;For every character input, two encrypted characters will be printed

;Because swapping the higher 4-bits and lower 4-bits result

;in two ASCII codes, There are a few exceptions where only one encrypted

;character will print since some ASCII codes cant be printed by console.

;#7 is added to each character of the string and then the highest 4 bits and lowest 4 bits are swapped

;String's max length is 8 characters

;enter a text string ended with the "Enter"

.ORIG X3000

LD R1, COUNT

LD R2, CHECK1

LEA R4, INPUT

LOOP GETC ;gets cleartext from user

AND R3, R3, #0

ADD R3, R0, R2

BRn BREAK

OUT

STR R0, R4, #0

ADD R4, R4 #1

BRnzp LOOP

BREAK OUT

LD R1, COUNT

LD R5, MASK

AND R2, R2 #0

LEA R3, INPUT

LOOP2 LDR R4, R3, #0 ;if memory location is empty print out encrypted text

BRz DONE

ADD R4, R4, #7

AND R2, R4, X000F

ADD R2, R2, R2 ;left shifts 4 bits

ADD R2, R2, R2

ADD R2, R2, R2

ADD R2, R2, R2 ;holds ascii code for bits [15:8]

AND R0, R0, #0

ADD R0, R0, R2 ;Prints out ASCII code from bits [15:8]

OUT

LD R5, MASK

AND R4, R4, R5 ;holds ascii code for bits [7:0]

AND R0, R0, #0

ADD R0, R0, R4 ;Prints out ASCII code from bits [7:0]

OUT

ADD R3, R3, #1 ;increment pointer

ADD R1, R1, #-1 ;decrement counter

BRp LOOP2

DONE HALT

CHECK1 .FILL XFFF3

MASK .FILL X00F0

COUNT .FILL #8

INPUT .BLKW 8

.END