PROOF OF THE CONTINUED FRACTION CONJECTURE FOR $(a,b)=(z^3+z, z^4+z^3+1)$

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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 $(a,b)=(z^3+z, z^4+z^3+1)$.

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* $(a,b)=(z^3+z, z^4+z^3+1)$*, 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 $\mathrm{CF}(a,b)$*,*

$$\begin{aligned}
p_0(z) &= z^{21}+z^{20}+z^{17}+z^{16}+z^{15}+z^{13}+z^{12}+z^9+z^8+z^5+z^4+z^3+z^2+z\\
&\quad +1,\\
p_1(z) &= z^{25}+z^{24}+z^{22}+z^{21}+z^{20}+z^{19}+z^{14}+z^{13}+z^{12}+z^{11}+z^{10}+z^8\\
&\quad +z^5+z^3+z^2+z,\\
p_2(z) &= z^{28}+z^{24}+z^{22}+z^{18}+z^{16}+z^{14}+z^{12}+z^{10}+z^6+z^2,\\
p_3(z) &= z^{25}+z^{24}+z^{22}+z^{21}+z^{20}+z^{19}+z^{14}+z^{13}+z^{12}+z^{11}+z^{10}+z^8\\
&\quad +z^5+z^3+z^2+z,\\
p_4(z) &= z^{22}+z^{21}+z^{18}+z^{17}+z^{15}+z^{14}+z^{13}+z^{12}+z^{10}+z^9+z^8+z^6+z^5\\
&\quad +z^4+z^3+z,
\end{aligned}$$

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

$$\begin{aligned}
p_0(z) &= z^{21}+z^{20}+z^{17}+z^{15}+z^{13}+z^{12}+z^9+z^8+z^5+z^3+z^2+z,\\
p_1(z) &= z^{25}+z^{24}+z^{22}+z^{21}+z^{20}+z^{19}+z^{14}+z^{13}+z^{12}+z^{11}+z^{10}+z^8\\
&\quad +z^5+z^3+z^2+z,\\
p_2(z) &= z^{28}+z^{24}+z^{22}+z^{18}+z^{16}+z^{14}+z^{12}+z^{10}+z^6+z^2,\\
p_3(z) &= z^{25}+z^{24}+z^{22}+z^{21}+z^{20}+z^{19}+z^{14}+z^{13}+z^{12}+z^{11}+z^{10}+z^8\\
&\quad +z^5+z^3+z^2+z,\\
p_4(z) &= z^{22}+z^{21}+z^{18}+z^{17}+z^{16}+z^{15}+z^{14}+z^{13}+z^{12}+z^{10}+z^9+z^8+z^6\\
&\quad +z^5+z^3+z+1.
\end{aligned}$$

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

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

$$\cdots \times x^{\deg(\bar{t}_0)} \begin{pmatrix} \bar{t}_0(1/x) & 1 \\ 1 & 0 \end{pmatrix},$$

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

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

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 $0 \leq i,j \leq 1$ 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 $0 \leq i,j \leq 1$, $T_{i,j}$ 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 $0 \leq i,j \leq 1$, 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

$$(175, 175, 175, 175, 175)$$

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 $n \geq 0$. If for some $n \geq 0$ 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 $j \geq 0$, $q_1(0) = 1$, 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

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

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 630 and substitute it for y in $Q(x, y)$. We get a series of valuation less than 630, 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

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

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 770 and substitute it for y in $Q(x, y)$. We get a series of valuation less than 770, 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.*

$$\begin{aligned} M^e[:14u] = {} & M^e[:7u] + x^u M^e[:6u] + x^{2u} M^e[:5u] + x^{3u} M^e[:4u] + x^{4u} M^e[:3u] \\ & + x^u M^e[:7u] + x^{2u} M^e[:6u] + x^{3u} M^e[:5u] + x^{4u} M^e[:4u] \end{aligned}$$

$$
\begin{aligned}
&+ x^{5u}M^e[:3u] + x^{5u}M^e[:7u] + x^{6u}M^e[:6u] + x^{7u}M^e[:5u]\\
&+ x^{8u}M^e[:4u] + x^{9u}M^e[:3u] + x^{6u}M^e[:7u] + x^{7u}M^e[:6u]\\
&+ x^{8u}M^e[:5u] + x^{9u}M^e[:4u] + x^{10u}M^e[:3u] + x^{7u}M^e[:7u]\\
&+ x^{8u}M^e[:6u] + x^{10u}M^e[:4u] + x^{11u}M^e[:3u] + x^{13u}M^e[:u]\\
&+ (x^{7u} + x^{8u} + x^{12u} + x^{13u})R^e,
\end{aligned}
$$

$$
\begin{aligned}
W^e[:14u] = {}& W^e[:7u] + x^{u}W^e[:6u] + x^{2u}W^e[:5u] + x^{3u}W^e[:4u] + x^{4u}W^e[:3u]\\
&+ x^{u}W^e[:7u] + x^{2u}W^e[:6u] + x^{3u}W^e[:5u] + x^{4u}W^e[:4u]\\
&+ x^{5u}W^e[:3u] + x^{5u}W^e[:7u] + x^{6u}W^e[:6u] + x^{7u}W^e[:5u]\\
&+ x^{8u}W^e[:4u] + x^{9u}W^e[:3u] + x^{6u}W^e[:7u] + x^{7u}W^e[:6u]\\
&+ x^{8u}W^e[:5u] + x^{9u}W^e[:4u] + x^{10u}W^e[:3u] + x^{7u}W^e[:7u]\\
&+ x^{8u}W^e[:6u] + x^{10u}W^e[:4u] + x^{11u}W^e[:3u] + x^{13u}W^e[:u]\\
&+ (x^{7u} + x^{8u} + x^{12u} + x^{13u})R^e.
\end{aligned}
$$

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

$$
\begin{aligned}
M^o[:14u] = {}& M^o[:7u] + x^{u}M^o[:6u] + x^{2u}M^o[:5u] + x^{3u}M^o[:4u] + x^{4u}M^o[:3u]\\
&+ x^{u}M^o[:7u] + x^{2u}M^o[:6u] + x^{3u}M^o[:5u] + x^{4u}M^o[:4u]\\
&+ x^{5u}M^o[:3u] + x^{5u}M^o[:7u] + x^{6u}M^o[:6u] + x^{7u}M^o[:5u]\\
&+ x^{8u}M^o[:4u] + x^{9u}M^o[:3u] + x^{6u}M^o[:7u] + x^{7u}M^o[:6u]\\
&+ x^{8u}M^o[:5u] + x^{9u}M^o[:4u] + x^{10u}M^o[:3u] + x^{7u}M^o[:7u]\\
&+ x^{8u}M^o[:6u] + x^{10u}M^o[:4u] + x^{11u}M^o[:3u] + x^{13u}M^o[:u]\\
&+ (x^{7u} + x^{8u} + x^{12u} + x^{13u})R^o,
\end{aligned}
$$

$$
\begin{aligned}
W^o[:14u] = {}& W^o[:7u] + x^{u}W^o[:6u] + x^{2u}W^o[:5u] + x^{3u}W^o[:4u] + x^{4u}W^o[:3u]\\
&+ x^{u}W^o[:7u] + x^{2u}W^o[:6u] + x^{3u}W^o[:5u] + x^{4u}W^o[:4u]\\
&+ x^{5u}W^o[:3u] + x^{5u}W^o[:7u] + x^{6u}W^o[:6u] + x^{7u}W^o[:5u]\\
&+ x^{8u}W^o[:4u] + x^{9u}W^o[:3u] + x^{6u}W^o[:7u] + x^{7u}W^o[:6u]\\
&+ x^{8u}W^o[:5u] + x^{9u}W^o[:4u] + x^{10u}W^o[:3u] + x^{7u}W^o[:7u]\\
&+ x^{8u}W^o[:6u] + x^{10u}W^o[:4u] + x^{11u}W^o[:3u] + x^{13u}W^o[:u]\\
&+ (x^{7u} + x^{8u} + x^{12u} + x^{13u})R^o.
\end{aligned}
$$

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 $u = 2^{2k}$,

$$
\begin{aligned}
T[:14u] = {}& T[:7u] + x^{u}T[:6u] + x^{2u}T[:5u] + x^{3u}T[:4u] + x^{4u}T[:3u] + x^{u}T[:7u]\\
&+ x^{2u}T[:6u] + x^{3u}T[:5u] + x^{4u}T[:4u] + x^{5u}T[:3u] + x^{5u}T[:7u]\\
&+ x^{6u}T[:6u] + x^{7u}T[:5u] + x^{8u}T[:4u] + x^{9u}T[:3u] + x^{6u}T[:7u]\\
&+ x^{7u}T[:6u] + x^{8u}T[:5u] + x^{9u}T[:4u] + x^{10u}T[:3u] + x^{7u}T[:7u]\\
&+ x^{8u}T[:6u] + x^{10u}T[:4u] + x^{11u}T[:3u] + x^{13u}T[:u].
\end{aligned}
$$

The proof of the other 15 cases are similar. We break down the above identity into 7 parts:

$$\begin{aligned}
0 &= x^{7u}T[:u] + x^{4u}T[3u:4u] + x^{3u}T[4u:5u] + x^{2u}T[5u:6u] \\
&\quad + x^{u}T[6u:7u] + T[7u:8u], \\
0 &= x^{8u}T[:u] + x^{7u}T[u:2u] + x^{5u}T[3u:4u] + T[8u:9u], \\
0 &= x^{8u}T[u:2u] + x^{7u}T[2u:3u] + x^{5u}T[4u:5u] + T[9u:10u], \\
0 &= x^{8u}T[2u:3u] + x^{7u}T[3u:4u] + x^{5u}T[5u:6u] + T[10u:11u], \\
0 &= x^{11u}T[:u] + x^{8u}T[3u:4u] + x^{7u}T[4u:5u] + x^{5u}T[6u:7u] \\
&\quad + T[11u:12u], \\
0 &= x^{11u}T[u:2u] + x^{9u}T[3u:4u] + x^{6u}T[6u:7u] + T[12u:13u], \\
0 &= x^{13u}T[:u] + x^{11u}T[2u:3u] + x^{10u}T[3u:4u] + x^{8u}T[5u:6u] \\
&\quad + x^{7u}T[6u:7u] + T[13u:14u],
\end{aligned}$$

which can be rewritten as

$$\begin{aligned}
0 &= T[[w]_2] + T[[11w]_2] + T[[100w]_2] + T[[101w]_2] + T[[110w]_2] \\
&\quad + T[[111w]_2], && (2.7) \\
0 &= T[[w]_2] + T[[1w]_2] + T[[11w]_2] + T[[1000w]_2], && (2.8) \\
0 &= T[[1w]_2] + T[[10w]_2] + T[[100w]_2] + T[[1001w]_2], && (2.9) \\
0 &= T[[10w]_2] + T[[11w]_2] + T[[101w]_2] + T[[1010w]_2], && (2.10) \\
0 &= T[[w]_2] + T[[11w]_2] + T[[100w]_2] + T[[110w]_2] + T[[1011w]_2], && (2.11) \\
0 &= T[[1w]_2] + T[[11w]_2] + T[[110w]_2] + T[[1100w]_2], && (2.12) \\
0 &= T[[w]_2] + T[[10w]_2] + T[[11w]_2] + T[[101w]_2] + T[[110w]_2] \\
&\quad + T[[1101w]_2], && (2.13)
\end{aligned}$$

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

$$\begin{aligned}
0 &= T[[w]_2] + T[[11w]_2] + T[[100w]_2] + T[[101w]_2] + T[[110w]_2] \\
&\quad + T[[111w]_2], && (2.14) \\
0 &= T[[w]_2] + T[[1w]_2] + T[[11w]_2] + T[[1000w]_2], && (2.15) \\
0 &= T[[1w]_2] + T[[10w]_2] + T[[100w]_2] + T[[1001w]_2], && (2.16) \\
0 &= T[[10w]_2] + T[[11w]_2] + T[[101w]_2] + T[[1010w]_2], && (2.17) \\
0 &= T[[w]_2] + T[[11w]_2] + T[[100w]_2] + T[[110w]_2] + T[[1011w]_2], && (2.18) \\
0 &= T[[1w]_2] + T[[11w]_2] + T[[110w]_2] + T[[1100w]_2], && (2.19) \\
0 &= T[[w]_2] + T[[10w]_2] + T[[11w]_2] + T[[101w]_2] + T[[110w]_2] \\
&\quad + T[[1101w]_2], && (2.20)
\end{aligned}$$

