PROOF OF THE CONTINUED FRACTION CONJECTURE FOR $(a,b)=(z^5+z^3+z^2, z+1)$

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Abstract. The continued fraction conjecture claims that the continued fraction defined by the (a,b)-Thue-Morse sequence is algebraic over $\mathbb{F}_2(x)$ for all pairs of distinct elements (a,b) in $\mathbb{F}_2[x]\setminus\mathbb{F}_2$. In this paper we prove the conjecture for $(a,b)=(z^5+z^3+z^2, z+1)$.

1. Introduction

Let $\mathbb{F}_2$ be the finite field of cardinality 2. Given a sequence of polynomials $\mathbf{a}=(a_0(z), a_1(z), a_2(z), \ldots)$ of elements from $\mathbb{F}_2[z]\setminus\mathbb{F}_2$, we define the infinite continued fraction

$$\mathrm{CF}(\mathbf{a}(z)) = \cfrac{1}{a_0(z)+\cfrac{1}{a_1(z)+\cfrac{1}{a_2(z)+\cfrac{1}{\ddots}}}} \tag{1.1}$$

as the limit of the finite continued fractions

$$\mathrm{CF}_n(\mathbf{a}(z)) = \cfrac{1}{a_0(z)+\cfrac{1}{a_1(z)+\cfrac{1}{\ddots+\cfrac{1}{a_n(z)}}}} \in \mathbb{F}_2((1/z)). \tag{1.2}$$

Conversely, each power series in $\mathbb{F}_2[[1/z]]$ without constant term

$$c_{-1}z^{-1}+c_{-2}z^{-2}+c_{-3}z^{-3}+\cdots \tag{1.3}$$

admits a continued fraction expansion of form (1.1).

Let a and b be two distinct elements from $\mathbb{F}_2[z]\setminus\mathbb{F}_2$. We consider the continued fraction (1.1) associated with the (a,b)-Thue-Morse sequence

$$\mathbf{t}=(t_0(z), t_1(z), t_2(z), \ldots) = (a,b,b,a,b,a,a,b,\ldots)$$

that we shall denote

$$\mathrm{CF}(a,b) := \mathrm{CF}(\mathbf{t}). \tag{1.4}$$

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Theorem 1.1. *When $(a, b) = (z^5 + z^3 + z^2, z + 1)$, the two power series* $\mathrm{CF}(a, b)$ *and* $\mathrm{CF}(b, a)$ *are algebraic over* $\mathbb{F}_2(z)$, *with minimal polynomials of the form*

$$p_4(z)y^4 + p_3(z)y^3 + p_2(z)y^2 + p_1(z)y + p_0(z) = 0$$

where, for $\mathrm{CF}(a, b)$,

$$\begin{aligned}
p_0(z) &= z^{18} + z^{17} + z^{16} + z^{13} + z^{12} + z^{11} + z^{10} + z^8 + z^7 + z^5 + z^2 + 1,\\
p_1(z) &= z^{23} + z^{22} + z^{19} + z^{16} + z^{15} + z^{11} + z^9 + z^7 + z^6 + z^4 + z^3 + z^2,\\
p_2(z) &= z^{24} + z^{22} + z^{16} + z^{12} + z^{10} + z^8 + z^6 + z^4,\\
p_3(z) &= z^{23} + z^{22} + z^{19} + z^{16} + z^{15} + z^{11} + z^9 + z^7 + z^6 + z^4 + z^3 + z^2,\\
p_4(z) &= z^{22} + z^{18} + z^{17} + z^{16} + z^{13} + z^{12} + z^{11} + z^7 + z^6 + z^5 + z^2,
\end{aligned}$$

and for $\mathrm{CF}(b, a)$,

$$\begin{aligned}
p_0(z) &= z^{20} + z^{18} + z^{17} + z^{16} + z^{13} + z^{11} + z^{10} + z^7 + z^5 + z^4 + z^2,\\
p_1(z) &= z^{23} + z^{22} + z^{19} + z^{16} + z^{15} + z^{11} + z^9 + z^7 + z^6 + z^4 + z^3 + z^2,\\
p_2(z) &= z^{24} + z^{22} + z^{16} + z^{12} + z^{10} + z^8 + z^6 + z^4,\\
p_3(z) &= z^{23} + z^{22} + z^{19} + z^{16} + z^{15} + z^{11} + z^9 + z^7 + z^6 + z^4 + z^3 + z^2,\\
p_4(z) &= z^{22} + z^{20} + z^{18} + z^{17} + z^{16} + z^{13} + z^{11} + z^8 + z^7 + z^6 + z^5 + z^4 + z^2 + 1
\end{aligned}$$

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2. Proof

Define the sequences of polynomials $(P_n(z))_{n\geq 0}$ and $(Q_n(z))_{n\geq 0}$ by

$$\begin{pmatrix} P_n(z) & Q_n(z) \\ P_{n-1}(z) & Q_{n-1}(z) \end{pmatrix} := \begin{pmatrix} t_n(z) & 1 \\ 1 & 0 \end{pmatrix} \begin{pmatrix} t_{n-1}(z) & 1 \\ 1 & 0 \end{pmatrix} \cdots \begin{pmatrix} t_0(z) & 1 \\ 1 & 0 \end{pmatrix} \begin{pmatrix} 0 & 1 \\ 1 & 0 \end{pmatrix}.$$

By the basic properties of continued fractions, we have

$$\mathrm{CF}_n(a, b) = \frac{P_n(z)}{Q_n(z)} \in \mathbb{F}_2((1/z)). \tag{2.1}$$

As formula (2.1) is not efficient for calculating $\mathrm{CF}_n(a, b)$, a fast method is to be derived and described as follows. Define

$$\begin{aligned}
M_n(x) &= x^{\deg(t_{2^n-1})} \begin{pmatrix} t_{2^n-1}(1/x) & 1 \\ 1 & 0 \end{pmatrix} \times x^{\deg(t_{2^n-2})} \begin{pmatrix} t_{2^n-2}(1/x) & 1 \\ 1 & 0 \end{pmatrix} \times \\
&\qquad \cdots \times x^{\deg(t_0)} \begin{pmatrix} t_0(1/x) & 1 \\ 1 & 0 \end{pmatrix},\\
W_n(x) &= x^{\deg(\bar t_{2^n-1})} \begin{pmatrix} \bar t_{2^n-1}(1/x) & 1 \\ 1 & 0 \end{pmatrix} \times x^{\deg(\bar t_{2^n-2})} \begin{pmatrix} \bar t_{2^n-2}(1/x) & 1 \\ 1 & 0 \end{pmatrix} \times \\
&\qquad \cdots \times x^{\deg(\bar t_0)} \begin{pmatrix} \bar t_0(1/x) & 1 \\ 1 & 0 \end{pmatrix},
\end{aligned}$$

where $\bar{\mathbf{t}}$ is the (b, a)-Thue-Morse sequence. By the properties of the Thue-Morse sequence, we have for $n \geq 0$

$$\begin{aligned}
M_{n+1}(x) &= W_n(x) \cdot M_n(x),\\
W_{n+1}(x) &= M_n(x) \cdot W_n(x).
\end{aligned}$$

Let $x := 1/z$. For each non-zero polynomial $P(z)$, define $\tilde{P}(x)$ to be $P(1/x)$. Then,

$$\mathrm{CF}_n(a,b) = \frac{P_n(z)}{Q_n(z)} = \frac{\tilde{P}_n(x)}{\tilde{Q}_n(x)} \in \mathbb{F}_2((x)) = \mathbb{F}_2((1/z)).$$

Comparing the definition of $M_n(x)$ with the definition of $P_n(x)$ and $Q_n(x)$, we see that

$$M_n(x)_{0,1} = x^{d_n}\tilde{P}_{2^n-1}(x),$$
$$M_n(x)_{0,0} = x^{d_n}\tilde{Q}_{2^n-1}(x),$$

for some positive integer d_n. Hence,

$$\mathrm{CF}_{2^{2n}-1}(a,b) = \frac{\tilde{P}_{2^{2n}-1}(x)}{\tilde{Q}_{2^{2n}-1}(x)} = \frac{M_{2n}(x)_{0,1}}{M_{2n}(x)_{0,0}}. \tag{2.2}$$

Therefore, by the convergence theorem of continued fraction, the algebraicity of $\mathrm{CF}(a,b)$ will be established if it is shown that both $M_{2n}(x)_{0,1}$ and $M_{2n}(x)_{0,0}$ converge to algebraic series in $\mathbb{F}_2[[x]]$.

Actually, we will prove that for all $0 \le i,j \le 1$ the four sequences $(M_{2n}(x)_{i,j})_n$, $(M_{2n+1}(x)_{i,j})_n$, $(W_{2n}(x)_{i,j})_n$, and $(W_{2n+1}(x)_{i,j})_n$ converge to algebraic series in $\mathbb{F}_2[[x]]$. For this purpose, we define four 2×2 matrices M^e, M^o, W^e, W^o as follows: For each $T \in \{M^e, M^o, W^e, W^o\}$ and $0 \le i,j \le 1$, $T_{i,j}$ is defined to be the unique solution in $\mathbb{F}_2[[x]]$ of the polynomial $\phi(T,i,j)$ under certain initial conditions; the polynomials $\phi(T,i,j)$ and initial conditions are given in Section 3. We will prove that these four matrices, whose components are algebraic by definition, are the limits of $(M_{2n}(x))_n$, $(M_{2n+1}(x))_n$, $(W_{2n}(x))_n$, and $(W_{2n+1}(x))_n$.

Let us explain how the polynomials $\phi(T,i,j)$ and initial conditions are found, and why the solutions exist and are unique. For $0 \le i,j \le 1$, the the coefficients of the polynomial $\phi(M^e,i,j)$ (resp. $\phi(M^o,i,j)$, $\phi(W^e,i,j)$, and $\phi(W^o,i,j)$) are the Padé-Hermite approximants of type

$$(150, 150, 150, 150, 150)$$

of the vector

$$(1, T^3, T^6, T^9, T^{12}),$$

where $T = M_{12,i,j}$ (resp. $M_{11,i,j}$, $W_{12,i,j}$, and $W_{11,i,j}$), found by the Derksen algorithm. We take the first 8 terms of $M_{12,i,j}$ (resp. $M_{11,i,j}$, $W_{12,i,j}$, and $W_{11,i,j}$) as initial conditions for $\phi(M^e,i,j)$ (resp. $\phi(M^o,i,j)$, $\phi(W^e,i,j)$, and $\phi(W^o,i,j)$). The following fact will be used to ensure that the solution exists and is unique: let $P(x,y) \in \mathbb{F}_2[x,y]$ and for each series $f(x) = \sum_{n=0}^{\infty} a_n x^n \in \mathbb{F}_2[[x]]$ denote the partial sum $\sum_{j=0}^{n-1} a_j x^j$ by $f_n(x)$ for $n \ge 0$. If for some $n \ge 0$ and $a_0, a_1, \ldots, a_{n-1} \in \mathbb{F}_2$ $P(x, \sum_{j=0}^{n-1} a_j x^j) = O(x^n)$ and $Q(x,y) := P(x, \sum_{j=0}^{n-1} a_j x^j + x^n y)$ can be written as $x^m \sum_{j=0}^{\infty} q_j(x) y^j$ where $q_j(x)$ are polynomials for $j \ge 0$, $q_1(0) = 1$, and $q_j(0) = 0$ for $j > 1$, then there exists a unique solution $f(x) \in \mathbb{F}_2[[x]]$ of $P(x, f(x)) = 0$ that satisfies the initial condition $f_n(x) = \sum_{j=0}^{n-1} a_j x^j$.

We state two lemmas concerning the four matrices M^e, M^o, W^e, W^o. The first one is about relations between them; the second, about the structure of the each matrix.

Lemma 2.1. *We have*

$$M^e = W^o \cdot M^o, \tag{2.3}$$

$$M^o = W^e \cdot M^e, \tag{2.4}$$

$$W^e = M^o \cdot W^o, \tag{2.5}$$

$$W^o = M^e \cdot W^e. \tag{2.6}$$

Proof. We give the proof of the identity

$$M^e_{0,0} = W^o_{0,0} M^o_{0,0} + W^o_{0,1} M^o_{1,0},$$

the proofs of the others being similar.

First, we compute the minimal polynomials of $W^o_{0,0}M^o_{0,0}$ and $W^o_{0,1}M^o_{1,0}$. We know that

$$P(x,y) = \mathrm{Res}_z \left(\phi(W^o,0,0)(x,z),\ z^{12} \cdot \phi(M^o,0,0)(x,y/z)\right)$$

is an annihilating polynomial of $W^o_{0,0}M^o_{0,0}$. We use Padé-Hermite approximation to find a candidate for the minimal polynomial of $W^o_{0,0}M^o_{0,0}$, that will be called $\phi_0(x,y)$. To prove that $\phi_0(x,y)$ is indeed the minimal polynomial, it suffices to prove that it is an irreducible factor of $P(x,y)$ of multiplicity m and that $Q(x,y) := P(x,y)/\phi_0(x,y)^m$ is not an annihilating polynomial of $W^o_{0,0}M^o_{0,0}$. We verify the first point directly. For the second point, we truncate $W^o_{0,0}M^o_{0,0}$ to order 540 and substitute it for y in $Q(x,y)$. We get a series of valuation less than 540, which proves that $Q(x,y)$ is not an annihilating polynomial of $W^o_{0,0}M^o_{0,0}$. We find the minimal polynomial $\phi_1(x,y)$ of $W^o_{0,1}M^o_{1,0}$ in a similar way.

Now we prove that $\phi(M^e,0,0)$ is the minimal polynomial of $W^o_{0,0}M^o_{0,0}+W^o_{0,1}M^o_{1,0}$. We know that

$$S(x,y) = \mathrm{Res}_z \left(\phi_0(x,z),\ \phi_1(x,y+z)\right)$$

is an annihilating of $W^o_{0,0}M^o_{0,0} + W^o_{0,1}M^o_{1,0}$. We verify that $\phi(M^e,0,0)$ is an irreducible factor of $S(x,y)$ of multiplicity μ, and that $Q(x,y) := S(x,y)/\phi(M^e,0,0)^\mu$ is not an annihilating polynomial of $W^o_{0,0}M^o_{0,0}+W^o_{0,1}M^o_{1,0}$. To see the last point, we truncate $W^o_{0,0}M^o_{0,0} + W^o_{0,1}M^o_{1,0}$ to order 660 and substitute it for y in $Q(x,y)$. We get a series of valuation less than 660, and therefore $Q(x,y)$ is not an annihilating polynomial of $W^o_{0,0}M^o_{0,0} + W^o_{0,1}M^o_{1,0}$.

Finally, the first 16 terms of $M^e_{0,0}$ and $W^o_{0,0}M^o_{0,0} + W^o_{0,1}M^o_{1,0}$ coincide. As these first terms determine a unique solution of $\phi(M^e,0,0)$, we know that the two series are one and the same. □

Define

$$R^e = \begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix} \qquad \text{and} \qquad R^o = \begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix}.$$

Lemma 2.2. *For all integers $k \geq 2$ and $u = 2^{2k-1}$, the following identities hold.*

$$\begin{aligned} M^e[:12u] = {} & M^e[:6u] + x^u M^e[:5u] + x^{3u} M^e[:3u] + x^u M^e[:6u] + x^{2u} M^e[:5u] \\ & + x^{4u} M^e[:3u] + x^{2u} M^e[:6u] + x^{3u} M^e[:5u] + x^{5u} M^e[:3u] \\ & + x^{4u} M^e[:6u] + x^{5u} M^e[:5u] + x^{7u} M^e[:3u] + x^{6u} M^e[:6u] \\ & + (x^{6u} + x^{7u} + x^{8u} + x^{10u}) R^e, \\ W^e[:12u] = {} & W^e[:6u] + x^u W^e[:5u] + x^{3u} W^e[:3u] + x^u W^e[:6u] + x^{2u} W^e[:5u] \\ & + x^{4u} W^e[:3u] + x^{2u} W^e[:6u] + x^{3u} W^e[:5u] + x^{5u} W^e[:3u] \end{aligned}$$

$$+ x^{4u}W^e[:6u] + x^{5u}W^e[:5u] + x^{7u}W^e[:3u] + x^{6u}W^e[:6u] + (x^{6u} + x^{7u} + x^{8u} + x^{10u})R^e.$$

For all integers $k \geq 2$ and $u = 2^{2k}$, the following identities hold.

$$\begin{aligned} M^o[:12u] = {} & M^o[:6u] + x^u M^o[:5u] + x^{3u}M^o[:3u] + x^u M^o[:6u] + x^{2u}M^o[:5u] \\ & + x^{4u}M^o[:3u] + x^{2u}M^o[:6u] + x^{3u}M^o[:5u] + x^{5u}M^o[:3u] \\ & + x^{4u}M^o[:6u] + x^{5u}M^o[:5u] + x^{7u}M^o[:3u] + x^{6u}M^o[:6u] \\ & + (x^{6u} + x^{7u} + x^{8u} + x^{10u})R^o, \\ W^o[:12u] = {} & W^o[:6u] + x^u W^o[:5u] + x^{3u}W^o[:3u] + x^u W^o[:6u] + x^{2u}W^o[:5u] \\ & + x^{4u}W^o[:3u] + x^{2u}W^o[:6u] + x^{3u}W^o[:5u] + x^{5u}W^o[:3u] \\ & + x^{4u}W^o[:6u] + x^{5u}W^o[:5u] + x^{7u}W^o[:3u] + x^{6u}W^o[:6u] \\ & + (x^{6u} + x^{7u} + x^{8u} + x^{10u})R^o. \end{aligned}$$

Proof. To prove Lemma 2.2 we first construct an automaton for each sequence concerned, and then transform the conditions on infinitely many k's into finitely many conditions on the states of the automaton. In the following, we will prove that for $T = M^o_{0,0}$, for all integer $k \geq 2$ and $u = 2^{2k}$,

$$\begin{aligned} T[:12u] = {} & T[:6u] + x^u T[:5u] + x^{3u}T[:3u] + x^u T[:6u] + x^{2u}T[:5u] + x^{4u}T[:3u] \\ & + x^{2u}T[:6u] + x^{3u}T[:5u] + x^{5u}T[:3u] + x^{4u}T[:6u] + x^{5u}T[:5u] \\ & + x^{7u}T[:3u] + x^{6u}T[:6u]. \end{aligned}$$

The proof of the other 15 cases are similar. We break down the above identity into 6 parts:

$$\begin{aligned} 0 &= x^{6u}T[:u] + x^{3u}T[3u:4u] + x^u T[5u:6u] + T[6u:7u], \\ 0 &= x^{7u}T[:u] + x^{6u}T[u:2u] + x^{4u}T[3u:4u] + x^{3u}T[4u:5u] \\ &\quad + x^{2u}T[5u:6u] + T[7u:8u], \\ 0 &= x^{7u}T[u:2u] + x^{6u}T[2u:3u] + x^{5u}T[3u:4u] + x^{4u}T[4u:5u] \\ &\quad + T[8u:9u], \\ 0 &= x^{7u}T[2u:3u] + x^{6u}T[3u:4u] + x^{5u}T[4u:5u] + x^{4u}T[5u:6u] \\ &\quad + T[9u:10u], \\ 0 &= x^{6u}T[4u:5u] + T[10u:11u], \\ 0 &= x^{6u}T[5u:6u] + T[11u:12u], \end{aligned}$$

which can be rewritten as

$$0 = T[[w]_2] + T[[11w]_2] + T[[101w]_2] + T[[110w]_2], \tag{2.7}$$

$$0 = T[[w]_2] + T[[1w]_2] + T[[11w]_2] + T[[100w]_2] + T[[101w]_2] + T[[111w]_2], \tag{2.8}$$

$$0 = T[[1w]_2] + T[[10w]_2] + T[[11w]_2] + T[[100w]_2] + T[[1000w]_2], \tag{2.9}$$

$$0 = T[[10w]_2] + T[[11w]_2] + T[[100w]_2] + T[[101w]_2] + T[[1001w]_2], \tag{2.10}$$

$$0 = T[[100w]_2] + T[[1010w]_2], \tag{2.11}$$

$$0 = T[[101w]_2] + T[[1011w]_2], \tag{2.12}$$

for all binary word w of length $2k$ and $w \neq 0^{2k}$, and

$$0 = T[[w]_2] + T[[11w]_2] + T[[101w]_2] + T[[110w]_2], \tag{2.13}$$

$$\begin{aligned} 0 = {} & T[[w]_2] + T[[1w]_2] + T[[11w]_2] + T[[100w]_2] + T[[101w]_2] \\ & + T[[111w]_2], \end{aligned} \tag{2.14}$$

$$0 = T[[1w]_2] + T[[10w]_2] + T[[11w]_2] + T[[100w]_2] + T[[1000w]_2], \tag{2.15}$$

$$0 = T[[10w]_2] + T[[11w]_2] + T[[100w]_2] + T[[101w]_2] + T[[1001w]_2], \tag{2.16}$$

$$0 = T[[100w]_2] + T[[1010w]_2], \tag{2.17}$$

$$0 = T[[101w]_2] + T[[1011w]_2], \tag{2.18}$$

for $w = 0^{2k}$.

First we calculate an 2-automaton that generates T from its minimal polynomial and its first terms. This automaton has 3288 states; its transition function and output function can be found in the annex. Let $A(s, w)$ denote the state reached after reading w from right to left starting from the state s, and τ the output function. Define

$$E_{2k} = \{A(i, w) : |w| = 2k, w \neq 0^{2k}\}.$$

Identities (2.7) through (2.18) can be written as

$$0 = \tau(A(s, \epsilon)) + \tau(A(s, 11)) + \tau(A(s, 101)) + \tau(A(s, 110)), \tag{2.19}$$

$$\begin{aligned} 0 = {} & \tau(A(s, \epsilon)) + \tau(A(s, 1)) + \tau(A(s, 11)) + \tau(A(s, 100)) \\ & + \tau(A(s, 101)) + \tau(A(s, 111)), \end{aligned} \tag{2.20}$$

$$\begin{aligned} 0 = {} & \tau(A(s, 1)) + \tau(A(s, 10)) + \tau(A(s, 11)) + \tau(A(s, 100)) \\ & + \tau(A(s, 1000)), \end{aligned} \tag{2.21}$$

$$\begin{aligned} 0 = {} & \tau(A(s, 10)) + \tau(A(s, 11)) + \tau(A(s, 100)) + \tau(A(s, 101)) \\ & + \tau(A(s, 1001)), \end{aligned} \tag{2.22}$$

$$0 = \tau(A(s, 100)) + \tau(A(s, 1010)), \tag{2.23}$$

$$0 = \tau(A(s, 101)) + \tau(A(s, 1011)), \tag{2.24}$$

for all $s \in E_{2k}$, and

$$0 = \tau(A(s, \epsilon)) + \tau(A(s, 11)) + \tau(A(s, 101)) + \tau(A(s, 110)), \tag{2.25}$$

$$\begin{aligned} 0 = {} & \tau(A(s, \epsilon)) + \tau(A(s, 1)) + \tau(A(s, 11)) + \tau(A(s, 100)) \\ & + \tau(A(s, 101)) + \tau(A(s, 111)), \end{aligned} \tag{2.26}$$

$$\begin{aligned} 0 = {} & \tau(A(s, 1)) + \tau(A(s, 10)) + \tau(A(s, 11)) + \tau(A(s, 100)) \\ & + \tau(A(s, 1000)), \end{aligned} \tag{2.27}$$

$$\begin{aligned} 0 = {} & \tau(A(s, 10)) + \tau(A(s, 11)) + \tau(A(s, 100)) + \tau(A(s, 101)) \\ & + \tau(A(s, 1001)), \end{aligned} \tag{2.28}$$

$$0 = \tau(A(s, 100)) + \tau(A(s, 1010)), \tag{2.29}$$

$$0 = \tau(A(s, 101)) + \tau(A(s, 1011)), \tag{2.30}$$

for $s = A(i, 0^{2k})$. We find that $(A(i, 0^{50}), E_{50}) = (A(i, 0^{22}), E_{22})$, so that we only have to verify that identities (2.19) through (2.30) hold for $2 \leq k \leq 25$, which turns out to be true. $\square$

In the following lemma, we express M_{2k}, M_{2k+1}, W_{2k}, and W_{2k+1} in terms of M^e, M^o, W^e, and W^o.

