***LAB 1B – Counting 1’s***

***Binary***

0011000000000000

1110001011111111

0101010010100000

0101101010100000

0110100001000000

0001100100100000

0000010000000101

0001010010100001

0001101100111111

0101100100000101

0000111111111010

0011010011110111

1111000000100101

***Assembly Language***

.ORIG x3000 ;Start Program at x3000

LEA R1, x0FF ;Load x3100 into R1

AND R2, R2, #0 ;Clear R2

AND R5, R2, #0 ;Clear R5

LDR R4, R1, #0 ;Load the value from the address listed in R1

ADD R4, R4, #0 ;Add 0 to R4 and store in R4 to check if it is 0

BRz #05 ;Check if R4 is 0 yet

ADD R2, R2, #1 ;Increment the counter

ADD R5, R4, #-1 ;Store R4 - 1 in R5

AND R4, R4, R5 ;Hamming Weight

BRnzp #-6 ;Keep going back to (ADD R4, R4, #0) until R4 = 0

ST R2, x0F7 ;Store R2 (Counter) in x3102

HALT

.END