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Table of Multiple Feedback Shift Registers

by

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Electronics Group at Otago

In 1987 Millman and Grabel discarded the historical definition of 'electronics' as the science and technology of the motion of charges, preferring instead the operational definition that the primary concern of people doing electronics is *information processing*. This makes a distinction from *energy processing* practiced in the rest of electrical engineering. The act of information processing is what gets electronics practicioners invloved in the fours 'C's: communication, computation, control, and components. This practical definition seems to describe well the activities within the Electronics Group in the Physics Department at the University of Otago, and the range of topics covered in this technical report series.

In September 2008, research within the Electronics Group include projects on lightweight GPS tags for birds, modelling and control of a robotic elbow, design and deployment of an under-sea glider, analysis of networks of random resistors, electrical impedance imaging, calibration of numerical models for geothermal fields using Bayesian inference, modelling and sampling of Gaussian processes, and efficient algorithms for Markov chain Monte Carlo applied to inverse problems.

Table of Multiple Feedback Shift Registers

R. W. Ward, T.C.A. Molteno

Abstract

This report presents a table of maximum-cycle Multiple Feedback Shift Register (MFSR) feedback terms. For all the values of n tested ($n < 787$ and other selected values), there exists a maximum-cycle MFSR with at most three required taps, corresponding to the n where LFSR designs require a minimum of four taps. Our data lends support to the conjecture that there is a two or three-tap maximum-cycle MFSR design for every value of $n \geq 5$.

Contents

Chapter 1

Introduction

This report contains a table of n-stage maximum-cycle Multiple Feedback Shift Register (MFSR) designs. For all the values of n tested ($n < 787$ and other selected values), there exists a maximum-cycle MFSR with at most three required taps, corresponding to the n where LFSR designs require a minimum of four taps. Our data lends support to the conjecture that there is a two or three-tap maximum-cycle MFSR design for every value of $n \geq 5$.

Multiple Feedback Shift Registers (MFSR). These are a class of feedback shift register that require fewer feedback terms and have a lower fan-out than Linear Feedback Shift Registers (LFSR). They differ from LFSRs in allowing feedback logic to be connected to and from arbitrary bit positions in the shift register. We present a matrix representation of feedback shift registers, and show how MFSRs are a generalisation of LFSRs. For a given characteristic polynomial there are in general many MFSR designs.

1.1 Notation

Each design is presented by describing its feedback terms. In the following tables, entries of the form $i \leftarrow j$, in an n-stage MFSR indicates that the output of bit position j is XORed with the output of $i-1$ and fed into bit position i. The feedback term $1 \leftarrow 8$ is implicit. Figure 1.1 shows an 8-stage maximum-cycle MFSR with feedback terms at $7 \leftarrow 8, 4 \leftarrow 6$.

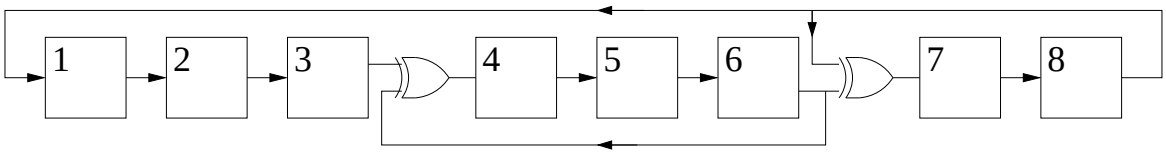

Figure 1.1. An 8-stage maximum cycle MFSR with cycle size $2^8 - 1$

1.2 Methods

An MFSR has a cycle of length l, from a state $\mathbf{v_0}$ if after l iterations, the MFSR returns to the starting state $\mathbf{v}_0$, i.e.,

$$\mathbf{M}^l\mathbf{v}_0 = \mathbf{v}_0 \tag{1.1}$$

Cyclic behaviour can be strongly dependent on the starting state. For example, the zero state $\{0, 0, \ldots, 0\}$ is always mapped onto itself under multiplication by any MFSR matrix $\mathbf{M}$. Thus any MFSR, regardless of the MFSR design, has a cycle of length one starting from the zero state.

Even ignoring the zero state, Equation 1.1 is *not* equivalent to $\mathbf{M}^{l-1} = \mathbf{I}$, where $\mathbf{I}$ is the $n \times n$ identity matrix. This is because an MFSR with an l-cycle, may do so starting only from a subset of the possible MFSR states – other starting states might exhibit l'-cyclic behaviour with length $l' \neq l$ where l and l' are not factors of each other.

An example of this is the 8-stage linear feedback shift register with taps at positions 8 and 3. Depending on which starting state is chosen, this design has a cycles of size 217,31,7 and 1 A starting state for the 217-cycle is $\{1, 0, 0, 0, 0, 0, 0, 0\}$, a starting state for the 31-cycle is $\{1, 0, 0, 0, 0, 0, 0, 1\}$, a starting state for the 7-cycle is $\{1, 0, 1, 1, 0, 0, 1, 1\}$ and the starting state for the 1-cycle is $\{0, 0, 0, 0, 0, 0, 0, 0\}$. The existence of the 7-cycle means that $\mathbf{M}^{31-1} \neq \mathbf{I}$.

1.2.1 Maximum-cycle MFSRs

An n-stage MFSR is *maximum-cycle* when all 2^n-1 non-zero states occur as the MFSR is iterated. For a maximum-cycle MFSR, the cyclic behaviour must be independent of the initial (non-zero) state. Equation 1.1 then becomes $\mathbf{M}^{2^n-1} = \mathbf{I}$ or equivalently

$$\mathbf{M}^{2^n} = \mathbf{M}. \tag{1.2}$$

Additionally, a maximum-cycle MFSR can have no smaller cycles, and as a consequence, we get the additional condition:

$$\forall k \in \mathbb{Z} : 1 \leq k < 2^n-1,\ \mathbf{M}^k \neq \mathbf{I}. \tag{1.3}$$

1.3 Efficient searching for maximum-cycle MFSRs

The task of finding a maximum-cycle MFSR can be reduced to the task of finding a MFSR matrix $\mathbf{M}$, such that Equation 1.2 and Equation 1.3 hold. At first glance, it seems that to determine whether Equation 1.3 holds, requires a search over all the possible values of k. The computational complexity of such a brute-force search is $O(n^3 2^n)$ to check each candidate and this becomes prohibitive for large values of n. We show in the next section how this search can be significantly pruned.

Non-matrix algorithms for maximum-cycle LFSR design have also been described, see for example Cadigal et al. [3] and Ahmad et al. [1] and these could be used by testing the LFSR corresponding with the MFSR.

1.3.1 Pruning the search tree

The 2^n-2 tests in Equation 1.3, for a 2^n-1-cycle MFSR to have no smaller cycles, can be reduced to only testing factors of 2^n-1.

Consider the set, K, of positive integers that satisfy $\mathbf{M}^k = \mathbf{I}$,

$$K = \{k : 1 \leq k \leq 2^n-1, \mathbf{M}^k = \mathbf{I}\}.$$

Assume that there is a cycle with length less than 2^n-1. The set K will have elements less than 2^n-1. Let the smallest such element be k_0. All multiples if k_0 will also satisfy $\mathbf{M}^k = \mathbf{I}$, i.e., for all positive integers $j \in \mathbb{Z}, \mathbf{M}^{jk_0} = \mathbf{I}$.

Assume that there exists $k_x \in K$ where k_x is not a multiple of k_0 and where $\mathbf{M}^{k_x} = \mathbf{I}$ then we can write,

$$k_x = jk_0 + t$$

for some integer $j > 0$ where $0 < t < k_0$. It follows that

$$\mathbf{M}^{k_x} = \mathbf{M}^{jk_0+t} = \mathbf{M}^{jk_0}\mathbf{M}^t = \mathbf{M}^t$$

however by assumption $\mathbf{M}^{k_x} = \mathbf{I}$, so $\mathbf{M}^t = \mathbf{I}$ which violates our assumption that k_0 is the smallest such value. Hence all elements of K must be multiples of k_0.

In a maximal-cycle MFSR Equation 1.2 holds, and $\mathbf{M}^{2^n-1} = \mathbf{I}$ so we know that k_0 must be a factor of 2^n-1. Therefore only values of k that are factors of 2^n-1 need to be checked in order to establish that Equation 1.3 holds.

1.3.2 Prime Factorisation

A further improvement is still possible by considering the prime factorisation of 2^n-1,

$$2^n-1 = \prod_{i=1}^{m} p_i^{k_i},$$

where m is the number of prime factors and the p_i are the prime factors. Any factor of 2^n-1 except 2^n-1 itself is a factor of $\frac{2^n-1}{p_i}$ for some i, so to establish that Equation 1.3 holds, we only need to check that

$$\forall i \in \{1, \ldots, m\},\ \mathbf{M}^{\frac{2^n-1}{p_i}} \neq \mathbf{I}. \tag{1.4}$$

Thus, if a prime factorisation of 2^n-1 is available then we only need to search as many values of k as there are prime factors and Equation 1.2 can be shown to hold with a

relatively small amount of computational effort. As there must be fewer than n factors of 2^n-1 this search can be done in polynomial time.

The numbers 2^n-1 are known as Mersenne numbers [2]. Implementation of the algorithm described in Equation 1.4 requires a table of the prime factors of Mersenne numbers. A table of all prime factors of the Mersenne numbers $M(n)$ for values of n up to $n = 786$ was generated and is available in machine readable form from Reference [4].

1.3.3 The search algorithm

The search for an n-stage maximum-cycle MFSR is performed by considering all potential designs in order of increasing tap number. Clearly zero taps will not lead to a cycle, and one tap will simply be a cyclic register with maximum period n, so our algorithm starts with a search for possible two-tap designs. By definition one of the taps is at $1 \leftarrow n$ for some $0 < i \leq n$, and without loss of generality we place the other tap in the *nth* column, so that all we need to find is the row i. We call this matrix $\mathbf{M}_{i \leftarrow n}$. We note that this is an LFSR, so using a symmetry property of LFSRs described in [5] we only need to consider $n/2 \leq i \leq n$. For each $\mathbf{M}_{i \leftarrow n}$, Equation 1.2 is checked, and if that holds, Equation 1.4 is tested.