Lemma 2.3. *For all integer $k \geq 2$, and $u = 2^{2k-1}$,*

$$M_{2k} = M^e[:6u] + x^u M^e[:5u] + x^{3u} M^e[:3u] + x^{6u} R^e,$$
$$W_{2k} = W^e[:6u] + x^u W^e[:5u] + x^{3u} W^e[:3u] + x^{6u} R^e.$$

For all integer $k \geq 2$, and $u = 2^{2k}$,

$$M_{2k+1} = M^o[:6u] + x^u M^o[:5u] + x^{3u} M^o[:3u] + x^{6u} R^o,$$
$$W_{2k+1} = W^o[:6u] + x^u W^o[:5u] + x^{3u} W^o[:3u] + x^{6u} R^o.$$

Proof. We call the four identities in Lemma 2.3 also by the name M_{2k}, W_{2k}, M_{2k+1}, and W_{2k+1}. For $n = 2$, the identities can be verified directly. For $n \geq 2$, we claim that

$$M_{2k} \wedge W_{2k} \Rightarrow M_{2k+1} \wedge W_{2k+1},$$
$$M_{2k+1} \wedge W_{2k+1} \Rightarrow M_{2k+2} \wedge W_{2k+2}.$$

We give the proof of

$$M_{2k} \wedge W_{2k} \Rightarrow M_{2k+1},$$

the other ones being similar. Set $u = 2^{2k}$ and $v = 2^{2k-1}$. By definition and induction hypothesis, the left side of identity M_{2k+1} is equal to

$$\begin{aligned} W_{2k} M_{2k} = \big(&W^e[:6v] + x^v W^e[:5v] + x^{3v} W^e[:3v] + x^{6u} R^e\big) \times \big(M^e[:6v] \\ &+ x^v M^e[:5v] + x^{3v} M^e[:3v] + x^{6u} R^e\big); \end{aligned} \tag{2.31}$$

Call this expression lhs. Note that both sides of identity M_{2k+1} have the same term of highest degree $x^{12v} R^o$. Therefore we only need to prove that their difference is $O(x^{12v})$. Using Lemma 2.1 it can be seen that the right side of identity M_{2k+1} is congruent, modulo x^{12v}, to

$$W^e[:12v] M^e[:12v] + x^{2v} W^e[:10v] M^e[:10v] + x^{6v} W^e[:6v] M^e[:6v].$$

For all $n \leq 12$, replace the occurrences of $W^e[:n \cdot v]$ and $M^e[:n \cdot v]$ in the above expression by the reduction modulo $x^{n \cdot v}$ of the right side of the corresponding identity in Lemma 2.2 and get a new expression, which we call rhs. Define

$$\begin{aligned} X &:= x^v, \\ a_n &:= W^e[n \cdot v : (n+1) \cdot v]/X^n, \\ b_n &:= M^e[n \cdot v : (n+1) \cdot v]/X^n, \\ c &:= R^e. \end{aligned}$$

Using the notation introduced above, we can represent the expressions lhs (2.31) and rhs as polynomials in $\mathbb{F}_2[a_1, ..., a_{12}, b_1, ..., b_{12}, c][X]$. Note that it is not a problem that a_j commutes with b_k while W^e does not commute with M^e, because in the expressions concerned, the products of W^e-terms and M^e-terms are always in the same order. We let the computer do the simplification and check that the difference between these two polynomials is indeed $O(X^{12})$, which completes the proof. $\square$

Proof of Theorem 1.1. We prove the theorem for $\mathrm{CF}(a, b)$; for $\mathrm{CF}(b, a)$, the proof is similar. By Lemma 2.3, we have For all $0 \leq j, k \leq 1$,

$$\lim_{n \to \infty} M_{2n,j,k} = M^e_{j,k},$$

$$\lim_{n\to\infty} M_{2n+1,j,k} = M^o_{j,k},$$
$$\lim_{n\to\infty} W_{2n,j,k} = W^e_{j,k},$$
$$\lim_{n\to\infty} W_{2n+1,j,k} = W^o_{j,k}.$$

Let $z = 1/x$. By the convergence theorem and identity (2.2),

$$\mathrm{CF}(a, b) = \frac{M^e_{0,1}(x)}{M^e_{0,0}(x)}.$$

By definition, $\phi(M^e, 0, 1)$ and $\phi(M^e, 0, 0)$ are minimal polynomials of $M^e_{0,1}$ and $M^e_{0,0}$. Therefore

$$P(x, y) = \mathrm{Res}_t\left(\phi(M^e, 0, 1)(x, t), y^{12}\phi(M^e, 0, 1)(x, t/y)\right)$$

is an annihilating polynomial of $f(x) = M^e_{0,1}/M^e_{0,0}$.

Define

$$Q(x, y) = q_4(x)y^4 + q_3(x)y^3 + q_2(x)y^2 + q_1(x)y + q_0(x),$$

where

$$\begin{aligned}
q_0(x) &= x^{24} + x^{22} + x^{19} + x^{17} + x^{16} + x^{14} + x^{13} + x^{12} + x^{11} + x^8 + x^7 + x^6,\\
q_1(x) &= x^{22} + x^{21} + x^{20} + x^{18} + x^{17} + x^{15} + x^{13} + x^9 + x^8 + x^5 + x^2 + x,\\
q_2(x) &= x^{20} + x^{18} + x^{16} + x^{14} + x^{12} + x^8 + x^2 + 1,\\
q_3(x) &= x^{22} + x^{21} + x^{20} + x^{18} + x^{17} + x^{15} + x^{13} + x^9 + x^8 + x^5 + x^2 + x,\\
q_4(x) &= x^{22} + x^{19} + x^{18} + x^{17} + x^{13} + x^{12} + x^{11} + x^8 + x^7 + x^6 + x^2.
\end{aligned}$$

The polynomial $Q(x, y)$ is the candidate for the minimal polynomial of $f(x)$ found by Padé-Hermite approximation. To prove that it is indeed the minimal polynomial of $f(x)$, we only need to prove that it is an irreducible factor of $P(x, y)$ of multiplicity m and $R(x, y) := P(x, y)/Q(x, y)^m$ is not an annihilating polynomial of $f(x)$. We verify the first point directly. For the second point, we find that when we truncate $f(x)$ to order 186, and substitute it for y in $R(z, y)$, we get a series with valuation smaller than 186, which proves that $R(z, y)$ is not an annihilating polynomial of $f(x)$. Finally, $z^{12}Q(1/z, y)$ is the minimal polynomial of $\mathrm{CF}(a, b) = f(1/z)$. □

3. Annexe

All 16 polynomials are of the form

$$p_0(x) + p_3(x)y^3 + p_6(x)y^6 + p_9(x)y^9 + p_{12}(x)y^{12}.$$

The coefficients $p_j(x)$ and the 16 initial terms to determine the solutions uniquely are given below.

For $\phi(M^e, 0, 0)$:

$$\begin{aligned}
p_0(x) &= x^{114} + x^{112} + x^{106} + x^{104} + x^{102} + x^{98} + x^{96} + x^{92} + x^{86} + x^{84} + x^{80}\\
&\quad + x^{78} + x^{76} + x^{74} + x^{72} + x^{68} + x^{64} + x^{44} + x^{38} + x^{36} + x^{22} + x^{20}\\
&\quad + x^{18} + x^{16} + x^{12},\\
p_3(x) &= x^{108} + x^{98} + x^{94} + x^{90} + x^{88} + x^{86} + x^{76} + x^{74} + x^{72} + x^{70} + x^{64}\\
&\quad + x^{62} + x^{60} + x^{56} + x^{46} + x^{44} + x^{42} + x^{40} + x^{36} + x^{28} + x^{26} + x^{24}\\
&\quad + x^{20} + x^{18} + x^{10} + x^8,
\end{aligned}$$

$$\begin{aligned}
p_6(x) &= x^{108} + x^{106} + x^{104} + x^{94} + x^{90} + x^{88} + x^{84} + x^{80} + x^{78} + x^{76} + x^{74} \\
&\quad + x^{72} + x^{70} + x^{68} + x^{60} + x^{58} + x^{50} + x^{44} + x^{38} + x^{36} + x^{32} + x^{30} \\
&\quad + x^{26} + x^{24} + x^{22} + x^{16} + x^{12} + x^{8} + x^{6} + x^{4} + x^{2} + 1, \\
p_9(x) &= x^{110} + x^{108} + x^{106} + x^{104} + x^{98} + x^{94} + x^{92} + x^{86} + x^{82} + x^{76} + x^{74} \\
&\quad + x^{72} + x^{60} + x^{58} + x^{50} + x^{48} + x^{44} + x^{42} + x^{40} + x^{38} + x^{30} + x^{26} \\
&\quad + x^{20} + x^{18} + x^{16} + x^{8} + x^{6} + x^{2}, \\
p_{12}(x) &= x^{110} + x^{108} + x^{104} + x^{102} + x^{100} + x^{96} + x^{94} + x^{92} + x^{88} + x^{86} + x^{84} \\
&\quad + x^{80} + x^{62} + x^{60} + x^{56} + x^{54} + x^{52} + x^{48} + x^{46} + x^{44} + x^{40} + x^{38} \\
&\quad + x^{36} + x^{32} + x^{14} + x^{12} + x^{8} + x^{6} + x^{4} + 1,
\end{aligned}$$

and the initial terms are [1, 0, 1, 0, 0, 0, 0, 0, 1, 0, 1, 0, 1, 0, 1, 0].

For $\phi(M^e, 0, 1)$:

$$\begin{aligned}
p_0(x) &= x^{126} + x^{121} + x^{120} + x^{119} + x^{117} + x^{116} + x^{115} + x^{112} + x^{109} + x^{108} \\
&\quad + x^{104} + x^{103} + x^{102} + x^{101} + x^{99} + x^{97} + x^{95} + x^{93} + x^{90} + x^{89} \\
&\quad + x^{88} + x^{83} + x^{81} + x^{79} + x^{78} + x^{75} + x^{74} + x^{73} + x^{71} + x^{70} + x^{69} \\
&\quad + x^{68} + x^{67} + x^{65} + x^{64} + x^{63} + x^{62} + x^{53} + x^{52} + x^{49} + x^{48} + x^{45} \\
&\quad + x^{44} + x^{43} + x^{41} + x^{37} + x^{34} + x^{31} + x^{30} + x^{29} + x^{24}, \\
p_3(x) &= x^{122} + x^{121} + x^{117} + x^{115} + x^{113} + x^{112} + x^{110} + x^{108} + x^{107} + x^{105} \\
&\quad + x^{104} + x^{103} + x^{100} + x^{98} + x^{93} + x^{91} + x^{90} + x^{88} + x^{86} + x^{85} + x^{84} \\
&\quad + x^{82} + x^{81} + x^{79} + x^{78} + x^{77} + x^{73} + x^{71} + x^{70} + x^{67} + x^{64} + x^{63} \\
&\quad + x^{60} + x^{57} + x^{34} + x^{33} + x^{29} + x^{27} + x^{25} + x^{24} + x^{22} + x^{20} + x^{19} \\
&\quad + x^{17} + x^{16} + x^{15} + x^{12} + x^{9}, \\
p_6(x) &= x^{120} + x^{117} + x^{115} + x^{112} + x^{111} + x^{107} + x^{105} + x^{101} + x^{100} + x^{99} \\
&\quad + x^{98} + x^{97} + x^{95} + x^{92} + x^{91} + x^{90} + x^{86} + x^{84} + x^{83} + x^{82} + x^{76} \\
&\quad + x^{73} + x^{71} + x^{70} + x^{66} + x^{63} + x^{62} + x^{61} + x^{59} + x^{58} + x^{56} + x^{54} \\
&\quad + x^{53} + x^{49} + x^{48} + x^{47} + x^{45} + x^{44} + x^{40} + x^{38} + x^{37} + x^{34} + x^{33} \\
&\quad + x^{32} + x^{22} + x^{19} + x^{17} + x^{16} + x^{12} + x^{9} + x^{7} + x^{6}, \\
p_9(x) &= x^{118} + x^{117} + x^{116} + x^{115} + x^{114} + x^{109} + x^{108} + x^{106} + x^{102} + x^{99} \\
&\quad + x^{98} + x^{97} + x^{93} + x^{92} + x^{89} + x^{76} + x^{75} + x^{71} + x^{69} + x^{68} + x^{66} \\
&\quad + x^{62} + x^{59} + x^{58} + x^{57} + x^{56} + x^{55} + x^{53} + x^{50} + x^{49} + x^{48} + x^{47} \\
&\quad + x^{45} + x^{42} + x^{41} + x^{38} + x^{35} + x^{34} + x^{33} + x^{32} + x^{31} + x^{30} + x^{28} \\
&\quad + x^{27} + x^{26} + x^{24} + x^{23} + x^{22} + x^{18} + x^{15} + x^{12} + x^{11} + x^{10} + x^{9} \\
&\quad + x^{8} + x^{6} + x^{5} + x^{3}, \\
p_{12}(x) &= x^{116} + x^{114} + x^{113} + x^{112} + x^{108} + x^{106} + x^{105} + x^{102} + x^{101} + x^{100} \\
&\quad + x^{92} + x^{90} + x^{89} + x^{86} + x^{85} + x^{82} + x^{81} + x^{80} + x^{68} + x^{66} + x^{65} \\
&\quad + x^{64} + x^{60} + x^{58} + x^{57} + x^{54} + x^{53} + x^{52} + x^{44} + x^{42} + x^{41} + x^{38}
\end{aligned}$$

$$+ x^{37} + x^{34} + x^{33} + x^{32} + x^{20} + x^{18} + x^{17} + x^{16} + x^{12} + x^{10} + x^{9} + x^{6} + x^{5} + x^{2} + x + 1,$$

and the initial terms are [0, 0, 0, 0, 0, 1, 0, 0, 1, 0, 1, 0, 0, 0, 1, 0].

For $\phi(M^e, 1, 0)$:

$$\begin{aligned}
p_0(x) = {} & x^{126} + x^{121} + x^{120} + x^{119} + x^{117} + x^{116} + x^{115} + x^{112} + x^{109} + x^{108} \\
& + x^{104} + x^{103} + x^{102} + x^{101} + x^{99} + x^{97} + x^{95} + x^{93} + x^{90} + x^{89} \\
& + x^{88} + x^{83} + x^{81} + x^{79} + x^{78} + x^{75} + x^{74} + x^{73} + x^{71} + x^{70} + x^{69} \\
& + x^{68} + x^{67} + x^{65} + x^{64} + x^{63} + x^{62} + x^{53} + x^{52} + x^{49} + x^{48} + x^{45} \\
& + x^{44} + x^{43} + x^{41} + x^{37} + x^{34} + x^{31} + x^{30} + x^{29} + x^{24}, \\
p_3(x) = {} & x^{122} + x^{121} + x^{117} + x^{115} + x^{113} + x^{112} + x^{110} + x^{108} + x^{107} + x^{105} \\
& + x^{104} + x^{103} + x^{100} + x^{98} + x^{93} + x^{91} + x^{90} + x^{88} + x^{86} + x^{85} + x^{84} \\
& + x^{82} + x^{81} + x^{79} + x^{78} + x^{77} + x^{73} + x^{71} + x^{70} + x^{67} + x^{64} + x^{63} \\
& + x^{60} + x^{57} + x^{34} + x^{33} + x^{29} + x^{27} + x^{25} + x^{24} + x^{22} + x^{20} + x^{19} \\
& + x^{17} + x^{16} + x^{15} + x^{12} + x^{9}, \\
p_6(x) = {} & x^{120} + x^{117} + x^{115} + x^{112} + x^{111} + x^{107} + x^{105} + x^{101} + x^{100} + x^{99} \\
& + x^{98} + x^{97} + x^{95} + x^{92} + x^{91} + x^{90} + x^{86} + x^{84} + x^{83} + x^{82} + x^{76} \\
& + x^{73} + x^{71} + x^{70} + x^{66} + x^{63} + x^{62} + x^{61} + x^{59} + x^{58} + x^{56} + x^{54} \\
& + x^{53} + x^{49} + x^{48} + x^{47} + x^{45} + x^{44} + x^{40} + x^{38} + x^{37} + x^{34} + x^{33} \\
& + x^{32} + x^{22} + x^{19} + x^{17} + x^{16} + x^{12} + x^{9} + x^{7} + x^{6}, \\
p_9(x) = {} & x^{118} + x^{117} + x^{116} + x^{115} + x^{114} + x^{109} + x^{108} + x^{106} + x^{102} + x^{99} \\
& + x^{98} + x^{97} + x^{93} + x^{92} + x^{89} + x^{76} + x^{75} + x^{71} + x^{69} + x^{68} + x^{66} \\
& + x^{62} + x^{59} + x^{58} + x^{57} + x^{56} + x^{55} + x^{53} + x^{50} + x^{49} + x^{48} + x^{47} \\
& + x^{45} + x^{42} + x^{41} + x^{38} + x^{35} + x^{34} + x^{33} + x^{32} + x^{31} + x^{30} + x^{28} \\
& + x^{27} + x^{26} + x^{24} + x^{23} + x^{22} + x^{18} + x^{15} + x^{12} + x^{11} + x^{10} + x^{9} \\
& + x^{8} + x^{6} + x^{5} + x^{3}, \\
p_{12}(x) = {} & x^{116} + x^{114} + x^{113} + x^{112} + x^{108} + x^{106} + x^{105} + x^{102} + x^{101} + x^{100} \\
& + x^{92} + x^{90} + x^{89} + x^{86} + x^{85} + x^{82} + x^{81} + x^{80} + x^{68} + x^{66} + x^{65} \\
& + x^{64} + x^{60} + x^{58} + x^{57} + x^{54} + x^{53} + x^{52} + x^{44} + x^{42} + x^{41} + x^{38} \\
& + x^{37} + x^{34} + x^{33} + x^{32} + x^{20} + x^{18} + x^{17} + x^{16} + x^{12} + x^{10} + x^{9} \\
& + x^{6} + x^{5} + x^{2} + x + 1,
\end{aligned}$$

and the initial terms are [0, 0, 0, 0, 0, 1, 0, 0, 1, 0, 1, 0, 0, 0, 1, 0].

For $\phi(M^e, 1, 1)$:

$$\begin{aligned}
p_0(x) = {} & x^{138} + x^{136} + x^{134} + x^{132} + x^{128} + x^{126} + x^{124} + x^{120} + x^{116} + x^{114} \\
& + x^{112} + x^{110} + x^{108} + x^{106} + x^{102} + x^{100} + x^{98} + x^{96} + x^{90} + x^{88} \\
& + x^{86} + x^{78} + x^{76} + x^{70} + x^{68} + x^{66} + x^{64} + x^{62} + x^{60} + x^{56} + x^{50}
\end{aligned}$$

$$\begin{aligned}
&+ x^{48} + x^{42} + x^{40} + x^{36},\\
p_3(x) &= x^{126} + x^{122} + x^{118} + x^{116} + x^{110} + x^{108} + x^{106} + x^{104} + x^{92} + x^{86}\\
&+ x^{70} + x^{68} + x^{56} + x^{54} + x^{50} + x^{40} + x^{34} + x^{32} + x^{28} + x^{24} + x^{20}\\
&+ x^{18} + x^{8} + x^{6},\\
p_6(x) &= x^{126} + x^{120} + x^{112} + x^{110} + x^{104} + x^{102} + x^{90} + x^{88} + x^{86} + x^{78}\\
&+ x^{68} + x^{66} + x^{64} + x^{60} + x^{50} + x^{48} + x^{44} + x^{42} + x^{36} + x^{34} + x^{32}\\
&+ x^{20} + x^{18} + x^{16} + x^{14} + x^{10} + x^{6} + 1,\\
p_9(x) &= x^{122} + x^{120} + x^{118} + x^{112} + x^{108} + x^{106} + x^{104} + x^{102} + x^{98} + x^{96}\\
&+ x^{90} + x^{86} + x^{84} + x^{82} + x^{78} + x^{76} + x^{74} + x^{56} + x^{46} + x^{40} + x^{34}\\
&+ x^{26} + x^{20} + x^{16} + x^{12} + x^{10} + x^{4} + x^{2},\\
p_{12}(x) &= x^{122} + x^{120} + x^{114} + x^{112} + x^{106} + x^{104} + x^{82} + x^{80} + x^{74} + x^{72}\\
&+ x^{66} + x^{64} + x^{58} + x^{56} + x^{34} + x^{32} + x^{26} + x^{24} + x^{18} + x^{16} + x^{2} + 1,
\end{aligned}$$

and the initial terms are [0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 1, 0, 1, 0, 1, 0].

For $\phi(W^e, 0, 0)$:

$$\begin{aligned}
p_0(x) &= x^{138} + x^{136} + x^{134} + x^{132} + x^{130} + x^{122} + x^{116} + x^{114} + x^{102} + x^{94}\\
&+ x^{90} + x^{88} + x^{86} + x^{84} + x^{80} + x^{76} + x^{70} + x^{64} + x^{60} + x^{58} + x^{54}\\
&+ x^{52} + x^{50} + x^{46} + x^{44} + x^{40} + x^{38} + x^{36} + x^{34} + x^{32} + x^{28} + x^{26}\\
&+ x^{20} + x^{18} + x^{16} + x^{14} + x^{12},\\
p_3(x) &= x^{126} + x^{122} + x^{116} + x^{112} + x^{110} + x^{108} + x^{106} + x^{104} + x^{102} + x^{98}\\
&+ x^{94} + x^{88} + x^{86} + x^{78} + x^{76} + x^{68} + x^{64} + x^{60} + x^{58} + x^{56} + x^{54}\\
&+ x^{52} + x^{48} + x^{46} + x^{42} + x^{38} + x^{34} + x^{32} + x^{28} + x^{26} + x^{22} + x^{18}\\
&+ x^{16} + x^{14} + x^{10} + x^{8},\\
p_6(x) &= x^{126} + x^{120} + x^{118} + x^{114} + x^{112} + x^{108} + x^{104} + x^{102} + x^{100} + x^{98}\\
&+ x^{90} + x^{84} + x^{82} + x^{80} + x^{76} + x^{74} + x^{72} + x^{70} + x^{68} + x^{66} + x^{56}\\
&+ x^{52} + x^{50} + x^{48} + x^{40} + x^{38} + x^{36} + x^{34} + x^{32} + x^{30} + x^{28} + x^{22}\\
&+ x^{18} + x^{10} + x^{8} + x^{6} + x^{4} + 1,\\
p_9(x) &= x^{122} + x^{120} + x^{118} + x^{112} + x^{108} + x^{106} + x^{104} + x^{102} + x^{98} + x^{96}\\
&+ x^{90} + x^{86} + x^{84} + x^{82} + x^{78} + x^{76} + x^{74} + x^{56} + x^{46} + x^{40} + x^{34}\\
&+ x^{26} + x^{20} + x^{16} + x^{12} + x^{10} + x^{4} + x^{2},\\
p_{12}(x) &= x^{122} + x^{120} + x^{114} + x^{112} + x^{106} + x^{104} + x^{82} + x^{80} + x^{74} + x^{72}\\
&+ x^{66} + x^{64} + x^{58} + x^{56} + x^{34} + x^{32} + x^{26} + x^{24} + x^{18} + x^{16} + x^{2} + 1,
\end{aligned}$$

and the initial terms are [1, 0, 0, 0, 1, 0, 0, 0, 1, 0, 1, 0, 0, 0, 1, 0].

For $\phi(W^e, 0, 1)$:

$$\begin{aligned}
p_0(x) &= x^{126} + x^{124} + x^{122} + x^{118} + x^{117} + x^{116} + x^{115} + x^{113} + x^{111} + x^{109}\\
&+ x^{108} + x^{103} + x^{102} + x^{100} + x^{99} + x^{98} + x^{97} + x^{95} + x^{94} + x^{91}
\end{aligned}$$

$$
\begin{aligned}
&+ x^{88} + x^{83} + x^{82} + x^{75} + x^{74} + x^{73} + x^{72} + x^{70} + x^{68} + x^{67} + x^{66}\\
&+ x^{64} + x^{61} + x^{60} + x^{59} + x^{58} + x^{56} + x^{55} + x^{53} + x^{49} + x^{47} + x^{45}\\
&+ x^{43} + x^{39} + x^{37} + x^{35} + x^{34} + x^{33} + x^{31} + x^{30} + x^{29} + x^{27} + x^{26}\\
&+ x^{25} + x^{23} + x^{21} + x^{20} + x^{19} + x^{18},\\
p_3(x) =\ & x^{122} + x^{121} + x^{117} + x^{115} + x^{113} + x^{112} + x^{110} + x^{108} + x^{107} + x^{105}\\
&+ x^{104} + x^{103} + x^{100} + x^{98} + x^{93} + x^{91} + x^{90} + x^{88} + x^{86} + x^{85} + x^{84}\\
&+ x^{82} + x^{81} + x^{79} + x^{78} + x^{77} + x^{73} + x^{71} + x^{70} + x^{67} + x^{64} + x^{63}\\
&+ x^{60} + x^{57} + x^{34} + x^{33} + x^{29} + x^{27} + x^{25} + x^{24} + x^{22} + x^{20} + x^{19}\\
&+ x^{17} + x^{16} + x^{15} + x^{12} + x^{9},\\
p_6(x) =\ & x^{120} + x^{117} + x^{115} + x^{112} + x^{111} + x^{107} + x^{105} + x^{101} + x^{100} + x^{99}\\
&+ x^{98} + x^{97} + x^{95} + x^{92} + x^{91} + x^{90} + x^{86} + x^{84} + x^{83} + x^{82} + x^{76}\\
&+ x^{73} + x^{71} + x^{70} + x^{66} + x^{63} + x^{62} + x^{61} + x^{59} + x^{58} + x^{56} + x^{54}\\
&+ x^{53} + x^{49} + x^{48} + x^{47} + x^{45} + x^{44} + x^{40} + x^{38} + x^{37} + x^{34} + x^{33}\\
&+ x^{32} + x^{22} + x^{19} + x^{17} + x^{16} + x^{12} + x^{9} + x^{7} + x^{6},\\
p_9(x) =\ & x^{118} + x^{117} + x^{116} + x^{115} + x^{114} + x^{109} + x^{108} + x^{106} + x^{102} + x^{99}\\
&+ x^{98} + x^{97} + x^{93} + x^{92} + x^{89} + x^{76} + x^{75} + x^{71} + x^{69} + x^{68} + x^{66}\\
&+ x^{62} + x^{59} + x^{58} + x^{57} + x^{56} + x^{55} + x^{53} + x^{50} + x^{49} + x^{48} + x^{47}\\
&+ x^{45} + x^{42} + x^{41} + x^{38} + x^{35} + x^{34} + x^{33} + x^{32} + x^{31} + x^{30} + x^{28}\\
&+ x^{27} + x^{26} + x^{24} + x^{23} + x^{22} + x^{18} + x^{15} + x^{12} + x^{11} + x^{10} + x^{9}\\
&+ x^{8} + x^{6} + x^{5} + x^{3},\\
p_{12}(x) =\ & x^{116} + x^{114} + x^{113} + x^{112} + x^{108} + x^{106} + x^{105} + x^{102} + x^{101} + x^{100}\\
&+ x^{92} + x^{90} + x^{89} + x^{86} + x^{85} + x^{82} + x^{81} + x^{80} + x^{68} + x^{66} + x^{65}\\
&+ x^{64} + x^{60} + x^{58} + x^{57} + x^{54} + x^{53} + x^{52} + x^{44} + x^{42} + x^{41} + x^{38}\\
&+ x^{37} + x^{34} + x^{33} + x^{32} + x^{20} + x^{18} + x^{17} + x^{16} + x^{12} + x^{10} + x^{9}\\
&+ x^{6} + x^{5} + x^{2} + x + 1,
\end{aligned}
$$

and the initial terms are [0, 1, 1, 1, 1, 0, 0, 1, 0, 1, 0, 0, 1, 0, 0, 0].