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

First we calculate an 2-automaton that generates T from its minimal polynomial and its first terms. This automaton has 3331 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 (2.20) can be written as

$$\begin{aligned}
0 &= \tau(A(s,\epsilon)) + \tau(A(s,11)) + \tau(A(s,100)) + \tau(A(s,101)) \\
&\quad + \tau(A(s,110)) + \tau(A(s,111)), \qquad (2.21)\\
0 &= \tau(A(s,\epsilon)) + \tau(A(s,1)) + \tau(A(s,11)) + \tau(A(s,1000)), \qquad (2.22)\\
0 &= \tau(A(s,1)) + \tau(A(s,10)) + \tau(A(s,100)) + \tau(A(s,1001)), \qquad (2.23)\\
0 &= \tau(A(s,10)) + \tau(A(s,11)) + \tau(A(s,101)) + \tau(A(s,1010)), \qquad (2.24)\\
0 &= \tau(A(s,\epsilon)) + \tau(A(s,11)) + \tau(A(s,100)) + \tau(A(s,110)) \\
&\quad + \tau(A(s,1011)), \qquad (2.25)\\
0 &= \tau(A(s,1)) + \tau(A(s,11)) + \tau(A(s,110)) + \tau(A(s,1100)), \qquad (2.26)\\
0 &= \tau(A(s,\epsilon)) + \tau(A(s,10)) + \tau(A(s,11)) + \tau(A(s,101)) \\
&\quad + \tau(A(s,110)) + \tau(A(s,1101)), \qquad (2.27)
\end{aligned}$$

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

$$\begin{aligned}
0 &= \tau(A(s,\epsilon)) + \tau(A(s,11)) + \tau(A(s,100)) + \tau(A(s,101)) \\
&\quad + \tau(A(s,110)) + \tau(A(s,111)), \qquad (2.28)\\
0 &= \tau(A(s,\epsilon)) + \tau(A(s,1)) + \tau(A(s,11)) + \tau(A(s,1000)), \qquad (2.29)\\
0 &= \tau(A(s,1)) + \tau(A(s,10)) + \tau(A(s,100)) + \tau(A(s,1001)), \qquad (2.30)\\
0 &= \tau(A(s,10)) + \tau(A(s,11)) + \tau(A(s,101)) + \tau(A(s,1010)), \qquad (2.31)\\
0 &= \tau(A(s,\epsilon)) + \tau(A(s,11)) + \tau(A(s,100)) + \tau(A(s,110)) \\
&\quad + \tau(A(s,1011)), \qquad (2.32)\\
0 &= \tau(A(s,1)) + \tau(A(s,11)) + \tau(A(s,110)) + \tau(A(s,1100)), \qquad (2.33)\\
0 &= \tau(A(s,\epsilon)) + \tau(A(s,10)) + \tau(A(s,11)) + \tau(A(s,101)) \\
&\quad + \tau(A(s,110)) + \tau(A(s,1101)), \qquad (2.34)
\end{aligned}$$

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 (2.21) through (2.34) 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 $u = 2^{2k-1}$,*

$$\begin{aligned}
M_{2k} &= M^e[:7u] + x^u M^e[:6u] + x^{2u} M^e[:5u] + x^{3u} M^e[:4u] + x^{4u} M^e[:3u] \\
&\quad + x^{7u} R^e, \\
W_{2k} &= W^e[:7u] + x^u W^e[:6u] + x^{2u} W^e[:5u] + x^{3u} W^e[:4u] + x^{4u} W^e[:3u] \\
&\quad + x^{7u} R^e.
\end{aligned}$$

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

$$\begin{aligned}
M_{2k+1} &= M^o[:7u] + x^u M^o[:6u] + x^{2u} M^o[:5u] + x^{3u} M^o[:4u] + x^{4u} M^o[:3u] \\
&\quad + x^{7u} R^o,
\end{aligned}$$

$$\begin{aligned} W_{2k+1} = {} & W^o[:7u] + x^u W^o[:6u] + x^{2u} W^o[:5u] + x^{3u} W^o[:4u] + x^{4u} W^o[:3u] \\ & + x^{7u} R^o. \end{aligned}$$

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

$$\begin{aligned} M_{2k} \wedge W_{2k} &\Rightarrow M_{2k+1} \wedge W_{2k+1}, \\ M_{2k+1} \wedge W_{2k+1} &\Rightarrow M_{2k+2} \wedge W_{2k+2}. \end{aligned}$$

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

$$\begin{aligned} W_{2k} M_{2k} = {} & \big(W^e[:7v] + x^v W^e[:6v] + x^{2v} W^e[:5v] + x^{3v} W^e[:4v] \\ & + x^{4v} W^e[:3v] + x^{7u} R^e\big) \times \big(M^e[:7v] + x^v M^e[:6v] + x^{2v} M^e[:5v] \\ & + x^{3v} M^e[:4v] + x^{4v} M^e[:3v] + x^{7u} R^e\big); \end{aligned} \tag{2.35}$$

Call this expression lhs. Note that both sides of identity M_{2k+1} have the same term of highest degree $x^{14v} R^o$. Therefore we only need to prove that their difference is $O(x^{14v})$. Using Lemma 2.1 it can be seen that the right side of identity M_{2k+1} is congruent, modulo x^{14v}, to

$$\begin{aligned} & W^e[:14v] M^e[:14v] + x^{2v} W^e[:12v] M^e[:12v] + x^{4v} W^e[:10v] M^e[:10v] \\ & \qquad + x^{6v} W^e[:8v] M^e[:8v] + x^{8v} W^e[:6v] M^e[:6v]. \end{aligned}$$

For all $n \leq 14$, 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 (2.35) and rhs as polynomials in $\mathbb{F}_2[a_1, ..., a_{14}, b_1, ..., b_{14}, c][X]$. 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 $O(X^{14})$, 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 $0 \leq j, k \leq 1$,

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

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

$$\begin{aligned}
q_0(x) &= x^{28} + x^{27} + x^{26} + x^{25} + x^{24} + x^{23} + x^{20} + x^{19} + x^{16} + x^{15} + x^{13} + x^{12} \\
&\quad + x^{11} + x^{8} + x^{7}, \\
q_1(x) &= x^{27} + x^{26} + x^{25} + x^{23} + x^{20} + x^{18} + x^{17} + x^{16} + x^{15} + x^{14} + x^{9} + x^{8} \\
&\quad + x^{7} + x^{6} + x^{4} + x^{3}, \\
q_2(x) &= x^{26} + x^{22} + x^{18} + x^{16} + x^{14} + x^{12} + x^{10} + x^{6} + x^{4} + 1, \\
q_3(x) &= x^{27} + x^{26} + x^{25} + x^{23} + x^{20} + x^{18} + x^{17} + x^{16} + x^{15} + x^{14} + x^{9} + x^{8} \\
&\quad + x^{7} + x^{6} + x^{4} + x^{3}, \\
q_4(x) &= x^{27} + x^{25} + x^{24} + x^{23} + x^{22} + x^{20} + x^{19} + x^{18} + x^{16} + x^{15} + x^{14} + x^{13} \\
&\quad + x^{11} + x^{10} + x^{7} + x^{6}.
\end{aligned}$$

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 216, and substitute it for y in $R(z,y)$, we get a series with valuation smaller than 216, 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 $\phi(M^e,0,0)$:

$$\begin{aligned}
p_0(x) &= x^{150} + x^{144} + x^{142} + x^{136} + x^{134} + x^{132} + x^{130} + x^{124} + x^{116} + x^{112} \\
&\quad + x^{108} + x^{98} + x^{94} + x^{90} + x^{88} + x^{78} + x^{76} + x^{72} + x^{66} + x^{64} + x^{58} \\
&\quad + x^{56} + x^{50} + x^{38} + x^{36}, \\
p_3(x) &= x^{144} + x^{128} + x^{124} + x^{118} + x^{114} + x^{110} + x^{108} + x^{102} + x^{98} + x^{96} \\
&\quad + x^{94} + x^{90} + x^{86} + x^{84} + x^{82} + x^{80} + x^{76} + x^{72} + x^{66} + x^{64} + x^{62}
\end{aligned}$$

$$
\begin{aligned}
&+x^{60}+x^{58}+x^{52}+x^{50}+x^{48}+x^{46}+x^{34}+x^{32}+x^{26}+x^{24}+x^{20},\\
p_6(x) = {}&x^{146}+x^{144}+x^{142}+x^{140}+x^{132}+x^{128}+x^{124}+x^{118}+x^{116}+x^{112}\\
&+x^{106}+x^{96}+x^{90}+x^{88}+x^{86}+x^{78}+x^{76}+x^{68}+x^{64}+x^{58}+x^{56}\\
&+x^{50}+x^{48}+x^{46}+x^{44}+x^{32}+x^{30}+x^{26}+x^{24}+x^{20}+x^{10}+x^{6}\\
&+x^{4}+1,\\
p_9(x) = {}&x^{148}+x^{146}+x^{144}+x^{136}+x^{134}+x^{128}+x^{126}+x^{124}+x^{120}+x^{118}\\
&+x^{114}+x^{112}+x^{110}+x^{106}+x^{100}+x^{98}+x^{96}+x^{94}+x^{92}+x^{84}\\
&+x^{82}+x^{72}+x^{70}+x^{66}+x^{62}+x^{60}+x^{56}+x^{52}+x^{48}+x^{44}+x^{40}\\
&+x^{34}+x^{28}+x^{22}+x^{20}+x^{14}+x^{12}+x^{10}+x^{8}+x^{6},\\
p_{12}(x) = {}&x^{148}+x^{144}+x^{124}+x^{120}+x^{116}+x^{112}+x^{100}+x^{96}+x^{76}+x^{72}\\
&+x^{52}+x^{48}+x^{44}+x^{40}+x^{28}+x^{24}+x^{20}+x^{16}+x^{12}+x^{8}+x^{4}+1,
\end{aligned}
$$

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

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

$$
\begin{aligned}
p_0(x) = {}&x^{147}+x^{146}+x^{143}+x^{142}+x^{140}+x^{139}+x^{138}+x^{135}+x^{134}+x^{133}\\
&+x^{130}+x^{129}+x^{127}+x^{121}+x^{116}+x^{115}+x^{112}+x^{110}+x^{108}\\
&+x^{107}+x^{104}+x^{103}+x^{101}+x^{96}+x^{95}+x^{94}+x^{92}+x^{91}+x^{88}\\
&+x^{86}+x^{83}+x^{81}+x^{80}+x^{79}+x^{78}+x^{77}+x^{75}+x^{72}+x^{71}+x^{69}\\
&+x^{66}+x^{65}+x^{64}+x^{63}+x^{62}+x^{61}+x^{59}+x^{58}+x^{56}+x^{54}+x^{51}\\
&+x^{47}+x^{46}+x^{45}+x^{44}+x^{40}+x^{39},\\
p_3(x) = {}&x^{145}+x^{144}+x^{140}+x^{137}+x^{135}+x^{134}+x^{130}+x^{126}+x^{123}+x^{119}\\
&+x^{118}+x^{114}+x^{113}+x^{112}+x^{111}+x^{108}+x^{107}+x^{106}+x^{105}\\
&+x^{103}+x^{99}+x^{98}+x^{97}+x^{96}+x^{95}+x^{92}+x^{91}+x^{90}+x^{89}+x^{87}\\
&+x^{83}+x^{82}+x^{79}+x^{75}+x^{74}+x^{73}+x^{72}+x^{70}+x^{68}+x^{67}+x^{64}\\
&+x^{60}+x^{56}+x^{52}+x^{49}+x^{41}+x^{40}+x^{39}+x^{38}+x^{36}+x^{34}+x^{33}\\
&+x^{30}+x^{27},\\
p_6(x) = {}&x^{144}+x^{141}+x^{138}+x^{137}+x^{135}+x^{134}+x^{133}+x^{129}+x^{128}+x^{124}\\
&+x^{121}+x^{120}+x^{118}+x^{115}+x^{114}+x^{112}+x^{110}+x^{109}+x^{108}\\
&+x^{107}+x^{106}+x^{94}+x^{91}+x^{87}+x^{84}+x^{83}+x^{82}+x^{81}+x^{77}+x^{73}\\
&+x^{72}+x^{60}+x^{58}+x^{57}+x^{56}+x^{55}+x^{54}+x^{42}+x^{40}+x^{39}+x^{37}\\
&+x^{36}+x^{35}+x^{34}+x^{30}+x^{28}+x^{27}+x^{25}+x^{24}+x^{23}+x^{19}+x^{18},\\
p_9(x) = {}&x^{143}+x^{142}+x^{141}+x^{140}+x^{139}+x^{136}+x^{135}+x^{134}+x^{133}+x^{131}\\
&+x^{125}+x^{124}+x^{121}+x^{119}+x^{118}+x^{117}+x^{116}+x^{115}+x^{113}\\
&+x^{111}+x^{110}+x^{109}+x^{108}+x^{107}+x^{104}+x^{100}+x^{99}+x^{98}+x^{97}\\
&+x^{95}+x^{93}+x^{92}+x^{89}+x^{87}+x^{86}+x^{83}+x^{81}+x^{80}+x^{79}+x^{78}\\
&+x^{77}+x^{75}+x^{73}+x^{72}+x^{71}+x^{70}+x^{68}+x^{67}+x^{65}+x^{61}+x^{60}
\end{aligned}
$$