If there are no two-tap designs, a three tap search is conducted, Once again, one of the taps is at $1 \leftarrow n$ and without loss of generality, we put another tap at $i \leftarrow n$ for some $0 < i \leq n$. The third tap put at $j \leftarrow k$ for some $0 < j, k \leq n$. For each candidate matrix $\mathbf{M}_{i \leftarrow n, j \leftarrow k}$ the same tests are done.

The algorithm terminates after finding a solution. Within the search for each tap number, we choose the search order to find solutions that avoid two taps in the same row of the matrix, and with non-zero elements clustered near the top-right corner of the matrix. Experience with synthesis of MFSR designs on FPGAs has indicated that these designs will synthesize with short feedback paths and low latency.

In practice, we get good results by searching first on j, choosing k such that $j \leq k < n$ and setting $i = k + 1$ – we have always found a solution in that search space. Pseudocode for this algorithm, showing the candidate search order, is given below.

```
boolean test(M)
    let {p_1...p_m} = prime factors of 2^n-1;
    if (M^(2^n-1) = I)
        if (∀p_i ∈ {p_1...p_m}, M^((2^n-1)/p_i) ≠ I)
            return true;
    return false;

// Two-tap case
for i = {n...n/2}
    if (test(M_{i←n}))
        return i←n;
```

```
// Three-tap case
for j = {n...2}
    for k = {n-1...j}
        i=k+1
        if (test(M_{i←n,j←k}))
            return i←n, j←k;
```

The following chapter presents the results of the search for maximum-cycle MFSR designs using the algorithm above.

Chapter 2

Maximum-cycle MFSRs

Table 2.1: Shift Registers with Cycle Size $2^n - 1$

n	2-tap MFSR	3-tap MFSR	n	2-tap MFSR	3-tap MFSR
2	$2 \leftarrow 2$		36	$26 \leftarrow 36$	$36 \leftarrow 36,\ 29 \leftarrow 35$
3	$3 \leftarrow 3$	$3 \leftarrow 3,\ 2 \leftarrow 2$	37		$36 \leftarrow 37,\ 26 \leftarrow 35$
4	$4 \leftarrow 4$	$4 \leftarrow 4,\ 3 \leftarrow 3$	38		$38 \leftarrow 38,\ 33 \leftarrow 37$
5	$4 \leftarrow 5$	$5 \leftarrow 5,\ 3 \leftarrow 4$	39	$36 \leftarrow 39$	$36 \leftarrow 39,\ 32 \leftarrow 35$
6	$6 \leftarrow 6$	$6 \leftarrow 6,\ 5 \leftarrow 5$	40		$39 \leftarrow 40,\ 20 \leftarrow 38$
7	$7 \leftarrow 7$	$7 \leftarrow 7,\ 6 \leftarrow 6$	41	$39 \leftarrow 41$	$41 \leftarrow 41,\ 39 \leftarrow 40$
8		$7 \leftarrow 8,\ 4 \leftarrow 6$	42		$41 \leftarrow 42,\ 36 \leftarrow 40$
9	$6 \leftarrow 9$	$9 \leftarrow 9,\ 6 \leftarrow 8$	43		$43 \leftarrow 43,\ 38 \leftarrow 42$
10	$8 \leftarrow 10$	$10 \leftarrow 10,\ 7 \leftarrow 9$	44		$38 \leftarrow 44,\ 30 \leftarrow 37$
11	$10 \leftarrow 11$	$10 \leftarrow 11,\ 8 \leftarrow 9$	45		$45 \leftarrow 45,\ 42 \leftarrow 44$
12		$10 \leftarrow 12,\ 6 \leftarrow 9$	46		$43 \leftarrow 46,\ 38 \leftarrow 42$
13		$13 \leftarrow 13,\ 10 \leftarrow 12$	47	$43 \leftarrow 47$	$47 \leftarrow 47,\ 43 \leftarrow 46$
14		$13 \leftarrow 14,\ 6 \leftarrow 12$	48		$43 \leftarrow 48,\ 30 \leftarrow 42$
15	$15 \leftarrow 15$	$15 \leftarrow 15,\ 14 \leftarrow 14$	49	$41 \leftarrow 49$	$49 \leftarrow 49,\ 41 \leftarrow 48$
16		$15 \leftarrow 16,\ 12 \leftarrow 14$	50		$48 \leftarrow 50,\ 39 \leftarrow 47$
17	$15 \leftarrow 17$	$17 \leftarrow 17,\ 15 \leftarrow 16$	51		$48 \leftarrow 51,\ 42 \leftarrow 47$
18	$12 \leftarrow 18$	$16 \leftarrow 18,\ 9 \leftarrow 15$	52	$50 \leftarrow 52$	$50 \leftarrow 52,\ 47 \leftarrow 49$
19		$19 \leftarrow 19,\ 14 \leftarrow 18$	53		$52 \leftarrow 53,\ 46 \leftarrow 51$
20	$18 \leftarrow 20$	$18 \leftarrow 20,\ 15 \leftarrow 17$	54		$51 \leftarrow 54,\ 42 \leftarrow 50$
21	$20 \leftarrow 21$	$20 \leftarrow 21,\ 18 \leftarrow 19$	55	$32 \leftarrow 55$	$54 \leftarrow 55,\ 48 \leftarrow 53$
22	$22 \leftarrow 22$	$22 \leftarrow 22,\ 21 \leftarrow 21$	56		$56 \leftarrow 56,\ 35 \leftarrow 55$
23	$19 \leftarrow 23$	$23 \leftarrow 23,\ 19 \leftarrow 22$	57	$51 \leftarrow 57$	$56 \leftarrow 57,\ 53 \leftarrow 55$
24		$24 \leftarrow 24,\ 21 \leftarrow 23$	58	$40 \leftarrow 58$	$58 \leftarrow 58,\ 53 \leftarrow 57$
25	$23 \leftarrow 25$	$25 \leftarrow 25,\ 23 \leftarrow 24$	59		$55 \leftarrow 59,\ 49 \leftarrow 54$
26		$26 \leftarrow 26,\ 19 \leftarrow 25$	60	$60 \leftarrow 60$	$60 \leftarrow 60,\ 59 \leftarrow 59$
27		$27 \leftarrow 27,\ 20 \leftarrow 26$	61		$59 \leftarrow 61,\ 49 \leftarrow 58$
28	$26 \leftarrow 28$	$26 \leftarrow 28,\ 23 \leftarrow 25$	62		$57 \leftarrow 62,\ 50 \leftarrow 56$
29	$28 \leftarrow 29$	$28 \leftarrow 29,\ 26 \leftarrow 27$	63	$63 \leftarrow 63$	$63 \leftarrow 63,\ 62 \leftarrow 62$
30		$28 \leftarrow 30,\ 21 \leftarrow 27$	64		$64 \leftarrow 64,\ 61 \leftarrow 63$
31	$29 \leftarrow 31$	$31 \leftarrow 31,\ 29 \leftarrow 30$	65	$48 \leftarrow 65$	$65 \leftarrow 65,\ 62 \leftarrow 64$
32		$28 \leftarrow 32,\ 21 \leftarrow 27$	66		$66 \leftarrow 66,\ 57 \leftarrow 65$
33	$21 \leftarrow 33$	$31 \leftarrow 33,\ 27 \leftarrow 30$	67		$67 \leftarrow 67,\ 58 \leftarrow 66$
34		$32 \leftarrow 34,\ 23 \leftarrow 31$	68	$60 \leftarrow 68$	$65 \leftarrow 68,\ 60 \leftarrow 64$
35	$34 \leftarrow 35$	$34 \leftarrow 35,\ 32 \leftarrow 33$	69		$67 \leftarrow 69,\ 60 \leftarrow 66$

Continued ...