For $\phi(W^e, 1, 0)$:

$$
\begin{aligned}
p_0(x) =\ & x^{126} + x^{124} + x^{122} + x^{118} + x^{117} + x^{116} + x^{115} + x^{113} + x^{111} + x^{109}\\
&+ x^{108} + x^{103} + x^{102} + x^{100} + x^{99} + x^{98} + x^{97} + x^{95} + x^{94} + x^{91}\\
&+ x^{88} + x^{83} + x^{82} + x^{75} + x^{74} + x^{73} + x^{72} + x^{70} + x^{68} + x^{67} + x^{66}\\
&+ x^{64} + x^{61} + x^{60} + x^{59} + x^{58} + x^{56} + x^{55} + x^{53} + x^{49} + x^{47} + x^{45}\\
&+ x^{43} + x^{39} + x^{37} + x^{35} + x^{34} + x^{33} + x^{31} + x^{30} + x^{29} + x^{27} + x^{26}\\
&+ x^{25} + x^{23} + x^{21} + x^{20} + x^{19} + x^{18},\\
p_3(x) =\ & x^{122} + x^{121} + x^{117} + x^{115} + x^{113} + x^{112} + x^{110} + x^{108} + x^{107} + x^{105}\\
&+ x^{104} + x^{103} + x^{100} + x^{98} + x^{93} + x^{91} + x^{90} + x^{88} + x^{86} + x^{85} + x^{84}
\end{aligned}
$$

$$
\begin{aligned}
&+ x^{82} + x^{81} + x^{79} + x^{78} + x^{77} + x^{73} + x^{71} + x^{70} + x^{67} + x^{64} + x^{63}\\
&+ x^{60} + x^{57} + x^{34} + x^{33} + x^{29} + x^{27} + x^{25} + x^{24} + x^{22} + x^{20} + x^{19}\\
&+ x^{17} + x^{16} + x^{15} + x^{12} + x^{9},\\
p_6(x) &= x^{120} + x^{117} + x^{115} + x^{112} + x^{111} + x^{107} + x^{105} + x^{101} + x^{100} + x^{99}\\
&+ x^{98} + x^{97} + x^{95} + x^{92} + x^{91} + x^{90} + x^{86} + x^{84} + x^{83} + x^{82} + x^{76}\\
&+ x^{73} + x^{71} + x^{70} + x^{66} + x^{63} + x^{62} + x^{61} + x^{59} + x^{58} + x^{56} + x^{54}\\
&+ x^{53} + x^{49} + x^{48} + x^{47} + x^{45} + x^{44} + x^{40} + x^{38} + x^{37} + x^{34} + x^{33}\\
&+ x^{32} + x^{22} + x^{19} + x^{17} + x^{16} + x^{12} + x^{9} + x^{7} + x^{6},\\
p_9(x) &= x^{118} + x^{117} + x^{116} + x^{115} + x^{114} + x^{109} + x^{108} + x^{106} + x^{102} + x^{99}\\
&+ x^{98} + x^{97} + x^{93} + x^{92} + x^{89} + x^{76} + x^{75} + x^{71} + x^{69} + x^{68} + x^{66}\\
&+ x^{62} + x^{59} + x^{58} + x^{57} + x^{56} + x^{55} + x^{53} + x^{50} + x^{49} + x^{48} + x^{47}\\
&+ x^{45} + x^{42} + x^{41} + x^{38} + x^{35} + x^{34} + x^{33} + x^{32} + x^{31} + x^{30} + x^{28}\\
&+ x^{27} + x^{26} + x^{24} + x^{23} + x^{22} + x^{18} + x^{15} + x^{12} + x^{11} + x^{10} + x^{9}\\
&+ x^{8} + x^{6} + x^{5} + x^{3},\\
p_{12}(x) &= x^{116} + x^{114} + x^{113} + x^{112} + x^{108} + x^{106} + x^{105} + x^{102} + x^{101} + x^{100}\\
&+ x^{92} + x^{90} + x^{89} + x^{86} + x^{85} + x^{82} + x^{81} + x^{80} + x^{68} + x^{66} + x^{65}\\
&+ x^{64} + x^{60} + x^{58} + x^{57} + x^{54} + x^{53} + x^{52} + x^{44} + x^{42} + x^{41} + x^{38}\\
&+ x^{37} + x^{34} + x^{33} + x^{32} + x^{20} + x^{18} + x^{17} + x^{16} + x^{12} + x^{10} + x^{9}\\
&+ x^{6} + x^{5} + x^{2} + x + 1,
\end{aligned}
$$

and the initial terms are [0, 1, 1, 1, 1, 0, 0, 1, 0, 1, 0, 0, 1, 0, 0, 0].

For $\phi(W^e, 1, 1)$:

$$
\begin{aligned}
p_0(x) &= x^{114} + x^{112} + x^{110} + x^{108} + x^{106} + x^{102} + x^{100} + x^{98} + x^{96} + x^{90}\\
&+ x^{88} + x^{86} + x^{84} + x^{72} + x^{68} + x^{62} + x^{60} + x^{56} + x^{54} + x^{46} + x^{36}\\
&+ x^{32} + x^{24},\\
p_3(x) &= x^{108} + x^{106} + x^{96} + x^{94} + x^{88} + x^{84} + x^{82} + x^{80} + x^{76} + x^{74} + x^{68}\\
&+ x^{66} + x^{62} + x^{46} + x^{40} + x^{30} + x^{22} + x^{20} + x^{18} + x^{16} + x^{14} + x^{6},\\
p_6(x) &= x^{108} + x^{104} + x^{102} + x^{100} + x^{96} + x^{94} + x^{92} + x^{90} + x^{86} + x^{84} + x^{80}\\
&+ x^{76} + x^{74} + x^{72} + x^{66} + x^{64} + x^{52} + x^{48} + x^{46} + x^{34} + x^{32} + x^{26}\\
&+ x^{24} + x^{22} + x^{18} + x^{12} + x^{2} + 1,\\
p_9(x) &= x^{110} + x^{108} + x^{106} + x^{104} + x^{98} + x^{94} + x^{92} + x^{86} + x^{82} + x^{76} + x^{74}\\
&+ x^{72} + x^{60} + x^{58} + x^{50} + x^{48} + x^{44} + x^{42} + x^{40} + x^{38} + x^{30} + x^{26}\\
&+ x^{20} + x^{18} + x^{16} + x^{8} + x^{6} + x^{2},\\
p_{12}(x) &= x^{110} + x^{108} + x^{104} + x^{102} + x^{100} + x^{96} + x^{94} + x^{92} + x^{88} + x^{86} + x^{84}\\
&+ x^{80} + x^{62} + x^{60} + x^{56} + x^{54} + x^{52} + x^{48} + x^{46} + x^{44} + x^{40} + x^{38}\\
&+ x^{36} + x^{32} + x^{14} + x^{12} + x^{8} + x^{6} + x^{4} + 1,
\end{aligned}
$$

and the initial terms are [0, 0, 1, 0, 1, 0, 0, 0, 0, 0, 1, 0, 0, 0, 1, 0].

For $\phi(M^o, 0, 0)$:

$$\begin{aligned}
p_0(x) &= x^{126} + x^{122} + x^{121} + x^{120} + x^{119} + x^{118} + x^{117} + x^{116} + x^{112} + x^{110} \\
&+ x^{107} + x^{102} + x^{101} + x^{100} + x^{96} + x^{94} + x^{92} + x^{91} + x^{90} + x^{85} \\
&+ x^{83} + x^{82} + x^{81} + x^{78} + x^{73} + x^{72} + x^{66} + x^{62} + x^{60} + x^{59} + x^{54} \\
&+ x^{53} + x^{50} + x^{49} + x^{45} + x^{44} + x^{40} + x^{39} + x^{37} + x^{36} + x^{35} + x^{33} \\
&+ x^{24} + x^{23} + x^{22} + x^{20} + x^{15} + x^{13} + x^{12}, \\
p_3(x) &= x^{124} + x^{121} + x^{115} + x^{114} + x^{111} + x^{110} + x^{109} + x^{105} + x^{104} + x^{103} \\
&+ x^{95} + x^{94} + x^{92} + x^{91} + x^{89} + x^{84} + x^{82} + x^{80} + x^{79} + x^{78} + x^{75} \\
&+ x^{74} + x^{71} + x^{70} + x^{68} + x^{66} + x^{65} + x^{64} + x^{62} + x^{61} + x^{59} + x^{58} \\
&+ x^{54} + x^{52} + x^{51} + x^{47} + x^{45} + x^{42} + x^{41} + x^{37} + x^{35} + x^{30} + x^{29} \\
&+ x^{28} + x^{27} + x^{20} + x^{19} + x^{18} + x^{14} + x^{13} + x^{12} + x^{11} + x^{9} + x^{8}, \\
p_6(x) &= x^{124} + x^{121} + x^{115} + x^{111} + x^{110} + x^{107} + x^{105} + x^{104} + x^{103} + x^{102} \\
&+ x^{97} + x^{95} + x^{93} + x^{91} + x^{88} + x^{82} + x^{79} + x^{78} + x^{77} + x^{75} + x^{73} \\
&+ x^{72} + x^{67} + x^{66} + x^{61} + x^{60} + x^{59} + x^{58} + x^{57} + x^{53} + x^{51} + x^{50} \\
&+ x^{49} + x^{47} + x^{46} + x^{38} + x^{35} + x^{34} + x^{33} + x^{32} + x^{30} + x^{21} + x^{18} \\
&+ x^{17} + x^{15} + x^{14} + x^{12} + x^{8} + x^{7} + x^{6} + x^{4} + x^{2} + x + 1, \\
p_9(x) &= x^{124} + x^{122} + x^{121} + x^{118} + x^{117} + x^{114} + x^{113} + x^{110} + x^{109} + x^{106} \\
&+ x^{105} + x^{104} + x^{100} + x^{98} + x^{97} + x^{94} + x^{93} + x^{92} + x^{88} + x^{86} + x^{85} \\
&+ x^{84} + x^{76} + x^{74} + x^{73} + x^{70} + x^{69} + x^{66} + x^{65} + x^{62} + x^{61} + x^{58} \\
&+ x^{57} + x^{56} + x^{52} + x^{50} + x^{49} + x^{46} + x^{45} + x^{44} + x^{40} + x^{38} + x^{37} \\
&+ x^{36} + x^{28} + x^{26} + x^{25} + x^{22} + x^{21} + x^{18} + x^{17} + x^{14} + x^{13} + x^{12} \\
&+ x^{8} + x^{6} + x^{5} + x^{4}, \\
p_{12}(x) &= x^{124} + x^{122} + x^{121} + x^{118} + x^{117} + x^{116} + x^{112} + x^{110} + x^{109} + x^{108} \\
&+ x^{104} + x^{102} + x^{101} + x^{98} + x^{97} + x^{94} + x^{93} + x^{90} + x^{89} + x^{88} + x^{84} \\
&+ x^{82} + x^{81} + x^{80} + x^{76} + x^{74} + x^{73} + x^{70} + x^{69} + x^{68} + x^{64} + x^{62} \\
&+ x^{61} + x^{60} + x^{56} + x^{54} + x^{53} + x^{50} + x^{49} + x^{46} + x^{45} + x^{42} + x^{41} \\
&+ x^{40} + x^{36} + x^{34} + x^{33} + x^{32} + x^{28} + x^{26} + x^{25} + x^{22} + x^{21} + x^{20} \\
&+ x^{16} + x^{14} + x^{13} + x^{10} + x^{9} + x^{8} + x^{4} + x^{2} + x + 1,
\end{aligned}$$

and the initial terms are [1, 0, 1, 0, 1, 0, 0, 1, 1, 0, 0, 0, 0, 1, 1, 0].

For $\phi(M^o, 0, 1)$:

$$\begin{aligned}
p_0(x) &= x^{140} + x^{136} + x^{131} + x^{128} + x^{124} + x^{122} + x^{117} + x^{115} + x^{113} + x^{109} \\
&+ x^{107} + x^{105} + x^{103} + x^{102} + x^{100} + x^{99} + x^{97} + x^{96} + x^{95} + x^{94} \\
&+ x^{93} + x^{89} + x^{87} + x^{86} + x^{81} + x^{78} + x^{76} + x^{74} + x^{72} + x^{70} + x^{68} \\
&+ x^{67} + x^{65} + x^{64} + x^{63} + x^{62} + x^{61} + x^{60} + x^{57} + x^{55} + x^{54} + x^{52}
\end{aligned}$$

$$
\begin{aligned}
&+ x^{49} + x^{47} + x^{46} + x^{43} + x^{42} + x^{41} + x^{38} + x^{37} + x^{35} + x^{34} + x^{33} \\
&+ x^{29} + x^{28} + x^{26} + x^{25} + x^{24}, \\
p_3(x) &= x^{126} + x^{125} + x^{123} + x^{122} + x^{120} + x^{119} + x^{118} + x^{115} + x^{113} + x^{111} \\
&+ x^{110} + x^{109} + x^{107} + x^{104} + x^{103} + x^{102} + x^{100} + x^{97} + x^{96} + x^{95} \\
&+ x^{93} + x^{90} + x^{89} + x^{88} + x^{86} + x^{83} + x^{82} + x^{81} + x^{79} + x^{76} + x^{75} \\
&+ x^{74} + x^{72} + x^{70} + x^{68} + x^{66} + x^{65} + x^{64} + x^{63} + x^{61} + x^{60} + x^{59} \\
&+ x^{58} + x^{57} + x^{38} + x^{37} + x^{35} + x^{34} + x^{32} + x^{31} + x^{30} + x^{27} + x^{25} \\
&+ x^{23} + x^{22} + x^{21} + x^{19} + x^{16} + x^{15} + x^{13} + x^{12} + x^{11} + x^{10} + x^{9}, \\
p_6(x) &= x^{128} + x^{126} + x^{124} + x^{106} + x^{100} + x^{96} + x^{84} + x^{80} + x^{78} + x^{74} + x^{70} \\
&+ x^{68} + x^{66} + x^{64} + x^{62} + x^{60} + x^{54} + x^{46} + x^{44} + x^{40} + x^{36} + x^{32} \\
&+ x^{30} + x^{28} + x^{26} + x^{24} + x^{20} + x^{14} + x^{8} + x^{6}, \\
p_9(x) &= x^{130} + x^{129} + x^{128} + x^{126} + x^{125} + x^{124} + x^{120} + x^{117} + x^{115} + x^{113} \\
&+ x^{110} + x^{109} + x^{108} + x^{107} + x^{106} + x^{104} + x^{103} + x^{101} + x^{100} \\
&+ x^{98} + x^{96} + x^{91} + x^{90} + x^{87} + x^{84} + x^{83} + x^{82} + x^{81} + x^{80} + x^{78} \\
&+ x^{77} + x^{76} + x^{72} + x^{69} + x^{67} + x^{65} + x^{62} + x^{61} + x^{60} + x^{59} + x^{58} \\
&+ x^{56} + x^{55} + x^{53} + x^{52} + x^{50} + x^{48} + x^{43} + x^{42} + x^{39} + x^{36} + x^{35} \\
&+ x^{34} + x^{33} + x^{32} + x^{30} + x^{29} + x^{28} + x^{24} + x^{21} + x^{19} + x^{18} + x^{16} \\
&+ x^{11} + x^{10} + x^{7} + x^{4} + x^{3}, \\
p_{12}(x) &= x^{132} + x^{124} + x^{112} + x^{108} + x^{100} + x^{84} + x^{80} + x^{76} + x^{64} + x^{60} + x^{52} \\
&+ x^{36} + x^{32} + x^{28} + x^{20} + x^{16} + 1,
\end{aligned}
$$

and the initial terms are [0, 0, 0, 0, 0, 1, 0, 0, 1, 1, 1, 1, 0, 1, 0, 1].

For $\phi(M^o, 1, 0)$:

$$
\begin{aligned}
p_0(x) &= x^{120} + x^{118} + x^{116} + x^{115} + x^{111} + x^{107} + x^{105} + x^{103} + x^{101} + x^{100} \\
&+ x^{99} + x^{96} + x^{95} + x^{93} + x^{92} + x^{91} + x^{89} + x^{88} + x^{86} + x^{85} + x^{83} \\
&+ x^{81} + x^{79} + x^{78} + x^{76} + x^{73} + x^{72} + x^{71} + x^{67} + x^{65} + x^{63} + x^{62} \\
&+ x^{61} + x^{60} + x^{59} + x^{58} + x^{56} + x^{55} + x^{54} + x^{48} + x^{44} + x^{41} + x^{39} \\
&+ x^{38} + x^{31} + x^{30} + x^{28} + x^{26} + x^{23} + x^{22} + x^{21} + x^{20} + x^{18}, \\
p_3(x) &= x^{118} + x^{117} + x^{115} + x^{114} + x^{112} + x^{111} + x^{110} + x^{107} + x^{106} + x^{102} \\
&+ x^{100} + x^{99} + x^{98} + x^{97} + x^{94} + x^{93} + x^{91} + x^{90} + x^{88} + x^{87} + x^{85} \\
&+ x^{80} + x^{79} + x^{78} + x^{77} + x^{76} + x^{75} + x^{74} + x^{73} + x^{72} + x^{71} + x^{68} \\
&+ x^{65} + x^{62} + x^{60} + x^{59} + x^{58} + x^{57} + x^{30} + x^{29} + x^{27} + x^{26} + x^{24} \\
&+ x^{23} + x^{22} + x^{19} + x^{18} + x^{14} + x^{12} + x^{11} + x^{10} + x^{9}, \\
p_6(x) &= x^{120} + x^{118} + x^{116} + x^{108} + x^{106} + x^{102} + x^{96} + x^{90} + x^{86} + x^{82} \\
&+ x^{76} + x^{74} + x^{72} + x^{70} + x^{66} + x^{64} + x^{60} + x^{58} + x^{56} + x^{50} + x^{46} \\
&+ x^{44} + x^{40} + x^{32} + x^{22} + x^{20} + x^{18} + x^{16} + x^{12} + x^{10} + x^{8} + x^{6},
\end{aligned}
$$

$$\begin{aligned}
p_9(x) &= x^{122} + x^{121} + x^{120} + x^{118} + x^{117} + x^{116} + x^{112} + x^{110} + x^{108} + x^{107}\\
&\quad + x^{105} + x^{102} + x^{101} + x^{99} + x^{96} + x^{94} + x^{92} + x^{91} + x^{90} + x^{88} + x^{84}\\
&\quad + x^{83} + x^{74} + x^{73} + x^{72} + x^{70} + x^{69} + x^{68} + x^{64} + x^{62} + x^{60} + x^{59}\\
&\quad + x^{57} + x^{54} + x^{53} + x^{51} + x^{48} + x^{46} + x^{44} + x^{43} + x^{42} + x^{40} + x^{36}\\
&\quad + x^{35} + x^{26} + x^{25} + x^{24} + x^{22} + x^{21} + x^{20} + x^{16} + x^{14} + x^{12} + x^{11}\\
&\quad + x^{10} + x^{8} + x^{4} + x^{3},\\
p_{12}(x) &= x^{124} + x^{116} + x^{112} + x^{108} + x^{104} + x^{88} + x^{84} + x^{80} + x^{76} + x^{68} + x^{64}\\
&\quad + x^{60} + x^{56} + x^{40} + x^{36} + x^{32} + x^{28} + x^{20} + x^{16} + x^{8} + x^{4} + 1,
\end{aligned}$$

and the initial terms are [0, 1, 1, 0, 0, 1, 1, 0, 0, 0, 0, 1, 1, 0, 0, 0].

For $\phi(M^o, 1, 1)$:

$$\begin{aligned}
p_0(x) &= x^{126} + x^{124} + x^{120} + x^{114} + x^{113} + x^{109} + x^{106} + x^{104} + x^{102} + x^{100}\\
&\quad + x^{97} + x^{93} + x^{92} + x^{89} + x^{87} + x^{84} + x^{81} + x^{80} + x^{79} + x^{76} + x^{75}\\
&\quad + x^{74} + x^{73} + x^{70} + x^{64} + x^{60} + x^{59} + x^{58} + x^{57} + x^{55} + x^{54} + x^{53}\\
&\quad + x^{52} + x^{51} + x^{44} + x^{43} + x^{39} + x^{38} + x^{36} + x^{34} + x^{33} + x^{32} + x^{30},\\
p_3(x) &= x^{124} + x^{121} + x^{120} + x^{117} + x^{116} + x^{113} + x^{112} + x^{110} + x^{106} + x^{103}\\
&\quad + x^{102} + x^{99} + x^{97} + x^{95} + x^{94} + x^{93} + x^{90} + x^{87} + x^{83} + x^{82} + x^{76}\\
&\quad + x^{75} + x^{74} + x^{73} + x^{72} + x^{69} + x^{68} + x^{67} + x^{65} + x^{64} + x^{61} + x^{58}\\
&\quad + x^{57} + x^{56} + x^{54} + x^{52} + x^{51} + x^{47} + x^{45} + x^{42} + x^{41} + x^{37} + x^{35}\\
&\quad + x^{32} + x^{30} + x^{26} + x^{25} + x^{24} + x^{23} + x^{21} + x^{20} + x^{19} + x^{17} + x^{16}\\
&\quad + x^{13} + x^{12},\\
p_6(x) &= x^{124} + x^{121} + x^{120} + x^{117} + x^{116} + x^{114} + x^{113} + x^{110} + x^{104} + x^{103}\\
&\quad + x^{102} + x^{101} + x^{99} + x^{97} + x^{96} + x^{93} + x^{89} + x^{88} + x^{85} + x^{83} + x^{79}\\
&\quad + x^{78} + x^{77} + x^{75} + x^{74} + x^{73} + x^{71} + x^{70} + x^{68} + x^{67} + x^{66} + x^{65}\\
&\quad + x^{63} + x^{61} + x^{57} + x^{56} + x^{54} + x^{52} + x^{51} + x^{49} + x^{48} + x^{38} + x^{35}\\
&\quad + x^{34} + x^{33} + x^{29} + x^{26} + x^{25} + x^{24} + x^{22} + x^{21} + x^{19} + x^{18} + x^{15}\\
&\quad + x^{13} + x^{10} + x^{8} + x^{6} + x^{5} + x^{2} + x + 1,\\
p_9(x) &= x^{124} + x^{122} + x^{121} + x^{118} + x^{117} + x^{114} + x^{113} + x^{110} + x^{109} + x^{106}\\
&\quad + x^{105} + x^{104} + x^{100} + x^{98} + x^{97} + x^{94} + x^{93} + x^{92} + x^{88} + x^{86} + x^{85}\\
&\quad + x^{84} + x^{76} + x^{74} + x^{73} + x^{70} + x^{69} + x^{66} + x^{65} + x^{62} + x^{61} + x^{58}\\
&\quad + x^{57} + x^{56} + x^{52} + x^{50} + x^{49} + x^{46} + x^{45} + x^{44} + x^{40} + x^{38} + x^{37}\\
&\quad + x^{36} + x^{28} + x^{26} + x^{25} + x^{22} + x^{21} + x^{18} + x^{17} + x^{14} + x^{13} + x^{12}\\
&\quad + x^{8} + x^{6} + x^{5} + x^{4},\\
p_{12}(x) &= x^{124} + x^{122} + x^{121} + x^{118} + x^{117} + x^{116} + x^{112} + x^{110} + x^{109} + x^{108}\\
&\quad + x^{104} + x^{102} + x^{101} + x^{98} + x^{97} + x^{94} + x^{93} + x^{90} + x^{89} + x^{88} + x^{84}\\
&\quad + x^{82} + x^{81} + x^{80} + x^{76} + x^{74} + x^{73} + x^{70} + x^{69} + x^{68} + x^{64} + x^{62}
\end{aligned}$$

$$+ x^{61} + x^{60} + x^{56} + x^{54} + x^{53} + x^{50} + x^{49} + x^{46} + x^{45} + x^{42} + x^{41} + x^{40} + x^{36} + x^{34} + x^{33} + x^{32} + x^{28} + x^{26} + x^{25} + x^{22} + x^{21} + x^{20} + x^{16} + x^{14} + x^{13} + x^{10} + x^{9} + x^{8} + x^{4} + x^{2} + x + 1,$$

and the initial terms are [0, 0, 0, 0, 0, 0, 1, 1, 1, 0, 1, 0, 0, 1, 0, 0].

