ARMAssemblyInt:BinaryInt:A

Sign magnitude

0 0101010 +42
1 0101010 -42

Two different “zero values”
0 0000000
1 0000000

Car Odometer

000,000
000,001
.
.
999,750 or -250
.
.
999,950 or -50
.
.
999,998 or -2
999,999 or -1
000,000

Odometer Math

001,000
+ drive 999,998
000,998

Dividing the range in half:

000,000 0
000,001 1
....
499,999 499,999

500,000 -500,000
500,001 -499,999
...
999,999 -1
000,000

Binary 8-bit range

00000000 0
00000001 1
00000010 2
.
011111111 127

10000000 -128
.
.
11111110 -2
11111111 -1
0000000 0

Binary 16-bit range

	unsigned	signed
0000000000000000	0	0
0000000000000001	1	1
0000000000000010	2	2
.....		
01111111111111111	32767	32767

1000000000000000	32768	-32768
....		
11111111111111110	65534	-2
11111111111111111	65535	-1

The negation trick: invert and add 1:

```
00000011 3 =>  11111100 => 11111101
11111101 -3 => 00000010 => 00000011

5  00000101
4  00000100
3  00000011
2  00000010
1  00000001
0  00000000
-------------
-1 11111111
-2 11111110
-3 11111101
-4 11111100
-5 11111011
```