n	2-tap MFSR	3-tap MFSR	n	2-tap MFSR	3-tap MFSR
70		$70 \leftarrow 70,\ 55 \leftarrow 69$	117		$116 \leftarrow 117,\ 98 \leftarrow 115$
71	$66 \leftarrow 71$	$70 \leftarrow 71,\ 66 \leftarrow 69$	118	$86 \leftarrow 118$	$110 \leftarrow 118,\ 95 \leftarrow 109$
72		$66 \leftarrow 72,\ 51 \leftarrow 65$	119	$112 \leftarrow 119$	$112 \leftarrow 119,\ 104 \leftarrow 111$
73	$49 \leftarrow 73$	$72 \leftarrow 73,\ 66 \leftarrow 71$	120		$107 \leftarrow 120,\ 86 \leftarrow 106$
74		$72 \leftarrow 74,\ 68 \leftarrow 71$	121	$104 \leftarrow 121$	$116 \leftarrow 121,\ 106 \leftarrow 115$
75		$75 \leftarrow 75,\ 65 \leftarrow 74$	122		$120 \leftarrow 122,\ 116 \leftarrow 119$
76		$73 \leftarrow 76,\ 64 \leftarrow 72$	123	$122 \leftarrow 123$	$122 \leftarrow 123,\ 120 \leftarrow 121$
77		$73 \leftarrow 77,\ 67 \leftarrow 72$	124	$88 \leftarrow 124$	$116 \leftarrow 124,\ 89 \leftarrow 115$
78		$74 \leftarrow 78,\ 66 \leftarrow 73$	125		$117 \leftarrow 125,\ 103 \leftarrow 116$
79	$71 \leftarrow 79$	$79 \leftarrow 79,\ 71 \leftarrow 78$	126		$115 \leftarrow 126,\ 98 \leftarrow 114$
80		$76 \leftarrow 80,\ 69 \leftarrow 75$	127	$127 \leftarrow 127$	$127 \leftarrow 127,\ 126 \leftarrow 126$
81	$78 \leftarrow 81$	$78 \leftarrow 81,\ 74 \leftarrow 77$	128		$119 \leftarrow 128,\ 108 \leftarrow 118$
82		$75 \leftarrow 82,\ 60 \leftarrow 74$	129	$125 \leftarrow 129$	$129 \leftarrow 129,\ 125 \leftarrow 128$
83		$78 \leftarrow 83,\ 70 \leftarrow 77$	130	$128 \leftarrow 130$	$128 \leftarrow 130,\ 125 \leftarrow 127$
84	$72 \leftarrow 84$	$81 \leftarrow 84,\ 72 \leftarrow 80$	131		$126 \leftarrow 131,\ 119 \leftarrow 125$
85		$83 \leftarrow 85,\ 74 \leftarrow 82$	132	$104 \leftarrow 132$	$128 \leftarrow 132,\ 110 \leftarrow 127$
86		$86 \leftarrow 86,\ 74 \leftarrow 85$	133		$124 \leftarrow 133,\ 113 \leftarrow 123$
87	$75 \leftarrow 87$	$80 \leftarrow 87,\ 71 \leftarrow 79$	134	$78 \leftarrow 134$	$129 \leftarrow 134,\ 114 \leftarrow 128$
88		$86 \leftarrow 88,\ 73 \leftarrow 85$	135	$125 \leftarrow 135$	$134 \leftarrow 135,\ 129 \leftarrow 133$
89	$52 \leftarrow 89$	$87 \leftarrow 89,\ 79 \leftarrow 86$	136		$134 \leftarrow 136,\ 113 \leftarrow 133$
90		$89 \leftarrow 90,\ 86 \leftarrow 88$	137	$117 \leftarrow 137$	$134 \leftarrow 137,\ 127 \leftarrow 133$
91		$87 \leftarrow 91,\ 80 \leftarrow 86$	138		$138 \leftarrow 138,\ 131 \leftarrow 137$
92		$90 \leftarrow 92,\ 82 \leftarrow 89$	139		$137 \leftarrow 139,\ 132 \leftarrow 136$
93	$92 \leftarrow 93$	$92 \leftarrow 93,\ 90 \leftarrow 91$	140	$112 \leftarrow 140$	$136 \leftarrow 140,\ 115 \leftarrow 135$
94	$74 \leftarrow 94$	$94 \leftarrow 94,\ 89 \leftarrow 93$	141		$139 \leftarrow 141,\ 129 \leftarrow 138$
95	$85 \leftarrow 95$	$94 \leftarrow 95,\ 85 \leftarrow 93$	142	$122 \leftarrow 142$	$136 \leftarrow 142,\ 125 \leftarrow 135$
96		$90 \leftarrow 96,\ 65 \leftarrow 89$	143		$142 \leftarrow 143,\ 139 \leftarrow 141$
97	$92 \leftarrow 97$	$96 \leftarrow 97,\ 92 \leftarrow 95$	144		$143 \leftarrow 144,\ 116 \leftarrow 142$
98	$88 \leftarrow 98$	$98 \leftarrow 98,\ 91 \leftarrow 97$	145	$94 \leftarrow 145$	$145 \leftarrow 145,\ 140 \leftarrow 144$
99		$93 \leftarrow 99,\ 75 \leftarrow 92$	146		$145 \leftarrow 146,\ 142 \leftarrow 144$
100	$64 \leftarrow 100$	$94 \leftarrow 100,\ 77 \leftarrow 93$	147		$140 \leftarrow 147,\ 126 \leftarrow 139$
101		$101 \leftarrow 101,\ 95 \leftarrow 100$	148	$122 \leftarrow 148$	$148 \leftarrow 148,\ 131 \leftarrow 147$
102		$98 \leftarrow 102,\ 80 \leftarrow 97$	149		$147 \leftarrow 149,\ 122 \leftarrow 146$
103	$95 \leftarrow 103$	$103 \leftarrow 103,\ 95 \leftarrow 102$	150	$98 \leftarrow 150$	$148 \leftarrow 150,\ 138 \leftarrow 147$
104		$104 \leftarrow 104,\ 94 \leftarrow 103$	151	$149 \leftarrow 151$	$151 \leftarrow 151,\ 149 \leftarrow 150$
105	$90 \leftarrow 105$	$105 \leftarrow 105,\ 99 \leftarrow 104$	152		$146 \leftarrow 152,\ 136 \leftarrow 145$
106	$92 \leftarrow 106$	$106 \leftarrow 106,\ 101 \leftarrow 105$	153	$153 \leftarrow 153$	$153 \leftarrow 153,\ 152 \leftarrow 152$
107		$102 \leftarrow 107,\ 88 \leftarrow 101$	154		$148 \leftarrow 154,\ 130 \leftarrow 147$
108	$78 \leftarrow 108$	$101 \leftarrow 108,\ 92 \leftarrow 100$	155		$150 \leftarrow 155,\ 143 \leftarrow 149$
109		$109 \leftarrow 109,\ 103 \leftarrow 108$	156		$149 \leftarrow 156,\ 132 \leftarrow 148$
110		$110 \leftarrow 110,\ 98 \leftarrow 109$	157		$153 \leftarrow 157,\ 146 \leftarrow 152$
111	$102 \leftarrow 111$	$110 \leftarrow 111,\ 102 \leftarrow 109$	158		$154 \leftarrow 158,\ 142 \leftarrow 153$
112		$110 \leftarrow 112,\ 97 \leftarrow 109$	159	$129 \leftarrow 159$	$158 \leftarrow 159,\ 146 \leftarrow 157$
113	$105 \leftarrow 113$	$112 \leftarrow 113,\ 109 \leftarrow 111$	160		$159 \leftarrow 160,\ 156 \leftarrow 158$
114		$107 \leftarrow 114,\ 92 \leftarrow 106$	161	$144 \leftarrow 161$	$161 \leftarrow 161,\ 146 \leftarrow 160$
115		$114 \leftarrow 115,\ 104 \leftarrow 113$	162		$158 \leftarrow 162,\ 152 \leftarrow 157$
116		$111 \leftarrow 116,\ 96 \leftarrow 110$	163		$159 \leftarrow 163,\ 153 \leftarrow 158$

Continued ...