For $\phi(W^o, 0, 0)$:

$$\begin{aligned}
p_0(x) &= x^{126} + x^{122} + x^{121} + x^{120} + x^{119} + x^{118} + x^{117} + x^{116} + x^{112} + x^{110} \\
&\quad + x^{107} + x^{102} + x^{101} + x^{100} + x^{96} + x^{94} + x^{92} + x^{91} + x^{90} + x^{85} \\
&\quad + x^{83} + x^{82} + x^{81} + x^{78} + x^{73} + x^{72} + x^{66} + x^{62} + x^{60} + x^{59} + x^{54} \\
&\quad + x^{53} + x^{50} + x^{49} + x^{45} + x^{44} + x^{40} + x^{39} + x^{37} + x^{36} + x^{35} + x^{33} \\
&\quad + x^{24} + x^{23} + x^{22} + x^{20} + x^{15} + x^{13} + x^{12}, \\
p_3(x) &= x^{124} + x^{121} + x^{115} + x^{114} + x^{111} + x^{110} + x^{109} + x^{105} + x^{104} + x^{103} \\
&\quad + x^{95} + x^{94} + x^{92} + x^{91} + x^{89} + x^{84} + x^{82} + x^{80} + x^{79} + x^{78} + x^{75} \\
&\quad + x^{74} + x^{71} + x^{70} + x^{68} + x^{66} + x^{65} + x^{64} + x^{62} + x^{61} + x^{59} + x^{58} \\
&\quad + x^{54} + x^{52} + x^{51} + x^{47} + x^{45} + x^{42} + x^{41} + x^{37} + x^{35} + x^{30} + x^{29} \\
&\quad + x^{28} + x^{27} + x^{20} + x^{19} + x^{18} + x^{14} + x^{13} + x^{12} + x^{11} + x^{9} + x^{8}, \\
p_6(x) &= x^{124} + x^{121} + x^{115} + x^{111} + x^{110} + x^{107} + x^{105} + x^{104} + x^{103} + x^{102} \\
&\quad + x^{97} + x^{95} + x^{93} + x^{91} + x^{88} + x^{82} + x^{79} + x^{78} + x^{77} + x^{75} + x^{73} \\
&\quad + x^{72} + x^{67} + x^{66} + x^{61} + x^{60} + x^{59} + x^{58} + x^{57} + x^{53} + x^{51} + x^{50} \\
&\quad + x^{49} + x^{47} + x^{46} + x^{38} + x^{35} + x^{34} + x^{33} + x^{32} + x^{30} + x^{21} + x^{18} \\
&\quad + x^{17} + x^{15} + x^{14} + x^{12} + x^{8} + x^{7} + x^{6} + x^{4} + x^{2} + x + 1, \\
p_9(x) &= x^{124} + x^{122} + x^{121} + x^{118} + x^{117} + x^{114} + x^{113} + x^{110} + x^{109} + x^{106} \\
&\quad + x^{105} + x^{104} + x^{100} + x^{98} + x^{97} + x^{94} + x^{93} + x^{92} + x^{88} + x^{86} + x^{85} \\
&\quad + x^{84} + x^{76} + x^{74} + x^{73} + x^{70} + x^{69} + x^{66} + x^{65} + x^{62} + x^{61} + x^{58} \\
&\quad + x^{57} + x^{56} + x^{52} + x^{50} + x^{49} + x^{46} + x^{45} + x^{44} + x^{40} + x^{38} + x^{37} \\
&\quad + x^{36} + x^{28} + x^{26} + x^{25} + x^{22} + x^{21} + x^{18} + x^{17} + x^{14} + x^{13} + x^{12} \\
&\quad + x^{8} + x^{6} + x^{5} + x^{4}, \\
p_{12}(x) &= x^{124} + x^{122} + x^{121} + x^{118} + x^{117} + x^{116} + x^{112} + x^{110} + x^{109} + x^{108} \\
&\quad + x^{104} + x^{102} + x^{101} + x^{98} + x^{97} + x^{94} + x^{93} + x^{90} + x^{89} + x^{88} + x^{84} \\
&\quad + x^{82} + x^{81} + x^{80} + x^{76} + x^{74} + x^{73} + x^{70} + x^{69} + x^{68} + x^{64} + x^{62} \\
&\quad + x^{61} + x^{60} + x^{56} + x^{54} + x^{53} + x^{50} + x^{49} + x^{46} + x^{45} + x^{42} + x^{41} \\
&\quad + x^{40} + x^{36} + x^{34} + x^{33} + x^{32} + x^{28} + x^{26} + x^{25} + x^{22} + x^{21} + x^{20} \\
&\quad + x^{16} + x^{14} + x^{13} + x^{10} + x^{9} + x^{8} + x^{4} + x^{2} + x + 1,
\end{aligned}$$

and the initial terms are [1, 0, 1, 0, 1, 0, 0, 1, 1, 0, 0, 0, 0, 1, 1, 0].

For $\phi(W^o, 0, 1)$:

$$p_0(x) = x^{120} + x^{118} + x^{116} + x^{115} + x^{111} + x^{107} + x^{105} + x^{103} + x^{101} + x^{100}$$

$$
\begin{aligned}
&+ x^{99} + x^{96} + x^{95} + x^{93} + x^{92} + x^{91} + x^{89} + x^{88} + x^{86} + x^{85} + x^{83} \\
&+ x^{81} + x^{79} + x^{78} + x^{76} + x^{73} + x^{72} + x^{71} + x^{67} + x^{65} + x^{63} + x^{62} \\
&+ x^{61} + x^{60} + x^{59} + x^{58} + x^{56} + x^{55} + x^{54} + x^{48} + x^{44} + x^{41} + x^{39} \\
&+ x^{38} + x^{31} + x^{30} + x^{28} + x^{26} + x^{23} + x^{22} + x^{21} + x^{20} + x^{18}, \\
p_3(x) &= x^{118} + x^{117} + x^{115} + x^{114} + x^{112} + x^{111} + x^{110} + x^{107} + x^{106} + x^{102} \\
&+ x^{100} + x^{99} + x^{98} + x^{97} + x^{94} + x^{93} + x^{91} + x^{90} + x^{88} + x^{87} + x^{85} \\
&+ x^{80} + x^{79} + x^{78} + x^{77} + x^{76} + x^{75} + x^{74} + x^{73} + x^{72} + x^{71} + x^{68} \\
&+ x^{65} + x^{62} + x^{60} + x^{59} + x^{58} + x^{57} + x^{30} + x^{29} + x^{27} + x^{26} + x^{24} \\
&+ x^{23} + x^{22} + x^{19} + x^{18} + x^{14} + x^{12} + x^{11} + x^{10} + x^{9}, \\
p_6(x) &= x^{120} + x^{118} + x^{116} + x^{108} + x^{106} + x^{102} + x^{96} + x^{90} + x^{86} + x^{82} \\
&+ x^{76} + x^{74} + x^{72} + x^{70} + x^{66} + x^{64} + x^{60} + x^{58} + x^{56} + x^{50} + x^{46} \\
&+ x^{44} + x^{40} + x^{32} + x^{22} + x^{20} + x^{18} + x^{16} + x^{12} + x^{10} + x^{8} + x^{6}, \\
p_9(x) &= x^{122} + x^{121} + x^{120} + x^{118} + x^{117} + x^{116} + x^{112} + x^{110} + x^{108} + x^{107} \\
&+ x^{105} + x^{102} + x^{101} + x^{99} + x^{96} + x^{94} + x^{92} + x^{91} + x^{90} + x^{88} + x^{84} \\
&+ x^{83} + x^{74} + x^{73} + x^{72} + x^{70} + x^{69} + x^{68} + x^{64} + x^{62} + x^{60} + x^{59} \\
&+ x^{57} + x^{54} + x^{53} + x^{51} + x^{48} + x^{46} + x^{44} + x^{43} + x^{42} + x^{40} + x^{36} \\
&+ x^{35} + x^{26} + x^{25} + x^{24} + x^{22} + x^{21} + x^{20} + x^{16} + x^{14} + x^{12} + x^{11} \\
&+ x^{10} + x^{8} + x^{4} + x^{3}, \\
p_{12}(x) &= x^{124} + x^{116} + x^{112} + x^{108} + x^{104} + x^{88} + x^{84} + x^{80} + x^{76} + x^{68} + x^{64} \\
&+ x^{60} + x^{56} + x^{40} + x^{36} + x^{32} + x^{28} + x^{20} + x^{16} + x^{8} + x^{4} + 1,
\end{aligned}
$$

and the initial terms are [0, 1, 1, 0, 0, 1, 1, 0, 0, 0, 0, 1, 1, 0, 0, 0].

For $\phi(W^o, 1, 0)$:

$$
\begin{aligned}
p_0(x) &= x^{140} + x^{136} + x^{131} + x^{128} + x^{124} + x^{122} + x^{117} + x^{115} + x^{113} + x^{109} \\
&+ x^{107} + x^{105} + x^{103} + x^{102} + x^{100} + x^{99} + x^{97} + x^{96} + x^{95} + x^{94} \\
&+ x^{93} + x^{89} + x^{87} + x^{86} + x^{81} + x^{78} + x^{76} + x^{74} + x^{72} + x^{70} + x^{68} \\
&+ x^{67} + x^{65} + x^{64} + x^{63} + x^{62} + x^{61} + x^{60} + x^{57} + x^{55} + x^{54} + x^{52} \\
&+ x^{49} + x^{47} + x^{46} + x^{43} + x^{42} + x^{41} + x^{38} + x^{37} + x^{35} + x^{34} + x^{33} \\
&+ x^{29} + x^{28} + x^{26} + x^{25} + x^{24}, \\
p_3(x) &= x^{126} + x^{125} + x^{123} + x^{122} + x^{120} + x^{119} + x^{118} + x^{115} + x^{113} + x^{111} \\
&+ x^{110} + x^{109} + x^{107} + x^{104} + x^{103} + x^{102} + x^{100} + x^{97} + x^{96} + x^{95} \\
&+ x^{93} + x^{90} + x^{89} + x^{88} + x^{86} + x^{83} + x^{82} + x^{81} + x^{79} + x^{76} + x^{75} \\
&+ x^{74} + x^{72} + x^{70} + x^{68} + x^{66} + x^{65} + x^{64} + x^{63} + x^{61} + x^{60} + x^{59} \\
&+ x^{58} + x^{57} + x^{38} + x^{37} + x^{35} + x^{34} + x^{32} + x^{31} + x^{30} + x^{27} + x^{25} \\
&+ x^{23} + x^{22} + x^{21} + x^{19} + x^{16} + x^{15} + x^{13} + x^{12} + x^{11} + x^{10} + x^{9}, \\
p_6(x) &= x^{128} + x^{126} + x^{124} + x^{106} + x^{100} + x^{96} + x^{84} + x^{80} + x^{78} + x^{74} + x^{70}
\end{aligned}
$$

$$
\begin{aligned}
&+ x^{68} + x^{66} + x^{64} + x^{62} + x^{60} + x^{54} + x^{46} + x^{44} + x^{40} + x^{36} + x^{32}\\
&+ x^{30} + x^{28} + x^{26} + x^{24} + x^{20} + x^{14} + x^{8} + x^{6},\\
p_9(x) &= x^{130} + x^{129} + x^{128} + x^{126} + x^{125} + x^{124} + x^{120} + x^{117} + x^{115} + x^{113}\\
&+ x^{110} + x^{109} + x^{108} + x^{107} + x^{106} + x^{104} + x^{103} + x^{101} + x^{100}\\
&+ x^{98} + x^{96} + x^{91} + x^{90} + x^{87} + x^{84} + x^{83} + x^{82} + x^{81} + x^{80} + x^{78}\\
&+ x^{77} + x^{76} + x^{72} + x^{69} + x^{67} + x^{65} + x^{62} + x^{61} + x^{60} + x^{59} + x^{58}\\
&+ x^{56} + x^{55} + x^{53} + x^{52} + x^{50} + x^{48} + x^{43} + x^{42} + x^{39} + x^{36} + x^{35}\\
&+ x^{34} + x^{33} + x^{32} + x^{30} + x^{29} + x^{28} + x^{24} + x^{21} + x^{19} + x^{18} + x^{16}\\
&+ x^{11} + x^{10} + x^{7} + x^{4} + x^{3},\\
p_{12}(x) &= x^{132} + x^{124} + x^{112} + x^{108} + x^{100} + x^{84} + x^{80} + x^{76} + x^{64} + x^{60} + x^{52}\\
&+ x^{36} + x^{32} + x^{28} + x^{20} + x^{16} + 1,
\end{aligned}
$$

and the initial terms are [0, 0, 0, 0, 0, 1, 0, 0, 1, 1, 1, 1, 0, 1, 0, 1].

For $\phi(W^o, 1, 1)$:

$$
\begin{aligned}
p_0(x) &= x^{126} + x^{124} + x^{120} + x^{114} + x^{113} + x^{109} + x^{106} + x^{104} + x^{102} + x^{100}\\
&+ x^{97} + x^{93} + x^{92} + x^{89} + x^{87} + x^{84} + x^{81} + x^{80} + x^{79} + x^{76} + x^{75}\\
&+ x^{74} + x^{73} + x^{70} + x^{64} + x^{60} + x^{59} + x^{58} + x^{57} + x^{55} + x^{54} + x^{53}\\
&+ x^{52} + x^{51} + x^{44} + x^{43} + x^{39} + x^{38} + x^{36} + x^{34} + x^{33} + x^{32} + x^{30},\\
p_3(x) &= x^{124} + x^{121} + x^{120} + x^{117} + x^{116} + x^{113} + x^{112} + x^{110} + x^{106} + x^{103}\\
&+ x^{102} + x^{99} + x^{97} + x^{95} + x^{94} + x^{93} + x^{90} + x^{87} + x^{83} + x^{82} + x^{76}\\
&+ x^{75} + x^{74} + x^{73} + x^{72} + x^{69} + x^{68} + x^{67} + x^{65} + x^{64} + x^{61} + x^{58}\\
&+ x^{57} + x^{56} + x^{54} + x^{52} + x^{51} + x^{47} + x^{45} + x^{42} + x^{41} + x^{37} + x^{35}\\
&+ x^{32} + x^{30} + x^{26} + x^{25} + x^{24} + x^{23} + x^{21} + x^{20} + x^{19} + x^{17} + x^{16}\\
&+ x^{13} + x^{12},\\
p_6(x) &= x^{124} + x^{121} + x^{120} + x^{117} + x^{116} + x^{114} + x^{113} + x^{110} + x^{104} + x^{103}\\
&+ x^{102} + x^{101} + x^{99} + x^{97} + x^{96} + x^{93} + x^{89} + x^{88} + x^{85} + x^{83} + x^{79}\\
&+ x^{78} + x^{77} + x^{75} + x^{74} + x^{73} + x^{71} + x^{70} + x^{68} + x^{67} + x^{66} + x^{65}\\
&+ x^{63} + x^{61} + x^{57} + x^{56} + x^{54} + x^{52} + x^{51} + x^{49} + x^{48} + x^{38} + x^{35}\\
&+ x^{34} + x^{33} + x^{29} + x^{26} + x^{25} + x^{24} + x^{22} + x^{21} + x^{19} + x^{18} + x^{15}\\
&+ x^{13} + x^{10} + x^{8} + x^{6} + x^{5} + x^{2} + x + 1,\\
p_9(x) &= x^{124} + x^{122} + x^{121} + x^{118} + x^{117} + x^{114} + x^{113} + x^{110} + x^{109} + x^{106}\\
&+ x^{105} + x^{104} + x^{100} + x^{98} + x^{97} + x^{94} + x^{93} + x^{92} + x^{88} + x^{86} + x^{85}\\
&+ x^{84} + x^{76} + x^{74} + x^{73} + x^{70} + x^{69} + x^{66} + x^{65} + x^{62} + x^{61} + x^{58}\\
&+ x^{57} + x^{56} + x^{52} + x^{50} + x^{49} + x^{46} + x^{45} + x^{44} + x^{40} + x^{38} + x^{37}\\
&+ x^{36} + x^{28} + x^{26} + x^{25} + x^{22} + x^{21} + x^{18} + x^{17} + x^{14} + x^{13} + x^{12}\\
&+ x^{8} + x^{6} + x^{5} + x^{4},
\end{aligned}
$$

$$\begin{aligned}p_{12}(x) = {} & x^{124} + x^{122} + x^{121} + x^{118} + x^{117} + x^{116} + x^{112} + x^{110} + x^{109} + x^{108} \\ & + x^{104} + x^{102} + x^{101} + x^{98} + x^{97} + x^{94} + x^{93} + x^{90} + x^{89} + x^{88} + x^{84} \\ & + x^{82} + x^{81} + x^{80} + x^{76} + x^{74} + x^{73} + x^{70} + x^{69} + x^{68} + x^{64} + x^{62} \\ & + x^{61} + x^{60} + x^{56} + x^{54} + x^{53} + x^{50} + x^{49} + x^{46} + x^{45} + x^{42} + x^{41} \\ & + x^{40} + x^{36} + x^{34} + x^{33} + x^{32} + x^{28} + x^{26} + x^{25} + x^{22} + x^{21} + x^{20} \\ & + x^{16} + x^{14} + x^{13} + x^{10} + x^{9} + x^{8} + x^{4} + x^{2} + x + 1,\end{aligned}$$

and the initial terms are [0, 0, 0, 0, 0, 0, 1, 1, 1, 0, 1, 0, 0, 1, 0, 0].

Below is the transition function and output function of an 2-automaton that generates $T = M^o_{0,0}$:

Transition function $(n, j) \mapsto \delta(n, j)$ $(\Lambda(n) := [\delta(n, 0), \delta(n, 1)])$:

n	$\Lambda(n)$	n	$\Lambda(n)$	n	$\Lambda(n)$	n	$\Lambda(n)$
0	[1, 2]	823	[1373, 1050]	1646	[2204, 2055]	2469	[2097, 1236]
1	[3, 4]	824	[278, 1374]	1647	[2205, 2131]	2470	[2791, 943]
2	[5, 6]	825	[1375, 1376]	1648	[2206, 98]	2471	[901, 2792]
3	[7, 8]	826	[817, 1377]	1649	[2207, 273]	2472	[2793, 2794]
4	[9, 10]	827	[1378, 1379]	1650	[2208, 2209]	2473	[2795, 1325]
5	[11, 12]	828	[606, 1380]	1651	[2132, 77]	2474	[860, 2796]
6	[13, 14]	829	[31, 1381]	1652	[1183, 2210]	2475	[2797, 1054]
7	[15, 16]	830	[785, 589]	1653	[2211, 945]	2476	[2798, 985]
8	[17, 18]	831	[1382, 1383]	1654	[2212, 959]	2477	[1095, 2345]
9	[19, 20]	832	[550, 1384]	1655	[2213, 337]	2478	[888, 2799]
10	[21, 22]	833	[1385, 1386]	1656	[2214, 2215]	2479	[886, 2254]
11	[23, 24]	834	[1387, 565]	1657	[2216, 368]	2480	[2224, 22]
12	[25, 26]	835	[604, 564]	1658	[1356, 2180]	2481	[2800, 919]
13	[27, 28]	836	[1388, 1389]	1659	[2217, 432]	2482	[2801, 2181]
14	[29, 30]	837	[1384, 599]	1660	[2218, 333]	2483	[2802, 115]
15	[31, 32]	838	[1390, 1391]	1661	[2219, 2220]	2484	[932, 1040]
16	[33, 34]	839	[1392, 1393]	1662	[2221, 2222]	2485	[2803, 1133]
17	[35, 36]	840	[647, 1394]	1663	[2223, 2224]	2486	[2804, 2805]
18	[37, 38]	841	[1395, 594]	1664	[264, 1204]	2487	[1365, 982]
19	[39, 40]	842	[1396, 1397]	1665	[2225, 893]	2488	[274, 2806]
20	[41, 42]	843	[1398, 690]	1666	[2158, 95]	2489	[2807, 1370]
21	[43, 44]	844	[1399, 1400]	1667	[64, 430]	2490	[2808, 385]
22	[45, 46]	845	[1401, 1402]	1668	[2226, 2227]	2491	[1119, 259]
23	[47, 48]	846	[1403, 1404]	1669	[2228, 871]	2492	[2003, 2262]
24	[49, 50]	847	[710, 1405]	1670	[2229, 2230]	2493	[2809, 1119]
25	[51, 52]	848	[1406, 1407]	1671	[2231, 1979]	2494	[2810, 1285]
26	[53, 54]	849	[1408, 1409]	1672	[2232, 249]	2495	[1925, 2410]
27	[55, 56]	850	[1410, 1411]	1673	[2233, 1926]	2496	[2811, 2334]
28	[57, 58]	851	[656, 574]	1674	[2234, 1027]	2497	[2812, 2813]
29	[59, 60]	852	[491, 1412]	1675	[2235, 1141]	2498	[2814, 2386]
30	[61, 62]	853	[1413, 1398]	1676	[2236, 1256]	2499	[2815, 2099]

31	[63, 64]	854	[1414, 1415]	1677	[1088, 1231]	2500	[2816, 255]
32	[65, 66]	855	[240, 546]	1678	[2237, 401]	2501	[2299, 2817]
33	[67, 68]	856	[1416, 1417]	1679	[2238, 2239]	2502	[2818, 2819]
34	[69, 70]	857	[732, 1418]	1680	[2240, 2241]	2503	[1254, 986]
35	[71, 72]	858	[1419, 156]	1681	[2242, 2243]	2504	[2820, 1266]
36	[73, 74]	859	[1420, 779]	1682	[2244, 1310]	2505	[2821, 1330]
37	[75, 76]	860	[1421, 1422]	1683	[2245, 1073]	2506	[2822, 261]
38	[77, 78]	861	[1423, 1424]	1684	[1191, 2246]	2507	[2823, 2824]
39	[79, 80]	862	[1425, 1426]	1685	[2247, 834]	2508	[2825, 2167]
40	[81, 82]	863	[1427, 1428]	1686	[1156, 1217]	2509	[2826, 2827]
41	[83, 84]	864	[551, 599]	1687	[1300, 2248]	2510	[2828, 454]
42	[85, 86]	865	[613, 770]	1688	[2249, 2250]	2511	[2829, 1269]
43	[87, 88]	866	[785, 1429]	1689	[1058, 888]	2512	[2830, 882]
44	[89, 90]	867	[1430, 485]	1690	[2192, 1305]	2513	[2831, 2832]
45	[91, 92]	868	[1431, 1432]	1691	[2251, 2252]	2514	[2833, 842]
46	[93, 94]	869	[1433, 1434]	1692	[2253, 2254]	2515	[266, 1042]
47	[95, 96]	870	[1435, 1436]	1693	[2255, 408]	2516	[2792, 2431]
48	[97, 98]	871	[1437, 713]	1694	[879, 2256]	2517	[2834, 1284]
49	[99, 100]	872	[1438, 1439]	1695	[2257, 358]	2518	[2835, 2836]
50	[101, 102]	873	[804, 1440]	1696	[2258, 64]	2519	[2837, 108]
51	[103, 104]	874	[1441, 693]	1697	[2259, 1951]	2520	[2838, 2839]
52	[105, 106]	875	[1442, 1443]	1698	[2260, 2261]	2521	[2840, 2362]
53	[107, 108]	876	[558, 1444]	1699	[1012, 992]	2522	[2841, 1178]
54	[109, 110]	877	[1445, 1446]	1700	[2262, 1064]	2523	[2842, 1310]
55	[111, 112]	878	[538, 711]	1701	[1023, 1034]	2524	[2843, 2844]
56	[113, 114]	879	[1447, 1448]	1702	[2263, 2264]	2525	[1950, 298]
57	[115, 114]	880	[1449, 1450]	1703	[2095, 2067]	2526	[2845, 1145]
58	[116, 117]	881	[767, 1451]	1704	[2265, 2266]	2527	[80, 2824]
59	[118, 119]	882	[1452, 1453]	1705	[2267, 2268]	2528	[2846, 266]
60	[120, 121]	883	[1454, 481]	1706	[2269, 279]	2529	[2197, 2083]
61	[122, 123]	884	[1418, 189]	1707	[410, 102]	2530	[2847, 1328]
62	[124, 125]	885	[1455, 1456]	1708	[110, 2270]	2531	[2848, 1204]
63	[126, 127]	886	[777, 1446]	1709	[2271, 1099]	2532	[2849, 2300]
64	[128, 129]	887	[1457, 1458]	1710	[2272, 356]	2533	[2850, 2064]
65	[130, 131]	888	[547, 491]	1711	[2273, 856]	2534	[2280, 2391]
66	[132, 133]	889	[1459, 1460]	1712	[2274, 263]	2535	[2442, 2851]
67	[134, 135]	890	[1461, 1462]	1713	[851, 2275]	2536	[2852, 301]
68	[136, 137]	891	[1463, 1439]	1714	[2276, 348]	2537	[2853, 1047]
69	[138, 139]	892	[1464, 1465]	1715	[1372, 320]	2538	[2854, 2855]
70	[140, 141]	893	[599, 1466]	1716	[2277, 321]	2539	[2856, 2799]
71	[142, 143]	894	[1467, 1468]	1717	[1045, 2278]	2540	[1259, 329]
72	[144, 145]	895	[470, 1407]	1718	[2279, 2280]	2541	[2857, 1954]
73	[146, 147]	896	[212, 1469]	1719	[2281, 1199]	2542	[2858, 2859]
74	[148, 149]	897	[1470, 1471]	1720	[2282, 2283]	2543	[2860, 2861]

