Conjecture that there is no a Poulet number to be as well Lychrel number

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Abstract. In this paper I make the following two conjectures: (I) There exist an infinity of Poulet numbers P such that P + R(P), where R(P) is the number obtained reversing the digits of P, is a palindromic number; (II) There is no a Poulet number to be as well Lychrel number. Note that a Lychrel number is a natural number that cannot form a palindrome through the iterative process of repeatedly reversing its digits and adding the resulting numbers (process sometimes called the 196-algorithm, 196 being the smallest such number) – see the sequence A023108 in OEIS.

Conjecture I:

There exist an infinity of Poulet numbers P such that P + R(P), where R(P) is the number obtained reversing the digits of P, is a palindromic number.

The sequence of these Poulet numbers:

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:    341   (+ 143 = 484);
:    1105  (+ 5011 = 6116);
:    1905  (+ 5091 = 6996);
:    2047  (+ 7402 = 9449);
:    2701  (+ 1072 = 3773);
:    4033  (+ 3304 = 7337);
:    6601  (+ 1066 = 7667);
:    8321  (+ 1238 = 9559);
:    10261 (+ 16201 = 26462);
:    11305 (+ 50311 = 61616);
:    23001 (+ 20032 = 33033);
:    30121 (+ 12103 = 42224);
:    33153 (+ 35133 = 68286);
:    35333 (+ 33353 = 68686);
:    41041 (+ 14014 = 55055);
:    57421 (+ 12475 = 69896);
     {...)
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Note that for 15 from the first 60 Poulet numbers is true that P + R(P) is a palindrome.

Conjecture II:

There is no a Poulet number to be as well Lychrel number.

Note that a Lychrel number is a natural number that cannot form a palindrome through the iterative process of repeatedly reversing its digits and adding the resulting numbers (process sometimes called the 196-algorithm, 196 being the smallest such number) – see the sequence A023108 in OEIS.

Note that for 52 from the first 60 Poulet numbers is obtained a palindrome in no more than ten iterations:

: palindromes 11011, 7117, 11011, 44044, 344443, 87478, 467764, 245542 are obtained in two iterations from Poulet numbers 1729, 2821, 3277, 4369, 31609, 31621, 42799, 46657;

: palindromes 4884, 5115, 67276, 23232, 22022, 45254, 138831, 112211, 271172, 796697, 219912, 569965, 958859 are obtained in three iterations from Poulet numbers 561, 645, 2465, 4371, 4681, 5461, 8481, 8911, 31417, 52633, 55245, 60701, 60787;

: palindromes 233332, 563365, 143341, 227722 are obtained in four iterations from Poulet numbers 7957, 15709, 18721, 19951;

: palindromes 1112111, 439934, 6856586 are obtained in five iterations from Poulet numbers 13741, 15841, 34945;

: palindromes 527725, 4534354 are obtained in six iterations from Poulet numbers 14491, 16705;

: palindrome 16699661 is obtained in seven iterations from Poulet number 49981.

: palindromes 2322232, 8726278 are obtained in eight iterations from Poulet numbers 13981, 29341;

: palindromes 156323651, 52788725 are obtained in nine iterations from Poulet numbers 41665, 49141.

: palindrome 885868588 is obtained in ten iterations from Poulet number 23377.