n	2-tap MFSR	3-tap MFSR	n	2-tap MFSR	3-tap MFSR
164		$164 \leftarrow 164,\ 151 \leftarrow 163$	211		$207 \leftarrow 211,\ 193 \leftarrow 206$
165		$160 \leftarrow 165,\ 146 \leftarrow 159$	212	$108 \leftarrow 212$	$210 \leftarrow 212,\ 206 \leftarrow 209$
166		$163 \leftarrow 166,\ 142 \leftarrow 162$	213		$213 \leftarrow 213,\ 206 \leftarrow 212$
167	$162 \leftarrow 167$	$166 \leftarrow 167,\ 162 \leftarrow 165$	214		$211 \leftarrow 214,\ 194 \leftarrow 210$
168		$167 \leftarrow 168,\ 152 \leftarrow 166$	215	$193 \leftarrow 215$	$213 \leftarrow 215,\ 209 \leftarrow 212$
169	$136 \leftarrow 169$	$168 \leftarrow 169,\ 159 \leftarrow 167$	216		$207 \leftarrow 216,\ 192 \leftarrow 206$
170	$148 \leftarrow 170$	$169 \leftarrow 170,\ 162 \leftarrow 168$	217	$173 \leftarrow 217$	$217 \leftarrow 217,\ 206 \leftarrow 216$
171		$171 \leftarrow 171,\ 153 \leftarrow 170$	218	$208 \leftarrow 218$	$218 \leftarrow 218,\ 211 \leftarrow 217$
172	$166 \leftarrow 172$	$166 \leftarrow 172,\ 159 \leftarrow 165$	219		$219 \leftarrow 219,\ 201 \leftarrow 218$
173		$171 \leftarrow 173,\ 161 \leftarrow 170$	220		$220 \leftarrow 220,\ 206 \leftarrow 219$
174	$162 \leftarrow 174$	$162 \leftarrow 174,\ 149 \leftarrow 161$	221		$220 \leftarrow 221,\ 214 \leftarrow 219$
175	$170 \leftarrow 175$	$174 \leftarrow 175,\ 170 \leftarrow 173$	222		$212 \leftarrow 222,\ 197 \leftarrow 211$
176		$174 \leftarrow 176,\ 141 \leftarrow 173$	223	$191 \leftarrow 223$	$222 \leftarrow 223,\ 217 \leftarrow 221$
177	$170 \leftarrow 177$	$176 \leftarrow 177,\ 173 \leftarrow 175$	224		$216 \leftarrow 224,\ 202 \leftarrow 215$
178	$92 \leftarrow 178$	$170 \leftarrow 178,\ 159 \leftarrow 169$	225	$194 \leftarrow 225$	$225 \leftarrow 225,\ 201 \leftarrow 224$
179		$173 \leftarrow 179,\ 156 \leftarrow 172$	226		$224 \leftarrow 226,\ 217 \leftarrow 223$
180		$178 \leftarrow 180,\ 158 \leftarrow 177$	227		$214 \leftarrow 227,\ 199 \leftarrow 213$
181		$181 \leftarrow 181,\ 175 \leftarrow 180$	228		$220 \leftarrow 228,\ 206 \leftarrow 219$
182		$175 \leftarrow 182,\ 162 \leftarrow 174$	229		$219 \leftarrow 229,\ 206 \leftarrow 218$
183	$128 \leftarrow 183$	$179 \leftarrow 183,\ 156 \leftarrow 178$	230		$225 \leftarrow 230,\ 196 \leftarrow 224$
184		$167 \leftarrow 184,\ 136 \leftarrow 166$	231	$206 \leftarrow 231$	$228 \leftarrow 231,\ 221 \leftarrow 227$
185	$162 \leftarrow 185$	$184 \leftarrow 185,\ 175 \leftarrow 183$	232		$219 \leftarrow 232,\ 204 \leftarrow 218$
186		$186 \leftarrow 186,\ 164 \leftarrow 185$	233	$160 \leftarrow 233$	$232 \leftarrow 233,\ 225 \leftarrow 231$
187		$185 \leftarrow 187,\ 158 \leftarrow 184$	234	$204 \leftarrow 234$	$233 \leftarrow 234,\ 224 \leftarrow 232$
188		$185 \leftarrow 188,\ 180 \leftarrow 184$	235		$235 \leftarrow 235,\ 226 \leftarrow 234$
189		$181 \leftarrow 189,\ 170 \leftarrow 180$	236	$232 \leftarrow 236$	$232 \leftarrow 236,\ 227 \leftarrow 231$
190		$190 \leftarrow 190,\ 173 \leftarrow 189$	237		$235 \leftarrow 237,\ 230 \leftarrow 234$
191	$183 \leftarrow 191$	$191 \leftarrow 191,\ 183 \leftarrow 190$	238		$226 \leftarrow 238,\ 209 \leftarrow 225$
192		$192 \leftarrow 192,\ 165 \leftarrow 191$	239	$204 \leftarrow 239$	$239 \leftarrow 239,\ 226 \leftarrow 238$
193	$179 \leftarrow 193$	$188 \leftarrow 193,\ 180 \leftarrow 187$	240		$238 \leftarrow 240,\ 233 \leftarrow 237$
194	$108 \leftarrow 194$	$193 \leftarrow 194,\ 178 \leftarrow 192$	241	$172 \leftarrow 241$	$238 \leftarrow 241,\ 226 \leftarrow 237$
195		$195 \leftarrow 195,\ 186 \leftarrow 194$	242		$234 \leftarrow 242,\ 221 \leftarrow 233$
196		$195 \leftarrow 196,\ 186 \leftarrow 194$	243		$238 \leftarrow 243,\ 222 \leftarrow 237$
197		$193 \leftarrow 197,\ 171 \leftarrow 192$	244		$235 \leftarrow 244,\ 218 \leftarrow 234$
198	$134 \leftarrow 198$	$184 \leftarrow 198,\ 165 \leftarrow 183$	245		$243 \leftarrow 245,\ 233 \leftarrow 242$
199	$166 \leftarrow 199$	$198 \leftarrow 199,\ 189 \leftarrow 197$	246		$246 \leftarrow 246,\ 212 \leftarrow 245$
200		$199 \leftarrow 200,\ 196 \leftarrow 198$	247	$166 \leftarrow 247$	$246 \leftarrow 247,\ 229 \leftarrow 245$
201	$188 \leftarrow 201$	$201 \leftarrow 201,\ 185 \leftarrow 200$	248		$234 \leftarrow 248,\ 217 \leftarrow 233$
202	$148 \leftarrow 202$	$198 \leftarrow 202,\ 181 \leftarrow 197$	249	$164 \leftarrow 249$	$246 \leftarrow 249,\ 234 \leftarrow 245$
203		$203 \leftarrow 203,\ 196 \leftarrow 202$	250	$148 \leftarrow 250$	$249 \leftarrow 250,\ 234 \leftarrow 248$
204		$200 \leftarrow 204,\ 168 \leftarrow 199$	251		$249 \leftarrow 251,\ 239 \leftarrow 248$
205		$205 \leftarrow 205,\ 176 \leftarrow 204$	252	$186 \leftarrow 252$	$244 \leftarrow 252,\ 222 \leftarrow 243$
206		$206 \leftarrow 206,\ 178 \leftarrow 205$	253		$253 \leftarrow 253,\ 247 \leftarrow 252$
207	$165 \leftarrow 207$	$199 \leftarrow 207,\ 183 \leftarrow 198$	254		$254 \leftarrow 254,\ 236 \leftarrow 253$
208		$203 \leftarrow 208,\ 194 \leftarrow 202$	255	$204 \leftarrow 255$	$254 \leftarrow 255,\ 251 \leftarrow 253$
209	$204 \leftarrow 209$	$208 \leftarrow 209,\ 205 \leftarrow 207$	256		$254 \leftarrow 256,\ 233 \leftarrow 253$
210		$208 \leftarrow 210,\ 176 \leftarrow 207$	257	$246 \leftarrow 257$	$254 \leftarrow 257,\ 246 \leftarrow 253$

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n	2-tap MFSR	3-tap MFSR	n	2-tap MFSR	3-tap MFSR
258	$176 \leftarrow 258$	$253 \leftarrow 258,\ 224 \leftarrow 252$	305	$204 \leftarrow 305$	$305 \leftarrow 305,\ 293 \leftarrow 304$
259		$259 \leftarrow 259,\ 245 \leftarrow 258$	306		$303 \leftarrow 306,\ 296 \leftarrow 302$
260		$260 \leftarrow 260,\ 240 \leftarrow 259$	307		$305 \leftarrow 307,\ 291 \leftarrow 304$
261		$252 \leftarrow 261,\ 239 \leftarrow 251$	308		$296 \leftarrow 308,\ 268 \leftarrow 295$
262		$258 \leftarrow 262,\ 244 \leftarrow 257$	309		$306 \leftarrow 309,\ 300 \leftarrow 305$
263	$171 \leftarrow 263$	$263 \leftarrow 263,\ 251 \leftarrow 262$	310		$310 \leftarrow 310,\ 295 \leftarrow 309$
264		$264 \leftarrow 264,\ 255 \leftarrow 263$	311		$303 \leftarrow 311,\ 288 \leftarrow 302$
265	$224 \leftarrow 265$	$264 \leftarrow 265,\ 261 \leftarrow 263$	312		$306 \leftarrow 312,\ 267 \leftarrow 305$
266	$220 \leftarrow 266$	$266 \leftarrow 266,\ 260 \leftarrow 265$	313	$235 \leftarrow 313$	$311 \leftarrow 313,\ 307 \leftarrow 310$
267		$263 \leftarrow 267,\ 245 \leftarrow 262$	314	$300 \leftarrow 314$	$312 \leftarrow 314,\ 300 \leftarrow 311$
268	$244 \leftarrow 268$	$268 \leftarrow 268,\ 253 \leftarrow 267$	315		$315 \leftarrow 315,\ 306 \leftarrow 314$
269		$269 \leftarrow 269,\ 263 \leftarrow 268$	316	$182 \leftarrow 316$	$312 \leftarrow 316,\ 275 \leftarrow 311$
270	$218 \leftarrow 270$	$268 \leftarrow 270,\ 261 \leftarrow 267$	317		$309 \leftarrow 317,\ 292 \leftarrow 308$
271	$214 \leftarrow 271$	$270 \leftarrow 271,\ 252 \leftarrow 269$	318		$312 \leftarrow 318,\ 299 \leftarrow 311$
272		$260 \leftarrow 272,\ 223 \leftarrow 259$	319	$284 \leftarrow 319$	$318 \leftarrow 319,\ 309 \leftarrow 317$
273	$251 \leftarrow 273$	$273 \leftarrow 273,\ 267 \leftarrow 272$	320		$320 \leftarrow 320,\ 317 \leftarrow 319$
274	$208 \leftarrow 274$	$273 \leftarrow 274,\ 266 \leftarrow 272$	321	$291 \leftarrow 321$	$320 \leftarrow 321,\ 315 \leftarrow 319$
275		$269 \leftarrow 275,\ 258 \leftarrow 268$	322	$256 \leftarrow 322$	$321 \leftarrow 322,\ 300 \leftarrow 320$
276		$263 \leftarrow 276,\ 248 \leftarrow 262$	323		$321 \leftarrow 323,\ 311 \leftarrow 320$
277		$272 \leftarrow 277,\ 256 \leftarrow 271$	324		$322 \leftarrow 324,\ 314 \leftarrow 321$
278	$274 \leftarrow 278$	$278 \leftarrow 278,\ 274 \leftarrow 277$	325		$323 \leftarrow 325,\ 301 \leftarrow 322$
279	$275 \leftarrow 279$	$279 \leftarrow 279,\ 275 \leftarrow 278$	326		$311 \leftarrow 326,\ 294 \leftarrow 310$
280		$279 \leftarrow 280,\ 268 \leftarrow 278$	327	$294 \leftarrow 327$	$323 \leftarrow 327,\ 311 \leftarrow 322$
281	$189 \leftarrow 281$	$278 \leftarrow 281,\ 269 \leftarrow 277$	328		$320 \leftarrow 328,\ 289 \leftarrow 319$
282	$248 \leftarrow 282$	$279 \leftarrow 282,\ 272 \leftarrow 278$	329	$280 \leftarrow 329$	$322 \leftarrow 329,\ 309 \leftarrow 321$
283		$279 \leftarrow 283,\ 272 \leftarrow 278$	330		$330 \leftarrow 330,\ 315 \leftarrow 329$
284	$166 \leftarrow 284$	$282 \leftarrow 284,\ 273 \leftarrow 281$	331		$326 \leftarrow 331,\ 319 \leftarrow 325$
285		$269 \leftarrow 285,\ 251 \leftarrow 268$	332	$210 \leftarrow 332$	$332 \leftarrow 332,\ 320 \leftarrow 331$
286	$218 \leftarrow 286$	$276 \leftarrow 286,\ 263 \leftarrow 275$	333	$332 \leftarrow 333$	$332 \leftarrow 333,\ 330 \leftarrow 331$
287	$217 \leftarrow 287$	$284 \leftarrow 287,\ 277 \leftarrow 283$	334		$330 \leftarrow 334,\ 314 \leftarrow 329$
288		$288 \leftarrow 288,\ 278 \leftarrow 287$	335		$327 \leftarrow 335,\ 315 \leftarrow 326$
289	$269 \leftarrow 289$	$282 \leftarrow 289,\ 272 \leftarrow 281$	336		$332 \leftarrow 336,\ 326 \leftarrow 331$
290		$289 \leftarrow 290,\ 286 \leftarrow 288$	337	$283 \leftarrow 337$	$333 \leftarrow 337,\ 325 \leftarrow 332$
291		$286 \leftarrow 291,\ 278 \leftarrow 285$	338		$335 \leftarrow 338,\ 324 \leftarrow 334$
292	$196 \leftarrow 292$	$288 \leftarrow 292,\ 276 \leftarrow 287$	339		$334 \leftarrow 339,\ 314 \leftarrow 333$
293		$284 \leftarrow 293,\ 256 \leftarrow 283$	340		$337 \leftarrow 340,\ 316 \leftarrow 336$
294	$234 \leftarrow 294$	$291 \leftarrow 294,\ 270 \leftarrow 290$	341		$341 \leftarrow 341,\ 318 \leftarrow 340$
295	$248 \leftarrow 295$	$295 \leftarrow 295,\ 283 \leftarrow 294$	342	$218 \leftarrow 342$	$329 \leftarrow 342,\ 314 \leftarrow 328$
296		$296 \leftarrow 296,\ 263 \leftarrow 295$	343	$269 \leftarrow 343$	$343 \leftarrow 343,\ 323 \leftarrow 342$
297	$293 \leftarrow 297$	$297 \leftarrow 297,\ 293 \leftarrow 296$	344		$339 \leftarrow 344,\ 318 \leftarrow 338$
298		$293 \leftarrow 298,\ 276 \leftarrow 292$	345	$324 \leftarrow 345$	$345 \leftarrow 345,\ 330 \leftarrow 344$
299		$279 \leftarrow 299,\ 254 \leftarrow 278$	346		$337 \leftarrow 346,\ 320 \leftarrow 336$
300	$294 \leftarrow 300$	$294 \leftarrow 300,\ 287 \leftarrow 293$	347		$339 \leftarrow 347,\ 325 \leftarrow 338$
301		$297 \leftarrow 301,\ 290 \leftarrow 296$	348		$344 \leftarrow 348,\ 326 \leftarrow 343$
302	$262 \leftarrow 302$	$294 \leftarrow 302,\ 268 \leftarrow 293$	349		$349 \leftarrow 349,\ 338 \leftarrow 348$
303		$296 \leftarrow 303,\ 284 \leftarrow 295$	350	$298 \leftarrow 350$	$345 \leftarrow 350,\ 330 \leftarrow 344$
304		$299 \leftarrow 304,\ 278 \leftarrow 298$	351	$318 \leftarrow 351$	$344 \leftarrow 351,\ 327 \leftarrow 343$

