

A property of repdigit numbers and the notion of cm-integer

Marius Coman
email: mariuscoman13@gmail.com

Abstract. In this paper I want to name generically all the numbers which are either c-primes, m-primes, cm-primes, c-composites, m-composites or cm-composites with the name "cm-integers" and to present what seems to be a special quality of repdigit numbers (it's about the odd ones) namely that are often cm-integers.

Observation:

The odd repdigit numbers (by definition, only odd numbers can be cm-integers) seems to be often cm-integers (either c-primes, m-primes, cm-primes, c-composites, m-composites or cm-composites).

Verifying the observation for the first few repdigit numbers:

(I shall not show here how I calculated the c-reached primes and the m-reached primes, see the paper "The notions of c-reached prime and m-reached prime")

For digit 1:

- : 11 is prime;
- : 111 is cm-prime having the c-reached prime equal to 3 and the m-reached prime equal to 7;
- : 1111 is cm-prime having the c-reached prime equal to the m-reached prime and equal to 7;
- : 11111 is m-prime having the m-reached prime equal to 311.

For digit 3:

- : 33 is cm-prime having the c-reached prime equal to 1 and the m-reached prime equal to 13;
- : 333 is cm-composite having two c-reached primes, equal to 29 and 109, and one m-reached prime equal, to 113;
- : 3333 is cm-composite having three c-reached primes, equal to 5, 293 and 1109, and two m-reached primes, equal to 5 and 313;
- : 33333 is cm-composite having two c-reached primes, equal to 151 and 773, and two m-reached primes, equal to 153 and 853.

For digit 5:

- : 55 is cm-prime having the c-reached prime equal to the m-reached prime and equal to 7;
- : 555 is cm-composite having three c-reached primes, equal to 1, 59 and 107, and one m-reached prime, equal to 19;
- : 5555 is cm-composite having one c-reached prime, equal to 19, and three m-reached primes, equal to 11, 47 and 227;
- : 55555 is c-composite having three c-reached primes, equal to 31 and 67.

For digit 7:

- : 77 is cm-prime having the c-reached prime equal to 5 and the m-reached prime and equal to 17;
- : 777 is cm-composite having two c-reached primes, equal to 17 and 257, and one m-reached prime, equal to 5;
- : 7777 is cm-composite having one c-reached prime, equal to 1, and three m-reached primes, equal to 1117, 241 and 61;
- : 77777 is cm-composite having two c-reached primes, equal to 17 and 617, and three m-reached primes, equal to 29, 557 and 11117.

For digit 9:

- : 99 is cm-composite having two c-reached primes, equal to 1 and 31, and two m-reached primes, equal to 11 and 19;
- : 999 is cm-composite having three c-reached primes, equal to 11, 103 and 331, and two m-reached primes, equal to 7 and 23;
- : 9999 is cm-composite having four c-reached primes, equal to 3, 271, 1103 and 3331, and three m-reached primes, equal to 71, 199 and 919.