75	[150, 151]	898	[1472, 800]	1721	[2284, 303]	2544	[2862, 2127]
76	[152, 153]	899	[571, 1393]	1722	[2285, 1229]	2545	[2863, 253]
77	[154, 155]	900	[190, 1473]	1723	[2286, 30]	2546	[2864, 2182]
78	[156, 157]	901	[1474, 755]	1724	[2287, 962]	2547	[2865, 2332]
79	[158, 159]	902	[485, 1475]	1725	[2288, 1061]	2548	[2866, 953]
80	[160, 161]	903	[488, 38]	1726	[2289, 2290]	2549	[924, 996]
81	[162, 163]	904	[1476, 1477]	1727	[2291, 1193]	2550	[2867, 2004]
82	[164, 165]	905	[1478, 1479]	1728	[1037, 830]	2551	[2551, 2551]
83	[166, 167]	906	[1480, 581]	1729	[845, 2131]	2552	[907, 313]
84	[168, 169]	907	[1481, 1482]	1730	[2292, 912]	2553	[2868, 1358]
85	[170, 171]	908	[1388, 614]	1731	[2293, 2294]	2554	[1317, 2009]
86	[172, 173]	909	[1483, 592]	1732	[303, 450]	2555	[394, 2869]
87	[174, 175]	910	[1484, 1400]	1733	[2295, 2296]	2556	[2870, 1985]
88	[176, 177]	911	[1485, 1445]	1734	[2297, 1983]	2557	[2871, 2872]
89	[178, 179]	912	[1486, 1487]	1735	[1010, 974]	2558	[2873, 2126]
90	[180, 181]	913	[1488, 685]	1736	[2088, 850]	2559	[2254, 2298]
91	[182, 183]	914	[1489, 1490]	1737	[2298, 2299]	2560	[2874, 928]
92	[184, 185]	915	[1491, 1492]	1738	[2300, 1248]	2561	[2875, 1357]
93	[186, 187]	916	[1493, 1494]	1739	[2301, 2302]	2562	[2876, 2792]
94	[188, 189]	917	[1487, 1495]	1740	[2303, 1037]	2563	[905, 2877]
95	[190, 141]	918	[1417, 1496]	1741	[325, 2289]	2564	[1960, 2437]
96	[191, 192]	919	[1497, 480]	1742	[2304, 442]	2565	[2878, 890]
97	[193, 194]	920	[1498, 683]	1743	[2305, 2306]	2566	[1990, 2879]
98	[195, 196]	921	[1499, 156]	1744	[2307, 1326]	2567	[2880, 2881]
99	[197, 198]	922	[1500, 472]	1745	[398, 27]	2568	[1302, 873]
100	[199, 200]	923	[588, 1429]	1746	[2308, 330]	2569	[2882, 2883]
101	[201, 202]	924	[1501, 527]	1747	[2008, 460]	2570	[2451, 124]
102	[203, 195]	925	[1502, 1503]	1748	[2309, 946]	2571	[2884, 2090]
103	[178, 204]	926	[624, 1504]	1749	[2310, 2311]	2572	[408, 1144]
104	[205, 206]	927	[1505, 1506]	1750	[2312, 1996]	2573	[2885, 83]
105	[207, 208]	928	[725, 1431]	1751	[1258, 1953]	2574	[2886, 271]
106	[209, 210]	929	[623, 1507]	1752	[953, 942]	2575	[2145, 2865]
107	[211, 212]	930	[1508, 1431]	1753	[2313, 2047]	2576	[895, 2887]
108	[213, 214]	931	[1509, 1510]	1754	[1304, 1038]	2577	[2406, 1913]
109	[215, 216]	932	[1511, 1512]	1755	[2314, 2315]	2578	[2888, 248]
110	[217, 218]	933	[1513, 1514]	1756	[76, 938]	2579	[2889, 2890]
111	[219, 220]	934	[1402, 1515]	1757	[2316, 1297]	2580	[2891, 69]
112	[221, 222]	935	[1516, 1517]	1758	[1285, 2163]	2581	[1277, 1006]
113	[223, 224]	936	[244, 1518]	1759	[2317, 1997]	2582	[2892, 1327]
114	[225, 226]	937	[1487, 709]	1760	[2318, 82]	2583	[2893, 125]
115	[227, 228]	938	[1519, 666]	1761	[2119, 1315]	2584	[1250, 2894]
116	[229, 230]	939	[1520, 1521]	1762	[2319, 1080]	2585	[364, 1233]
117	[231, 232]	940	[1440, 1522]	1763	[2320, 2321]	2586	[1082, 1255]
118	[233, 234]	941	[1523, 53]	1764	[2322, 2323]	2587	[2895, 2895]

119	[235, 236]	942	[1524, 181]	1765	[2324, 1172]	2588	[2896, 2051]
120	[237, 8]	943	[1525, 1526]	1766	[1007, 2325]	2589	[342, 1263]
121	[238, 239]	944	[1526, 639]	1767	[2326, 2014]	2590	[2897, 2898]
122	[240, 170]	945	[1516, 1527]	1768	[2278, 2327]	2591	[2394, 89]
123	[241, 242]	946	[1528, 561]	1769	[2328, 339]	2592	[2899, 2900]
124	[243, 244]	947	[1529, 1530]	1770	[2329, 2330]	2593	[2901, 1361]
125	[245, 246]	948	[1531, 609]	1771	[2331, 1191]	2594	[2902, 2161]
126	[247, 74]	949	[1532, 1533]	1772	[2332, 1062]	2595	[2903, 2904]
127	[248, 249]	950	[1534, 1411]	1773	[2333, 886]	2596	[2905, 952]
128	[250, 251]	951	[1535, 1536]	1774	[2334, 2311]	2597	[2906, 1944]
129	[252, 253]	952	[1537, 1538]	1775	[937, 93]	2598	[2907, 2399]
130	[254, 255]	953	[532, 1409]	1776	[2085, 2335]	2599	[1029, 2268]
131	[256, 73]	954	[1539, 1540]	1777	[876, 2336]	2600	[2908, 78]
132	[257, 258]	955	[726, 1493]	1778	[2337, 2316]	2601	[380, 2909]
133	[259, 260]	956	[1541, 40]	1779	[2338, 1127]	2602	[1205, 1134]
134	[261, 262]	957	[1379, 1542]	1780	[2339, 826]	2603	[2910, 2039]
135	[263, 264]	958	[1543, 1544]	1781	[2340, 1009]	2604	[2911, 874]
136	[265, 266]	959	[1545, 154]	1782	[2341, 1185]	2605	[1056, 287]
137	[267, 268]	960	[1546, 1474]	1783	[2342, 1122]	2606	[418, 2219]
138	[269, 270]	961	[753, 1547]	1784	[282, 1086]	2607	[2912, 2336]
139	[271, 272]	962	[808, 804]	1785	[2343, 2344]	2608	[2913, 1366]
140	[273, 274]	963	[668, 634]	1786	[2345, 2346]	2609	[2914, 916]
141	[275, 276]	964	[670, 1548]	1787	[1177, 459]	2610	[2270, 2018]
142	[277, 278]	965	[481, 1549]	1788	[2347, 1980]	2611	[2915, 2313]
143	[279, 280]	966	[1550, 580]	1789	[2348, 2349]	2612	[2916, 1035]
144	[281, 282]	967	[1551, 758]	1790	[1043, 1237]	2613	[2917, 2918]
145	[283, 284]	968	[1552, 152]	1791	[2350, 1058]	2614	[2296, 2138]
146	[285, 286]	969	[1553, 1519]	1792	[2351, 2352]	2615	[2919, 2920]
147	[287, 288]	970	[1554, 36]	1793	[2353, 1952]	2616	[2921, 1018]
148	[289, 290]	971	[777, 1555]	1794	[468, 2354]	2617	[66, 1176]
149	[291, 292]	972	[1556, 1557]	1795	[1315, 2355]	2618	[315, 2922]
150	[293, 257]	973	[203, 521]	1796	[2041, 16]	2619	[2923, 2924]
151	[294, 104]	974	[1558, 488]	1797	[106, 2356]	2620	[2417, 999]
152	[295, 296]	975	[1559, 620]	1798	[961, 2357]	2621	[329, 2250]
153	[297, 92]	976	[1560, 197]	1799	[2358, 1234]	2622	[2925, 2787]
154	[298, 299]	977	[790, 1561]	1800	[2359, 1232]	2623	[2926, 2166]
155	[300, 301]	978	[1562, 1563]	1801	[1998, 2119]	2624	[2927, 2928]
156	[302, 303]	979	[1564, 1565]	1802	[2360, 1341]	2625	[2929, 2321]
157	[304, 305]	980	[217, 1566]	1803	[829, 1073]	2626	[2930, 2931]
158	[306, 307]	981	[522, 768]	1804	[2361, 1121]	2627	[997, 107]
159	[308, 309]	982	[1567, 233]	1805	[1091, 2362]	2628	[2932, 1254]
160	[310, 311]	983	[1568, 1493]	1806	[1306, 2363]	2629	[2933, 2934]
161	[312, 313]	984	[1569, 1570]	1807	[2364, 2365]	2630	[1132, 2108]
162	[314, 315]	985	[605, 511]	1808	[2366, 287]	2631	[1005, 2155]

163	[316, 317]	986	[1571, 621]	1809	[2367, 889]	2632	[2935, 2329]
164	[318, 319]	987	[1572, 1475]	1810	[2368, 1147]	2633	[2936, 830]
165	[320, 321]	988	[1573, 1574]	1811	[2369, 1978]	2634	[385, 1265]
166	[322, 323]	989	[1575, 1576]	1812	[1933, 1341]	2635	[361, 2937]
167	[324, 325]	990	[1577, 1578]	1813	[2370, 2320]	2636	[2920, 2004]
168	[326, 327]	991	[1579, 1580]	1814	[2371, 296]	2637	[2938, 431]
169	[328, 329]	992	[1581, 1582]	1815	[2372, 369]	2638	[2939, 2323]
170	[330, 331]	993	[1583, 194]	1816	[2373, 1060]	2639	[985, 948]
171	[332, 333]	994	[671, 1584]	1817	[2374, 1171]	2640	[2940, 4]
172	[334, 335]	995	[1585, 1586]	1818	[2375, 2376]	2641	[2941, 118]
173	[336, 337]	996	[1587, 1588]	1819	[22, 1945]	2642	[2942, 1348]
174	[338, 339]	997	[1589, 1590]	1820	[455, 2377]	2643	[2943, 2937]
175	[340, 338]	998	[564, 611]	1821	[2378, 2049]	2644	[2311, 1244]
176	[341, 342]	999	[1591, 1592]	1822	[2379, 299]	2645	[1168, 2858]
177	[343, 344]	1000	[7, 1593]	1823	[2380, 2381]	2646	[2047, 925]
178	[345, 346]	1001	[1450, 136]	1824	[2382, 1331]	2647	[2944, 1030]
179	[347, 348]	1002	[1594, 654]	1825	[2383, 2384]	2648	[2290, 1322]
180	[349, 280]	1003	[1595, 1586]	1826	[117, 969]	2649	[2945, 1986]
181	[350, 351]	1004	[1596, 509]	1827	[2385, 2079]	2650	[2946, 2947]
182	[352, 353]	1005	[1597, 1598]	1828	[2386, 2302]	2651	[2948, 2083]
183	[354, 355]	1006	[1599, 695]	1829	[2387, 2388]	2652	[2949, 2012]
184	[356, 357]	1007	[228, 1600]	1830	[2389, 2390]	2653	[2950, 2146]
185	[358, 359]	1008	[1601, 7]	1831	[1290, 325]	2654	[2887, 924]
186	[360, 361]	1009	[548, 662]	1832	[2363, 1112]	2655	[2951, 420]
187	[362, 66]	1010	[1602, 1383]	1833	[2391, 1210]	2656	[2952, 1179]
188	[363, 364]	1011	[1603, 1581]	1834	[2392, 1080]	2657	[2953, 2029]
189	[365, 366]	1012	[201, 1604]	1835	[2393, 2289]	2658	[2954, 1981]
190	[367, 122]	1013	[825, 546]	1836	[1334, 2394]	2659	[1962, 2826]
191	[368, 63]	1014	[1605, 1606]	1837	[2395, 1919]	2660	[2955, 2956]
192	[369, 370]	1015	[1607, 1608]	1838	[2396, 28]	2661	[2957, 877]
193	[371, 372]	1016	[1609, 640]	1839	[1988, 1068]	2662	[2958, 2059]
194	[373, 374]	1017	[1610, 1611]	1840	[2397, 2295]	2663	[2959, 2917]
195	[375, 376]	1018	[1612, 1538]	1841	[2398, 2207]	2664	[2960, 2961]
196	[377, 378]	1019	[1613, 1587]	1842	[2399, 2100]	2665	[84, 285]
197	[379, 380]	1020	[1614, 1615]	1843	[2400, 1097]	2666	[1159, 116]
198	[381, 270]	1021	[1593, 771]	1844	[2401, 441]	2667	[2962, 2963]
199	[382, 383]	1022	[1616, 1617]	1845	[2402, 951]	2668	[2964, 123]
200	[384, 258]	1023	[1550, 1618]	1846	[2403, 1302]	2669	[2266, 1202]
201	[317, 385]	1024	[1619, 1507]	1847	[2404, 2405]	2670	[2140, 2412]
202	[386, 387]	1025	[1620, 1621]	1848	[2012, 2264]	2671	[2965, 2097]
203	[388, 377]	1026	[504, 1622]	1849	[1983, 419]	2672	[2102, 2222]
204	[389, 390]	1027	[1623, 1521]	1850	[1338, 2406]	2673	[2414, 2791]
205	[391, 392]	1028	[1624, 1625]	1851	[2407, 2145]	2674	[2966, 2902]
206	[393, 394]	1029	[727, 1494]	1852	[2408, 913]	2675	[2961, 2207]

207	[395, 396]	1030	[683, 1626]	1853	[2409, 94]	2676	[251, 2967]
208	[397, 398]	1031	[1627, 1628]	1854	[1172, 1117]	2677	[2182, 1183]
209	[399, 400]	1032	[1629, 1630]	1855	[2410, 937]	2678	[2968, 2388]
210	[401, 402]	1033	[1631, 602]	1856	[2411, 288]	2679	[2136, 2969]
211	[403, 404]	1034	[1489, 578]	1857	[2412, 2243]	2680	[2970, 974]
212	[405, 334]	1035	[1618, 1632]	1858	[2413, 2414]	2681	[2971, 1162]
213	[406, 93]	1036	[194, 785]	1859	[2415, 873]	2682	[2972, 2178]
214	[407, 408]	1037	[1633, 1634]	1860	[2416, 1351]	2683	[2043, 2973]
215	[409, 410]	1038	[1635, 1574]	1861	[1220, 2351]	2684	[2974, 977]
216	[411, 412]	1039	[810, 497]	1862	[1092, 2417]	2685	[1048, 1370]
217	[413, 414]	1040	[173, 1592]	1863	[2418, 1069]	2686	[2306, 2975]
218	[415, 416]	1041	[490, 1636]	1864	[2419, 338]	2687	[837, 1090]
219	[417, 418]	1042	[1603, 1637]	1865	[2248, 284]	2688	[2152, 2202]
220	[419, 420]	1043	[1638, 1639]	1866	[2420, 2298]	2689	[2976, 294]
221	[421, 422]	1044	[210, 716]	1867	[2421, 1325]	2690	[2977, 898]
222	[423, 424]	1045	[580, 1632]	1868	[2422, 2423]	2691	[2161, 451]
223	[425, 426]	1046	[690, 1640]	1869	[78, 1976]	2692	[831, 2164]
224	[427, 428]	1047	[1641, 706]	1870	[2071, 437]	2693	[2978, 1354]
225	[429, 430]	1048	[1642, 1643]	1871	[2222, 412]	2694	[2979, 2980]
226	[431, 432]	1049	[1565, 681]	1872	[1118, 295]	2695	[2981, 2296]
227	[433, 434]	1050	[1644, 1548]	1873	[2424, 1297]	2696	[2832, 2982]
228	[435, 436]	1051	[738, 1583]	1874	[2425, 276]	2697	[2455, 1094]
229	[437, 438]	1052	[1645, 1585]	1875	[2426, 2427]	2698	[2166, 949]
230	[439, 440]	1053	[1646, 1647]	1876	[2428, 1036]	2699	[2365, 1026]
231	[441, 363]	1054	[1648, 1649]	1877	[2429, 378]	2700	[2983, 1017]
232	[442, 111]	1055	[1650, 1651]	1878	[2430, 865]	2701	[2984, 1165]
233	[443, 444]	1056	[1419, 539]	1879	[2431, 991]	2702	[2985, 2986]
234	[445, 446]	1057	[170, 547]	1880	[1202, 2023]	2703	[2987, 984]
235	[447, 448]	1058	[1652, 1542]	1881	[2432, 2199]	2704	[2988, 829]
236	[449, 450]	1059	[161, 1629]	1882	[2433, 452]	2705	[2989, 117]
237	[451, 452]	1060	[1653, 537]	1883	[2000, 2319]	2706	[1352, 5]
238	[26, 453]	1061	[1476, 1547]	1884	[2434, 2435]	2707	[2990, 1376]
239	[454, 455]	1062	[1654, 671]	1885	[2436, 2153]	2708	[2991, 1231]
240	[456, 457]	1063	[515, 1655]	1886	[2210, 1103]	2709	[465, 1280]
241	[458, 459]	1064	[1656, 690]	1887	[2437, 2125]	2710	[2054, 1067]
242	[460, 461]	1065	[1657, 1658]	1888	[2438, 2291]	2711	[2992, 2993]
243	[462, 463]	1066	[1400, 1659]	1889	[2439, 2233]	2712	[2283, 417]
244	[464, 465]	1067	[1540, 1660]	1890	[920, 1987]	2713	[1275, 2994]
245	[466, 428]	1068	[1661, 684]	1891	[2440, 1296]	2714	[991, 1364]
246	[467, 468]	1069	[1662, 482]	1892	[2441, 467]	2715	[2995, 1181]
247	[469, 470]	1070	[1571, 782]	1893	[2067, 2442]	2716	[2996, 453]
248	[471, 472]	1071	[134, 1590]	1894	[2443, 2327]	2717	[2997, 436]
249	[473, 474]	1072	[1663, 1664]	1895	[2444, 2175]	2718	[2998, 2822]
250	[475, 476]	1073	[1665, 1666]	1896	[2445, 2270]	2719	[2999, 2165]

251	[477, 478]	1074	[1381, 1667]	1897	[977, 99]	2720	[3000, 2198]
252	[479, 480]	1075	[1668, 1669]	1898	[2446, 2132]	2721	[3001, 1963]
253	[481, 482]	1076	[1670, 1671]	1899	[2447, 2448]	2722	[268, 2228]
254	[483, 48]	1077	[54, 1672]	1900	[2449, 2031]	2723	[70, 3002]
255	[484, 192]	1078	[1673, 1674]	1901	[2450, 2451]	2724	[2844, 2158]
256	[485, 148]	1079	[1403, 1422]	1902	[344, 2452]	2725	[930, 3003]
257	[486, 485]	1080	[1675, 1408]	1903	[2453, 418]	2726	[3004, 286]
258	[487, 488]	1081	[1676, 725]	1904	[2454, 2455]	2727	[1376, 1071]
259	[489, 490]	1082	[528, 1677]	1905	[2456, 1251]	2728	[3005, 2838]
260	[491, 492]	1083	[723, 1677]	1906	[2215, 1995]	2729	[3006, 3007]
261	[493, 216]	1084	[174, 174]	1907	[2457, 1137]	2730	[3008, 909]
262	[494, 495]	1085	[1678, 209]	1908	[2458, 264]	2731	[3009, 868]
263	[496, 497]	1086	[529, 724]	1909	[1647, 775]	2732	[426, 2797]
264	[498, 499]	1087	[1678, 1505]	1910	[1762, 782]	2733	[3010, 1990]
265	[500, 501]	1088	[627, 1432]	1911	[2459, 1793]	2734	[438, 2233]
266	[158, 502]	1089	[725, 627]	1912	[1548, 1734]	2735	[339, 2060]
267	[503, 504]	1090	[1650, 591]	1913	[2460, 512]	2736	[3011, 376]
268	[505, 506]	1091	[1679, 169]	1914	[679, 1387]	2737	[972, 2078]
269	[507, 508]	1092	[1509, 751]	1915	[1760, 617]	2738	[854, 2992]
270	[509, 510]	1093	[1680, 1501]	1916	[2461, 638]	2739	[3012, 2259]
271	[511, 512]	1094	[1681, 1682]	1917	[1585, 1725]	2740	[3013, 902]
272	[513, 514]	1095	[796, 136]	1918	[579, 1618]	2741	[3014, 1130]
273	[515, 516]	1096	[1541, 1683]	1919	[654, 214]	2742	[3015, 3016]
274	[517, 518]	1097	[1460, 173]	1920	[2462, 217]	2743	[3017, 3018]
275	[519, 520]	1098	[1684, 1685]	1921	[727, 1873]	2744	[3019, 2278]
276	[521, 196]	1099	[1686, 520]	1922	[556, 1580]	2745	[3020, 3021]
277	[522, 523]	1100	[1687, 1688]	1923	[487, 37]	2746	[2059, 457]
278	[524, 128]	1101	[1543, 1689]	1924	[1497, 1728]	2747	[3022, 2312]
279	[525, 487]	1102	[1690, 1485]	1925	[2463, 1487]	2748	[1084, 3023]
280	[526, 527]	1103	[745, 198]	1926	[1413, 1656]	2749	[1198, 2244]
281	[528, 529]	1104	[214, 46]	1927	[1424, 2464]	2750	[3024, 1045]
282	[530, 531]	1105	[1691, 1692]	1928	[2465, 2466]	2751	[3025, 350]
283	[532, 533]	1106	[152, 1693]	1929	[2467, 1897]	2752	[3026, 2224]
284	[534, 206]	1107	[1694, 733]	1930	[2468, 2469]	2753	[1187, 1129]
285	[535, 536]	1108	[1695, 184]	1931	[477, 1625]	2754	[3027, 2187]
286	[169, 474]	1109	[13, 1696]	1932	[1652, 1885]	2755	[2452, 3028]
287	[537, 538]	1110	[1697, 744]	1933	[749, 753]	2756	[3029, 938]
288	[539, 157]	1111	[1698, 1699]	1934	[1690, 776]	2757	[2187, 358]
289	[540, 541]	1112	[1491, 1700]	1935	[2470, 2471]	2758	[3030, 455]
290	[542, 543]	1113	[626, 528]	1936	[222, 1415]	2759	[3031, 3032]
291	[544, 545]	1114	[1701, 1702]	1937	[1839, 1389]	2760	[3033, 1344]
292	[546, 547]	1115	[1614, 1703]	1938	[2472, 2473]	2761	[3034, 2974]
293	[548, 549]	1116	[1704, 1598]	1939	[2474, 2475]	2762	[3035, 2116]
294	[550, 551]	1117	[1705, 1456]	1940	[1457, 2476]	2763	[2193, 2448]