$$
\begin{aligned}
&+ x^{59} + x^{58} + x^{57} + x^{55} + x^{49} + x^{48} + x^{47} + x^{46} + x^{44} + x^{42} + x^{41}\\
&+ x^{39} + x^{37} + x^{36} + x^{35} + x^{34} + x^{33} + x^{30} + x^{26} + x^{23} + x^{21} + x^{20}\\
&+ x^{19} + x^{18} + x^{16} + x^{14} + x^{12} + x^{11} + x^{9},\\
p_{12}(x) = &\; x^{142} + x^{140} + x^{139} + x^{138} + x^{137} + x^{136} + x^{134} + x^{132} + x^{131} + x^{129}\\
&+ x^{127} + x^{125} + x^{123} + x^{121} + x^{119} + x^{117} + x^{115} + x^{114} + x^{113}\\
&+ x^{112} + x^{94} + x^{92} + x^{91} + x^{90} + x^{89} + x^{88} + x^{86} + x^{84} + x^{83} + x^{81}\\
&+ x^{79} + x^{77} + x^{75} + x^{73} + x^{71} + x^{69} + x^{67} + x^{66} + x^{65} + x^{64} + x^{62}\\
&+ x^{60} + x^{59} + x^{58} + x^{57} + x^{56} + x^{54} + x^{52} + x^{51} + x^{49} + x^{47} + x^{46}\\
&+ x^{45} + x^{44} + x^{42} + x^{40} + x^{39} + x^{38} + x^{37} + x^{36} + x^{34} + x^{32} + x^{31}\\
&+ x^{30} + x^{29} + x^{28} + x^{26} + x^{24} + x^{23} + x^{22} + x^{21} + x^{20} + x^{18} + x^{16}\\
&+ x^{15} + x^{13} + x^{11} + x^{9} + x^{7} + x^{5} + x^{3} + x^{2} + x + 1,
\end{aligned}
$$

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

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

$$
\begin{aligned}
p_0(x) = &\; x^{147} + x^{146} + x^{143} + x^{142} + x^{140} + x^{139} + x^{138} + x^{135} + x^{134} + x^{133}\\
&+ x^{130} + x^{129} + x^{127} + x^{121} + x^{116} + x^{115} + x^{112} + x^{110} + x^{108}\\
&+ x^{107} + x^{104} + x^{103} + x^{101} + x^{96} + x^{95} + x^{94} + x^{92} + x^{91} + x^{88}\\
&+ x^{86} + x^{83} + x^{81} + x^{80} + x^{79} + x^{78} + x^{77} + x^{75} + x^{72} + x^{71} + x^{69}\\
&+ x^{66} + x^{65} + x^{64} + x^{63} + x^{62} + x^{61} + x^{59} + x^{58} + x^{56} + x^{54} + x^{51}\\
&+ x^{47} + x^{46} + x^{45} + x^{44} + x^{40} + x^{39},\\
p_3(x) = &\; x^{145} + x^{144} + x^{140} + x^{137} + x^{135} + x^{134} + x^{130} + x^{126} + x^{123} + x^{119}\\
&+ x^{118} + x^{114} + x^{113} + x^{112} + x^{111} + x^{108} + x^{107} + x^{106} + x^{105}\\
&+ x^{103} + x^{99} + x^{98} + x^{97} + x^{96} + x^{95} + x^{92} + x^{91} + x^{90} + x^{89} + x^{87}\\
&+ x^{83} + x^{82} + x^{79} + x^{75} + x^{74} + x^{73} + x^{72} + x^{70} + x^{68} + x^{67} + x^{64}\\
&+ x^{60} + x^{56} + x^{52} + x^{49} + x^{41} + x^{40} + x^{39} + x^{38} + x^{36} + x^{34} + x^{33}\\
&+ x^{30} + x^{27},\\
p_6(x) = &\; x^{144} + x^{141} + x^{138} + x^{137} + x^{135} + x^{134} + x^{133} + x^{129} + x^{128} + x^{124}\\
&+ x^{121} + x^{120} + x^{118} + x^{115} + x^{114} + x^{112} + x^{110} + x^{109} + x^{108}\\
&+ x^{107} + x^{106} + x^{94} + x^{91} + x^{87} + x^{84} + x^{83} + x^{82} + x^{81} + x^{77} + x^{73}\\
&+ x^{72} + x^{60} + x^{58} + x^{57} + x^{56} + x^{55} + x^{54} + x^{42} + x^{40} + x^{39} + x^{37}\\
&+ x^{36} + x^{35} + x^{34} + x^{30} + x^{28} + x^{27} + x^{25} + x^{24} + x^{23} + x^{19} + x^{18},\\
p_9(x) = &\; x^{143} + x^{142} + x^{141} + x^{140} + x^{139} + x^{136} + x^{135} + x^{134} + x^{133} + x^{131}\\
&+ x^{125} + x^{124} + x^{121} + x^{119} + x^{118} + x^{117} + x^{116} + x^{115} + x^{113}\\
&+ x^{111} + x^{110} + x^{109} + x^{108} + x^{107} + x^{104} + x^{100} + x^{99} + x^{98} + x^{97}\\
&+ x^{95} + x^{93} + x^{92} + x^{89} + x^{87} + x^{86} + x^{83} + x^{81} + x^{80} + x^{79} + x^{78}\\
&+ x^{77} + x^{75} + x^{73} + x^{72} + x^{71} + x^{70} + x^{68} + x^{67} + x^{65} + x^{61} + x^{60}
\end{aligned}
$$

$$
\begin{aligned}
&+x^{59}+x^{58}+x^{57}+x^{55}+x^{49}+x^{48}+x^{47}+x^{46}+x^{44}+x^{42}+x^{41}\\
&+x^{39}+x^{37}+x^{36}+x^{35}+x^{34}+x^{33}+x^{30}+x^{26}+x^{23}+x^{21}+x^{20}\\
&+x^{19}+x^{18}+x^{16}+x^{14}+x^{12}+x^{11}+x^{9},\\
p_{12}(x)=&\,x^{142}+x^{140}+x^{139}+x^{138}+x^{137}+x^{136}+x^{134}+x^{132}+x^{131}+x^{129}\\
&+x^{127}+x^{125}+x^{123}+x^{121}+x^{119}+x^{117}+x^{115}+x^{114}+x^{113}\\
&+x^{112}+x^{94}+x^{92}+x^{91}+x^{90}+x^{89}+x^{88}+x^{86}+x^{84}+x^{83}+x^{81}\\
&+x^{79}+x^{77}+x^{75}+x^{73}+x^{71}+x^{69}+x^{67}+x^{66}+x^{65}+x^{64}+x^{62}\\
&+x^{60}+x^{59}+x^{58}+x^{57}+x^{56}+x^{54}+x^{52}+x^{51}+x^{49}+x^{47}+x^{46}\\
&+x^{45}+x^{44}+x^{42}+x^{40}+x^{39}+x^{38}+x^{37}+x^{36}+x^{34}+x^{32}+x^{31}\\
&+x^{30}+x^{29}+x^{28}+x^{26}+x^{24}+x^{23}+x^{22}+x^{21}+x^{20}+x^{18}+x^{16}\\
&+x^{15}+x^{13}+x^{11}+x^{9}+x^{7}+x^{5}+x^{3}+x^{2}+x+1,
\end{aligned}
$$

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

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

$$
\begin{aligned}
p_0(x)=&\,x^{144}+x^{142}+x^{138}+x^{136}+x^{132}+x^{122}+x^{120}+x^{118}+x^{116}+x^{114}\\
&+x^{110}+x^{108}+x^{106}+x^{104}+x^{98}+x^{92}+x^{80}+x^{76}+x^{68}+x^{66}\\
&+x^{64}+x^{60}+x^{58}+x^{52}+x^{42},\\
p_3(x)=&\,x^{138}+x^{136}+x^{132}+x^{130}+x^{128}+x^{124}+x^{122}+x^{110}+x^{106}+x^{102}\\
&+x^{100}+x^{98}+x^{96}+x^{92}+x^{84}+x^{76}+x^{74}+x^{70}+x^{66}+x^{64}+x^{62}\\
&+x^{60}+x^{58}+x^{56}+x^{54}+x^{50}+x^{42}+x^{36}+x^{34}+x^{28}+x^{24}+x^{22}\\
&+x^{20}+x^{18},\\
p_6(x)=&\,x^{138}+x^{134}+x^{118}+x^{114}+x^{110}+x^{106}+x^{100}+x^{96}+x^{90}+x^{86}\\
&+x^{84}+x^{82}+x^{78}+x^{72}+x^{70}+x^{68}+x^{66}+x^{54}+x^{50}+x^{48}+x^{44}\\
&+x^{40}+x^{34}+x^{32}+x^{30}+x^{28}+x^{16}+x^{14}+x^{12}+x^{10}+x^{8}+x^{6}+x^{2}\\
&+1,\\
p_9(x)=&\,x^{136}+x^{134}+x^{122}+x^{120}+x^{118}+x^{116}+x^{112}+x^{108}+x^{106}+x^{104}\\
&+x^{102}+x^{98}+x^{96}+x^{94}+x^{90}+x^{86}+x^{82}+x^{76}+x^{70}+x^{68}+x^{64}\\
&+x^{62}+x^{60}+x^{56}+x^{50}+x^{48}+x^{46}+x^{42}+x^{40}+x^{34}+x^{28}+x^{26}\\
&+x^{24}+x^{14}+x^{10}+x^{6},\\
p_{12}(x)=&\,x^{136}+x^{130}+x^{128}+x^{120}+x^{114}+x^{112}+x^{88}+x^{82}+x^{80}+x^{72}\\
&+x^{66}+x^{64}+x^{56}+x^{50}+x^{48}+x^{8}+x^{2}+1,
\end{aligned}
$$

