A recreative conjecture on primes obtained inserting n with digit sum 12 before the last digit of a prime

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Abstract. In this paper I conjecture that for any prime p, p ≥ 7, there exist a prime q obtained inserting a number n with the sum of digits equal to 12 before the last digit of p.

Conjecture:

For any prime p, p ≥ 7, there exist a prime q obtained inserting a number n with the sum of digits equal to 12 before the last digit of p.

The sequence of the least primes q obtained for p primes, p ≥ 7:

: 397, 1481, 1483, 1487, 1399, 2393, 2399, 3391, 3847, 4391, 4483, 4397, 5393, 5399, 6481, 6397, 7481, 7393, 7489, 8573, 8669, 9397, 10391, 10663, 10487, 10399, 11393, 12487, 13751, 13397, 13399, 14489, 15391, 15667, 16573, 16487, 17393, 17489, 18481, 19391, 19483, 19577, 19489, 21391, 22483, 22397, 22669, 23663, 23399, 24391, 25391, 25577 (...)

The corresponding [p, n] for the fifty terms above:

[7, 39], [11, 48], [13, 48], [17, 48], [19, 39], [23, 39], [29, 39], [31, 39], [37, 84], [41, 39], [43, 48], [47, 39], [53, 39], [59, 39], [61, 48], [67, 39], [71, 48], [73, 39], [79, 48], [83, 57], [89, 66], [97, 39], [101, 39], [103, 66], [107, 48], [109, 39], [113, 39], [127, 48], [131, 75], [137, 39], [139, 39], [149, 48], [151, 39], [157, 66], [163, 57], [167, 48], [173, 39], [179, 48], [181, 48], [191, 39], [193, 48], [197, 57], [199, 48], [211, 39], [223, 48], [227, 39], [229, 66], [233, 66], [239, 39], [241, 39], [251, 39], [257, 57].

Note that for 40 from the 50 terms above n is 39 or 48! For 3 terms n is 57, for 5 terms n is 66, for one term n is 75 and for one term n is 84.

The least primes q obtained for ten consecutive primes with 10 digits:

: 961748942191, 96174894847, 96174895931, 961748961479, 96174898397, 96174899393, 961749021293, 96174903577, 96174904753, 96174906397.

The corresponding [p, n] for the ten terms above:

[961748941, 219], [961748947, 84], [961748951, 93], [961748969, 147], [961748987, 39], [961748993, 39], [961749023, 129], [961749037, 57], [961749043, 75], [961749067, 39].

Note that for 3 from the 10 terms above n is 39! And n is not greater than 219 (which is just the 16th highest number having the digit sum 12) for any term!

The least primes q obtained for five random primes with 30 digits (actually not randomly chosen by me but presented as "random 30 digit primes" on "Prime Pages" site):

: 671998030559713968361666935761749,
2821744885995995005738499809017 49,
521419622856657689423872613773 91,
362736035870515331128527330651389,
115756986668303657898962467952287.

The corresponding [p, n] for the ten terms above:

[671998030559713968361666935769, 174],
[2821744885995995005738499809 09, 174],
[521419622856657689423872613771, 39],
[362736035870515331128527330659, 138],
[115756986668303657898962467957, 228].

Note that n is not greater than 228 (which is just the 17th highest number having the digit sum 12) for any term!