

## A Compact Prime Listing

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**Abstract.** A very compact listing of the primes to 100000 is given and applications to computer storage of primes is indicated.

The accompanying table gives a compact listing of prime numbers for the interval from zero to 100000. Each decade (an interval of 10 numbers) can contain at most 4 primes: Those numbers congruent to 1, 3, 7 or 9 mod 10 (with the obvious exception of the first four primes: 2, 3, 5 and 7). There exist  $\sum_{i=0}^4 \binom{4}{i} = 16$  possible combinations for each decade. These 16 possibilities are represented in the table by the symbols O, A, B, C, ..., N and P and their meanings are indicated at the bottom of the table. (An additional symbol, Q, is used for the first four primes.)

The left-hand column in the table indicates the thousands, the top row the hundreds and the second row the decades. Thus, for example, to see if 39199 is prime we look at the row for 39000 in the 100 column and down the 9 column and find the symbol G. This shows that in this decade 1 and 9 are primes; i.e., 39191 and 39199 are both primes.

In addition, the table lists the counts of primes for each interval of 100 and for each 1000. The key for the hundreds is indicated at the bottom of the first page of the table. Thus, there are  $P = 25$  primes from 0 to 100 and  $L = 21$  primes from 100 to 200 etc. From 0 to 1000 there are 168 primes. Also, as shown on the bottom of the table, there are 5133 primes from zero to 50000 and 9592 primes from zero to 100000.

Since, in most computers, words are represented in the octal or hexadecimal (16) systems the listing provides an efficient means for computer storage of primes.

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	100	200	300	400	500	600	700	800	900	COUNTS BY HUNDREDS M
0										
1000	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	PLGSGHEGEFE 168
2000	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	GCFRHCFCCD 135
3000	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	EAFK8FBCDB 127
4000	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	CABF98DCDB 157
5000	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	F9493CC0C8 114
6000	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	C9AA00C0A7 119
7000	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	CRDF88ACCD 117
8000	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	9AB9FCAAAA 117
9000	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	BAE99C8D99 110
10000	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	BC8B7DBD9 112
11000	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	BCAC8CBAA 106
12000	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	9BA48989CD 103
13000	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	9C90CC9A9C 109
14000	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	BC9A88CC98 105
15000	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	8797CCAC8E 102
16000	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	9CC868DC9A 108
17000	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	C9867D79C 98
18000	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	999C0A8A8E 104
19000	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	8789697AAC 104
20000	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	9D9C8A7C99 98
21000	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	8D79AD9888 104
22000	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	DC9999CC89 100
23000	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	68A99CC9D9 104
24000	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	DC78A89888 100
25000	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	887C8AC8AC 98
26000	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	88BA8ABCA 101
27000	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	8A5A899E98 94
28000	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	87978CEA98 98
29000	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	98A89A87A7 92
30000	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	9C999998D8 95
31000	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	AC8A4AA7E 92
32000	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	D99DB89A8D 106
33000	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	668AACAC 100
34000	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	9999D47CA 94
35000	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	8A999D47CA 99
36000	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	8A9989888 95
37000	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	87C8F45A 94
38000	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	69A47CB9A 90
39000	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	8C9C9888 96
40000	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	9885AA77D8 88
41000	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	98D87AD78C 101
42000	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	AAAF79D8A 102
43000	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	97798A85B 85
44000	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	AD6688A9A 86
45000	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	87A8A9787 86
46000	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	9A7A9A888 95
47000	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	7A9A89888 95
48000	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	7A78699A86 89
49000	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	AC998A9AA 98

0-0 A#1 B#3 C#7 D#9 E#13 F#17 G#19 H#37 I#39 J#79 K#137 L#139 M#379 P#1379 Q#2357  
 KEY FOR HUNDREDS... A#10 B#11 C#12 D#13 E#14 F#15 G#16 H#17 I#18 J#19 K#20 L#21 P#25

A COMPACT PRIME LISTING

COUNTS BY HUNDREDS M

900 800 700 600 500 400 300 200 100

0123456789 0123456789 0123456789 0123456789 0123456789 0123456789 0123456789 0123456789 0123456789

Table with 10 columns representing counts from 0 to 900. Each row contains a 10-digit prime number. The table lists 900 rows of prime numbers, starting from 50000 and ending at 99000.

050 A51 0-3 C-7 D=9 E=13 F=17 G=19 H=37 I=39 J=79 K=137 L=139 M=179 N=379 P=1379 COUNT 4459 CUMUL. 9592