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

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

$$
\begin{aligned}
p_0(x)=&\,x^{144}+x^{142}+x^{140}+x^{138}+x^{132}+x^{124}+x^{122}+x^{120}+x^{118}+x^{114}\\
&+x^{112}+x^{110}+x^{96}+x^{94}+x^{92}+x^{88}+x^{86}+x^{80}+x^{78}+x^{74}+x^{72}\\
&+x^{66}+x^{64}+x^{60}+x^{50}+x^{46}+x^{36},
\end{aligned}
$$

$$
\begin{aligned}
p_3(x) &= x^{138} + x^{136} + x^{134} + x^{130} + x^{128} + x^{120} + x^{116} + x^{114} + x^{110} + x^{108} \\
&\quad + x^{106} + x^{102} + x^{98} + x^{96} + x^{90} + x^{88} + x^{86} + x^{84} + x^{82} + x^{78} + x^{74} \\
&\quad + x^{70} + x^{68} + x^{66} + x^{64} + x^{62} + x^{58} + x^{56} + x^{54} + x^{52} + x^{50} + x^{44} \\
&\quad + x^{40} + x^{30} + x^{28} + x^{26} + x^{22} + x^{20}, \\
p_6(x) &= x^{138} + x^{128} + x^{126} + x^{124} + x^{112} + x^{110} + x^{102} + x^{98} + x^{96} + x^{94} \\
&\quad + x^{92} + x^{90} + x^{86} + x^{84} + x^{78} + x^{76} + x^{62} + x^{60} + x^{58} + x^{52} + x^{48} \\
&\quad + x^{46} + x^{40} + x^{38} + x^{28} + x^{24} + x^{20} + x^{10} + x^{8} + x^{6} + x^{2} + 1, \\
p_9(x) &= x^{136} + x^{134} + x^{122} + x^{120} + x^{118} + x^{116} + x^{112} + x^{108} + x^{106} + x^{104} \\
&\quad + x^{102} + x^{98} + x^{96} + x^{94} + x^{90} + x^{86} + x^{82} + x^{76} + x^{70} + x^{68} + x^{64} \\
&\quad + x^{62} + x^{60} + x^{56} + x^{50} + x^{48} + x^{46} + x^{42} + x^{40} + x^{34} + x^{28} + x^{26} \\
&\quad + x^{24} + x^{14} + x^{10} + x^{6}, \\
p_{12}(x) &= x^{136} + x^{130} + x^{128} + x^{120} + x^{114} + x^{112} + x^{88} + x^{82} + x^{80} + x^{72} \\
&\quad + x^{66} + x^{64} + x^{56} + x^{50} + x^{48} + x^{8} + x^{2} + 1,
\end{aligned}
$$

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

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

$$
\begin{aligned}
p_0(x) &= x^{147} + x^{145} + x^{144} + x^{143} + x^{141} + x^{140} + x^{138} + x^{133} + x^{132} + x^{131} \\
&\quad + x^{130} + x^{127} + x^{125} + x^{124} + x^{120} + x^{117} + x^{114} + x^{113} + x^{112} \\
&\quad + x^{108} + x^{107} + x^{106} + x^{104} + x^{103} + x^{100} + x^{99} + x^{97} + x^{92} + x^{91} \\
&\quad + x^{90} + x^{86} + x^{85} + x^{83} + x^{81} + x^{79} + x^{78} + x^{76} + x^{69} + x^{68} + x^{66} \\
&\quad + x^{64} + x^{61} + x^{59} + x^{57} + x^{56} + x^{55} + x^{54} + x^{49} + x^{48} + x^{47} + x^{46} \\
&\quad + x^{40} + x^{39}, \\
p_3(x) &= x^{145} + x^{144} + x^{140} + x^{137} + x^{135} + x^{134} + x^{130} + x^{126} + x^{123} + x^{119} \\
&\quad + x^{118} + x^{114} + x^{113} + x^{112} + x^{111} + x^{108} + x^{107} + x^{106} + x^{105} \\
&\quad + x^{103} + x^{99} + x^{98} + x^{97} + x^{96} + x^{95} + x^{92} + x^{91} + x^{90} + x^{89} + x^{87} \\
&\quad + x^{83} + x^{82} + x^{79} + x^{75} + x^{74} + x^{73} + x^{72} + x^{70} + x^{68} + x^{67} + x^{64} \\
&\quad + x^{60} + x^{56} + x^{52} + x^{49} + x^{41} + x^{40} + x^{39} + x^{38} + x^{36} + x^{34} + x^{33} \\
&\quad + x^{30} + x^{27}, \\
p_6(x) &= x^{144} + x^{141} + x^{138} + x^{137} + x^{135} + x^{134} + x^{133} + x^{129} + x^{128} + x^{124} \\
&\quad + x^{121} + x^{120} + x^{118} + x^{115} + x^{114} + x^{112} + x^{110} + x^{109} + x^{108} \\
&\quad + x^{107} + x^{106} + x^{94} + x^{91} + x^{87} + x^{84} + x^{83} + x^{82} + x^{81} + x^{77} + x^{73} \\
&\quad + x^{72} + x^{60} + x^{58} + x^{57} + x^{56} + x^{55} + x^{54} + x^{42} + x^{40} + x^{39} + x^{37} \\
&\quad + x^{36} + x^{35} + x^{34} + x^{30} + x^{28} + x^{27} + x^{25} + x^{24} + x^{23} + x^{19} + x^{18}, \\
p_9(x) &= x^{143} + x^{142} + x^{141} + x^{140} + x^{139} + x^{136} + x^{135} + x^{134} + x^{133} + x^{131} \\
&\quad + x^{125} + x^{124} + x^{121} + x^{119} + x^{118} + x^{117} + x^{116} + x^{115} + x^{113} \\
&\quad + x^{111} + x^{110} + x^{109} + x^{108} + x^{107} + x^{104} + x^{100} + x^{99} + x^{98} + x^{97}
\end{aligned}
$$

$$
\begin{aligned}
&+ x^{95} + x^{93} + x^{92} + x^{89} + x^{87} + x^{86} + x^{83} + x^{81} + x^{80} + x^{79} + x^{78}\\
&+ x^{77} + x^{75} + x^{73} + x^{72} + x^{71} + x^{70} + x^{68} + x^{67} + x^{65} + x^{61} + x^{60}\\
&+ x^{59} + x^{58} + x^{57} + x^{55} + x^{49} + x^{48} + x^{47} + x^{46} + x^{44} + x^{42} + x^{41}\\
&+ x^{39} + x^{37} + x^{36} + x^{35} + x^{34} + x^{33} + x^{30} + x^{26} + x^{23} + x^{21} + x^{20}\\
&+ x^{19} + x^{18} + x^{16} + x^{14} + x^{12} + x^{11} + x^{9},\\
p_{12}(x) = {}& x^{142} + x^{140} + x^{139} + x^{138} + x^{137} + x^{136} + x^{134} + x^{132} + x^{131} + x^{129}\\
&+ x^{127} + x^{125} + x^{123} + x^{121} + x^{119} + x^{117} + x^{115} + x^{114} + x^{113}\\
&+ x^{112} + x^{94} + x^{92} + x^{91} + x^{90} + x^{89} + x^{88} + x^{86} + x^{84} + x^{83} + x^{81}\\
&+ x^{79} + x^{77} + x^{75} + x^{73} + x^{71} + x^{69} + x^{67} + x^{66} + x^{65} + x^{64} + x^{62}\\
&+ x^{60} + x^{59} + x^{58} + x^{57} + x^{56} + x^{54} + x^{52} + x^{51} + x^{49} + x^{47} + x^{46}\\
&+ x^{45} + x^{44} + x^{42} + x^{40} + x^{39} + x^{38} + x^{37} + x^{36} + x^{34} + x^{32} + x^{31}\\
&+ x^{30} + x^{29} + x^{28} + x^{26} + x^{24} + x^{23} + x^{22} + x^{21} + x^{20} + x^{18} + x^{16}\\
&+ x^{15} + x^{13} + x^{11} + x^{9} + x^{7} + x^{5} + x^{3} + x^{2} + x + 1,
\end{aligned}
$$

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

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

$$
\begin{aligned}
p_0(x) = {}& x^{147} + x^{145} + x^{144} + x^{143} + x^{141} + x^{140} + x^{138} + x^{133} + x^{132} + x^{131}\\
&+ x^{130} + x^{127} + x^{125} + x^{124} + x^{120} + x^{117} + x^{114} + x^{113} + x^{112}\\
&+ x^{108} + x^{107} + x^{106} + x^{104} + x^{103} + x^{100} + x^{99} + x^{97} + x^{92} + x^{91}\\
&+ x^{90} + x^{86} + x^{85} + x^{83} + x^{81} + x^{79} + x^{78} + x^{76} + x^{69} + x^{68} + x^{66}\\
&+ x^{64} + x^{61} + x^{59} + x^{57} + x^{56} + x^{55} + x^{54} + x^{49} + x^{48} + x^{47} + x^{46}\\
&+ x^{40} + x^{39},\\
p_3(x) = {}& x^{145} + x^{144} + x^{140} + x^{137} + x^{135} + x^{134} + x^{130} + x^{126} + x^{123} + x^{119}\\
&+ x^{118} + x^{114} + x^{113} + x^{112} + x^{111} + x^{108} + x^{107} + x^{106} + x^{105}\\
&+ x^{103} + x^{99} + x^{98} + x^{97} + x^{96} + x^{95} + x^{92} + x^{91} + x^{90} + x^{89} + x^{87}\\
&+ x^{83} + x^{82} + x^{79} + x^{75} + x^{74} + x^{73} + x^{72} + x^{70} + x^{68} + x^{67} + x^{64}\\
&+ x^{60} + x^{56} + x^{52} + x^{49} + x^{41} + x^{40} + x^{39} + x^{38} + x^{36} + x^{34} + x^{33}\\
&+ x^{30} + x^{27},\\
p_6(x) = {}& x^{144} + x^{141} + x^{138} + x^{137} + x^{135} + x^{134} + x^{133} + x^{129} + x^{128} + x^{124}\\
&+ x^{121} + x^{120} + x^{118} + x^{115} + x^{114} + x^{112} + x^{110} + x^{109} + x^{108}\\
&+ x^{107} + x^{106} + x^{94} + x^{91} + x^{87} + x^{84} + x^{83} + x^{82} + x^{81} + x^{77} + x^{73}\\
&+ x^{72} + x^{60} + x^{58} + x^{57} + x^{56} + x^{55} + x^{54} + x^{42} + x^{40} + x^{39} + x^{37}\\
&+ x^{36} + x^{35} + x^{34} + x^{30} + x^{28} + x^{27} + x^{25} + x^{24} + x^{23} + x^{19} + x^{18},\\
p_9(x) = {}& x^{143} + x^{142} + x^{141} + x^{140} + x^{139} + x^{136} + x^{135} + x^{134} + x^{133} + x^{131}\\
&+ x^{125} + x^{124} + x^{121} + x^{119} + x^{118} + x^{117} + x^{116} + x^{115} + x^{113}\\
&+ x^{111} + x^{110} + x^{109} + x^{108} + x^{107} + x^{104} + x^{100} + x^{99} + x^{98} + x^{97}
\end{aligned}
$$

$$
\begin{aligned}
&+ x^{95} + x^{93} + x^{92} + x^{89} + x^{87} + x^{86} + x^{83} + x^{81} + x^{80} + x^{79} + x^{78} \\
&+ x^{77} + x^{75} + x^{73} + x^{72} + x^{71} + x^{70} + x^{68} + x^{67} + x^{65} + x^{61} + x^{60} \\
&+ x^{59} + x^{58} + x^{57} + x^{55} + x^{49} + x^{48} + x^{47} + x^{46} + x^{44} + x^{42} + x^{41} \\
&+ x^{39} + x^{37} + x^{36} + x^{35} + x^{34} + x^{33} + x^{30} + x^{26} + x^{23} + x^{21} + x^{20} \\
&+ x^{19} + x^{18} + x^{16} + x^{14} + x^{12} + x^{11} + x^{9}, \\
p_{12}(x) = {}& x^{142} + x^{140} + x^{139} + x^{138} + x^{137} + x^{136} + x^{134} + x^{132} + x^{131} + x^{129} \\
&+ x^{127} + x^{125} + x^{123} + x^{121} + x^{119} + x^{117} + x^{115} + x^{114} + x^{113} \\
&+ x^{112} + x^{94} + x^{92} + x^{91} + x^{90} + x^{89} + x^{88} + x^{86} + x^{84} + x^{83} + x^{81} \\
&+ x^{79} + x^{77} + x^{75} + x^{73} + x^{71} + x^{69} + x^{67} + x^{66} + x^{65} + x^{64} + x^{62} \\
&+ x^{60} + x^{59} + x^{58} + x^{57} + x^{56} + x^{54} + x^{52} + x^{51} + x^{49} + x^{47} + x^{46} \\
&+ x^{45} + x^{44} + x^{42} + x^{40} + x^{39} + x^{38} + x^{37} + x^{36} + x^{34} + x^{32} + x^{31} \\
&+ x^{30} + x^{29} + x^{28} + x^{26} + x^{24} + x^{23} + x^{22} + x^{21} + x^{20} + x^{18} + x^{16} \\
&+ x^{15} + x^{13} + x^{11} + x^{9} + x^{7} + x^{5} + x^{3} + x^{2} + x + 1,
\end{aligned}
$$

