hw06

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6.3

The asm code can be

```
.ORIG x3000

AND R1, R1, #0
ADD R1, R1, #1
LDI R0, R0ADR
LDI R2, R2ADR


LOOP
ADD R0, R0, #0
BRz END
ADD R1, R1, R1
ADD R0, R0, #-1
BRnzp LOOP

END
ADD R3, R1, #0 ; R3 = R1
AND R1, R1, R0
BRnp SKIP ; if (R1 AND R0) is not 0, the bit has been set
ADD R1, R3, R2

SKIP
ADD R3, R1, #0
TRAP x25

R2ADR .FILL x4000
R0ADR .FILL x4001
.END

.ORIG x4000
RTWO .FILL x3101
RZERO .FILL x0005
.END
```

The machine language can be

```
 1    0011 1111 0000 0000 ; 0x3F00
 2    0101 001 001 1 00000
 3    0001 001 001 1 00001
 4    0010 000 0 1111 1101
 5    0010 010 0 1111 1101
 6    0001 000 000 1 00000
 7    0000 010 0 0000 0011
 8    0001 001 001 0 00 001
 9    0001 000 000 1 11111
10    0000 111 1 1111 1011
11    0001 001 011 0 00 010
12    1111 0000 0010 0101
```

7.4

symbol	address
TEST	x301F
FINISH	x3027
SAVE3	x3029
SAVE2	x302A

7.18

a. `LDR R3, R1, #0`

b. `NOT R3, R3`

c. `ADD R3, R3, #1`

7.20

In module (a), 0x0015 is stored to 0x4000 when the instruction `STI R0, PTR` is executed.

In module (b), 0x0015 is stored to 0x4000 at the beginning of program.