295	[552, 553]	1118	[1706, 648]	1941	[2477, 2478]	2764	[3036, 353]
296	[554, 140]	1119	[171, 491]	1942	[806, 570]	2765	[2027, 2068]
297	[555, 556]	1120	[1707, 735]	1943	[1385, 2479]	2766	[2323, 2197]
298	[557, 558]	1121	[540, 245]	1944	[2480, 641]	2767	[1218, 2419]
299	[244, 559]	1122	[1708, 559]	1945	[2481, 193]	2768	[3037, 110]
300	[560, 234]	1123	[1709, 513]	1946	[2482, 2483]	2769	[2294, 392]
301	[518, 561]	1124	[1710, 1695]	1947	[1569, 2484]	2770	[865, 424]
302	[562, 563]	1125	[1711, 61]	1948	[2471, 2485]	2771	[3038, 320]
303	[564, 565]	1126	[571, 1712]	1949	[2486, 558]	2772	[2209, 1170]
304	[566, 567]	1127	[1428, 787]	1950	[2487, 244]	2773	[2169, 1287]
305	[476, 568]	1128	[1713, 1403]	1951	[2488, 217]	2774	[3039, 1180]
306	[562, 569]	1129	[1714, 548]	1952	[2489, 691]	2775	[3040, 3041]
307	[570, 571]	1130	[1485, 777]	1953	[1438, 2490]	2776	[3042, 292]
308	[572, 573]	1131	[1452, 1715]	1954	[2491, 475]	2777	[3043, 1078]
309	[574, 575]	1132	[1716, 31]	1955	[2492, 1791]	2778	[249, 3044]
310	[576, 212]	1133	[1717, 1626]	1956	[2493, 2494]	2779	[4, 431]
311	[577, 578]	1134	[1718, 1719]	1957	[212, 794]	2780	[3045, 3046]
312	[579, 580]	1135	[1720, 1721]	1958	[149, 737]	2781	[1500, 1857]
313	[581, 582]	1136	[1529, 1722]	1959	[132, 476]	2782	[2584, 3047]
314	[583, 584]	1137	[1723, 1381]	1960	[2495, 2496]	2783	[1399, 1478]
315	[585, 563]	1138	[1540, 1724]	1961	[2497, 629]	2784	[1563, 748]
316	[586, 587]	1139	[1725, 608]	1962	[1709, 596]	2785	[1562, 1474]
317	[588, 589]	1140	[1726, 1727]	1963	[2498, 1606]	2786	[614, 1853]
318	[590, 591]	1141	[1728, 1729]	1964	[2471, 537]	2787	[2722, 2558]
319	[592, 593]	1142	[1730, 1686]	1965	[513, 2499]	2788	[766, 1871]
320	[594, 595]	1143	[1731, 584]	1966	[575, 47]	2789	[229, 2568]
321	[596, 514]	1144	[1732, 1733]	1967	[486, 1572]	2790	[1470, 3048]
322	[493, 597]	1145	[1427, 1448]	1968	[2463, 708]	2791	[2461, 1526]
323	[598, 205]	1146	[1702, 592]	1969	[1726, 2500]	2792	[819, 1757]
324	[599, 600]	1147	[1390, 1695]	1970	[2486, 1869]	2793	[633, 2740]
325	[601, 602]	1148	[1734, 1584]	1971	[2501, 1889]	2794	[39, 1683]
326	[603, 604]	1149	[1735, 1636]	1972	[1883, 1530]	2795	[1803, 1874]
327	[572, 605]	1150	[193, 784]	1973	[2502, 2503]	2796	[3049, 1571]
328	[606, 607]	1151	[1736, 481]	1974	[1610, 2504]	2797	[2590, 3050]
329	[608, 609]	1152	[238, 1647]	1975	[186, 2505]	2798	[1725, 1531]
330	[610, 603]	1153	[1737, 240]	1976	[155, 1536]	2799	[1542, 1886]
331	[611, 612]	1154	[1738, 1686]	1977	[1774, 1783]	2800	[2696, 542]
332	[126, 613]	1155	[802, 1739]	1978	[2506, 1891]	2801	[1791, 1492]
333	[614, 615]	1156	[475, 133]	1979	[2507, 1864]	2802	[2637, 225]
334	[616, 47]	1157	[1740, 1741]	1980	[2508, 765]	2803	[1888, 1726]
335	[617, 618]	1158	[1711, 696]	1981	[1494, 130]	2804	[2533, 678]
336	[619, 620]	1159	[1742, 231]	1982	[2491, 132]	2805	[3051, 1540]
337	[621, 622]	1160	[1743, 132]	1983	[1563, 755]	2806	[3052, 2637]
338	[623, 624]	1161	[32, 1667]	1984	[1737, 825]	2807	[557, 1869]

339	[625, 626]	1162	[811, 1744]	1985	[740, 1663]	2808	[3053, 1831]
340	[627, 625]	1163	[747, 650]	1986	[1719, 1833]	2809	[750, 1510]
341	[628, 629]	1164	[1745, 1721]	1987	[2509, 186]	2810	[2498, 2621]
342	[630, 631]	1165	[1746, 240]	1988	[1736, 1662]	2811	[1533, 1577]
343	[49, 632]	1166	[1747, 241]	1989	[675, 2510]	2812	[1792, 2770]
344	[633, 634]	1167	[1406, 1748]	1990	[2511, 1660]	2813	[3054, 2493]
345	[635, 636]	1168	[582, 179]	1991	[2512, 158]	2814	[2605, 2651]
346	[637, 185]	1169	[1441, 1749]	1992	[227, 1424]	2815	[1854, 2597]
347	[638, 639]	1170	[538, 1405]	1993	[2513, 1485]	2816	[1564, 680]
348	[640, 641]	1171	[1750, 1705]	1994	[2514, 477]	2817	[3055, 241]
349	[642, 549]	1172	[1391, 184]	1995	[2515, 236]	2818	[753, 1477]
350	[643, 644]	1173	[807, 803]	1996	[2516, 2517]	2819	[3056, 3057]
351	[645, 646]	1174	[1751, 1414]	1997	[2518, 2519]	2820	[791, 3058]
352	[647, 648]	1175	[1752, 1753]	1998	[1552, 1866]	2821	[1401, 1879]
353	[649, 650]	1176	[1754, 813]	1999	[1891, 521]	2822	[3059, 692]
354	[651, 652]	1177	[133, 568]	2000	[2520, 2521]	2823	[691, 3060]
355	[653, 654]	1178	[1755, 1417]	2001	[749, 1476]	2824	[1628, 1639]
356	[655, 656]	1179	[1756, 1496]	2002	[1484, 1478]	2825	[3061, 1808]
357	[657, 658]	1180	[182, 1757]	2003	[2522, 1656]	2826	[2701, 1585]
358	[659, 146]	1181	[192, 31]	2004	[2523, 723]	2827	[3062, 733]
359	[660, 129]	1182	[1607, 1758]	2005	[2524, 1824]	2828	[1860, 805]
360	[169, 661]	1183	[1560, 745]	2006	[761, 523]	2829	[2619, 2671]
361	[642, 662]	1184	[1759, 1760]	2007	[582, 204]	2830	[1695, 637]
362	[663, 544]	1185	[1586, 608]	2008	[2525, 815]	2831	[1723, 32]
363	[664, 502]	1186	[1428, 1714]	2009	[1751, 222]	2832	[816, 675]
364	[665, 666]	1187	[1629, 1761]	2010	[2526, 2527]	2833	[2522, 1398]
365	[667, 668]	1188	[1602, 1480]	2011	[496, 2528]	2834	[1556, 2468]
366	[669, 670]	1189	[1762, 621]	2012	[1582, 2529]	2835	[778, 2769]
367	[671, 672]	1190	[1735, 1461]	2013	[1594, 213]	2836	[3063, 1671]
368	[673, 128]	1191	[1763, 734]	2014	[1596, 54]	2837	[2600, 3064]
369	[674, 675]	1192	[1381, 1764]	2015	[239, 2530]	2838	[2526, 1894]
370	[676, 677]	1193	[1707, 574]	2016	[696, 1675]	2839	[586, 495]
371	[678, 679]	1194	[1765, 1412]	2017	[2531, 2529]	2840	[773, 3065]
372	[680, 681]	1195	[1766, 1767]	2018	[2532, 2496]	2841	[1416, 1756]
373	[682, 683]	1196	[1768, 1769]	2019	[1893, 2527]	2842	[1432, 2523]
374	[684, 685]	1197	[1770, 1771]	2020	[759, 1633]	2843	[1697, 1838]
375	[686, 687]	1198	[1507, 1504]	2021	[1578, 1392]	2844	[3066, 2633]
376	[688, 689]	1199	[1411, 14]	2022	[2533, 603]	2845	[1440, 1436]
377	[690, 691]	1200	[624, 1678]	2023	[2534, 1719]	2846	[2597, 1782]
378	[692, 693]	1201	[1772, 1773]	2024	[2535, 233]	2847	[793, 1631]
379	[611, 694]	1202	[1774, 1775]	2025	[1537, 2536]	2848	[1551, 2628]
380	[695, 670]	1203	[1747, 1776]	2026	[45, 1863]	2849	[2509, 1443]
381	[696, 62]	1204	[1772, 506]	2027	[2537, 774]	2850	[185, 197]
382	[697, 131]	1205	[499, 1777]	2028	[739, 1908]	2851	[3067, 2517]

383	[698, 699]	1206	[1778, 819]	2029	[2538, 2539]	2852	[1754, 1395]
384	[700, 701]	1207	[241, 1779]	2030	[1684, 2540]	2853	[2688, 1642]
385	[587, 702]	1208	[1377, 238]	2031	[1815, 484]	2854	[539, 820]
386	[643, 703]	1209	[1417, 1780]	2032	[1410, 13]	2855	[3068, 659]
387	[704, 623]	1210	[1781, 1643]	2033	[2541, 517]	2856	[1895, 3069]
388	[705, 692]	1211	[1782, 1783]	2034	[2542, 668]	2857	[752, 1476]
389	[706, 707]	1212	[145, 1784]	2035	[1532, 805]	2858	[2587, 803]
390	[708, 709]	1213	[1785, 177]	2036	[2543, 1610]	2859	[3070, 814]
391	[710, 711]	1214	[1786, 1787]	2037	[2544, 556]	2860	[1447, 1428]
392	[712, 713]	1215	[1788, 631]	2038	[736, 2545]	2861	[3071, 2473]
393	[714, 715]	1216	[1789, 1790]	2039	[1465, 1753]	2862	[1637, 2531]
394	[716, 646]	1217	[1791, 1700]	2040	[628, 2546]	2863	[1717, 3072]
395	[717, 607]	1218	[646, 623]	2041	[2547, 2548]	2864	[637, 1560]
396	[718, 719]	1219	[1792, 1793]	2042	[11, 2549]	2865	[3073, 56]
397	[720, 721]	1220	[1794, 505]	2043	[2550, 2551]	2866	[2751, 1524]
398	[722, 545]	1221	[1795, 1796]	2044	[704, 1619]	2867	[1676, 1508]
399	[723, 529]	1222	[717, 1380]	2045	[645, 704]	2868	[547, 1765]
400	[724, 725]	1223	[1797, 1638]	2046	[529, 1676]	2869	[3074, 2762]
401	[626, 723]	1224	[1734, 672]	2047	[1619, 624]	2870	[587, 3075]
402	[175, 174]	1225	[1798, 1799]	2048	[1573, 2552]	2871	[1612, 2536]
403	[726, 727]	1226	[1752, 1800]	2049	[1636, 1462]	2872	[3076, 487]
404	[728, 729]	1227	[1801, 1629]	2050	[2553, 790]	2873	[2755, 3077]
405	[730, 731]	1228	[1731, 1802]	2051	[2554, 2539]	2874	[2732, 3078]
406	[732, 188]	1229	[1803, 617]	2052	[2555, 700]	2875	[3079, 2479]
407	[733, 734]	1230	[1506, 716]	2053	[1806, 1655]	2876	[3080, 3081]
408	[735, 575]	1231	[1505, 210]	2054	[1513, 2556]	2877	[3082, 1379]
409	[736, 737]	1232	[1432, 626]	2055	[1389, 615]	2878	[1565, 3083]
410	[738, 193]	1233	[1804, 653]	2056	[2557, 2558]	2879	[583, 1802]
411	[739, 740]	1234	[1805, 231]	2057	[1813, 2559]	2880	[1819, 151]
412	[741, 742]	1235	[1599, 669]	2058	[824, 1624]	2881	[3084, 712]
413	[743, 744]	1236	[1806, 516]	2059	[51, 2560]	2882	[517, 1528]
414	[185, 745]	1237	[1637, 1582]	2060	[2561, 2562]	2883	[3085, 729]
415	[746, 747]	1238	[1807, 1808]	2061	[1889, 1727]	2884	[2775, 3086]
416	[748, 749]	1239	[616, 483]	2062	[2563, 760]	2885	[1384, 1856]
417	[750, 751]	1240	[1809, 505]	2063	[142, 687]	2886	[568, 513]
418	[752, 753]	1241	[1453, 164]	2064	[2541, 1426]	2887	[3053, 1587]
419	[754, 7]	1242	[1810, 669]	2065	[2564, 1899]	2888	[168, 473]
420	[755, 749]	1243	[1811, 763]	2066	[664, 159]	2889	[473, 661]
421	[576, 756]	1244	[1812, 1472]	2067	[2565, 1622]	2890	[3087, 551]
422	[757, 758]	1245	[1813, 1814]	2068	[2566, 2483]	2891	[3066, 3088]
423	[759, 760]	1246	[1815, 191]	2069	[1425, 517]	2892	[1742, 1877]
424	[615, 761]	1247	[560, 1816]	2070	[2567, 2568]	2893	[684, 3089]
425	[762, 763]	1248	[1817, 684]	2071	[2569, 822]	2894	[3090, 741]
426	[764, 765]	1249	[1818, 470]	2072	[1831, 1740]	2895	[2686, 1418]

427	[766, 767]	1250	[1819, 786]	2073	[1804, 1594]	2896	[2511, 1724]
428	[761, 768]	1251	[1820, 158]	2074	[2570, 61]	2897	[3091, 2577]
429	[619, 769]	1252	[62, 1408]	2075	[544, 2571]	2898	[1786, 3092]
430	[127, 770]	1253	[1821, 1822]	2076	[2510, 238]	2899	[484, 1716]
431	[8, 771]	1254	[700, 1784]	2077	[1842, 2572]	2900	[3093, 747]
432	[697, 772]	1255	[1823, 1824]	2078	[1555, 1806]	2901	[1905, 3092]
433	[740, 773]	1256	[1677, 724]	2079	[2573, 2574]	2902	[2576, 3094]
434	[774, 601]	1257	[1825, 1826]	2080	[1430, 1572]	2903	[2523, 528]
435	[239, 775]	1258	[1827, 1537]	2081	[2575, 1814]	2904	[3095, 531]
436	[776, 777]	1259	[1606, 1828]	2082	[2576, 2577]	2905	[1675, 532]
437	[778, 779]	1260	[1829, 127]	2083	[756, 1469]	2906	[1486, 708]
438	[780, 781]	1261	[1830, 1471]	2084	[2578, 126]	2907	[796, 2604]
439	[782, 783]	1262	[608, 676]	2085	[2579, 2580]	2908	[686, 143]
440	[784, 785]	1263	[650, 34]	2086	[747, 33]	2909	[3096, 605]
441	[150, 786]	1264	[610, 678]	2087	[561, 190]	2910	[2506, 203]
442	[787, 548]	1265	[1831, 1588]	2088	[2581, 656]	2911	[1673, 1669]
443	[55, 788]	1266	[1832, 1833]	2089	[1588, 1741]	2912	[1755, 1756]
444	[789, 790]	1267	[1616, 1834]	2090	[1448, 787]	2913	[1535, 1852]
445	[791, 792]	1268	[1659, 227]	2091	[1778, 182]	2914	[2477, 2637]
446	[793, 601]	1269	[573, 511]	2092	[2582, 2553]	2915	[646, 1619]
447	[756, 794]	1270	[161, 1835]	2093	[665, 2583]	2916	[503, 2565]
448	[795, 796]	1271	[1383, 581]	2094	[479, 1728]	2917	[2610, 2643]
449	[797, 798]	1272	[678, 604]	2095	[1797, 1628]	2918	[43, 1681]
450	[799, 800]	1273	[1836, 1837]	2096	[222, 1481]	2919	[625, 2523]
451	[801, 802]	1274	[1546, 1563]	2097	[1557, 2469]	2920	[3097, 2774]
452	[58, 139]	1275	[609, 677]	2098	[2584, 2519]	2921	[148, 736]
453	[803, 804]	1276	[743, 1838]	2099	[1835, 1761]	2922	[3098, 2466]
454	[130, 772]	1277	[1423, 228]	2100	[1713, 1421]	2923	[1866, 1693]
455	[805, 806]	1278	[1839, 614]	2101	[2585, 501]	2924	[3099, 161]
456	[807, 808]	1279	[160, 1801]	2102	[2586, 741]	2925	[1899, 636]
457	[809, 810]	1280	[1671, 1604]	2103	[53, 509]	2926	[2553, 1846]
458	[811, 812]	1281	[603, 679]	2104	[2534, 1832]	2927	[1597, 2766]
459	[813, 594]	1282	[1840, 1841]	2105	[2587, 808]	2928	[2563, 1633]
460	[651, 814]	1283	[1842, 1843]	2106	[2588, 1544]	2929	[755, 752]
461	[815, 154]	1284	[1646, 239]	2107	[2579, 2589]	2930	[219, 823]
462	[816, 817]	1285	[1659, 1423]	2108	[1715, 164]	2931	[3100, 1891]
463	[818, 819]	1286	[1844, 1742]	2109	[2582, 789]	2932	[2777, 1571]
464	[156, 820]	1287	[223, 1845]	2110	[2537, 793]	2933	[1504, 209]
465	[691, 821]	1288	[1846, 1561]	2111	[1890, 793]	2934	[3101, 644]
466	[822, 823]	1289	[1847, 1848]	2112	[692, 1749]	2935	[2626, 1744]
467	[824, 477]	1290	[1849, 822]	2113	[2590, 2591]	2936	[1884, 534]
468	[825, 170]	1291	[133, 1709]	2114	[2592, 2593]	2937	[495, 702]
469	[826, 827]	1292	[1507, 1678]	2115	[520, 499]	2938	[1873, 697]
470	[828, 829]	1293	[1850, 1851]	2116	[2594, 1611]	2939	[2613, 167]

471	[830, 831]	1294	[155, 1852]	2117	[2595, 2507]	2940	[3102, 42]
472	[832, 90]	1295	[782, 622]	2118	[231, 2596]	2941	[3056, 3103]
473	[833, 834]	1296	[1853, 761]	2119	[2597, 1774]	2942	[640, 3104]
474	[327, 835]	1297	[1854, 1855]	2120	[776, 1445]	2943	[525, 1558]
475	[836, 837]	1298	[1856, 1466]	2121	[2598, 1453]	2944	[243, 1708]
476	[838, 839]	1299	[471, 1857]	2122	[552, 2599]	2945	[2566, 3105]
477	[840, 841]	1300	[760, 1634]	2123	[1645, 1595]	2946	[1901, 2471]
478	[842, 843]	1301	[669, 1644]	2124	[1702, 2600]	2947	[3106, 1397]
479	[844, 845]	1302	[54, 510]	2125	[2496, 1855]	2948	[2608, 2754]
480	[846, 847]	1303	[1858, 1545]	2126	[1898, 595]	2949	[803, 2682]
481	[848, 849]	1304	[1859, 810]	2127	[507, 2521]	2950	[1640, 3060]
482	[850, 851]	1305	[1860, 1533]	2128	[2601, 1537]	2951	[1455, 3107]
483	[852, 851]	1306	[802, 658]	2129	[1855, 1774]	2952	[558, 3108]
484	[853, 854]	1307	[1408, 533]	2130	[2602, 2603]	2953	[1879, 2716]
485	[855, 291]	1308	[1858, 815]	2131	[1400, 1479]	2954	[1732, 1648]
486	[856, 857]	1309	[1861, 1805]	2132	[2604, 137]	2955	[524, 660]
487	[858, 77]	1310	[1504, 1505]	2133	[2532, 1854]	2956	[3109, 2704]
488	[859, 860]	1311	[1862, 715]	2134	[2605, 146]	2957	[746, 649]
489	[861, 862]	1312	[214, 1863]	2135	[2606, 1568]	2958	[2693, 809]
490	[863, 864]	1313	[1768, 1864]	2136	[565, 612]	2959	[3110, 152]
491	[331, 326]	1314	[500, 1865]	2137	[1679, 473]	2960	[764, 2630]
492	[333, 865]	1315	[1866, 153]	2138	[2607, 155]	2961	[3111, 2744]
493	[866, 867]	1316	[787, 642]	2139	[2608, 1881]	2962	[2711, 2599]
494	[868, 869]	1317	[1867, 218]	2140	[2593, 2609]	2963	[3112, 3113]
495	[870, 871]	1318	[1868, 1642]	2141	[2610, 1468]	2964	[698, 3114]
496	[872, 848]	1319	[1869, 1444]	2142	[2611, 1465]	2965	[3111, 3115]
497	[873, 874]	1320	[1479, 1423]	2143	[488, 2612]	2966	[722, 2571]
498	[875, 876]	1321	[1870, 1829]	2144	[2613, 2614]	2967	[3116, 2580]
499	[6, 877]	1322	[1871, 1451]	2145	[1776, 242]	2968	[521, 3117]
500	[878, 879]	1323	[1868, 1781]	2146	[2470, 1653]	2969	[3118, 3119]
501	[880, 881]	1324	[1872, 719]	2147	[2601, 1612]	2970	[2709, 3120]
502	[882, 346]	1325	[1873, 130]	2148	[1833, 1519]	2971	[1411, 1696]
503	[883, 884]	1326	[1874, 618]	2149	[1668, 1674]	2972	[1525, 638]
504	[885, 886]	1327	[1875, 1876]	2150	[2615, 781]	2973	[3121, 2668]
505	[887, 888]	1328	[1877, 232]	2151	[1588, 2616]	2974	[3122, 3113]
506	[889, 890]	1329	[1453, 1878]	2152	[1810, 695]	2975	[3123, 1402]
507	[891, 892]	1330	[675, 1377]	2153	[1415, 1482]	2976	[760, 2715]
508	[893, 442]	1331	[1879, 1515]	2154	[1587, 1740]	2977	[1511, 3124]
509	[894, 895]	1332	[1759, 1803]	2155	[2617, 1576]	2978	[2462, 1867]
510	[108, 896]	1333	[1794, 1772]	2156	[2618, 1434]	2979	[2653, 2603]
511	[897, 73]	1334	[1880, 1881]	2157	[554, 190]	2980	[3125, 51]
512	[898, 899]	1335	[1820, 664]	2158	[1878, 165]	2981	[1545, 2607]
513	[900, 901]	1336	[1475, 149]	2159	[1589, 135]	2982	[3126, 1565]
514	[902, 903]	1337	[1795, 1882]	2160	[1636, 801]	2983	[2679, 3127]

515	[904, 905]	1338	[1883, 1722]	2161	[2574, 58]	2984	[1446, 515]
516	[906, 907]	1339	[1884, 205]	2162	[2619, 2620]	2985	[2481, 1583]
517	[908, 909]	1340	[1875, 1848]	2163	[2621, 1828]	2986	[3128, 792]
518	[910, 23]	1341	[1885, 1886]	2164	[2622, 2623]	2987	[2594, 2504]
519	[911, 6]	1342	[1805, 1877]	2165	[2624, 2625]	2988	[1606, 1665]
520	[912, 913]	1343	[1424, 1600]	2166	[561, 140]	2989	[1832, 1553]
521	[914, 268]	1344	[1426, 518]	2167	[1818, 1406]	2990	[1501, 3129]
522	[915, 916]	1345	[191, 1716]	2168	[2626, 812]	2991	[2761, 3130]
523	[917, 918]	1346	[635, 1887]	2169	[2627, 2625]	2992	[1825, 1837]
524	[919, 920]	1347	[1888, 1889]	2170	[2611, 1752]	2993	[3110, 1866]
525	[921, 922]	1348	[541, 246]	2171	[757, 2628]	2994	[3131, 2730]
526	[923, 924]	1349	[1890, 774]	2172	[2629, 1623]	2995	[555, 1579]
527	[925, 926]	1350	[1891, 195]	2173	[2508, 2630]	2996	[2516, 3132]
528	[927, 928]	1351	[1743, 475]	2174	[2551, 2550]	2997	[1694, 1763]
529	[929, 930]	1352	[1765, 492]	2175	[2631, 1608]	2998	[1830, 3048]
530	[931, 932]	1353	[1892, 541]	2176	[2632, 2633]	2999	[1706, 1394]
531	[933, 934]	1354	[1893, 1894]	2177	[1766, 2634]	3000	[3125, 2648]
532	[935, 305]	1355	[1576, 689]	2178	[480, 1729]	3001	[1595, 1725]
533	[936, 937]	1356	[1861, 1742]	2179	[1519, 2583]	3002	[3133, 50]
534	[938, 939]	1357	[1895, 1896]	2180	[2635, 2636]	3003	[3134, 2562]
535	[940, 908]	1358	[1580, 1897]	2181	[1904, 1882]	3004	[194, 588]
536	[941, 942]	1359	[570, 1392]	2182	[2637, 2638]	3005	[3059, 1441]
537	[943, 944]	1360	[813, 1898]	2183	[1745, 2639]	3006	[2718, 1458]
538	[945, 946]	1361	[1548, 671]	2184	[1677, 1676]	3007	[3135, 1512]
539	[947, 948]	1362	[1474, 748]	2185	[2640, 2641]	3008	[180, 3136]
540	[949, 950]	1363	[1899, 1887]	2186	[504, 2642]	3009	[1823, 3137]
541	[376, 951]	1364	[1578, 571]	2187	[781, 2636]	3010	[2745, 2707]
542	[952, 953]	1365	[1900, 1568]	2188	[1467, 2643]	3011	[154, 1535]
543	[954, 955]	1366	[1901, 1653]	2189	[804, 1435]	3012	[1829, 613]
544	[956, 957]	1367	[1902, 1903]	2190	[1661, 1488]	3013	[2681, 3138]
545	[958, 959]	1368	[1904, 1796]	2191	[2624, 2644]	3014	[1750, 1455]
546	[960, 961]	1369	[1378, 1652]	2192	[1462, 802]	3015	[166, 2614]
547	[457, 962]	1370	[706, 543]	2193	[679, 564]	3016	[1499, 539]
548	[963, 964]	1371	[1905, 1787]	2194	[2645, 1658]	3017	[762, 2771]
549	[965, 944]	1372	[568, 596]	2195	[2646, 526]	3018	[2742, 2764]
550	[966, 967]	1373	[1459, 172]	2196	[211, 756]	3019	[2586, 2709]
551	[968, 969]	1374	[1906, 1907]	2197	[2647, 582]	3020	[140, 1473]
552	[970, 388]	1375	[1738, 519]	2198	[1435, 1522]	3021	[3139, 3140]
553	[971, 972]	1376	[1908, 1663]	2199	[2648, 2560]	3022	[2565, 2642]
554	[973, 275]	1377	[1153, 1909]	2200	[733, 2649]	3023	[3141, 3078]
555	[974, 975]	1378	[1910, 1911]	2201	[1900, 726]	3024	[498, 1821]
556	[976, 977]	1379	[1912, 1913]	2202	[2650, 1899]	3025	[210, 645]
557	[978, 979]	1380	[1914, 1915]	2203	[489, 1735]	3026	[213, 45]
558	[980, 981]	1381	[370, 1330]	2204	[659, 2651]	3027	[2665, 659]

