



Sample Check Digit Algorithm

The Mod 10 Algorithm is a means to validate a string of numbers. It is one of many check digit algorithms and you may choose any of them to use for purposes of scan line validation. The algorithm validates the accuracy of the capture of the scan line.

THE ALGORITHM:

1. Starting from the left end of the string of digits, multiply each digit by alternating prime numbers 1, 3 and 7.
2. Sum the products.
3. Divide the resulting number by 10. The remainder is the check digit.

EXAMPLE:

Scan line without check digit: AK0330990 000000701475

(Left)

$$\begin{aligned} A(1) * 1 &= 1 \\ K(2) * 3 &= 6 \\ Q(8) * 7 &= 56 \\ 0 * 1 &= 0 \\ 3 * 3 &= 9 \\ 3 * 7 &= 21 \\ 0 * 1 &= 0 \\ 9 * 3 &= 27 \\ 9 * 7 &= 63 \\ 0 * 1 &= 0 \end{aligned}$$

$$\begin{aligned} 0 * 3 &= 0 \\ 0 * 7 &= 0 \\ 0 * 1 &= 0 \\ 0 * 3 &= 0 \\ 0 * 7 &= 0 \\ 0 * 1 &= 0 \\ 7 * 3 &= 21 \\ 0 * 7 &= 0 \\ 1 * 1 &= 1 \\ 4 * 3 &= 12 \\ 7 * 7 &= 49 \\ 5 * 1 &= 5 \end{aligned}$$

(Right)

$$\text{Sum} = 271$$

$$\text{Sum} = 271/10 = 27 \text{ with a remainder of } 1 \quad 1 = \text{the check digit}$$

Scan line with check digit: AK0330990 000000701475 1

Alpha Substitution Table	
A	1
B	2
C	3
D	4
E	5
F	6
G	7
H	8
I	9
J	1
K	2
L	3
M	4
N	5
O	6
P	7
Q	8
R	9
S	1
T	2
U	3
V	4
W	5
X	6
Y	7
Z	8

$$\begin{aligned} 16 \text{ THSGIV} 2 &= 142 \\ 16 \text{ THSGIV} &= 164 \\ 16 \text{ HOLC} &= 95 \\ 16 \text{ SUMLS} &= 63 \\ 16 \text{ LCIR} &= 129 \\ 16 \text{ BKTSC} &= 51 \\ 16 \text{ CHALL} &= 75 \end{aligned}$$

$$\begin{aligned} \text{GEN} &= 69 \\ \text{ACQ} &= 34 \\ \text{JOIMDI} &= 99 \\ \text{JOI} &= 40 \\ \text{MDIH} &= 73 \end{aligned}$$