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n	2-tap MFSR	3-tap MFSR	n	2-tap MFSR	3-tap MFSR
352		$340 \leftarrow 352,\ 317 \leftarrow 339$	399	$314 \leftarrow 399$	$398 \leftarrow 399,\ 389 \leftarrow 397$
353	$285 \leftarrow 353$	$347 \leftarrow 353,\ 331 \leftarrow 346$	400		$399 \leftarrow 400,\ 396 \leftarrow 398$
354		$352 \leftarrow 354,\ 336 \leftarrow 351$	401	$250 \leftarrow 401$	$398 \leftarrow 401,\ 376 \leftarrow 397$
355		$355 \leftarrow 355,\ 350 \leftarrow 354$	402		$394 \leftarrow 402,\ 380 \leftarrow 393$
356		$354 \leftarrow 356,\ 337 \leftarrow 353$	403		$398 \leftarrow 403,\ 391 \leftarrow 397$
357		$345 \leftarrow 357,\ 330 \leftarrow 344$	404	$216 \leftarrow 404$	$401 \leftarrow 404,\ 384 \leftarrow 400$
358		$356 \leftarrow 358,\ 330 \leftarrow 355$	405		$396 \leftarrow 405,\ 384 \leftarrow 395$
359	$292 \leftarrow 359$	$356 \leftarrow 359,\ 349 \leftarrow 355$	406	$250 \leftarrow 406$	$403 \leftarrow 406,\ 394 \leftarrow 402$
360		$360 \leftarrow 360,\ 335 \leftarrow 359$	407	$337 \leftarrow 407$	$398 \leftarrow 407,\ 376 \leftarrow 397$
361		$360 \leftarrow 361,\ 354 \leftarrow 359$	408		$404 \leftarrow 408,\ 363 \leftarrow 403$
362	$300 \leftarrow 362$	$358 \leftarrow 362,\ 337 \leftarrow 357$	409	$323 \leftarrow 409$	$408 \leftarrow 409,\ 399 \leftarrow 407$
363		$363 \leftarrow 363,\ 356 \leftarrow 362$	410		$396 \leftarrow 410,\ 370 \leftarrow 395$
364	$298 \leftarrow 364$	$355 \leftarrow 364,\ 338 \leftarrow 354$	411		$406 \leftarrow 411,\ 360 \leftarrow 405$
365		$363 \leftarrow 365,\ 354 \leftarrow 362$	412	$266 \leftarrow 412$	$410 \leftarrow 412,\ 402 \leftarrow 409$
366	$338 \leftarrow 366$	$366 \leftarrow 366,\ 342 \leftarrow 365$	413		$411 \leftarrow 413,\ 384 \leftarrow 410$
367	$347 \leftarrow 367$	$367 \leftarrow 367,\ 356 \leftarrow 366$	414		$410 \leftarrow 414,\ 372 \leftarrow 409$
368		$354 \leftarrow 368,\ 321 \leftarrow 353$	415	$314 \leftarrow 415$	$414 \leftarrow 415,\ 397 \leftarrow 413$
369	$279 \leftarrow 369$	$368 \leftarrow 369,\ 353 \leftarrow 367$	416		$403 \leftarrow 416,\ 378 \leftarrow 402$
370	$232 \leftarrow 370$	$369 \leftarrow 370,\ 366 \leftarrow 368$	417	$311 \leftarrow 417$	$416 \leftarrow 417,\ 389 \leftarrow 415$
371		$366 \leftarrow 371,\ 358 \leftarrow 365$	418		$418 \leftarrow 418,\ 401 \leftarrow 417$
372		$365 \leftarrow 372,\ 336 \leftarrow 364$	419		$402 \leftarrow 419,\ 377 \leftarrow 401$
373		$363 \leftarrow 373,\ 346 \leftarrow 362$	420		$414 \leftarrow 420,\ 383 \leftarrow 413$
374		$364 \leftarrow 374,\ 343 \leftarrow 363$	421		$416 \leftarrow 421,\ 405 \leftarrow 415$
375	$360 \leftarrow 375$	$375 \leftarrow 375,\ 368 \leftarrow 374$	422	$274 \leftarrow 422$	$416 \leftarrow 422,\ 394 \leftarrow 415$
376		$375 \leftarrow 376,\ 356 \leftarrow 374$	423	$399 \leftarrow 423$	$419 \leftarrow 423,\ 399 \leftarrow 418$
377	$337 \leftarrow 377$	$375 \leftarrow 377,\ 367 \leftarrow 374$	424		$423 \leftarrow 424,\ 416 \leftarrow 422$
378	$336 \leftarrow 378$	$364 \leftarrow 378,\ 336 \leftarrow 363$	425	$414 \leftarrow 425$	$423 \leftarrow 425,\ 419 \leftarrow 422$
379		$375 \leftarrow 379,\ 361 \leftarrow 374$	426		$420 \leftarrow 426,\ 390 \leftarrow 419$
380	$334 \leftarrow 380$	$380 \leftarrow 380,\ 363 \leftarrow 379$	427		$423 \leftarrow 427,\ 417 \leftarrow 422$
381		$361 \leftarrow 381,\ 330 \leftarrow 360$	428	$324 \leftarrow 428$	$421 \leftarrow 428,\ 402 \leftarrow 420$
382	$302 \leftarrow 382$	$376 \leftarrow 382,\ 358 \leftarrow 375$	429		$421 \leftarrow 429,\ 404 \leftarrow 420$
383	$294 \leftarrow 383$	$379 \leftarrow 383,\ 370 \leftarrow 378$	430		$426 \leftarrow 430,\ 414 \leftarrow 425$
384		$346 \leftarrow 384,\ 305 \leftarrow 345$	431	$312 \leftarrow 431$	$420 \leftarrow 431,\ 405 \leftarrow 419$
385	$380 \leftarrow 385$	$384 \leftarrow 385,\ 380 \leftarrow 383$	432		$424 \leftarrow 432,\ 405 \leftarrow 423$
386	$304 \leftarrow 386$	$380 \leftarrow 386,\ 349 \leftarrow 379$	433	$401 \leftarrow 433$	$430 \leftarrow 433,\ 416 \leftarrow 429$
387		$381 \leftarrow 387,\ 371 \leftarrow 380$	434		$427 \leftarrow 434,\ 400 \leftarrow 426$
388		$380 \leftarrow 388,\ 356 \leftarrow 379$	435		$415 \leftarrow 435,\ 386 \leftarrow 414$
389		$384 \leftarrow 389,\ 353 \leftarrow 383$	436	$272 \leftarrow 436$	$421 \leftarrow 436,\ 394 \leftarrow 420$
390	$302 \leftarrow 390$	$380 \leftarrow 390,\ 345 \leftarrow 379$	437		$433 \leftarrow 437,\ 427 \leftarrow 432$
391	$364 \leftarrow 391$	$387 \leftarrow 391,\ 371 \leftarrow 386$	438	$374 \leftarrow 438$	$434 \leftarrow 438,\ 399 \leftarrow 433$
392		$380 \leftarrow 392,\ 365 \leftarrow 379$	439	$391 \leftarrow 439$	$429 \leftarrow 439,\ 403 \leftarrow 428$
393	$387 \leftarrow 393$	$387 \leftarrow 393,\ 380 \leftarrow 386$	440		$440 \leftarrow 440,\ 437 \leftarrow 439$
394	$260 \leftarrow 394$	$388 \leftarrow 394,\ 376 \leftarrow 387$	441	$411 \leftarrow 441$	$438 \leftarrow 441,\ 429 \leftarrow 437$
395		$391 \leftarrow 395,\ 385 \leftarrow 390$	442		$441 \leftarrow 442,\ 436 \leftarrow 440$
396	$372 \leftarrow 396$	$394 \leftarrow 396,\ 348 \leftarrow 393$	443		$443 \leftarrow 443,\ 428 \leftarrow 442$
397		$387 \leftarrow 397,\ 373 \leftarrow 386$	444		$442 \leftarrow 444,\ 410 \leftarrow 441$
398		$396 \leftarrow 398,\ 381 \leftarrow 395$	445		$441 \leftarrow 445,\ 434 \leftarrow 440$

