

Signed binary value 111110 is -2 in decimal;  
however, 111101 (which is -3 in decimal) is the correct answer

	M	A	Q	$\beta$	Count
Initialization	1 1 1 1 1 0 1	0 0 0 0 0 0 0	0 1 1 0 1 0 0	0	7
Shift	1 1 1 1 1 0 1	0 0 0 0 0 0 0	0 0 1 1 0 1 0	0	6

User Input

M: 111110

A: 000000

Q: 001101

$\beta$ : 0

Count: 6

### Booth's Multiplication Algorithm

```
01 boothMultiply(multiplicand, multiplier){
02   Register M=multiplicand
03   Register A=0
04   Register Q=multiplier
05   Bit  $\beta$ =0
06   Integer count=REGISTER_SIZE
07
08   while (count > 0) {
09
10     switch ([leastSignificantBit(Q), $\beta$ ]) {
11       case [1,0]: A=A-M
12         break
13
14       case[0,1]: A=A+M
15         break
16     }
17
18     //Shift A, Q, and  $\beta$  1 bit
19     signPreservingRightShift(1, A, Q,  $\beta$ )
20
21     count--
22   }
23 }
```