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

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

$$
\begin{aligned}
p_0(x) = {}& x^{150} + x^{148} + x^{146} + x^{142} + x^{138} + x^{124} + x^{122} + x^{118} + x^{112} + x^{108} \\
&+ x^{106} + x^{104} + x^{100} + x^{96} + x^{92} + x^{84} + x^{82} + x^{80} + x^{72} + x^{64} + x^{60} \\
&+ x^{54} + x^{52} + x^{44} + x^{42}, \\
p_3(x) = {}& x^{146} + x^{142} + x^{136} + x^{130} + x^{128} + x^{122} + x^{120} + x^{94} + x^{92} + x^{90} \\
&+ x^{88} + x^{82} + x^{74} + x^{72} + x^{68} + x^{66} + x^{64} + x^{62} + x^{58} + x^{52} + x^{50} \\
&+ x^{48} + x^{46} + x^{44} + x^{36} + x^{30} + x^{26} + x^{18}, \\
p_6(x) = {}& x^{144} + x^{140} + x^{136} + x^{130} + x^{124} + x^{122} + x^{114} + x^{112} + x^{110} + x^{108} \\
&+ x^{106} + x^{104} + x^{102} + x^{98} + x^{96} + x^{92} + x^{90} + x^{84} + x^{78} + x^{76} + x^{74} \\
&+ x^{72} + x^{60} + x^{58} + x^{56} + x^{52} + x^{50} + x^{46} + x^{44} + x^{40} + x^{36} + x^{34} \\
&+ x^{32} + x^{28} + x^{26} + x^{24} + x^{18} + x^{12} + x^{10} + x^{6} + x^{4} + 1, \\
p_9(x) = {}& x^{148} + x^{146} + x^{144} + x^{136} + x^{134} + x^{128} + x^{126} + x^{124} + x^{120} + x^{118} \\
&+ x^{114} + x^{112} + x^{110} + x^{106} + x^{100} + x^{98} + x^{96} + x^{94} + x^{92} + x^{84} \\
&+ x^{82} + x^{72} + x^{70} + x^{66} + x^{62} + x^{60} + x^{56} + x^{52} + x^{48} + x^{44} + x^{40} \\
&+ x^{34} + x^{28} + x^{22} + x^{20} + x^{14} + x^{12} + x^{10} + x^{8} + x^{6}, \\
p_{12}(x) = {}& x^{148} + x^{144} + x^{124} + x^{120} + x^{116} + x^{112} + x^{100} + x^{96} + x^{76} + x^{72} \\
&+ x^{52} + x^{48} + x^{44} + x^{40} + x^{28} + x^{24} + x^{20} + x^{16} + x^{12} + x^{8} + x^{4} + 1,
\end{aligned}
$$

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

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

$$
\begin{aligned}
p_0(x) = {}& x^{147} + x^{146} + x^{145} + x^{141} + x^{135} + x^{134} + x^{132} + x^{131} + x^{125} + x^{121} \\
&+ x^{120} + x^{119} + x^{116} + x^{115} + x^{114} + x^{111} + x^{110} + x^{109} + x^{108}
\end{aligned}
$$

$$
\begin{aligned}
&+ x^{106} + x^{105} + x^{101} + x^{100} + x^{98} + x^{96} + x^{95} + x^{94} + x^{93} + x^{92}\\
&+ x^{89} + x^{87} + x^{86} + x^{84} + x^{83} + x^{81} + x^{80} + x^{76} + x^{75} + x^{74} + x^{73}\\
&+ x^{71} + x^{69} + x^{68} + x^{66} + x^{64} + x^{62} + x^{60} + x^{59} + x^{58} + x^{56} + x^{54}\\
&+ x^{53} + x^{50} + x^{49} + x^{47} + x^{46} + x^{44} + x^{42} + x^{41} + x^{37} + x^{36},\\
p_3(x) &= x^{146} + x^{145} + x^{143} + x^{142} + x^{141} + x^{140} + x^{138} + x^{137} + x^{133} + x^{132}\\
&+ x^{128} + x^{126} + x^{125} + x^{124} + x^{120} + x^{119} + x^{118} + x^{117} + x^{116}\\
&+ x^{113} + x^{112} + x^{111} + x^{108} + x^{106} + x^{100} + x^{99} + x^{98} + x^{96} + x^{95}\\
&+ x^{94} + x^{93} + x^{92} + x^{91} + x^{89} + x^{86} + x^{85} + x^{84} + x^{79} + x^{78} + x^{76}\\
&+ x^{75} + x^{72} + x^{71} + x^{70} + x^{69} + x^{67} + x^{66} + x^{65} + x^{64} + x^{62} + x^{60}\\
&+ x^{59} + x^{58} + x^{57} + x^{56} + x^{50} + x^{49} + x^{48} + x^{47} + x^{46} + x^{42} + x^{41}\\
&+ x^{40} + x^{38} + x^{36} + x^{35} + x^{34} + x^{32} + x^{30} + x^{29} + x^{25} + x^{24},\\
p_6(x) &= x^{146} + x^{145} + x^{143} + x^{142} + x^{135} + x^{134} + x^{133} + x^{132} + x^{131} + x^{126}\\
&+ x^{125} + x^{121} + x^{119} + x^{116} + x^{111} + x^{110} + x^{109} + x^{108} + x^{107}\\
&+ x^{104} + x^{103} + x^{102} + x^{101} + x^{100} + x^{99} + x^{98} + x^{96} + x^{92} + x^{91}\\
&+ x^{90} + x^{87} + x^{86} + x^{84} + x^{83} + x^{82} + x^{78} + x^{77} + x^{76} + x^{75} + x^{72}\\
&+ x^{70} + x^{69} + x^{68} + x^{66} + x^{61} + x^{55} + x^{54} + x^{47} + x^{44} + x^{43} + x^{42}\\
&+ x^{41} + x^{40} + x^{39} + x^{37} + x^{36} + x^{30} + x^{28} + x^{27} + x^{22} + x^{21} + x^{20}\\
&+ x^{15} + x^{12} + x^{11} + x^{9} + x^{7} + x^{5} + x^{3} + x^{2} + x + 1,\\
p_9(x) &= x^{146} + x^{144} + x^{143} + x^{141} + x^{139} + x^{138} + x^{137} + x^{136} + x^{130} + x^{128}\\
&+ x^{127} + x^{126} + x^{125} + x^{124} + x^{98} + x^{96} + x^{95} + x^{93} + x^{91} + x^{90}\\
&+ x^{89} + x^{88} + x^{82} + x^{80} + x^{79} + x^{78} + x^{77} + x^{76} + x^{66} + x^{64} + x^{63}\\
&+ x^{61} + x^{59} + x^{58} + x^{57} + x^{56} + x^{46} + x^{44} + x^{43} + x^{42} + x^{41} + x^{40}\\
&+ x^{30} + x^{28} + x^{27} + x^{26} + x^{25} + x^{24} + x^{18} + x^{16} + x^{15} + x^{14} + x^{13}\\
&+ x^{12},\\
p_{12}(x) &= x^{146} + x^{144} + x^{143} + x^{142} + x^{141} + x^{140} + x^{134} + x^{132} + x^{131} + x^{130}\\
&+ x^{129} + x^{128} + x^{126} + x^{124} + x^{123} + x^{121} + x^{119} + x^{117} + x^{115}\\
&+ x^{114} + x^{113} + x^{112} + x^{98} + x^{96} + x^{95} + x^{94} + x^{93} + x^{92} + x^{86} + x^{84}\\
&+ x^{83} + x^{82} + x^{81} + x^{80} + x^{78} + x^{76} + x^{75} + x^{73} + x^{71} + x^{69} + x^{67}\\
&+ x^{65} + x^{63} + x^{62} + x^{61} + x^{60} + x^{54} + x^{52} + x^{51} + x^{49} + x^{47} + x^{45}\\
&+ x^{43} + x^{41} + x^{39} + x^{38} + x^{37} + x^{36} + x^{34} + x^{32} + x^{31} + x^{29} + x^{27}\\
&+ x^{25} + x^{23} + x^{22} + x^{21} + x^{20} + x^{14} + x^{12} + x^{11} + x^{9} + x^{7} + x^{5} + x^{3}\\
&+ x^{2} + x + 1,
\end{aligned}
$$

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

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

$$p_0(x) = x^{152} + x^{149} + x^{148} + x^{146} + x^{145} + x^{143} + x^{142} + x^{139} + x^{136} + x^{135}$$

$$
\begin{aligned}
&+ x^{132} + x^{127} + x^{126} + x^{118} + x^{116} + x^{115} + x^{114} + x^{113} + x^{110} \\
&+ x^{106} + x^{105} + x^{101} + x^{100} + x^{96} + x^{92} + x^{91} + x^{89} + x^{88} + x^{85} \\
&+ x^{83} + x^{82} + x^{81} + x^{80} + x^{78} + x^{74} + x^{71} + x^{70} + x^{68} + x^{67} + x^{66} \\
&+ x^{64} + x^{59} + x^{55} + x^{54} + x^{53} + x^{52} + x^{46} + x^{41} + x^{39}, \\
p_3(x) = &\, x^{145} + x^{144} + x^{143} + x^{140} + x^{139} + x^{138} + x^{135} + x^{134} + x^{133} + x^{131} \\
&+ x^{130} + x^{129} + x^{126} + x^{122} + x^{121} + x^{120} + x^{118} + x^{117} + x^{116} \\
&+ x^{113} + x^{111} + x^{109} + x^{107} + x^{105} + x^{103} + x^{101} + x^{99} + x^{97} + x^{95} \\
&+ x^{93} + x^{91} + x^{89} + x^{87} + x^{85} + x^{83} + x^{80} + x^{77} + x^{76} + x^{74} + x^{72} \\
&+ x^{71} + x^{70} + x^{68} + x^{67} + x^{49} + x^{48} + x^{47} + x^{44} + x^{43} + x^{42} + x^{39} \\
&+ x^{38} + x^{37} + x^{35} + x^{34} + x^{32} + x^{31} + x^{30} + x^{28} + x^{27}, \\
p_6(x) = &\, x^{146} + x^{144} + x^{140} + x^{138} + x^{136} + x^{134} + x^{130} + x^{128} + x^{126} + x^{124} \\
&+ x^{122} + x^{118} + x^{116} + x^{106} + x^{96} + x^{94} + x^{86} + x^{82} + x^{74} + x^{72} \\
&+ x^{62} + x^{54} + x^{44} + x^{40} + x^{38} + x^{34} + x^{32} + x^{28} + x^{26} + x^{24} + x^{20} \\
&+ x^{18}, \\
p_9(x) = &\, x^{147} + x^{146} + x^{144} + x^{138} + x^{137} + x^{133} + x^{130} + x^{128} + x^{125} + x^{123} \\
&+ x^{122} + x^{121} + x^{99} + x^{98} + x^{96} + x^{90} + x^{89} + x^{85} + x^{82} + x^{80} + x^{77} \\
&+ x^{75} + x^{74} + x^{73} + x^{67} + x^{66} + x^{64} + x^{58} + x^{57} + x^{53} + x^{51} + x^{45} \\
&+ x^{43} + x^{37} + x^{35} + x^{29} + x^{27} + x^{21} + x^{18} + x^{16} + x^{13} + x^{11} + x^{10} \\
&+ x^{9}, \\
p_{12}(x) = &\, x^{148} + x^{140} + x^{136} + x^{124} + x^{116} + x^{112} + x^{100} + x^{92} + x^{88} + x^{76} \\
&+ x^{64} + x^{60} + x^{56} + x^{52} + x^{40} + x^{32} + x^{24} + x^{20} + x^{16} + x^{12} + x^{4} + 1,
\end{aligned}
$$