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n	2-tap MFSR	3-tap MFSR	n	2-tap MFSR	3-tap MFSR
446	$342 \leftarrow 446$	$441 \leftarrow 446,\ 410 \leftarrow 440$	493		$489 \leftarrow 493,\ 468 \leftarrow 488$
447	$375 \leftarrow 447$	$446 \leftarrow 447,\ 431 \leftarrow 445$	494	$358 \leftarrow 494$	$492 \leftarrow 494,\ 478 \leftarrow 491$
448		$443 \leftarrow 448,\ 422 \leftarrow 442$	495	$420 \leftarrow 495$	$495 \leftarrow 495,\ 470 \leftarrow 494$
449	$316 \leftarrow 449$	$441 \leftarrow 449,\ 427 \leftarrow 440$	496		$494 \leftarrow 496,\ 451 \leftarrow 493$
450	$372 \leftarrow 450$	$447 \leftarrow 450,\ 392 \leftarrow 446$	497	$420 \leftarrow 497$	$490 \leftarrow 497,\ 481 \leftarrow 489$
451		$441 \leftarrow 451,\ 426 \leftarrow 440$	498		$496 \leftarrow 498,\ 456 \leftarrow 495$
452		$449 \leftarrow 452,\ 436 \leftarrow 448$	499		$495 \leftarrow 499,\ 489 \leftarrow 494$
453		$445 \leftarrow 453,\ 434 \leftarrow 444$	500		$494 \leftarrow 500,\ 470 \leftarrow 493$
454		$445 \leftarrow 454,\ 428 \leftarrow 444$	501		$491 \leftarrow 501,\ 477 \leftarrow 490$
455	$418 \leftarrow 455$	$455 \leftarrow 455,\ 440 \leftarrow 454$	502		$498 \leftarrow 502,\ 490 \leftarrow 497$
456		$447 \leftarrow 456,\ 386 \leftarrow 446$	503	$501 \leftarrow 503$	$503 \leftarrow 503,\ 501 \leftarrow 502$
457	$442 \leftarrow 457$	$455 \leftarrow 457,\ 447 \leftarrow 454$	504		$498 \leftarrow 504,\ 461 \leftarrow 497$
458	$256 \leftarrow 458$	$448 \leftarrow 458,\ 433 \leftarrow 447$	505	$350 \leftarrow 505$	$504 \leftarrow 505,\ 485 \leftarrow 503$
459		$456 \leftarrow 459,\ 446 \leftarrow 455$	506	$412 \leftarrow 506$	$496 \leftarrow 506,\ 472 \leftarrow 495$
460	$400 \leftarrow 460$	$458 \leftarrow 460,\ 445 \leftarrow 457$	507		$501 \leftarrow 507,\ 488 \leftarrow 500$
461		$461 \leftarrow 461,\ 455 \leftarrow 460$	508	$400 \leftarrow 508$	$501 \leftarrow 508,\ 486 \leftarrow 500$
462	$390 \leftarrow 462$	$455 \leftarrow 462,\ 426 \leftarrow 454$	509		$496 \leftarrow 509,\ 474 \leftarrow 495$
463	$371 \leftarrow 463$	$463 \leftarrow 463,\ 446 \leftarrow 462$	510		$510 \leftarrow 510,\ 462 \leftarrow 509$
464		$452 \leftarrow 464,\ 425 \leftarrow 451$	511	$502 \leftarrow 511$	$510 \leftarrow 511,\ 502 \leftarrow 509$
465	$407 \leftarrow 465$	$464 \leftarrow 465,\ 453 \leftarrow 463$	512		$506 \leftarrow 512,\ 479 \leftarrow 505$
466		$466 \leftarrow 466,\ 451 \leftarrow 465$	513	$429 \leftarrow 513$	$513 \leftarrow 513,\ 482 \leftarrow 512$
467		$462 \leftarrow 467,\ 448 \leftarrow 461$	514		$514 \leftarrow 514,\ 493 \leftarrow 513$
468		$460 \leftarrow 468,\ 429 \leftarrow 459$	515		$506 \leftarrow 515,\ 487 \leftarrow 505$
469		$461 \leftarrow 469,\ 440 \leftarrow 460$	516		$515 \leftarrow 516,\ 510 \leftarrow 514$
470	$322 \leftarrow 470$	$462 \leftarrow 470,\ 401 \leftarrow 461$	517		$516 \leftarrow 517,\ 506 \leftarrow 515$
471	$471 \leftarrow 471$	$471 \leftarrow 471,\ 470 \leftarrow 470$	518	$486 \leftarrow 518$	$508 \leftarrow 518,\ 493 \leftarrow 507$
472		$471 \leftarrow 472,\ 448 \leftarrow 470$	519	$441 \leftarrow 519$	$518 \leftarrow 519,\ 483 \leftarrow 517$
473		$470 \leftarrow 473,\ 459 \leftarrow 469$	520		$516 \leftarrow 520,\ 433 \leftarrow 515$
474	$284 \leftarrow 474$	$471 \leftarrow 474,\ 456 \leftarrow 470$	521	$490 \leftarrow 521$	$520 \leftarrow 521,\ 513 \leftarrow 519$
475		$472 \leftarrow 475,\ 466 \leftarrow 471$	522		$520 \leftarrow 522,\ 476 \leftarrow 519$
476	$462 \leftarrow 476$	$462 \leftarrow 476,\ 447 \leftarrow 461$	523		$518 \leftarrow 523,\ 501 \leftarrow 517$
477		$472 \leftarrow 477,\ 458 \leftarrow 471$	524	$358 \leftarrow 524$	$518 \leftarrow 524,\ 501 \leftarrow 517$
478	$358 \leftarrow 478$	$465 \leftarrow 478,\ 440 \leftarrow 464$	525		$520 \leftarrow 525,\ 494 \leftarrow 519$
479	$376 \leftarrow 479$	$470 \leftarrow 479,\ 455 \leftarrow 469$	526		$517 \leftarrow 526,\ 484 \leftarrow 516$
480		$471 \leftarrow 480,\ 438 \leftarrow 470$	527	$481 \leftarrow 527$	$518 \leftarrow 527,\ 503 \leftarrow 517$
481	$344 \leftarrow 481$	$481 \leftarrow 481,\ 472 \leftarrow 480$	528		$514 \leftarrow 528,\ 497 \leftarrow 513$
482		$472 \leftarrow 482,\ 436 \leftarrow 471$	529	$488 \leftarrow 529$	$526 \leftarrow 529,\ 502 \leftarrow 525$
483		$479 \leftarrow 483,\ 446 \leftarrow 478$	530		$528 \leftarrow 530,\ 521 \leftarrow 527$
484	$380 \leftarrow 484$	$480 \leftarrow 484,\ 422 \leftarrow 479$	531		$531 \leftarrow 531,\ 513 \leftarrow 530$
485		$476 \leftarrow 485,\ 463 \leftarrow 475$	532	$532 \leftarrow 532$	$532 \leftarrow 532,\ 531 \leftarrow 531$
486		$480 \leftarrow 486,\ 467 \leftarrow 479$	533		$519 \leftarrow 533,\ 493 \leftarrow 518$
487	$394 \leftarrow 487$	$486 \leftarrow 487,\ 473 \leftarrow 485$	534		$518 \leftarrow 534,\ 461 \leftarrow 517$
488		$488 \leftarrow 488,\ 485 \leftarrow 487$	535		$534 \leftarrow 535,\ 528 \leftarrow 533$
489	$407 \leftarrow 489$	$488 \leftarrow 489,\ 476 \leftarrow 487$	536		$536 \leftarrow 536,\ 485 \leftarrow 535$
490	$272 \leftarrow 490$	$480 \leftarrow 490,\ 450 \leftarrow 479$	537	$444 \leftarrow 537$	$523 \leftarrow 537,\ 507 \leftarrow 522$
491		$491 \leftarrow 491,\ 477 \leftarrow 490$	538		$534 \leftarrow 538,\ 527 \leftarrow 533$
492		$492 \leftarrow 492,\ 485 \leftarrow 491$	539		$531 \leftarrow 539,\ 517 \leftarrow 530$

