

The property of a type of numbers to be often c-primes and c-composites

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Abstract. In a previous paper I presented a type of numbers which seem to be often m-primes or m-composites (the numbers of the form $l n n \dots n n l$, where n is a digit or a group of digits, repeated by an odd number of times). In this paper I present a type of numbers which seem to be often c-primes or c-composites. These are the numbers of the form $l a b c$ (formed through concatenation, not the product $l \cdot a \cdot b \cdot c$), where a , b , c are three primes such that $b = a + 6$ and $c = b + 6$.

Observation:

The numbers of the form $l a b c$ (formed through concatenation, not the product $l \cdot a \cdot b \cdot c$), where a , b , c are three primes such that $b = a + 6$ and $c = b + 6$, seem to be often c-primes or c-composites.

Examples:

- : $N = 151117 = 349 \cdot 433$ and $433 - 349 + 1 = 85 = 5 \cdot 17$ and $17 - 5 + 1 = 13$ which is prime so N is c-prime;
- : $N = 171319 = 67 \cdot 2557$ and $2557 - 67 + 1 = 2491 = 47 \cdot 53$ and $53 - 47 + 1 = 7$ which is prime so N is c-prime;
- : $N = 1111723$ is prime, so N is c-prime by definition;
- : $N = 1172329$ is prime, so N is c-prime by definition;
- : $N = 1313743 = 17 \cdot 77279$ and $77279 - 17 + 1 = 77263$ which is prime so N is c-prime;
- : $N = 1414753 = 23 \cdot 61511$ and $61511 - 23 + 1 = 61489 = 17 \cdot 3617$ and $3617 - 17 + 1 = 3601 = 13 \cdot 277$ and $277 - 13 + 1 = 265 = 5 \cdot 53$ and $53 - 5 + 1 = 49$ which is square of prime so N is c-prime by definition;
- : $N = 1475359 = 127 \cdot 11617$ and $11617 - 127 + 1 = 11491$ which is prime so N is c-prime;
- : $N = 1616773 = 883 \cdot 1831$ and $1831 - 883 + 1 = 949 = 13 \cdot 73$ and $73 - 13 + 1 = 61$ which is prime so N is c-prime;
- : $N = 197103109 = 7 \cdot 28157587$ and $28157587 - 7 + 1 = 28157581$ which is prime so N is c-prime;
- : $N = 1101107113 = 173 \cdot 6364781$ and $6364781 - 173 + 1 = 6364609 = 137 \cdot 46457$ and $46457 - 137 + 1 = 46321 = 11 \cdot 421$ and $421 - 11 + 1 = 4201$ which is prime so N is c-prime;
- : $N = 1227233239 = 31 \cdot 39588169$ and $39588169 - 31 + 1 = 39588139 = 181 \cdot 218719$ and $218719 - 181 + 1 = 218539 =$

$83 \cdot 2633$ and $2633 - 83 + 1 = 2551$ which is prime so N is c -prime;
: $N = 1251257263$ is prime, so N is c -prime by definition;
: $N = 1257263269 = 19 \cdot 97 \cdot 682183$ and $19 \cdot 682183 - 97 + 1 = 12961381$ which is prime so N is c -composite;
: $N = 1347353359 = 11 \cdot 83 \cdot 1475743$ and $83 \cdot 1475743 - 11 + 1 = 122486659$ which is prime so N is c -composite;
: $N = 1367373379$ is prime, so N is c -prime by definition;
: $N = 1557563569 = 61 \cdot 2833 \cdot 9013$ and $61 \cdot 9013 - 2833 + 1 = 546961$ which is prime so N is c -composite;
: $N = 1587593599 = 127^2 \cdot 257 \cdot 383$ and $127^2 \cdot 383 - 257 + 1 = 6177151$ which is prime so N is c -composite;
: $N = 1601607613$ is prime, so N is c -prime by definition;
: $N = 1647653659$ is prime, so N is c -prime by definition;
: $N = 1727733739$ is prime, so N is c -prime by definition;
: $N = 1971977983 = 31 \cdot 63612193$ and $63612193 - 31 + 1 = 1153 \cdot 55171$ and $55171 - 1153 + 1 = 54019 = 7 \cdot 7717$ and $7717 - 7 + 1 = 7711 = 11 \cdot 701$ and $701 - 1 + 1 = 691$ which is prime so N is c -composite;
: $N = 1109110971103 = 19 \cdot 137 \cdot 426089501$ and $137 \cdot 426089501 - 19 + 1 = 58374261619$ which is prime so N is c -composite;
: $N = 1102471025310259 = 11 \cdot 83 \cdot 2083 \cdot 9343 \cdot 62047$ and $83 \cdot 2083 \cdot 9343 \cdot 62047 - 11 + 1 = 100224638664559$ which is prime so N is c -composite;
: $N = 1100511100517100523$ is prime, so N is c -prime by definition.

Conjecture:

There exist an infinity of primes of the form $labc$ (formed through concatenation, not of course the product $1 \cdot a \cdot b \cdot c$), where a, b, c are three primes such that $b = a + 6$ and $c = b + 6$ (of course, that implies that there exist an infinity of such triplets of primes $[a, b, c]$). The sequence of these primes is: 1111723, 1172329, 1251257263, 1367373379, 1601607613, 1647653659, 1727733739 (...).