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

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

$$
\begin{aligned}
p_0(x) = &\, x^{154} + x^{153} + x^{152} + x^{151} + x^{149} + x^{148} + x^{147} + x^{143} + x^{142} + x^{139} \\
&+ x^{138} + x^{135} + x^{132} + x^{131} + x^{128} + x^{125} + x^{123} + x^{122} + x^{120} \\
&+ x^{118} + x^{117} + x^{116} + x^{114} + x^{108} + x^{105} + x^{102} + x^{101} + x^{100} \\
&+ x^{98} + x^{95} + x^{92} + x^{91} + x^{86} + x^{85} + x^{79} + x^{74} + x^{73} + x^{72} + x^{71} \\
&+ x^{69} + x^{67} + x^{65} + x^{60} + x^{59} + x^{57} + x^{54} + x^{53} + x^{50} + x^{47} + x^{45} \\
&+ x^{44} + x^{43} + x^{41} + x^{39}, \\
p_3(x) = &\, x^{153} + x^{152} + x^{151} + x^{148} + x^{147} + x^{146} + x^{145} + x^{144} + x^{142} + x^{139} \\
&+ x^{137} + x^{136} + x^{134} + x^{132} + x^{131} + x^{130} + x^{129} + x^{125} + x^{122} \\
&+ x^{121} + x^{119} + x^{117} + x^{116} + x^{115} + x^{114} + x^{110} + x^{107} + x^{106} \\
&+ x^{105} + x^{103} + x^{102} + x^{101} + x^{98} + x^{94} + x^{91} + x^{90} + x^{88} + x^{86} \\
&+ x^{85} + x^{84} + x^{83} + x^{79} + x^{76} + x^{75} + x^{73} + x^{71} + x^{70} + x^{69} + x^{68} \\
&+ x^{65} + x^{63} + x^{61} + x^{59} + x^{56} + x^{53} + x^{52} + x^{50} + x^{48} + x^{47} + x^{46}
\end{aligned}
$$

$$
\begin{aligned}
&+ x^{45} + x^{41} + x^{38} + x^{37} + x^{35} + x^{30} + x^{28} + x^{27},\\
p_6(x) &= x^{154} + x^{152} + x^{148} + x^{136} + x^{132} + x^{130} + x^{126} + x^{124} + x^{122} + x^{118}\\
&+ x^{112} + x^{108} + x^{100} + x^{98} + x^{94} + x^{90} + x^{88} + x^{82} + x^{68} + x^{66} + x^{64}\\
&+ x^{62} + x^{60} + x^{56} + x^{50} + x^{36} + x^{28} + x^{22} + x^{20} + x^{18},\\
p_9(x) &= x^{155} + x^{154} + x^{152} + x^{147} + x^{145} + x^{144} + x^{143} + x^{142} + x^{141} + x^{140}\\
&+ x^{137} + x^{136} + x^{135} + x^{133} + x^{132} + x^{131} + x^{128} + x^{127} + x^{126}\\
&+ x^{123} + x^{122} + x^{121} + x^{107} + x^{106} + x^{104} + x^{99} + x^{97} + x^{96} + x^{95}\\
&+ x^{94} + x^{93} + x^{92} + x^{89} + x^{88} + x^{87} + x^{85} + x^{84} + x^{83} + x^{80} + x^{79}\\
&+ x^{78} + x^{73} + x^{72} + x^{67} + x^{65} + x^{64} + x^{63} + x^{62} + x^{61} + x^{60} + x^{59}\\
&+ x^{58} + x^{57} + x^{55} + x^{53} + x^{52} + x^{49} + x^{45} + x^{44} + x^{39} + x^{37} + x^{36}\\
&+ x^{33} + x^{29} + x^{28} + x^{27} + x^{26} + x^{24} + x^{23} + x^{21} + x^{20} + x^{19} + x^{16}\\
&+ x^{15} + x^{14} + x^{11} + x^{10} + x^{9},\\
p_{12}(x) &= x^{156} + x^{140} + x^{136} + x^{124} + x^{112} + x^{108} + x^{92} + x^{88} + x^{64} + x^{56}\\
&+ x^{44} + x^{40} + x^{32} + x^{24} + x^{16} + x^{12} + 1,
\end{aligned}
$$

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

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

$$
\begin{aligned}
p_0(x) &= x^{147} + x^{143} + x^{142} + x^{141} + x^{140} + x^{138} + x^{136} + x^{135} + x^{133} + x^{132}\\
&+ x^{131} + x^{130} + x^{129} + x^{127} + x^{126} + x^{121} + x^{119} + x^{115} + x^{111}\\
&+ x^{110} + x^{107} + x^{105} + x^{102} + x^{98} + x^{97} + x^{96} + x^{95} + x^{91} + x^{90}\\
&+ x^{89} + x^{88} + x^{87} + x^{85} + x^{83} + x^{80} + x^{79} + x^{78} + x^{77} + x^{75} + x^{73}\\
&+ x^{72} + x^{69} + x^{65} + x^{64} + x^{62} + x^{55} + x^{53} + x^{51} + x^{50} + x^{43} + x^{42},\\
p_3(x) &= x^{146} + x^{145} + x^{144} + x^{143} + x^{140} + x^{139} + x^{138} + x^{136} + x^{135} + x^{133}\\
&+ x^{131} + x^{129} + x^{128} + x^{127} + x^{126} + x^{124} + x^{123} + x^{122} + x^{121}\\
&+ x^{119} + x^{117} + x^{115} + x^{107} + x^{105} + x^{101} + x^{99} + x^{96} + x^{94} + x^{93}\\
&+ x^{90} + x^{86} + x^{82} + x^{80} + x^{77} + x^{75} + x^{74} + x^{72} + x^{69} + x^{67} + x^{65}\\
&+ x^{63} + x^{62} + x^{61} + x^{60} + x^{58} + x^{56} + x^{55} + x^{53} + x^{51} + x^{50} + x^{42}\\
&+ x^{41} + x^{38} + x^{37} + x^{35} + x^{34} + x^{27} + x^{26},\\
p_6(x) &= x^{146} + x^{145} + x^{144} + x^{143} + x^{141} + x^{140} + x^{139} + x^{138} + x^{135} + x^{133}\\
&+ x^{132} + x^{128} + x^{127} + x^{120} + x^{119} + x^{118} + x^{116} + x^{115} + x^{110}\\
&+ x^{109} + x^{108} + x^{102} + x^{100} + x^{97} + x^{91} + x^{90} + x^{89} + x^{87} + x^{86}\\
&+ x^{85} + x^{83} + x^{79} + x^{77} + x^{75} + x^{74} + x^{73} + x^{72} + x^{71} + x^{64} + x^{63}\\
&+ x^{62} + x^{58} + x^{57} + x^{56} + x^{54} + x^{52} + x^{51} + x^{49} + x^{46} + x^{45} + x^{43}\\
&+ x^{42} + x^{41} + x^{40} + x^{39} + x^{38} + x^{37} + x^{36} + x^{35} + x^{32} + x^{31} + x^{30}\\
&+ x^{29} + x^{28} + x^{25} + x^{24} + x^{23} + x^{22} + x^{21} + x^{20} + x^{19} + x^{16} + x^{14}\\
&+ x^{13} + x^{11} + x^{9} + x^{7} + x^{5} + x^{3} + x^{2} + x + 1,
\end{aligned}
$$

$$
\begin{aligned}
p_9(x) &= x^{146} + x^{144} + x^{143} + x^{141} + x^{139} + x^{138} + x^{137} + x^{136} + x^{130} + x^{128} \\
&\quad + x^{127} + x^{126} + x^{125} + x^{124} + x^{98} + x^{96} + x^{95} + x^{93} + x^{91} + x^{90} \\
&\quad + x^{89} + x^{88} + x^{82} + x^{80} + x^{79} + x^{78} + x^{77} + x^{76} + x^{66} + x^{64} + x^{63} \\
&\quad + x^{61} + x^{59} + x^{58} + x^{57} + x^{56} + x^{46} + x^{44} + x^{43} + x^{42} + x^{41} + x^{40} \\
&\quad + x^{30} + x^{28} + x^{27} + x^{26} + x^{25} + x^{24} + x^{18} + x^{16} + x^{15} + x^{14} + x^{13} \\
&\quad + x^{12}, \\
p_{12}(x) &= x^{146} + x^{144} + x^{143} + x^{142} + x^{141} + x^{140} + x^{134} + x^{132} + x^{131} + x^{130} \\
&\quad + x^{129} + x^{128} + x^{126} + x^{124} + x^{123} + x^{121} + x^{119} + x^{117} + x^{115} \\
&\quad + x^{114} + x^{113} + x^{112} + x^{98} + x^{96} + x^{95} + x^{94} + x^{93} + x^{92} + x^{86} + x^{84} \\
&\quad + x^{83} + x^{82} + x^{81} + x^{80} + x^{78} + x^{76} + x^{75} + x^{73} + x^{71} + x^{69} + x^{67} \\
&\quad + x^{65} + x^{63} + x^{62} + x^{61} + x^{60} + x^{54} + x^{52} + x^{51} + x^{49} + x^{47} + x^{45} \\
&\quad + x^{43} + x^{41} + x^{39} + x^{38} + x^{37} + x^{36} + x^{34} + x^{32} + x^{31} + x^{29} + x^{27} \\
&\quad + x^{25} + x^{23} + x^{22} + x^{21} + x^{20} + x^{14} + x^{12} + x^{11} + x^{9} + x^{7} + x^{5} + x^{3} \\
&\quad + x^{2} + x + 1,
\end{aligned}
$$

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

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

$$
\begin{aligned}
p_0(x) &= x^{147} + x^{146} + x^{145} + x^{141} + x^{135} + x^{134} + x^{132} + x^{131} + x^{125} + x^{121} \\
&\quad + x^{120} + x^{119} + x^{116} + x^{115} + x^{114} + x^{111} + x^{110} + x^{109} + x^{108} \\
&\quad + x^{106} + x^{105} + x^{101} + x^{100} + x^{98} + x^{96} + x^{95} + x^{94} + x^{93} + x^{92} \\
&\quad + x^{89} + x^{87} + x^{86} + x^{84} + x^{83} + x^{81} + x^{80} + x^{76} + x^{75} + x^{74} + x^{73} \\
&\quad + x^{71} + x^{69} + x^{68} + x^{66} + x^{64} + x^{62} + x^{60} + x^{59} + x^{58} + x^{56} + x^{54} \\
&\quad + x^{53} + x^{50} + x^{49} + x^{47} + x^{46} + x^{44} + x^{42} + x^{41} + x^{37} + x^{36}, \\
p_3(x) &= x^{146} + x^{145} + x^{143} + x^{142} + x^{141} + x^{140} + x^{138} + x^{137} + x^{133} + x^{132} \\
&\quad + x^{128} + x^{126} + x^{125} + x^{124} + x^{120} + x^{119} + x^{118} + x^{117} + x^{116} \\
&\quad + x^{113} + x^{112} + x^{111} + x^{108} + x^{106} + x^{100} + x^{99} + x^{98} + x^{96} + x^{95} \\
&\quad + x^{94} + x^{93} + x^{92} + x^{91} + x^{89} + x^{86} + x^{85} + x^{84} + x^{79} + x^{78} + x^{76} \\
&\quad + x^{75} + x^{72} + x^{71} + x^{70} + x^{69} + x^{67} + x^{66} + x^{65} + x^{64} + x^{62} + x^{60} \\
&\quad + x^{59} + x^{58} + x^{57} + x^{56} + x^{50} + x^{49} + x^{48} + x^{47} + x^{46} + x^{42} + x^{41} \\
&\quad + x^{40} + x^{38} + x^{36} + x^{35} + x^{34} + x^{32} + x^{30} + x^{29} + x^{25} + x^{24}, \\
p_6(x) &= x^{146} + x^{145} + x^{143} + x^{142} + x^{135} + x^{134} + x^{133} + x^{132} + x^{131} + x^{126} \\
&\quad + x^{125} + x^{121} + x^{119} + x^{116} + x^{111} + x^{110} + x^{109} + x^{108} + x^{107} \\
&\quad + x^{104} + x^{103} + x^{102} + x^{101} + x^{100} + x^{99} + x^{98} + x^{96} + x^{92} + x^{91} \\
&\quad + x^{90} + x^{87} + x^{86} + x^{84} + x^{83} + x^{82} + x^{78} + x^{77} + x^{76} + x^{75} + x^{72} \\
&\quad + x^{70} + x^{69} + x^{68} + x^{66} + x^{61} + x^{55} + x^{54} + x^{47} + x^{44} + x^{43} + x^{42} \\
&\quad + x^{41} + x^{40} + x^{39} + x^{37} + x^{36} + x^{30} + x^{28} + x^{27} + x^{22} + x^{21} + x^{20}
\end{aligned}
$$