559	[982, 983]	1382	[1916, 1016]	2205	[676, 2652]	3028	[3142, 1843]
560	[984, 985]	1383	[1917, 398]	2206	[1635, 2552]	3029	[2735, 1520]
561	[986, 987]	1384	[1918, 1919]	2207	[1733, 1649]	3030	[663, 722]
562	[988, 989]	1385	[1261, 1920]	2208	[2653, 2654]	3031	[2659, 1735]
563	[990, 991]	1386	[1921, 1922]	2209	[2555, 145]	3032	[3143, 544]
564	[992, 993]	1387	[1923, 1064]	2210	[2638, 226]	3033	[1567, 560]
565	[994, 995]	1388	[1924, 1925]	2211	[1426, 1528]	3034	[2627, 2644]
566	[996, 997]	1389	[1272, 344]	2212	[1450, 2604]	3035	[2713, 3144]
567	[998, 999]	1390	[1137, 978]	2213	[128, 503]	3036	[518, 554]
568	[258, 902]	1391	[1926, 1227]	2214	[1568, 727]	3037	[601, 2655]
569	[420, 1000]	1392	[1927, 983]	2215	[1692, 1527]	3038	[1872, 3145]
570	[1001, 1002]	1393	[1002, 68]	2216	[2655, 2656]	3039	[3118, 3146]
571	[899, 1003]	1394	[1928, 1929]	2217	[655, 1707]	3040	[1776, 1779]
572	[1004, 1005]	1395	[1284, 1930]	2218	[2657, 2658]	3041	[3091, 3094]
573	[307, 898]	1396	[1931, 1337]	2219	[2659, 490]	3042	[2573, 57]
574	[1006, 1007]	1397	[1932, 1933]	2220	[2660, 1791]	3043	[2721, 1403]
575	[102, 97]	1398	[96, 1180]	2221	[580, 2661]	3044	[3147, 1596]
576	[255, 1008]	1399	[121, 1934]	2222	[1782, 1775]	3045	[1421, 1404]
577	[1009, 1010]	1400	[1935, 1936]	2223	[1657, 2662]	3046	[3148, 1908]
578	[1011, 1012]	1401	[1937, 1938]	2224	[2493, 2609]	3047	[2089, 2148]
579	[1013, 1014]	1402	[1939, 1000]	2225	[1836, 1826]	3048	[903, 1336]
580	[1015, 115]	1403	[1940, 1933]	2226	[499, 1822]	3049	[3016, 2426]
581	[1016, 347]	1404	[1941, 1942]	2227	[1730, 519]	3050	[3149, 1205]
582	[1017, 309]	1405	[1133, 1140]	2228	[2663, 1702]	3051	[1278, 2218]
583	[1018, 1019]	1406	[1943, 1364]	2229	[209, 1506]	3052	[3150, 2939]
584	[1020, 1021]	1407	[827, 1208]	2230	[2664, 1621]	3053	[3151, 2139]
585	[1022, 1023]	1408	[123, 1057]	2231	[149, 2545]	3054	[955, 2914]
586	[1024, 1025]	1409	[1141, 1944]	2232	[615, 522]	3055	[3152, 3153]
587	[1026, 1027]	1410	[1945, 1946]	2233	[1640, 821]	3056	[3154, 3155]
588	[1028, 1029]	1411	[1947, 1259]	2234	[2665, 2605]	3057	[3156, 1146]
589	[374, 1030]	1412	[1948, 319]	2235	[1609, 2480]	3058	[1229, 334]
590	[422, 1031]	1413	[1949, 1950]	2236	[1506, 645]	3059	[3157, 3158]
591	[1032, 1033]	1414	[1951, 1952]	2237	[175, 175]	3060	[3159, 374]
592	[1034, 1035]	1415	[1953, 952]	2238	[1478, 1659]	3061	[2063, 3160]
593	[1036, 1037]	1416	[1954, 1955]	2239	[2666, 2574]	3062	[3161, 1245]
594	[1038, 1039]	1417	[1956, 409]	2240	[1431, 625]	3063	[1256, 2156]
595	[1040, 839]	1418	[1957, 1958]	2241	[2667, 2641]	3064	[3162, 2140]
596	[260, 1041]	1419	[1959, 304]	2242	[602, 2656]	3065	[3163, 1355]
597	[1042, 1043]	1420	[981, 1960]	2243	[44, 1682]	3066	[3164, 828]
598	[1044, 393]	1421	[1961, 1962]	2244	[1770, 2668]	3067	[3165, 2444]
599	[967, 1045]	1422	[1963, 1139]	2245	[2547, 2669]	3068	[3166, 2149]
600	[1046, 860]	1423	[1936, 1964]	2246	[2670, 2671]	3069	[2836, 465]
601	[1047, 1048]	1424	[1965, 366]	2247	[1579, 2467]	3070	[3167, 1096]
602	[1049, 1050]	1425	[1966, 910]	2248	[1523, 1596]	3071	[1199, 352]

603	[1051, 992]	1426	[1967, 986]	2249	[630, 2672]	3072	[3168, 274]
604	[1052, 994]	1427	[1968, 1323]	2250	[1828, 1666]	3073	[3169, 3027]
605	[1053, 1054]	1428	[366, 963]	2251	[2673, 1594]	3074	[3028, 3170]
606	[1055, 1056]	1429	[1969, 347]	2252	[2674, 60]	3075	[3171, 1083]
607	[1057, 1058]	1430	[1970, 1971]	2253	[2515, 2675]	3076	[2346, 859]
608	[1059, 1060]	1431	[1230, 868]	2254	[237, 1593]	3077	[2918, 409]
609	[1061, 826]	1432	[1232, 1044]	2255	[1840, 1732]	3078	[3172, 963]
610	[1062, 1052]	1433	[1972, 1324]	2256	[2676, 2658]	3079	[3173, 2128]
611	[1063, 955]	1434	[1973, 300]	2257	[673, 660]	3080	[1161, 3174]
612	[1064, 18]	1435	[1974, 835]	2258	[2657, 2677]	3081	[1313, 1936]
613	[1065, 896]	1436	[1975, 1048]	2259	[1554, 2678]	3082	[1350, 2825]
614	[1066, 1067]	1437	[1976, 1012]	2260	[1647, 2530]	3083	[3175, 987]
615	[1068, 1069]	1438	[1977, 1375]	2261	[2679, 2680]	3084	[3176, 1213]
616	[1070, 843]	1439	[1978, 1979]	2262	[2681, 1903]	3085	[3177, 1219]
617	[1071, 1072]	1440	[1346, 1132]	2263	[2488, 1867]	3086	[1244, 307]
618	[1073, 1074]	1441	[1980, 1981]	2264	[2682, 1440]	3087	[2993, 2389]
619	[1075, 1076]	1442	[1982, 362]	2265	[2585, 1865]	3088	[2980, 847]
620	[1077, 377]	1443	[874, 940]	2266	[2683, 712]	3089	[3178, 326]
621	[1078, 1079]	1444	[979, 1983]	2267	[2557, 2684]	3090	[3179, 3180]
622	[1080, 848]	1445	[1984, 99]	2268	[729, 1472]	3091	[3181, 3182]
623	[1081, 1082]	1446	[1985, 1986]	2269	[470, 1748]	3092	[3183, 2335]
624	[1083, 1084]	1447	[1987, 1988]	2270	[2655, 2685]	3093	[3184, 1116]
625	[1085, 1086]	1448	[1989, 1990]	2271	[1581, 2531]	3094	[3185, 2210]
626	[1087, 1088]	1449	[1991, 265]	2272	[1462, 657]	3095	[2898, 3186]
627	[1089, 1087]	1450	[1240, 267]	2273	[2686, 188]	3096	[2134, 897]
628	[1090, 1091]	1451	[1293, 1087]	2274	[519, 498]	3097	[3187, 3188]
629	[301, 841]	1452	[909, 318]	2275	[2687, 2553]	3098	[3189, 2343]
630	[119, 1092]	1453	[1992, 1288]	2276	[682, 1717]	3099	[3190, 2188]
631	[1093, 849]	1454	[1993, 1994]	2277	[2606, 726]	3100	[3191, 375]
632	[1094, 1095]	1455	[1995, 972]	2278	[1821, 1777]	3101	[3018, 3192]
633	[1096, 1097]	1456	[1996, 381]	2279	[1498, 1717]	3102	[3193, 2387]
634	[1098, 1099]	1457	[1997, 1998]	2280	[2688, 1781]	3103	[2327, 1189]
635	[1100, 86]	1458	[964, 444]	2281	[1391, 637]	3104	[3194, 1272]
636	[1101, 1002]	1459	[1999, 2000]	2282	[233, 1816]	3105	[1144, 1966]
637	[1102, 1103]	1460	[2001, 1929]	2283	[2689, 2690]	3106	[1331, 1228]
638	[896, 1104]	1461	[2002, 70]	2284	[1812, 799]	3107	[3195, 359]
639	[1105, 905]	1462	[864, 1127]	2285	[735, 616]	3108	[3196, 1149]
640	[1106, 1026]	1463	[951, 2003]	2286	[809, 496]	3109	[1363, 3017]
641	[1107, 1108]	1464	[2004, 2005]	2287	[59, 2691]	3110	[3197, 3198]
642	[1109, 416]	1465	[2006, 1094]	2288	[674, 817]	3111	[3199, 1940]
643	[1110, 81]	1466	[969, 76]	2289	[822, 220]	3112	[3041, 2040]
644	[1111, 1112]	1467	[2007, 2008]	2290	[602, 2685]	3113	[3200, 1976]
645	[1113, 1081]	1468	[2009, 1313]	2291	[2692, 1610]	3114	[1027, 2134]
646	[402, 1083]	1469	[404, 1029]	2292	[1817, 1488]	3115	[2405, 1168]

647	[1035, 1114]	1470	[2010, 1339]	2293	[505, 1773]	3116	[378, 2932]
648	[1115, 335]	1471	[2011, 267]	2294	[2693, 1859]	3117	[3201, 363]
649	[296, 69]	1472	[1238, 2012]	2295	[2694, 1834]	3118	[839, 3202]
650	[1116, 263]	1473	[2013, 1072]	2296	[773, 1664]	3119	[3203, 63]
651	[1117, 1118]	1474	[1308, 2014]	2297	[483, 2695]	3120	[3204, 1230]
652	[86, 1119]	1475	[857, 918]	2298	[1446, 1806]	3121	[3205, 1020]
653	[1120, 407]	1476	[2015, 1108]	2299	[2513, 776]	3122	[3206, 1276]
654	[1121, 1122]	1477	[2016, 2017]	2300	[2696, 706]	3123	[867, 3207]
655	[1123, 1124]	1478	[2018, 1260]	2301	[1656, 2489]	3124	[2839, 361]
656	[1125, 1095]	1479	[1934, 435]	2302	[2651, 147]	3125	[400, 2874]
657	[1126, 468]	1480	[1193, 1017]	2303	[535, 2697]	3126	[2227, 1164]
658	[1127, 893]	1481	[2019, 111]	2304	[1849, 219]	3127	[104, 864]
659	[1128, 1129]	1482	[424, 1300]	2305	[1494, 697]	3128	[3208, 2935]
660	[1130, 885]	1483	[2020, 1036]	2306	[2698, 484]	3129	[3209, 1082]
661	[1131, 1132]	1484	[2021, 2022]	2307	[9, 2699]	3130	[383, 291]
662	[348, 1133]	1485	[2023, 1985]	2308	[1387, 611]	3131	[357, 3210]
663	[1134, 1135]	1486	[2022, 2024]	2309	[566, 1556]	3132	[2050, 2192]
664	[1136, 1137]	1487	[2025, 89]	2310	[728, 1812]	3133	[3211, 3212]
665	[1138, 1139]	1488	[286, 317]	2311	[1577, 570]	3134	[1222, 3213]
666	[1140, 1141]	1489	[2026, 2027]	2312	[2570, 696]	3135	[3214, 2940]
667	[1142, 1098]	1490	[2028, 1212]	2313	[207, 2700]	3136	[3215, 1084]
668	[1143, 1144]	1491	[2029, 1915]	2314	[2701, 1595]	3137	[3216, 1049]
669	[1145, 1146]	1492	[2030, 993]	2315	[2702, 1705]	3138	[459, 1372]
670	[1147, 1148]	1493	[2031, 254]	2316	[2703, 2704]	3139	[3217, 3218]
671	[1074, 1149]	1494	[1234, 355]	2317	[1414, 1481]	3140	[3219, 1350]
672	[1150, 1039]	1495	[2032, 1041]	2318	[801, 657]	3141	[3220, 3221]
673	[1151, 252]	1496	[1955, 1156]	2319	[469, 1406]	3142	[3222, 1991]
674	[1152, 1153]	1497	[2033, 2034]	2320	[2474, 2690]	3143	[3223, 958]
675	[1154, 996]	1498	[2035, 2036]	2321	[567, 1557]	3144	[90, 837]
676	[1155, 1156]	1499	[436, 2037]	2322	[1480, 2647]	3145	[2142, 1958]
677	[446, 1157]	1500	[2038, 1349]	2323	[2600, 593]	3146	[1175, 854]
678	[1158, 1159]	1501	[1958, 2039]	2324	[745, 2705]	3147	[1920, 109]
679	[1160, 1161]	1502	[2040, 2041]	2325	[2706, 2707]	3148	[2813, 2223]
680	[1162, 1163]	1503	[2042, 885]	2326	[712, 2708]	3149	[2683, 1437]
681	[1164, 275]	1504	[926, 2043]	2327	[2709, 742]	3150	[1483, 2600]
682	[1165, 1166]	1505	[351, 387]	2328	[1785, 2710]	3151	[3054, 2593]
683	[1167, 1168]	1506	[2044, 394]	2329	[2711, 553]	3152	[1718, 1832]
684	[1169, 1170]	1507	[2045, 351]	2330	[2712, 1845]	3153	[3224, 1685]
685	[1171, 1172]	1508	[2046, 2047]	2331	[2713, 200]	3154	[596, 2499]
686	[849, 1173]	1509	[2048, 2020]	2332	[2497, 2546]	3155	[3225, 3226]
687	[1174, 1175]	1510	[2049, 2050]	2333	[754, 237]	3156	[205, 3227]
688	[20, 121]	1511	[2051, 833]	2334	[1624, 478]	3157	[656, 735]
689	[1176, 1177]	1512	[2052, 940]	2335	[2478, 2638]	3158	[3228, 1460]
690	[1178, 1179]	1513	[2053, 2054]	2336	[1443, 187]	3159	[638, 3229]

691	[1180, 1181]	1514	[392, 1304]	2337	[2495, 1854]	3160	[3230, 51]
692	[1182, 1183]	1515	[1938, 2055]	2338	[2703, 2714]	3161	[1382, 1480]
693	[1184, 1185]	1516	[2056, 1922]	2339	[1691, 1516]	3162	[2647, 178]
694	[1186, 1187]	1517	[2057, 1964]	2340	[1633, 2715]	3163	[537, 710]
695	[1188, 1189]	1518	[2058, 1003]	2341	[1402, 2716]	3164	[3116, 2589]
696	[1190, 1191]	1519	[1112, 1942]	2342	[188, 2717]	3165	[1763, 2649]
697	[1192, 1193]	1520	[847, 2059]	2343	[2718, 2476]	3166	[2569, 219]
698	[1194, 1195]	1521	[2060, 401]	2344	[2719, 2720]	3167	[680, 3083]
699	[1196, 1059]	1522	[1348, 2061]	2345	[2567, 230]	3168	[1539, 2511]
700	[428, 881]	1523	[2062, 2063]	2346	[2721, 1421]	3169	[1576, 2776]
701	[1197, 1044]	1524	[1104, 1175]	2347	[2722, 2684]	3170	[3231, 10]
702	[1025, 1198]	1525	[2064, 2065]	2348	[657, 1739]	3171	[2561, 3232]
703	[1195, 1199]	1526	[2066, 2067]	2349	[2723, 699]	3172	[3233, 3234]
704	[1200, 1198]	1527	[2068, 434]	2350	[1687, 2724]	3173	[2518, 3047]
705	[1003, 1184]	1528	[2069, 273]	2351	[2645, 2662]	3174	[3235, 12]
706	[1201, 1202]	1529	[2070, 2071]	2352	[2725, 180]	3175	[1396, 3236]
707	[1203, 995]	1530	[1208, 957]	2353	[1582, 2726]	3176	[724, 1508]
708	[1204, 1205]	1531	[2072, 446]	2354	[2727, 1760]	3177	[1558, 37]
709	[1206, 901]	1532	[1981, 844]	2355	[2728, 1637]	3178	[2650, 635]
710	[1207, 1208]	1533	[2073, 1001]	2356	[2729, 1503]	3179	[716, 704]
711	[1209, 1210]	1534	[2074, 29]	2357	[2502, 2730]	3180	[3237, 2700]
712	[1211, 1212]	1535	[2075, 2076]	2358	[767, 2731]	3181	[1618, 2661]
713	[1213, 930]	1536	[299, 876]	2359	[2732, 2733]	3182	[3238, 1859]
714	[1214, 1215]	1537	[2077, 2078]	2360	[2465, 2734]	3183	[1716, 1723]
715	[1216, 1217]	1538	[2079, 2076]	2361	[2487, 1708]	3184	[1859, 496]
716	[387, 1218]	1539	[2080, 2081]	2362	[2485, 538]	3185	[3122, 3239]
717	[1219, 1220]	1540	[2082, 2050]	2363	[1533, 806]	3186	[3240, 2548]
718	[1221, 1222]	1541	[2083, 2084]	2364	[577, 1490]	3187	[3142, 2572]
719	[1223, 364]	1542	[1911, 1295]	2365	[2735, 1623]	3188	[3241, 1615]
720	[1224, 1225]	1543	[1217, 2085]	2366	[2604, 2736]	3189	[235, 2675]
721	[1226, 1227]	1544	[2086, 1062]	2367	[490, 1461]	3190	[1827, 1612]
722	[1228, 1229]	1545	[1344, 300]	2368	[1654, 1734]	3191	[2617, 688]
723	[1086, 106]	1546	[2087, 2088]	2369	[1867, 1566]	3192	[3242, 3050]
724	[928, 1230]	1547	[1266, 2089]	2370	[1692, 1517]	3193	[1559, 769]
725	[1231, 1232]	1548	[1146, 2090]	2371	[2574, 138]	3194	[667, 633]
726	[1233, 1234]	1549	[2091, 96]	2372	[1531, 676]	3195	[2472, 3243]
727	[1235, 1236]	1550	[1041, 2092]	2373	[2622, 2737]	3196	[2692, 2594]
728	[1237, 1238]	1551	[2093, 1158]	2374	[1710, 1391]	3197	[805, 1577]
729	[1239, 1021]	1552	[1108, 297]	2375	[695, 1644]	3198	[3244, 567]
730	[975, 1240]	1553	[2094, 1140]	2376	[2738, 1841]	3199	[2689, 2475]
731	[346, 1241]	1554	[311, 2095]	2377	[2739, 813]	3200	[3063, 201]
732	[1242, 365]	1555	[2096, 906]	2378	[668, 2740]	3201	[1553, 665]
733	[1243, 1244]	1556	[2078, 2097]	2379	[1642, 2741]	3202	[1698, 3245]
734	[1245, 906]	1557	[2098, 2099]	2380	[2742, 731]	3203	[781, 3246]

735	[1246, 95]	1558	[2100, 1033]	2381	[2743, 2744]	3204	[1850, 3247]
736	[1247, 1177]	1559	[2101, 2102]	2382	[2745, 2746]	3205	[3102, 2763]
737	[918, 884]	1560	[2103, 381]	2383	[2747, 2697]	3206	[2670, 2620]
738	[1248, 373]	1561	[1326, 454]	2384	[2748, 767]	3207	[3248, 2623]
739	[1249, 1250]	1562	[948, 1274]	2385	[817, 2510]	3208	[1705, 3107]
740	[1251, 1252]	1563	[2104, 1265]	2386	[35, 2678]	3209	[3097, 3249]
741	[1253, 1254]	1564	[2105, 2106]	2387	[2592, 2493]	3210	[3250, 721]
742	[1255, 1256]	1565	[2107, 2108]	2388	[129, 504]	3211	[565, 694]
743	[1257, 1258]	1566	[2109, 964]	2389	[1463, 2490]	3212	[3080, 3226]
744	[1139, 1259]	1567	[2110, 445]	2390	[2749, 1681]	3213	[3251, 2756]
745	[1103, 1130]	1568	[2111, 1237]	2391	[1454, 1662]	3214	[2780, 2724]
746	[1260, 1261]	1569	[2112, 2028]	2392	[146, 2750]	3215	[2618, 3252]
747	[1262, 1263]	1570	[2113, 1930]	2393	[215, 597]	3216	[3233, 3140]
748	[1264, 272]	1571	[2114, 2115]	2394	[2751, 180]	3217	[609, 2652]
749	[1265, 1266]	1572	[1149, 2116]	2395	[1481, 2752]	3218	[3253, 3057]
750	[1267, 310]	1573	[922, 2117]	2396	[670, 1654]	3219	[1638, 3254]
751	[1268, 1269]	1574	[2118, 2119]	2397	[1908, 773]	3220	[2631, 1758]
752	[1270, 1271]	1575	[2120, 2121]	2398	[1555, 515]	3221	[3255, 163]
753	[272, 1272]	1576	[2122, 451]	2399	[1847, 1876]	3222	[3061, 2753]
754	[1227, 1273]	1577	[2123, 899]	2400	[1377, 1646]	3223	[2525, 1545]
755	[1274, 1275]	1578	[2124, 2125]	2401	[2512, 664]	3224	[3256, 2056]
756	[1276, 1277]	1579	[1361, 2126]	2402	[780, 2635]	3225	[3257, 3216]
757	[1170, 1278]	1580	[2127, 2017]	2403	[1807, 2753]	3226	[3258, 1260]
758	[1279, 1280]	1581	[2128, 2129]	2404	[1880, 2754]	3227	[3259, 402]
759	[1281, 1282]	1582	[2130, 1355]	2405	[1680, 526]	3228	[1189, 336]
760	[1283, 1284]	1583	[2131, 934]	2406	[2755, 2756]	3229	[3260, 2363]
761	[1067, 1285]	1584	[959, 2132]	2407	[720, 2757]	3230	[3261, 3262]
762	[288, 1286]	1585	[2133, 2134]	2408	[1728, 2758]	3231	[2879, 3263]
763	[1287, 1288]	1586	[2135, 2136]	2409	[1641, 542]	3232	[2357, 945]
764	[1289, 1290]	1587	[2137, 2138]	2410	[1442, 186]	3233	[432, 397]
765	[1291, 1163]	1588	[2139, 2140]	2411	[2602, 2654]	3234	[881, 1001]
766	[1292, 1293]	1589	[2141, 2142]	2412	[1870, 126]	3235	[3264, 3265]
767	[1294, 1043]	1590	[2143, 1252]	2413	[2759, 2480]	3236	[1163, 1962]
768	[94, 290]	1591	[2144, 907]	2414	[2759, 640]	3237	[3263, 1928]
769	[1295, 1296]	1592	[1929, 1061]	2415	[705, 1441]	3238	[2928, 2979]
770	[74, 895]	1593	[1273, 1187]	2416	[171, 1765]	3239	[2117, 981]
771	[16, 1161]	1594	[995, 2145]	2417	[797, 2720]	3240	[3266, 2843]
772	[1297, 1298]	1595	[2146, 1059]	2418	[541, 2760]	3241	[2967, 1136]
773	[1299, 1300]	1596	[2147, 2148]	2419	[2761, 2762]	3242	[2246, 1015]
774	[1301, 1049]	1597	[2149, 2150]	2420	[41, 2763]	3243	[1241, 414]
775	[453, 1302]	1598	[2151, 2129]	2421	[730, 2764]	3244	[3267, 2098]
776	[1303, 1304]	1599	[414, 2152]	2422	[2698, 191]	3245	[3268, 1159]
777	[1305, 1306]	1600	[1964, 2153]	2423	[2765, 1692]	3246	[3269, 2551]
778	[1307, 1308]	1601	[2154, 1267]	2424	[551, 1856]	3247	[2261, 407]

