**Assembly Sec C Lab 6 Fall 2017**

**Mul**

For Unsigned number

mov ax,10

mov bx,5

mul bx ; DX:AX = 00000032h, CF=0

The Carry flag indicates whether or not the upper half of the product contains significant digits.

**Div**

mov dx,0

mov ax, 50 ; dividend

mov cx, 5 ; divisor

div cx

; AX = 000Ah, DX = 0000

Answer is in AX

Reminder is in DX

**Task 1**

Write a program that calculate the following series:

Where r and l are variables. If r =2 and l = 8 then final answer is 4C

**Task 2**

Encryption and Decryption algorithms are very commonly used in Network Security. Your task is to write code for Encryption algorithm written below

Encryption

There is a 64 bit Plaintext and a 32 bit Encryption Key. Use the key to perform 4 rounds to encrypt Text.

**In 1st round, Take the key,**

1. complement every 2nd bit, starting from 1st bit
2. Rotate Left
3. Add key to the plaintext

**In 2nd round, take the updated key from round 1**

1. Complement every 2nd bit starting from 2nd bit
2. Rotate Right
3. Add to the text obtained from round 1

**In 3rd round, take the updated key from round 2**

1. Complement every 2nd bit starting from 3nd bit
2. Rotate Left
3. Add to the text obtained from round 2

**In 4th round, take updated key from round 3**

1. Complement every 2nd bit starting from 4nd bit
2. Rotate Right
3. Add to text obtained from round 3

Example

Plaintext: 15D3 C2 57

Key: 23 CD E6 89

*Round 1*

KEY: 0010 0011 1100 1101 1110 0110 1000 1001

Bit cpl: 1000 1001 0110 0111 0100 1100 0010 0011

Rotate left: 00010010 1100 1110 1001 1000 01000111

Resultant key in hex 12CE9847

Result after addition Plain text: 28A25A9E

*Round 2*

KEY: 0001 0010 1100 1110 1001 1000 0100 0111

Bit cpl: 0100 0111 1001 1011 1100 1101 0001 0011

Rotate Right: 10100 0111 1001 1011 1100 1101 0001 001

Resultant key in hex A3CDE689

Result after addition Plain text: CC704127

*Round 3*

KEY: 10100011110011011110011010001001

Bit cpl: 0010001111001101 1110 0110 1000 1011

Rotate left: 010 0011 1100 1101 1110 0110 1000 10110

Resultant key in hex 479BCD16

Result after addition Plain text: 1140C0E3D

*Round 4*

KEY: 010 0011 1100 1101 1110 0110 1000 10110

Bit cpl: 000100101100111010011000010 00110

Rotate Right: 0000100101100111010011000010 0011

Resultant key in hex 23CDE689

Result after addition Plain text: 11D735A60