Problem: Given a sequence of 2's complement numbers stored in memory (starting location available), count how many are negative. The total values to consider is also available.

Pointer, Counter, current number

Memory

values 1
values 2
values 3

$\times 4000$

100
Negative?

Y

Increment counter

Move to next address

N

Done?

Y
Assembly code

; R0 - Pointer register holds starting address
; R1 - Counter for numbers to be checked
; R2 - Counter for the negative values
; R5 - Value of current number

; ORIG x 3000
; Initialization
LD R0, FIRST

Symbol Table
GETNUM
LD R0, FIRST
LD R1, TOTAL
AND R2, R2, #0

INCRMNT
LDR R5, R0, #0
BR 2 In
ADD R2, R2, #1
ADD R0, R0, #1
ADD R1, R1, #1
BR 1 GETNUM
HALT

FIRST .FILL X 4000
TOTAL .FILL # 100
.END

<table>
<thead>
<tr>
<th>GETNUM</th>
<th>x 3003</th>
</tr>
</thead>
<tbody>
<tr>
<td>INCRMNT</td>
<td>x 3006</td>
</tr>
<tr>
<td>FIRST</td>
<td>x 300A</td>
</tr>
<tr>
<td>TOTAL</td>
<td>x 300B</td>
</tr>
</tbody>
</table>