ICS_HM05_solutions

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1

x23FF

2

the ADD instruction 's immdiate num is 5 bits so it's range is [-16,15]. it can't be #30

solution

```
    ADD  R3,R3,#15
    ADD  R3,R3,#15
```

yes, it says

> can't be represented as a signed number in 5 bits

3

symbol	address
LOOP	X3003
L1	X300A
NEXT	X300B
DONE	X300D
NUMBERS	X300E

Count the num of zeros and store it in R3 ,the num of non-zero (namely positive here) integer in R4

4

```
a:LDR R3,R1,#0
b:NOT R4,R4
c:ADD R4,R4,#1
```

5

1.

REG	val
R0	X300B
R1	X300D
R2	X000A
R3	X1263
R4	X300B

2.

ADDR	val
ADDR1	X300B
ADDR2	X300A
ADDR3	X300C
ADDR4	X300B
ADDR5	X300D

6

STR R0,R2,#1 is wrong because R2 's content is the vector , not the address x3500 of the vector.

solusion:

insert a instruction before it LD R2, VECTOR

7

count the amount of negtive number stored in [x4000,x4009]

8

Interrupt-driven I/O id more efficient . Because polling checks the status register every clk , it's less efficient and slower . As for interrupt-driven io ,only when there is service needed for io , the cpu stops its current task and deal with io .After that , it continuese its task.

9

1. set KBSR with x4000 to indicate that there is no keyboard input interruption. then keep outputing the ascii character 2 , which ascii code is #50

2. output the character twice and return to the main routinuee
3. It has no changes //to do

10

output ABCDEFGHI