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n	2-tap MFSR	3-tap MFSR	n	2-tap MFSR	3-tap MFSR
540	$362 \leftarrow 540$	$520 \leftarrow 540,\ 494 \leftarrow 519$	587		$581 \leftarrow 587,\ 568 \leftarrow 580$
541		$533 \leftarrow 541,\ 512 \leftarrow 532$	588	$438 \leftarrow 588$	$577 \leftarrow 588,\ 560 \leftarrow 576$
542		$542 \leftarrow 542,\ 525 \leftarrow 541$	589		$583 \leftarrow 589,\ 556 \leftarrow 582$
543	$528 \leftarrow 543$	$539 \leftarrow 543,\ 527 \leftarrow 538$	590	$498 \leftarrow 590$	$584 \leftarrow 590,\ 573 \leftarrow 583$
544		$532 \leftarrow 544,\ 487 \leftarrow 531$	591		$583 \leftarrow 591,\ 566 \leftarrow 582$
545	$424 \leftarrow 545$	$544 \leftarrow 545,\ 516 \leftarrow 543$	592		$591 \leftarrow 592,\ 560 \leftarrow 590$
546		$542 \leftarrow 546,\ 501 \leftarrow 541$	593	$508 \leftarrow 593$	$591 \leftarrow 593,\ 577 \leftarrow 590$
547		$541 \leftarrow 547,\ 515 \leftarrow 540$	594	$576 \leftarrow 594$	$588 \leftarrow 594,\ 560 \leftarrow 587$
548		$537 \leftarrow 548,\ 514 \leftarrow 536$	595		$595 \leftarrow 595,\ 586 \leftarrow 594$
549		$523 \leftarrow 549,\ 480 \leftarrow 522$	596		$588 \leftarrow 596,\ 548 \leftarrow 587$
550	$358 \leftarrow 550$	$547 \leftarrow 550,\ 530 \leftarrow 546$	597		$597 \leftarrow 597,\ 540 \leftarrow 596$
551	$417 \leftarrow 551$	$548 \leftarrow 551,\ 536 \leftarrow 547$	598		$598 \leftarrow 598,\ 592 \leftarrow 597$
552		$543 \leftarrow 552,\ 506 \leftarrow 542$	599	$570 \leftarrow 599$	$596 \leftarrow 599,\ 585 \leftarrow 595$
553	$515 \leftarrow 553$	$552 \leftarrow 553,\ 541 \leftarrow 551$	600		$600 \leftarrow 600,\ 590 \leftarrow 599$
554		$552 \leftarrow 554,\ 544 \leftarrow 551$	601	$401 \leftarrow 601$	$600 \leftarrow 601,\ 590 \leftarrow 599$
555		$550 \leftarrow 555,\ 524 \leftarrow 549$	602		$600 \leftarrow 602,\ 583 \leftarrow 599$
556	$404 \leftarrow 556$	$556 \leftarrow 556,\ 518 \leftarrow 555$	603		$603 \leftarrow 603,\ 584 \leftarrow 602$
557		$552 \leftarrow 557,\ 541 \leftarrow 551$	604		$602 \leftarrow 604,\ 584 \leftarrow 601$
558		$554 \leftarrow 558,\ 545 \leftarrow 553$	605		$602 \leftarrow 605,\ 592 \leftarrow 601$
559	$526 \leftarrow 559$	$558 \leftarrow 559,\ 551 \leftarrow 557$	606		$586 \leftarrow 606,\ 558 \leftarrow 585$
560		$547 \leftarrow 560,\ 510 \leftarrow 546$	607	$503 \leftarrow 607$	$600 \leftarrow 607,\ 585 \leftarrow 599$
561	$491 \leftarrow 561$	$558 \leftarrow 561,\ 551 \leftarrow 557$	608		$608 \leftarrow 608,\ 501 \leftarrow 607$
562		$558 \leftarrow 562,\ 516 \leftarrow 557$	609	$579 \leftarrow 609$	$598 \leftarrow 609,\ 581 \leftarrow 597$
563		$553 \leftarrow 563,\ 538 \leftarrow 552$	610	$484 \leftarrow 610$	$601 \leftarrow 610,\ 572 \leftarrow 600$
564	$402 \leftarrow 564$	$550 \leftarrow 564,\ 524 \leftarrow 549$	611		$601 \leftarrow 611,\ 576 \leftarrow 600$
565		$559 \leftarrow 565,\ 542 \leftarrow 558$	612		$598 \leftarrow 612,\ 570 \leftarrow 597$
566	$414 \leftarrow 566$	$564 \leftarrow 566,\ 549 \leftarrow 563$	613		$605 \leftarrow 613,\ 595 \leftarrow 604$
567	$425 \leftarrow 567$	$562 \leftarrow 567,\ 555 \leftarrow 561$	614		$612 \leftarrow 614,\ 563 \leftarrow 611$
568		$562 \leftarrow 568,\ 529 \leftarrow 561$	615	$405 \leftarrow 615$	$615 \leftarrow 615,\ 609 \leftarrow 614$
569	$493 \leftarrow 569$	$560 \leftarrow 569,\ 548 \leftarrow 559$	616		$615 \leftarrow 616,\ 596 \leftarrow 614$
570	$504 \leftarrow 570$	$561 \leftarrow 570,\ 512 \leftarrow 560$	617	$418 \leftarrow 617$	$611 \leftarrow 617,\ 602 \leftarrow 610$
571		$561 \leftarrow 571,\ 542 \leftarrow 560$	618		$617 \leftarrow 618,\ 584 \leftarrow 616$
572		$566 \leftarrow 572,\ 528 \leftarrow 565$	619		$605 \leftarrow 619,\ 582 \leftarrow 604$
573		$570 \leftarrow 573,\ 564 \leftarrow 569$	620		$613 \leftarrow 620,\ 600 \leftarrow 612$
574	$562 \leftarrow 574$	$570 \leftarrow 574,\ 561 \leftarrow 569$	621		$617 \leftarrow 621,\ 570 \leftarrow 616$
575	$430 \leftarrow 575$	$573 \leftarrow 575,\ 554 \leftarrow 572$	622	$326 \leftarrow 622$	$616 \leftarrow 622,\ 605 \leftarrow 615$
576		$564 \leftarrow 576,\ 546 \leftarrow 563$	623	$556 \leftarrow 623$	$617 \leftarrow 623,\ 591 \leftarrow 616$
577	$553 \leftarrow 577$	$572 \leftarrow 577,\ 563 \leftarrow 571$	624		$624 \leftarrow 624,\ 609 \leftarrow 623$
578		$572 \leftarrow 578,\ 540 \leftarrow 571$	625	$493 \leftarrow 625$	$619 \leftarrow 625,\ 611 \leftarrow 618$
579		$573 \leftarrow 579,\ 518 \leftarrow 572$	626		$621 \leftarrow 626,\ 608 \leftarrow 620$
580		$574 \leftarrow 580,\ 553 \leftarrow 573$	627		$615 \leftarrow 627,\ 582 \leftarrow 614$
581		$576 \leftarrow 581,\ 569 \leftarrow 575$	628	$406 \leftarrow 628$	$626 \leftarrow 628,\ 598 \leftarrow 625$
582	$498 \leftarrow 582$	$564 \leftarrow 582,\ 521 \leftarrow 563$	629		$614 \leftarrow 629,\ 580 \leftarrow 613$
583	$454 \leftarrow 583$	$582 \leftarrow 583,\ 576 \leftarrow 581$	630		$622 \leftarrow 630,\ 582 \leftarrow 621$
584		$584 \leftarrow 584,\ 511 \leftarrow 583$	631	$325 \leftarrow 631$	$626 \leftarrow 631,\ 618 \leftarrow 625$
585	$465 \leftarrow 585$	$572 \leftarrow 585,\ 557 \leftarrow 571$	632		$616 \leftarrow 632,\ 525 \leftarrow 615$
586		$585 \leftarrow 586,\ 580 \leftarrow 584$	633	$533 \leftarrow 633$	$633 \leftarrow 633,\ 609 \leftarrow 632$