$$
\begin{aligned}
&+ x^{15} + x^{12} + x^{11} + x^{9} + x^{7} + x^{5} + x^{3} + x^{2} + x + 1,\\
p_9(x) &= x^{146} + x^{144} + x^{143} + x^{141} + x^{139} + x^{138} + x^{137} + x^{136} + x^{130} + x^{128}\\
&+ x^{127} + x^{126} + x^{125} + x^{124} + x^{98} + x^{96} + x^{95} + x^{93} + x^{91} + x^{90}\\
&+ x^{89} + x^{88} + x^{82} + x^{80} + x^{79} + x^{78} + x^{77} + x^{76} + x^{66} + x^{64} + x^{63}\\
&+ x^{61} + x^{59} + x^{58} + x^{57} + x^{56} + x^{46} + x^{44} + x^{43} + x^{42} + x^{41} + x^{40}\\
&+ x^{30} + x^{28} + x^{27} + x^{26} + x^{25} + x^{24} + x^{18} + x^{16} + x^{15} + x^{14} + x^{13}\\
&+ x^{12},\\
p_{12}(x) &= x^{146} + x^{144} + x^{143} + x^{142} + x^{141} + x^{140} + x^{134} + x^{132} + x^{131} + x^{130}\\
&+ x^{129} + x^{128} + x^{126} + x^{124} + x^{123} + x^{121} + x^{119} + x^{117} + x^{115}\\
&+ x^{114} + x^{113} + x^{112} + x^{98} + x^{96} + x^{95} + x^{94} + x^{93} + x^{92} + x^{86} + x^{84}\\
&+ x^{83} + x^{82} + x^{81} + x^{80} + x^{78} + x^{76} + x^{75} + x^{73} + x^{71} + x^{69} + x^{67}\\
&+ x^{65} + x^{63} + x^{62} + x^{61} + x^{60} + x^{54} + x^{52} + x^{51} + x^{49} + x^{47} + x^{45}\\
&+ x^{43} + x^{41} + x^{39} + x^{38} + x^{37} + x^{36} + x^{34} + x^{32} + x^{31} + x^{29} + x^{27}\\
&+ x^{25} + x^{23} + x^{22} + x^{21} + x^{20} + x^{14} + x^{12} + x^{11} + x^{9} + x^{7} + x^{5} + x^{3}\\
&+ x^{2} + x + 1,
\end{aligned}
$$

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

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

$$
\begin{aligned}
p_0(x) &= x^{154} + x^{153} + x^{152} + x^{151} + x^{149} + x^{148} + x^{147} + x^{143} + x^{142} + x^{139}\\
&+ x^{138} + x^{135} + x^{132} + x^{131} + x^{128} + x^{125} + x^{123} + x^{122} + x^{120}\\
&+ x^{118} + x^{117} + x^{116} + x^{114} + x^{108} + x^{105} + x^{102} + x^{101} + x^{100}\\
&+ x^{98} + x^{95} + x^{92} + x^{91} + x^{86} + x^{85} + x^{79} + x^{74} + x^{73} + x^{72} + x^{71}\\
&+ x^{69} + x^{67} + x^{65} + x^{60} + x^{59} + x^{57} + x^{54} + x^{53} + x^{50} + x^{47} + x^{45}\\
&+ x^{44} + x^{43} + x^{41} + x^{39},\\
p_3(x) &= x^{153} + x^{152} + x^{151} + x^{148} + x^{147} + x^{146} + x^{145} + x^{144} + x^{142} + x^{139}\\
&+ x^{137} + x^{136} + x^{134} + x^{132} + x^{131} + x^{130} + x^{129} + x^{125} + x^{122}\\
&+ x^{121} + x^{119} + x^{117} + x^{116} + x^{115} + x^{114} + x^{110} + x^{107} + x^{106}\\
&+ x^{105} + x^{103} + x^{102} + x^{101} + x^{98} + x^{94} + x^{91} + x^{90} + x^{88} + x^{86}\\
&+ x^{85} + x^{84} + x^{83} + x^{79} + x^{76} + x^{75} + x^{73} + x^{71} + x^{70} + x^{69} + x^{68}\\
&+ x^{65} + x^{63} + x^{61} + x^{59} + x^{56} + x^{53} + x^{52} + x^{50} + x^{48} + x^{47} + x^{46}\\
&+ x^{45} + x^{41} + x^{38} + x^{37} + x^{35} + x^{30} + x^{28} + x^{27},\\
p_6(x) &= x^{154} + x^{152} + x^{148} + x^{136} + x^{132} + x^{130} + x^{126} + x^{124} + x^{122} + x^{118}\\
&+ x^{112} + x^{108} + x^{100} + x^{98} + x^{94} + x^{90} + x^{88} + x^{82} + x^{68} + x^{66} + x^{64}\\
&+ x^{62} + x^{60} + x^{56} + x^{50} + x^{36} + x^{28} + x^{22} + x^{20} + x^{18},\\
p_9(x) &= x^{155} + x^{154} + x^{152} + x^{147} + x^{145} + x^{144} + x^{143} + x^{142} + x^{141} + x^{140}\\
&+ x^{137} + x^{136} + x^{135} + x^{133} + x^{132} + x^{131} + x^{128} + x^{127} + x^{126}
\end{aligned}
$$

$$
\begin{aligned}
&+x^{123}+x^{122}+x^{121}+x^{107}+x^{106}+x^{104}+x^{99}+x^{97}+x^{96}+x^{95}\\
&+x^{94}+x^{93}+x^{92}+x^{89}+x^{88}+x^{87}+x^{85}+x^{84}+x^{83}+x^{80}+x^{79}\\
&+x^{78}+x^{73}+x^{72}+x^{67}+x^{65}+x^{64}+x^{63}+x^{62}+x^{61}+x^{60}+x^{59}\\
&+x^{58}+x^{57}+x^{55}+x^{53}+x^{52}+x^{49}+x^{45}+x^{44}+x^{39}+x^{37}+x^{36}\\
&+x^{33}+x^{29}+x^{28}+x^{27}+x^{26}+x^{24}+x^{23}+x^{21}+x^{20}+x^{19}+x^{16}\\
&+x^{15}+x^{14}+x^{11}+x^{10}+x^{9},\\
p_{12}(x)=\,&x^{156}+x^{140}+x^{136}+x^{124}+x^{112}+x^{108}+x^{92}+x^{88}+x^{64}+x^{56}\\
&+x^{44}+x^{40}+x^{32}+x^{24}+x^{16}+x^{12}+1,
\end{aligned}
$$

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

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

$$
\begin{aligned}
p_0(x)=\,&x^{152}+x^{149}+x^{148}+x^{146}+x^{145}+x^{143}+x^{142}+x^{139}+x^{136}+x^{135}\\
&+x^{132}+x^{127}+x^{126}+x^{118}+x^{116}+x^{115}+x^{114}+x^{113}+x^{110}\\
&+x^{106}+x^{105}+x^{101}+x^{100}+x^{96}+x^{92}+x^{91}+x^{89}+x^{88}+x^{85}\\
&+x^{83}+x^{82}+x^{81}+x^{80}+x^{78}+x^{74}+x^{71}+x^{70}+x^{68}+x^{67}+x^{66}\\
&+x^{64}+x^{59}+x^{55}+x^{54}+x^{53}+x^{52}+x^{46}+x^{41}+x^{39},\\
p_3(x)=\,&x^{145}+x^{144}+x^{143}+x^{140}+x^{139}+x^{138}+x^{135}+x^{134}+x^{133}+x^{131}\\
&+x^{130}+x^{129}+x^{126}+x^{122}+x^{121}+x^{120}+x^{118}+x^{117}+x^{116}\\
&+x^{113}+x^{111}+x^{109}+x^{107}+x^{105}+x^{103}+x^{101}+x^{99}+x^{97}+x^{95}\\
&+x^{93}+x^{91}+x^{89}+x^{87}+x^{85}+x^{83}+x^{80}+x^{77}+x^{76}+x^{74}+x^{72}\\
&+x^{71}+x^{70}+x^{68}+x^{67}+x^{49}+x^{48}+x^{47}+x^{44}+x^{43}+x^{42}+x^{39}\\
&+x^{38}+x^{37}+x^{35}+x^{34}+x^{32}+x^{31}+x^{30}+x^{28}+x^{27},\\
p_6(x)=\,&x^{146}+x^{144}+x^{140}+x^{138}+x^{136}+x^{134}+x^{130}+x^{128}+x^{126}+x^{124}\\
&+x^{122}+x^{118}+x^{116}+x^{106}+x^{96}+x^{94}+x^{86}+x^{82}+x^{74}+x^{72}\\
&+x^{62}+x^{54}+x^{44}+x^{40}+x^{38}+x^{34}+x^{32}+x^{28}+x^{26}+x^{24}+x^{20}\\
&+x^{18},\\
p_9(x)=\,&x^{147}+x^{146}+x^{144}+x^{138}+x^{137}+x^{133}+x^{130}+x^{128}+x^{125}+x^{123}\\
&+x^{122}+x^{121}+x^{99}+x^{98}+x^{96}+x^{90}+x^{89}+x^{85}+x^{82}+x^{80}+x^{77}\\
&+x^{75}+x^{74}+x^{73}+x^{67}+x^{66}+x^{64}+x^{58}+x^{57}+x^{53}+x^{51}+x^{45}\\
&+x^{43}+x^{37}+x^{35}+x^{29}+x^{27}+x^{21}+x^{18}+x^{16}+x^{13}+x^{11}+x^{10}\\
&+x^{9},\\
p_{12}(x)=\,&x^{148}+x^{140}+x^{136}+x^{124}+x^{116}+x^{112}+x^{100}+x^{92}+x^{88}+x^{76}\\
&+x^{64}+x^{60}+x^{56}+x^{52}+x^{40}+x^{32}+x^{24}+x^{20}+x^{16}+x^{12}+x^{4}+1,
\end{aligned}
$$

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

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

$$
p_0(x)=x^{147}+x^{143}+x^{142}+x^{141}+x^{140}+x^{138}+x^{136}+x^{135}+x^{133}+x^{132}
$$