779	[1309, 939]	1602	[1971, 1949]	2425	[1704, 2766]	3248	[2116, 2829]
780	[1310, 1311]	1603	[2155, 2130]	2426	[2747, 536]	3249	[2819, 2215]
781	[1312, 1313]	1604	[2156, 400]	2427	[2767, 2507]	3250	[1236, 3010]
782	[1314, 1315]	1605	[2014, 988]	2428	[613, 2768]	3251	[3270, 302]
783	[1316, 1317]	1606	[2157, 2158]	2429	[1420, 2769]	3252	[3212, 1363]
784	[1318, 1319]	1607	[2159, 1918]	2430	[2459, 2770]	3253	[1909, 2331]
785	[934, 1320]	1608	[2160, 2161]	2431	[1811, 2771]	3254	[3271, 1218]
786	[1321, 1322]	1609	[1124, 1107]	2432	[2663, 1483]	3255	[2794, 1283]
787	[1323, 390]	1610	[2162, 2163]	2433	[162, 2772]	3256	[819, 183]
788	[1324, 271]	1611	[2164, 1271]	2434	[1508, 627]	3257	[47, 2695]
789	[1325, 1326]	1612	[2165, 2166]	2435	[2773, 2774]	3258	[1623, 3272]
790	[1327, 1328]	1613	[2167, 2101]	2436	[590, 1651]	3259	[2640, 3273]
791	[372, 1100]	1614	[2168, 2169]	2437	[2775, 1907]	3260	[2492, 1491]
792	[1329, 1277]	1615	[2170, 1104]	2438	[2581, 1707]	3261	[2550, 2550]
793	[1330, 1331]	1616	[2171, 2172]	2439	[688, 2776]	3262	[3274, 1851]
794	[1332, 1320]	1617	[276, 2115]	2440	[1575, 688]	3263	[3079, 1386]
795	[1333, 1334]	1618	[2173, 1966]	2441	[1746, 825]	3264	[32, 1764]
796	[1335, 1336]	1619	[2174, 926]	2442	[2673, 653]	3265	[3275, 1767]
797	[1337, 1338]	1620	[2175, 2176]	2443	[2777, 1762]	3266	[2778, 2484]
798	[1339, 1009]	1621	[2177, 1117]	2444	[2778, 1570]	3267	[1801, 1835]
799	[1340, 1157]	1622	[253, 2178]	2445	[2595, 1768]	3268	[1681, 3276]
800	[1341, 961]	1623	[2179, 2180]	2446	[2694, 1617]	3269	[1502, 3277]
801	[1342, 461]	1624	[2181, 2182]	2447	[2538, 2779]	3270	[2554, 2779]
802	[1343, 1344]	1625	[2183, 97]	2448	[1841, 1733]	3271	[714, 2]
803	[1345, 1346]	1626	[1166, 122]	2449	[575, 483]	3272	[3278, 2043]
804	[1347, 1348]	1627	[2184, 2185]	2450	[2501, 1726]	3273	[2969, 1346]
805	[1349, 1350]	1628	[2186, 2187]	2451	[1892, 245]	3274	[3279, 3280]
806	[1351, 1352]	1629	[2188, 1018]	2452	[2780, 1688]	3275	[3281, 3282]
807	[1353, 1347]	1630	[2189, 1079]	2453	[172, 1591]	3276	[3283, 1088]
808	[983, 118]	1631	[2190, 2061]	2454	[2593, 2494]	3277	[3282, 251]
809	[989, 440]	1632	[2092, 2049]	2455	[1449, 796]	3278	[1620, 3284]
810	[1354, 1317]	1633	[2191, 2192]	2456	[2520, 508]	3279	[585, 569]
811	[1355, 1356]	1634	[1282, 2193]	2457	[605, 2460]	3280	[3285, 1896]
812	[1357, 1358]	1635	[2194, 2195]	2458	[1809, 1772]	3281	[1392, 1712]
813	[1359, 1040]	1636	[862, 1343]	2459	[2781, 427]	3282	[1789, 1799]
814	[1360, 1361]	1637	[2196, 2197]	2460	[2782, 1298]	3283	[530, 3286]
815	[1362, 1363]	1638	[2198, 2199]	2461	[2783, 1105]	3284	[3202, 2334]
816	[1364, 1365]	1639	[2185, 1081]	2462	[2784, 415]	3285	[3287, 2901]
817	[1173, 26]	1640	[2200, 2193]	2463	[2785, 1206]	3286	[24, 372]
818	[1366, 1367]	1641	[2201, 954]	2464	[2786, 1295]	3287	[3073, 788]
819	[1368, 1241]	1642	[1079, 2198]	2465	[2787, 2421]		
820	[1369, 1057]	1643	[2202, 380]	2466	[2788, 2290]		
821	[1370, 1319]	1644	[2203, 1074]	2467	[2789, 2089]		
822	[1371, 1372]	1645	[834, 2135]	2468	[2790, 903]		

Output function $n \mapsto \tau(n)$:

n	$\tau(n)$	n	$\tau(n)$	n	$\tau(n)$	n	$\tau(n)$	n	$\tau(n)$	n	$\tau(n)$
0	0	549	0	1098	0	1647	1	2196	0	2745	0
1	0	550	0	1099	1	1648	0	2197	1	2746	1
2	1	551	0	1100	1	1649	1	2198	0	2747	0
3	0	552	1	1101	1	1650	1	2199	0	2748	1
4	1	553	0	1102	0	1651	1	2200	1	2749	0
5	1	554	0	1103	1	1652	0	2201	0	2750	0
6	0	555	1	1104	1	1653	0	2202	1	2751	0
7	0	556	0	1105	1	1654	0	2203	0	2752	0
8	0	557	0	1106	1	1655	1	2204	1	2753	0
9	1	558	0	1107	1	1656	1	2205	1	2754	0
10	1	559	0	1108	0	1657	1	2206	0	2755	0
11	1	560	1	1109	0	1658	1	2207	1	2756	0
12	1	561	1	1110	1	1659	1	2208	1	2757	1
13	0	562	1	1111	1	1660	1	2209	1	2758	1
14	0	563	0	1112	0	1661	1	2210	1	2759	1
15	0	564	1	1113	0	1662	1	2211	0	2760	0
16	0	565	1	1114	0	1663	1	2212	0	2761	1
17	0	566	1	1115	0	1664	0	2213	1	2762	0
18	1	567	1	1116	1	1665	1	2214	1	2763	1
19	1	568	0	1117	0	1666	1	2215	1	2764	1
20	0	569	1	1118	1	1667	1	2216	1	2765	0
21	1	570	0	1119	0	1668	0	2217	1	2766	1
22	0	571	0	1120	0	1669	1	2218	1	2767	0
23	1	572	1	1121	1	1670	1	2219	1	2768	0
24	0	573	0	1122	0	1671	0	2220	1	2769	0
25	1	574	1	1123	1	1672	1	2221	1	2770	1
26	0	575	0	1124	0	1673	1	2222	0	2771	1
27	0	576	1	1125	1	1674	0	2223	1	2772	1
28	1	577	1	1126	0	1675	0	2224	0	2773	1
29	0	578	0	1127	0	1676	1	2225	1	2774	1
30	0	579	1	1128	1	1677	0	2226	0	2775	0
31	0	580	1	1129	0	1678	0	2227	0	2776	1
32	0	581	0	1130	0	1679	1	2228	1	2777	0
33	0	582	0	1131	0	1680	1	2229	1	2778	0
34	0	583	0	1132	1	1681	0	2230	1	2779	1
35	0	584	0	1133	1	1682	0	2231	0	2780	0
36	1	585	0	1134	1	1683	1	2232	1	2781	1
37	1	586	0	1135	0	1684	0	2233	1	2782	0
38	0	587	1	1136	0	1685	1	2234	0	2783	0
39	1	588	1	1137	1	1686	1	2235	0	2784	0
40	0	589	0	1138	1	1687	1	2236	1	2785	0

41	0	590	0	1139	0	1688	0	2237	0	2786	0
42	0	591	0	1140	1	1689	0	2238	1	2787	1
43	1	592	0	1141	0	1690	0	2239	0	2788	0
44	1	593	0	1142	0	1691	1	2240	1	2789	1
45	0	594	0	1143	1	1692	1	2241	0	2790	1
46	1	595	0	1144	1	1693	0	2242	0	2791	0
47	1	596	0	1145	0	1694	1	2243	1	2792	1
48	1	597	0	1146	1	1695	0	2244	0	2793	0
49	0	598	0	1147	1	1696	1	2245	1	2794	1
50	1	599	1	1148	0	1697	1	2246	1	2795	0
51	1	600	1	1149	1	1698	1	2247	1	2796	1
52	0	601	0	1150	1	1699	1	2248	1	2797	0
53	0	602	0	1151	0	1700	1	2249	0	2798	0
54	1	603	0	1152	0	1701	0	2250	0	2799	1
55	0	604	0	1153	1	1702	1	2251	1	2800	1
56	0	605	1	1154	1	1703	1	2252	1	2801	1
57	1	606	1	1155	1	1704	1	2253	1	2802	0
58	1	607	0	1156	1	1705	0	2254	1	2803	0
59	0	608	1	1157	1	1706	1	2255	0	2804	1
60	1	609	0	1158	1	1707	0	2256	0	2805	0
61	0	610	0	1159	0	1708	0	2257	0	2806	0
62	1	611	0	1160	1	1709	1	2258	1	2807	0
63	0	612	1	1161	0	1710	0	2259	1	2808	0
64	1	613	1	1162	1	1711	1	2260	1	2809	0
65	0	614	0	1163	1	1712	0	2261	1	2810	0
66	0	615	1	1164	1	1713	1	2262	1	2811	0
67	0	616	1	1165	0	1714	0	2263	1	2812	0
68	0	617	0	1166	0	1715	0	2264	1	2813	0
69	0	618	1	1167	0	1716	1	2265	1	2814	0
70	0	619	0	1168	0	1717	1	2266	1	2815	1
71	0	620	1	1169	0	1718	1	2267	0	2816	1
72	0	621	1	1170	0	1719	1	2268	1	2817	1
73	1	622	0	1171	0	1720	0	2269	1	2818	1
74	1	623	1	1172	1	1721	0	2270	1	2819	0
75	1	624	1	1173	0	1722	0	2271	1	2820	1
76	1	625	0	1174	0	1723	1	2272	0	2821	0
77	0	626	0	1175	0	1724	0	2273	1	2822	1
78	1	627	0	1176	0	1725	0	2274	0	2823	0
79	1	628	1	1177	0	1726	1	2275	1	2824	1
80	1	629	1	1178	1	1727	0	2276	0	2825	0
81	0	630	0	1179	1	1728	0	2277	1	2826	1
82	0	631	1	1180	0	1729	0	2278	1	2827	0
83	0	632	0	1181	0	1730	0	2279	1	2828	0
84	0	633	0	1182	1	1731	1	2280	0	2829	0

85	0	634	0	1183	0	1732	1	2281	1	2830	0
86	1	635	1	1184	1	1733	1	2282	0	2831	1
87	1	636	1	1185	1	1734	0	2283	1	2832	1
88	1	637	0	1186	0	1735	1	2284	0	2833	0
89	1	638	1	1187	0	1736	0	2285	0	2834	0
90	0	639	1	1188	1	1737	1	2286	1	2835	1
91	0	640	1	1189	0	1738	1	2287	0	2836	0
92	1	641	1	1190	1	1739	1	2288	0	2837	1
93	1	642	0	1191	0	1740	1	2289	1	2838	1
94	0	643	1	1192	1	1741	0	2290	0	2839	0
95	1	644	1	1193	0	1742	0	2291	0	2840	0
96	0	645	0	1194	1	1743	1	2292	0	2841	0
97	1	646	0	1195	0	1744	1	2293	1	2842	1
98	1	647	0	1196	1	1745	1	2294	0	2843	1
99	0	648	0	1197	0	1746	0	2295	1	2844	1
100	1	649	0	1198	0	1747	0	2296	0	2845	1
101	1	650	1	1199	1	1748	1	2297	0	2846	1
102	0	651	0	1200	1	1749	0	2298	1	2847	1
103	1	652	1	1201	0	1750	0	2299	1	2848	1
104	1	653	0	1202	1	1751	0	2300	1	2849	1
105	0	654	1	1203	0	1752	0	2301	1	2850	1
106	1	655	1	1204	0	1753	0	2302	0	2851	0
107	0	656	1	1205	0	1754	0	2303	1	2852	0
108	0	657	0	1206	0	1755	1	2304	0	2853	0
109	1	658	0	1207	1	1756	1	2305	1	2854	0
110	0	659	1	1208	1	1757	1	2306	1	2855	1
111	0	660	0	1209	0	1758	1	2307	1	2856	0
112	1	661	0	1210	0	1759	1	2308	0	2857	1
113	0	662	1	1211	0	1760	1	2309	1	2858	1
114	0	663	1	1212	0	1761	1	2310	0	2859	1
115	1	664	0	1213	0	1762	0	2311	0	2860	1
116	1	665	1	1214	0	1763	0	2312	0	2861	1
117	1	666	1	1215	1	1764	0	2313	0	2862	0
118	0	667	0	1216	0	1765	1	2314	1	2863	1
119	0	668	1	1217	1	1766	0	2315	1	2864	0
120	1	669	0	1218	0	1767	0	2316	1	2865	1
121	0	670	1	1219	0	1768	1	2317	1	2866	0
122	0	671	1	1220	1	1769	0	2318	1	2867	1
123	1	672	1	1221	0	1770	0	2319	0	2868	1
124	1	673	0	1222	0	1771	0	2320	0	2869	0
125	1	674	0	1223	1	1772	0	2321	1	2870	1
126	0	675	1	1224	0	1773	0	2322	0	2871	0
127	0	676	1	1225	1	1774	1	2323	1	2872	0
128	1	677	1	1226	0	1775	1	2324	1	2873	0

129	0	678	1	1227	0	1776	0	2325	1	2874	1
130	0	679	1	1228	1	1777	0	2326	0	2875	1
131	0	680	1	1229	0	1778	0	2327	0	2876	0
132	0	681	1	1230	1	1779	1	2328	0	2877	1
133	0	682	0	1231	0	1780	1	2329	0	2878	0
134	0	683	0	1232	1	1781	0	2330	1	2879	0
135	1	684	0	1233	0	1782	0	2331	0	2880	0
136	0	685	0	1234	1	1783	0	2332	0	2881	0
137	1	686	1	1235	1	1784	1	2333	0	2882	1
138	0	687	0	1236	1	1785	0	2334	1	2883	1
139	1	688	0	1237	0	1786	0	2335	1	2884	0
140	0	689	0	1238	1	1787	0	2336	0	2885	1
141	0	690	1	1239	1	1788	1	2337	0	2886	0
142	0	691	0	1240	0	1789	0	2338	1	2887	0
143	1	692	1	1241	1	1790	0	2339	1	2888	0
144	0	693	1	1242	0	1791	1	2340	0	2889	0
145	0	694	0	1243	1	1792	0	2341	0	2890	1
146	1	695	1	1244	0	1793	0	2342	0	2891	1
147	1	696	1	1245	1	1794	1	2343	0	2892	0
148	1	697	1	1246	0	1795	0	2344	1	2893	0
149	0	698	1	1247	1	1796	1	2345	0	2894	1
150	1	699	1	1248	0	1797	1	2346	0	2895	1
151	0	700	1	1249	1	1798	1	2347	1	2896	0
152	1	701	0	1250	0	1799	1	2348	0	2897	0
153	1	702	0	1251	1	1800	1	2349	0	2898	0
154	0	703	0	1252	1	1801	0	2350	1	2899	1
155	1	704	1	1253	1	1802	1	2351	0	2900	0
156	1	705	0	1254	1	1803	0	2352	1	2901	1
157	1	706	0	1255	0	1804	0	2353	0	2902	1
158	1	707	0	1256	0	1805	1	2354	0	2903	1
159	1	708	0	1257	0	1806	1	2355	1	2904	0
160	1	709	0	1258	0	1807	1	2356	0	2905	0
161	1	710	1	1259	0	1808	1	2357	1	2906	1
162	0	711	0	1260	1	1809	0	2358	1	2907	1
163	0	712	0	1261	0	1810	0	2359	1	2908	1
164	0	713	0	1262	1	1811	1	2360	1	2909	0
165	0	714	0	1263	1	1812	0	2361	0	2910	1
166	0	715	0	1264	0	1813	1	2362	0	2911	1
167	1	716	1	1265	0	1814	0	2363	0	2912	1
168	0	717	0	1266	0	1815	0	2364	1	2913	0
169	1	718	0	1267	0	1816	0	2365	0	2914	1
170	0	719	1	1268	1	1817	0	2366	1	2915	0
171	0	720	0	1269	0	1818	1	2367	0	2916	1
172	1	721	0	1270	1	1819	0	2368	0	2917	1

173	0	722	1	1271	1	1820	1	2369	1	2918	1
174	1	723	1	1272	1	1821	1	2370	1	2919	0
175	0	724	0	1273	1	1822	1	2371	0	2920	0
176	1	725	0	1274	1	1823	0	2372	0	2921	1
177	0	726	0	1275	0	1824	0	2373	0	2922	0
178	1	727	1	1276	0	1825	0	2374	0	2923	0
179	1	728	0	1277	0	1826	1	2375	1	2924	0
180	0	729	1	1278	0	1827	0	2376	1	2925	0
181	1	730	1	1279	1	1828	0	2377	1	2926	1
182	0	731	0	1280	0	1829	1	2378	1	2927	0
183	0	732	0	1281	0	1830	0	2379	1	2928	1
184	1	733	1	1282	0	1831	0	2380	0	2929	1
185	1	734	1	1283	1	1832	0	2381	0	2930	0
186	1	735	0	1284	1	1833	1	2382	0	2931	0
187	1	736	1	1285	1	1834	1	2383	0	2932	0
188	0	737	0	1286	0	1835	1	2384	1	2933	1
189	0	738	0	1287	0	1836	1	2385	0	2934	0
190	1	739	1	1288	1	1837	0	2386	0	2935	0
191	0	740	1	1289	1	1838	1	2387	1	2936	1
192	0	741	1	1290	0	1839	0	2388	0	2937	0
193	1	742	0	1291	0	1840	0	2389	0	2938	0
194	0	743	0	1292	0	1841	0	2390	0	2939	1
195	1	744	0	1293	1	1842	1	2391	1	2940	1
196	1	745	1	1294	1	1843	1	2392	1	2941	0
197	0	746	1	1295	0	1844	0	2393	1	2942	1
198	1	747	1	1296	0	1845	1	2394	0	2943	1
199	1	748	0	1297	1	1846	1	2395	0	2944	1
200	1	749	0	1298	0	1847	1	2396	1	2945	0
201	1	750	0	1299	0	1848	0	2397	0	2946	1
202	1	751	1	1300	1	1849	0	2398	0	2947	1
203	0	752	1	1301	0	1850	1	2399	1	2948	0
204	0	753	1	1302	1	1851	0	2400	1	2949	0
205	1	754	0	1303	1	1852	0	2401	0	2950	1
206	0	755	1	1304	0	1853	0	2402	1	2951	1
207	0	756	0	1305	0	1854	1	2403	1	2952	0
208	0	757	0	1306	1	1855	0	2404	1	2953	1
209	1	758	1	1307	1	1856	0	2405	1	2954	1
210	0	759	0	1308	1	1857	1	2406	0	2955	1
211	0	760	1	1309	1	1858	1	2407	0	2956	0
212	1	761	1	1310	1	1859	0	2408	0	2957	1
213	0	762	0	1311	1	1860	0	2409	0	2958	0
214	1	763	0	1312	1	1861	1	2410	0	2959	1
215	1	764	1	1313	1	1862	1	2411	0	2960	1
216	1	765	0	1314	0	1863	0	2412	1	2961	1

217	0	766	0	1315	0	1864	1	2413	1	2962	0
218	1	767	1	1316	1	1865	1	2414	1	2963	0
219	0	768	0	1317	1	1866	0	2415	0	2964	1
220	0	769	0	1318	1	1867	1	2416	0	2965	1
221	1	770	1	1319	1	1868	1	2417	0	2966	1
222	0	771	0	1320	0	1869	1	2418	0	2967	1
223	0	772	1	1321	1	1870	1	2419	1	2968	0
224	0	773	0	1322	0	1871	0	2420	0	2969	1
225	0	774	0	1323	1	1872	1	2421	1	2970	0
226	0	775	0	1324	1	1873	0	2422	1	2971	1
227	1	776	1	1325	0	1874	1	2423	0	2972	1
228	0	777	0	1326	1	1875	0	2424	0	2973	1
229	1	778	1	1327	0	1876	1	2425	1	2974	1
230	0	779	1	1328	0	1877	0	2426	0	2975	1
231	1	780	1	1329	1	1878	1	2427	0	2976	1
232	1	781	1	1330	1	1879	1	2428	1	2977	1
233	0	782	0	1331	1	1880	1	2429	0	2978	0
234	1	783	1	1332	1	1881	1	2430	1	2979	1
235	0	784	1	1333	1	1882	0	2431	1	2980	0
236	0	785	0	1334	1	1883	1	2432	1	2981	0
237	1	786	1	1335	1	1884	1	2433	0	2982	0
238	0	787	1	1336	0	1885	0	2434	1	2983	1
239	0	788	1	1337	0	1886	1	2435	1	2984	1
240	0	789	0	1338	1	1887	0	2436	0	2985	1
241	1	790	0	1339	1	1888	0	2437	0	2986	0
242	0	791	1	1340	0	1889	0	2438	0	2987	1
243	1	792	1	1341	0	1890	1	2439	0	2988	0
244	1	793	1	1342	1	1891	1	2440	1	2989	0
245	1	794	1	1343	1	1892	0	2441	0	2990	0
246	1	795	1	1344	0	1893	0	2442	1	2991	1
247	0	796	1	1345	0	1894	0	2443	0	2992	0
248	0	797	0	1346	1	1895	0	2444	0	2993	1
249	0	798	1	1347	0	1896	1	2445	1	2994	0
250	1	799	0	1348	0	1897	0	2446	1	2995	1
251	0	800	0	1349	1	1898	1	2447	0	2996	1
252	0	801	1	1350	1	1899	0	2448	0	2997	1
253	0	802	1	1351	1	1900	0	2449	0	2998	0
254	0	803	0	1352	1	1901	1	2450	1	2999	1
255	1	804	0	1353	0	1902	0	2451	0	3000	0
256	0	805	1	1354	0	1903	1	2452	0	3001	0
257	0	806	1	1355	1	1904	1	2453	1	3002	1
258	0	807	0	1356	1	1905	1	2454	1	3003	0
259	0	808	1	1357	0	1906	1	2455	0	3004	0
260	0	809	1	1358	0	1907	1	2456	1	3005	1

261	0	810	0	1359	0	1908	0	2457	1	3006	0
262	1	811	1	1360	0	1909	1	2458	0	3007	0
263	1	812	0	1361	1	1910	0	2459	1	3008	0
264	0	813	0	1362	1	1911	1	2460	0	3009	0
265	0	814	0	1363	0	1912	1	2461	0	3010	0
266	1	815	1	1364	1	1913	0	2462	0	3011	0
267	1	816	1	1365	0	1914	1	2463	0	3012	1
268	1	817	0	1366	1	1915	1	2464	0	3013	1
269	0	818	1	1367	0	1916	0	2465	1	3014	0
270	0	819	1	1368	1	1917	1	2466	0	3015	0
271	1	820	0	1369	0	1918	1	2467	1	3016	1
272	1	821	0	1370	0	1919	1	2468	1	3017	0
273	0	822	1	1371	1	1920	0	2469	0	3018	0
274	1	823	1	1372	0	1921	1	2470	0	3019	0
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294	0	843	0	1392	1	1941	1	2490	0	3039	1
295	1	844	0	1393	1	1942	1	2491	0	3040	0
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307	0	856	0	1405	1	1954	0	2503	1	3052	0
308	1	857	0	1406	0	1955	0	2504	1	3053	0
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315	0	864	0	1413	1	1962	1	2511	0	3060	1
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383	1	932	1	1481	0	2030	0	2579	0	3128	0
384	1	933	1	1482	1	2031	0	2580	1	3129	0
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