010 ;Decryption technique

rora

andb #%01010101

rolb

stab \$09

oraa \$09

staa \$13

swi ;Conclude the test

## 3 CONCLUSION

The mechanisms of the microprocessors and bit-wise encryption have been learnt in this laboratory session. Although the training kit was too old, we were able to complete our tasks.