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n	2-tap MFSR	3-tap MFSR	n	2-tap MFSR	3-tap MFSR
634	$320 \leftarrow 634$	$616 \leftarrow 634,\ 596 \leftarrow 615$	681		$676 \leftarrow 681,\ 663 \leftarrow 675$
635		$632 \leftarrow 635,\ 622 \leftarrow 631$	682		$670 \leftarrow 682,\ 655 \leftarrow 669$
636		$634 \leftarrow 636,\ 608 \leftarrow 633$	683		$678 \leftarrow 683,\ 661 \leftarrow 677$
637		$632 \leftarrow 637,\ 613 \leftarrow 631$	684		$662 \leftarrow 684,\ 614 \leftarrow 661$
638		$638 \leftarrow 638,\ 633 \leftarrow 637$	685		$685 \leftarrow 685,\ 682 \leftarrow 684$
639	$624 \leftarrow 639$	$627 \leftarrow 639,\ 611 \leftarrow 626$	686	$490 \leftarrow 686$	$678 \leftarrow 686,\ 663 \leftarrow 677$
640		$639 \leftarrow 640,\ 624 \leftarrow 638$	687	$675 \leftarrow 687$	$680 \leftarrow 687,\ 663 \leftarrow 679$
641	$631 \leftarrow 641$	$631 \leftarrow 641,\ 620 \leftarrow 630$	688		$682 \leftarrow 688,\ 649 \leftarrow 681$
642	$524 \leftarrow 642$	$640 \leftarrow 642,\ 612 \leftarrow 639$	689	$676 \leftarrow 689$	$688 \leftarrow 689,\ 673 \leftarrow 687$
643		$641 \leftarrow 643,\ 631 \leftarrow 640$	690		$688 \leftarrow 690,\ 681 \leftarrow 687$
644		$633 \leftarrow 644,\ 620 \leftarrow 632$	691		$681 \leftarrow 691,\ 662 \leftarrow 680$
645		$640 \leftarrow 645,\ 614 \leftarrow 639$	692	$394 \leftarrow 692$	$692 \leftarrow 692,\ 661 \leftarrow 691$
646	$398 \leftarrow 646$	$644 \leftarrow 646,\ 629 \leftarrow 643$	693		$693 \leftarrow 693,\ 671 \leftarrow 692$
647	$643 \leftarrow 647$	$647 \leftarrow 647,\ 643 \leftarrow 646$	694		$689 \leftarrow 694,\ 644 \leftarrow 688$
648		$648 \leftarrow 648,\ 626 \leftarrow 647$	695	$484 \leftarrow 695$	$692 \leftarrow 695,\ 681 \leftarrow 691$
649	$613 \leftarrow 649$	$639 \leftarrow 649,\ 620 \leftarrow 638$	696		$684 \leftarrow 696,\ 651 \leftarrow 683$
650	$648 \leftarrow 650$	$648 \leftarrow 650,\ 645 \leftarrow 647$	697	$431 \leftarrow 697$	$688 \leftarrow 697,\ 674 \leftarrow 687$
651		$626 \leftarrow 651,\ 599 \leftarrow 625$	698	$484 \leftarrow 698$	$684 \leftarrow 698,\ 668 \leftarrow 683$
652	$560 \leftarrow 652$	$652 \leftarrow 652,\ 626 \leftarrow 651$	699		$669 \leftarrow 699,\ 624 \leftarrow 668$
653		$651 \leftarrow 653,\ 642 \leftarrow 650$	700		$695 \leftarrow 700,\ 680 \leftarrow 694$
654		$634 \leftarrow 654,\ 594 \leftarrow 633$	701		$691 \leftarrow 701,\ 678 \leftarrow 690$
655	$568 \leftarrow 655$	$647 \leftarrow 655,\ 631 \leftarrow 646$	702	$666 \leftarrow 702$	$666 \leftarrow 702,\ 629 \leftarrow 665$
656		$650 \leftarrow 656,\ 631 \leftarrow 649$	703		$698 \leftarrow 703,\ 690 \leftarrow 697$
657	$620 \leftarrow 657$	$657 \leftarrow 657,\ 650 \leftarrow 656$	704		$695 \leftarrow 704,\ 614 \leftarrow 694$
658	$604 \leftarrow 658$	$652 \leftarrow 658,\ 644 \leftarrow 651$	705	$687 \leftarrow 705$	$705 \leftarrow 705,\ 698 \leftarrow 704$
659		$647 \leftarrow 659,\ 614 \leftarrow 646$	706		$684 \leftarrow 706,\ 622 \leftarrow 683$
660		$647 \leftarrow 660,\ 612 \leftarrow 646$	707		$694 \leftarrow 707,\ 679 \leftarrow 693$
661		$659 \leftarrow 661,\ 624 \leftarrow 658$	708	$422 \leftarrow 708$	$702 \leftarrow 708,\ 672 \leftarrow 701$
662	$366 \leftarrow 662$	$659 \leftarrow 662,\ 646 \leftarrow 658$	709		$709 \leftarrow 709,\ 706 \leftarrow 708$
663	$407 \leftarrow 663$	$657 \leftarrow 663,\ 627 \leftarrow 656$	710		$710 \leftarrow 710,\ 696 \leftarrow 709$
664		$664 \leftarrow 664,\ 625 \leftarrow 663$	711	$620 \leftarrow 711$	$709 \leftarrow 711,\ 698 \leftarrow 708$
665	$633 \leftarrow 665$	$661 \leftarrow 665,\ 642 \leftarrow 660$	712		$704 \leftarrow 712,\ 683 \leftarrow 703$
666		$664 \leftarrow 666,\ 633 \leftarrow 663$	713	$673 \leftarrow 713$	$707 \leftarrow 713,\ 697 \leftarrow 706$
667		$658 \leftarrow 667,\ 647 \leftarrow 657$	714	$692 \leftarrow 714$	$708 \leftarrow 714,\ 683 \leftarrow 707$
668		$663 \leftarrow 668,\ 640 \leftarrow 662$	715		$715 \leftarrow 715,\ 709 \leftarrow 714$
669		$649 \leftarrow 669,\ 611 \leftarrow 648$	716	$534 \leftarrow 716$	$704 \leftarrow 716,\ 684 \leftarrow 703$
670	$518 \leftarrow 670$	$670 \leftarrow 670,\ 665 \leftarrow 669$	717		$708 \leftarrow 717,\ 687 \leftarrow 707$
671	$657 \leftarrow 671$	$669 \leftarrow 671,\ 657 \leftarrow 668$	718		$718 \leftarrow 718,\ 689 \leftarrow 717$
672		$668 \leftarrow 672,\ 662 \leftarrow 667$	719	$570 \leftarrow 719$	$713 \leftarrow 719,\ 705 \leftarrow 712$
673	$646 \leftarrow 673$	$673 \leftarrow 673,\ 653 \leftarrow 672$	720		$692 \leftarrow 720,\ 662 \leftarrow 691$
674		$672 \leftarrow 674,\ 658 \leftarrow 671$	721	$713 \leftarrow 721$	$721 \leftarrow 721,\ 713 \leftarrow 720$
675		$671 \leftarrow 675,\ 608 \leftarrow 670$	722	$492 \leftarrow 722$	$719 \leftarrow 722,\ 680 \leftarrow 718$
676	$436 \leftarrow 676$	$668 \leftarrow 676,\ 648 \leftarrow 667$	723		$723 \leftarrow 723,\ 692 \leftarrow 722$
677		$677 \leftarrow 677,\ 647 \leftarrow 676$	724		$720 \leftarrow 724,\ 712 \leftarrow 719$
678		$674 \leftarrow 678,\ 648 \leftarrow 673$	725		$719 \leftarrow 725,\ 701 \leftarrow 718$
679	$614 \leftarrow 679$	$674 \leftarrow 679,\ 653 \leftarrow 673$	726	$722 \leftarrow 726$	$726 \leftarrow 726,\ 722 \leftarrow 725$
680		$667 \leftarrow 680,\ 636 \leftarrow 666$	727	$548 \leftarrow 727$	$721 \leftarrow 727,\ 710 \leftarrow 720$

Continued ...

n	2-tap MFSR	3-tap MFSR	n	2-tap MFSR	3-tap MFSR
728		$694 \leftarrow 728,\ 651 \leftarrow 693$	759	$662 \leftarrow 759$	$753 \leftarrow 759,\ 701 \leftarrow 752$
729	$672 \leftarrow 729$	$722 \leftarrow 729,\ 705 \leftarrow 721$	760		$758 \leftarrow 760,\ 719 \leftarrow 757$
730	$584 \leftarrow 730$	$727 \leftarrow 730,\ 712 \leftarrow 726$	761	$759 \leftarrow 761$	$761 \leftarrow 761,\ 759 \leftarrow 760$
731		$730 \leftarrow 731,\ 724 \leftarrow 729$	762	$680 \leftarrow 762$	$715 \leftarrow 762,\ 648 \leftarrow 714$
732		$730 \leftarrow 732,\ 726 \leftarrow 729$	763		$748 \leftarrow 763,\ 730 \leftarrow 747$
733		$729 \leftarrow 733,\ 722 \leftarrow 728$	764		$753 \leftarrow 764,\ 738 \leftarrow 752$
734		$728 \leftarrow 734,\ 695 \leftarrow 727$	765		$756 \leftarrow 765,\ 737 \leftarrow 755$
735	$692 \leftarrow 735$	$730 \leftarrow 735,\ 713 \leftarrow 729$	766		$744 \leftarrow 766,\ 713 \leftarrow 743$
736		$732 \leftarrow 736,\ 703 \leftarrow 731$	767	$600 \leftarrow 767$	$757 \leftarrow 767,\ 733 \leftarrow 756$
737	$733 \leftarrow 737$	$737 \leftarrow 737,\ 733 \leftarrow 736$	768		$738 \leftarrow 768,\ 689 \leftarrow 737$
738	$392 \leftarrow 738$	$728 \leftarrow 738,\ 692 \leftarrow 727$	769	$650 \leftarrow 769$	$759 \leftarrow 769,\ 740 \leftarrow 758$
739		$739 \leftarrow 739,\ 716 \leftarrow 738$	770		$760 \leftarrow 770,\ 745 \leftarrow 759$
740	$588 \leftarrow 740$	$730 \leftarrow 740,\ 697 \leftarrow 729$	771		$763 \leftarrow 771,\ 738 \leftarrow 762$
741		$721 \leftarrow 741,\ 683 \leftarrow 720$	772	$766 \leftarrow 772$	$766 \leftarrow 772,\ 759 \leftarrow 765$
742		$728 \leftarrow 742,\ 671 \leftarrow 727$	773		$757 \leftarrow 773,\ 715 \leftarrow 756$
743	$654 \leftarrow 743$	$743 \leftarrow 743,\ 731 \leftarrow 742$	774	$590 \leftarrow 774$	$766 \leftarrow 774,\ 750 \leftarrow 765$
744		$736 \leftarrow 744,\ 699 \leftarrow 735$	775	$409 \leftarrow 775$	$772 \leftarrow 775,\ 757 \leftarrow 771$
745	$488 \leftarrow 745$	$742 \leftarrow 745,\ 718 \leftarrow 741$	776		$760 \leftarrow 776,\ 717 \leftarrow 759$
746	$396 \leftarrow 746$	$726 \leftarrow 746,\ 697 \leftarrow 725$	777	$749 \leftarrow 777$	$762 \leftarrow 777,\ 732 \leftarrow 761$
747		$744 \leftarrow 747,\ 738 \leftarrow 743$	778	$404 \leftarrow 778$	$776 \leftarrow 778,\ 760 \leftarrow 775$
748		$742 \leftarrow 748,\ 722 \leftarrow 741$	779		$774 \leftarrow 779,\ 760 \leftarrow 773$
749		$749 \leftarrow 749,\ 743 \leftarrow 748$	780		$774 \leftarrow 780,\ 710 \leftarrow 773$
750		$742 \leftarrow 750,\ 668 \leftarrow 741$	781		$773 \leftarrow 781,\ 759 \leftarrow 772$
751	$734 \leftarrow 751$	$750 \leftarrow 751,\ 734 \leftarrow 749$	782	$454 \leftarrow 782$	$762 \leftarrow 782,\ 722 \leftarrow 761$
752		$746 \leftarrow 752,\ 619 \leftarrow 745$	783	$716 \leftarrow 783$	$773 \leftarrow 783,\ 747 \leftarrow 772$
753	$596 \leftarrow 753$	$749 \leftarrow 753,\ 741 \leftarrow 748$	784		$771 \leftarrow 784,\ 726 \leftarrow 770$
754	$736 \leftarrow 754$	$746 \leftarrow 754,\ 733 \leftarrow 745$	785	$694 \leftarrow 785$	$783 \leftarrow 785,\ 775 \leftarrow 782$
755		$746 \leftarrow 755,\ 734 \leftarrow 745$	786		$781 \leftarrow 786,\ 756 \leftarrow 780$
756	$408 \leftarrow 756$	$747 \leftarrow 756,\ 684 \leftarrow 746$	1024		$991 \leftarrow 1024,\ 940 \leftarrow 990$
757		$757 \leftarrow 757,\ 751 \leftarrow 756$	2048		$2030 \leftarrow 2048,\ 1925 \leftarrow 2029$
758		$751 \leftarrow 758,\ 706 \leftarrow 750$	4096		$4079 \leftarrow 4096,\ 3944 \leftarrow 4078$

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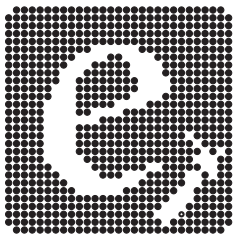

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