$$
\begin{aligned}
&+ x^{131} + x^{130} + x^{129} + x^{127} + x^{126} + x^{121} + x^{119} + x^{115} + x^{111} \\
&+ x^{110} + x^{107} + x^{105} + x^{102} + x^{98} + x^{97} + x^{96} + x^{95} + x^{91} + x^{90} \\
&+ x^{89} + x^{88} + x^{87} + x^{85} + x^{83} + x^{80} + x^{79} + x^{78} + x^{77} + x^{75} + x^{73} \\
&+ x^{72} + x^{69} + x^{65} + x^{64} + x^{62} + x^{55} + x^{53} + x^{51} + x^{50} + x^{43} + x^{42}, \\
p_3(x) = {}& x^{146} + x^{145} + x^{144} + x^{143} + x^{140} + x^{139} + x^{138} + x^{136} + x^{135} + x^{133} \\
&+ x^{131} + x^{129} + x^{128} + x^{127} + x^{126} + x^{124} + x^{123} + x^{122} + x^{121} \\
&+ x^{119} + x^{117} + x^{115} + x^{107} + x^{105} + x^{101} + x^{99} + x^{96} + x^{94} + x^{93} \\
&+ x^{90} + x^{86} + x^{82} + x^{80} + x^{77} + x^{75} + x^{74} + x^{72} + x^{69} + x^{67} + x^{65} \\
&+ x^{63} + x^{62} + x^{61} + x^{60} + x^{58} + x^{56} + x^{55} + x^{53} + x^{51} + x^{50} + x^{42} \\
&+ x^{41} + x^{38} + x^{37} + x^{35} + x^{34} + x^{27} + x^{26}, \\
p_6(x) = {}& x^{146} + x^{145} + x^{144} + x^{143} + x^{141} + x^{140} + x^{139} + x^{138} + x^{135} + x^{133} \\
&+ x^{132} + x^{128} + x^{127} + x^{120} + x^{119} + x^{118} + x^{116} + x^{115} + x^{110} \\
&+ x^{109} + x^{108} + x^{102} + x^{100} + x^{97} + x^{91} + x^{90} + x^{89} + x^{87} + x^{86} \\
&+ x^{85} + x^{83} + x^{79} + x^{77} + x^{75} + x^{74} + x^{73} + x^{72} + x^{71} + x^{64} + x^{63} \\
&+ x^{62} + x^{58} + x^{57} + x^{56} + x^{54} + x^{52} + x^{51} + x^{49} + x^{46} + x^{45} + x^{43} \\
&+ x^{42} + x^{41} + x^{40} + x^{39} + x^{38} + x^{37} + x^{36} + x^{35} + x^{32} + x^{31} + x^{30} \\
&+ x^{29} + x^{28} + x^{25} + x^{24} + x^{23} + x^{22} + x^{21} + x^{20} + x^{19} + x^{16} + x^{14} \\
&+ x^{13} + x^{11} + x^{9} + x^{7} + x^{5} + x^{3} + x^{2} + x + 1, \\
p_9(x) = {}& x^{146} + x^{144} + x^{143} + x^{141} + x^{139} + x^{138} + x^{137} + x^{136} + x^{130} + x^{128} \\
&+ x^{127} + x^{126} + x^{125} + x^{124} + x^{98} + x^{96} + x^{95} + x^{93} + x^{91} + x^{90} \\
&+ x^{89} + x^{88} + x^{82} + x^{80} + x^{79} + x^{78} + x^{77} + x^{76} + x^{66} + x^{64} + x^{63} \\
&+ x^{61} + x^{59} + x^{58} + x^{57} + x^{56} + x^{46} + x^{44} + x^{43} + x^{42} + x^{41} + x^{40} \\
&+ x^{30} + x^{28} + x^{27} + x^{26} + x^{25} + x^{24} + x^{18} + x^{16} + x^{15} + x^{14} + x^{13} \\
&+ x^{12}, \\
p_{12}(x) = {}& x^{146} + x^{144} + x^{143} + x^{142} + x^{141} + x^{140} + x^{134} + x^{132} + x^{131} + x^{130} \\
&+ x^{129} + x^{128} + x^{126} + x^{124} + x^{123} + x^{121} + x^{119} + x^{117} + x^{115} \\
&+ x^{114} + x^{113} + x^{112} + x^{98} + x^{96} + x^{95} + x^{94} + x^{93} + x^{92} + x^{86} + x^{84} \\
&+ x^{83} + x^{82} + x^{81} + x^{80} + x^{78} + x^{76} + x^{75} + x^{73} + x^{71} + x^{69} + x^{67} \\
&+ x^{65} + x^{63} + x^{62} + x^{61} + x^{60} + x^{54} + x^{52} + x^{51} + x^{49} + x^{47} + x^{45} \\
&+ x^{43} + x^{41} + x^{39} + x^{38} + x^{37} + x^{36} + x^{34} + x^{32} + x^{31} + x^{29} + x^{27} \\
&+ x^{25} + x^{23} + x^{22} + x^{21} + x^{20} + x^{14} + x^{12} + x^{11} + x^{9} + x^{7} + x^{5} + x^{3} \\
&+ x^{2} + x + 1,
\end{aligned}
$$

and the initial terms are [0, 0, 0, 0, 0, 0, 0, 1, 1, 0, 0, 0, 1, 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]	833	[1326, 1327]	1666	[2085, 2231]	2499	[2034, 2915]
1	[3, 4]	834	[1328, 1329]	1667	[63, 2037]	2500	[2914, 2145]
2	[5, 6]	835	[1330, 1331]	1668	[1968, 2255]	2501	[2128, 2916]
3	[7, 8]	836	[1332, 1333]	1669	[926, 2256]	2502	[2265, 2917]
4	[9, 10]	837	[1334, 222]	1670	[2102, 2101]	2503	[2918, 2919]
5	[11, 12]	838	[1335, 1336]	1671	[358, 1196]	2504	[446, 24]
6	[13, 14]	839	[1337, 488]	1672	[2257, 398]	2505	[255, 82]
7	[15, 16]	840	[1338, 486]	1673	[1229, 2258]	2506	[971, 2920]
8	[17, 18]	841	[765, 1339]	1674	[1978, 301]	2507	[2921, 407]
9	[19, 20]	842	[1340, 1341]	1675	[2153, 264]	2508	[1174, 849]
10	[21, 22]	843	[1342, 1343]	1676	[1215, 1020]	2509	[2922, 1108]
11	[23, 24]	844	[1344, 1345]	1677	[2174, 1246]	2510	[99, 2212]
12	[25, 26]	845	[1346, 1347]	1678	[2259, 1109]	2511	[2923, 29]
13	[27, 28]	846	[1348, 1348]	1679	[2111, 1298]	2512	[2008, 2924]
14	[29, 30]	847	[1349, 580]	1680	[2120, 2176]	2513	[1038, 2925]
15	[31, 32]	848	[1350, 1351]	1681	[1237, 966]	2514	[2127, 2926]
16	[33, 34]	849	[1352, 1353]	1682	[2260, 398]	2515	[2888, 111]
17	[35, 36]	850	[1354, 1355]	1683	[2261, 2262]	2516	[2927, 2265]
18	[37, 38]	851	[1356, 1357]	1684	[2199, 1150]	2517	[2928, 2885]
19	[39, 40]	852	[1358, 545]	1685	[2263, 423]	2518	[105, 453]
20	[41, 42]	853	[1359, 1360]	1686	[2264, 2265]	2519	[2929, 1116]
21	[43, 44]	854	[1361, 1362]	1687	[2233, 2266]	2520	[87, 2930]
22	[45, 46]	855	[1363, 662]	1688	[2267, 917]	2521	[2363, 2352]
23	[47, 48]	856	[1364, 1365]	1689	[397, 2244]	2522	[2931, 2141]
24	[49, 50]	857	[1366, 1367]	1690	[2268, 2269]	2523	[2240, 1992]
25	[51, 52]	858	[1368, 1369]	1691	[2229, 442]	2524	[2243, 301]
26	[53, 54]	859	[769, 1370]	1692	[836, 2099]	2525	[1226, 1181]
27	[55, 56]	860	[1371, 1372]	1693	[1016, 28]	2526	[2932, 2031]
28	[57, 58]	861	[1373, 1374]	1694	[2270, 2059]	2527	[2933, 2934]
29	[59, 60]	862	[1375, 1376]	1695	[2271, 2272]	2528	[2935, 995]
30	[61, 62]	863	[1377, 1378]	1696	[2273, 866]	2529	[2409, 2195]
31	[63, 64]	864	[217, 1379]	1697	[396, 307]	2530	[313, 2224]
32	[65, 66]	865	[1380, 1381]	1698	[2274, 345]	2531	[2350, 1139]
33	[67, 68]	866	[1382, 1383]	1699	[2157, 2275]	2532	[2936, 2937]
34	[69, 70]	867	[1384, 1385]	1700	[2169, 2056]	2533	[2040, 1143]
35	[71, 72]	868	[247, 1386]	1701	[2064, 1247]	2534	[2938, 2226]
36	[73, 74]	869	[1387, 1388]	1702	[2276, 2147]	2535	[2219, 1269]
37	[75, 76]	870	[1389, 1390]	1703	[2277, 1265]	2536	[2939, 320]
38	[77, 78]	871	[1391, 484]	1704	[2278, 2279]	2537	[110, 2889]
39	[79, 80]	872	[1392, 1393]	1705	[1308, 2280]	2538	[2940, 2941]
40	[81, 82]	873	[1394, 538]	1706	[458, 2281]	2539	[1175, 2345]
41	[83, 84]	874	[1395, 1396]	1707	[2114, 1198]	2540	[2912, 2942]
42	[85, 86]	875	[1397, 789]	1708	[2282, 2283]	2541	[2943, 2944]

43	[87, 88]	876	[1398, 605]	1709	[2073, 23]	2542	[2026, 2945]
44	[89, 30]	877	[1399, 1400]	1710	[2248, 270]	2543	[2117, 997]
45	[90, 91]	878	[1401, 1402]	1711	[917, 2284]	2544	[2946, 1042]
46	[92, 93]	879	[1403, 1404]	1712	[2285, 2042]	2545	[2315, 2348]
47	[94, 95]	880	[538, 1405]	1713	[2286, 1192]	2546	[916, 2066]
48	[96, 97]	881	[1406, 1344]	1714	[1289, 2287]	2547	[2082, 969]
49	[98, 99]	882	[1407, 1408]	1715	[979, 999]	2548	[906, 433]
50	[100, 101]	883	[1409, 1410]	1716	[1142, 1972]	2549	[289, 6]
51	[102, 103]	884	[1411, 1329]	1717	[2288, 2289]	2550	[1256, 2173]
52	[104, 105]	885	[703, 1412]	1718	[2165, 297]	2551	[1107, 2947]
53	[106, 107]	886	[1413, 1414]	1719	[20, 1252]	2552	[2948, 350]
54	[108, 109]	887	[207, 1415]	1720	[2290, 2158]	2553	[2086, 2949]
55	[110, 111]	888	[1416, 126]	1721	[993, 902]	2554	[310, 373]
56	[112, 113]	889	[1417, 1418]	1722	[1104, 2291]	2555	[2063, 2068]
57	[114, 115]	890	[563, 1419]	1723	[1084, 1047]	2556	[124, 2950]
58	[116, 117]	891	[482, 1420]	1724	[374, 376]	2557	[2951, 1034]
59	[118, 119]	892	[1421, 691]	1725	[2292, 1006]	2558	[2952, 1066]
60	[120, 121]	893	[554, 1422]	1726	[2293, 2294]	2559	[1189, 2199]
61	[122, 123]	894	[1423, 1424]	1727	[2295, 2296]	2560	[1203, 2953]
62	[124, 125]	895	[1425, 1426]	1728	[299, 892]	2561	[1985, 2954]
63	[126, 127]	896	[1427, 1428]	1729	[1306, 2211]	2562	[1286, 2117]
64	[128, 129]	897	[1429, 1396]	1730	[938, 96]	2563	[2393, 2304]
65	[130, 131]	898	[580, 1430]	1731	[1005, 2297]	2564	[119, 2422]
66	[132, 133]	899	[1431, 1359]	1732	[2032, 457]	2565	[932, 2955]
67	[134, 135]	900	[514, 1432]	1733	[2210, 2298]	2566	[2911, 2195]
68	[136, 137]	901	[1433, 1434]	1734	[2299, 2081]	2567	[1172, 78]
69	[138, 139]	902	[1435, 754]	1735	[103, 299]	2568	[930, 2322]
70	[140, 141]	903	[1436, 1437]	1736	[1099, 1956]	2569	[2932, 253]
71	[142, 143]	904	[1438, 247]	1737	[2058, 2300]	2570	[2956, 2003]
72	[144, 145]	905	[139, 1439]	1738	[2301, 2302]	2571	[2957, 2958]
73	[146, 147]	906	[1440, 1441]	1739	[248, 2117]	2572	[2959, 105]
74	[148, 9]	907	[1442, 1443]	1740	[915, 2303]	2573	[456, 2416]
75	[149, 150]	908	[1444, 58]	1741	[30, 2304]	2574	[2929, 861]
76	[151, 152]	909	[1445, 1446]	1742	[2305, 2023]	2575	[2190, 386]
77	[153, 154]	910	[1447, 1448]	1743	[2046, 2306]	2576	[2926, 1187]
78	[155, 156]	911	[1449, 1450]	1744	[1988, 2216]	2577	[2939, 2084]
79	[157, 158]	912	[1451, 1452]	1745	[370, 947]	2578	[2329, 2893]
80	[159, 160]	913	[1453, 1454]	1746	[285, 1065]	2579	[1298, 2960]
81	[161, 162]	914	[1455, 1408]	1747	[2303, 2066]	2580	[2961, 2892]
82	[163, 164]	915	[1456, 1457]	1748	[2307, 2094]	2581	[2043, 386]
83	[165, 166]	916	[1458, 1459]	1749	[2308, 100]	2582	[974, 1284]
84	[167, 168]	917	[1460, 1389]	1750	[2036, 832]	2583	[344, 2962]
85	[169, 170]	918	[1461, 1462]	1751	[355, 2309]	2584	[381, 2963]
86	[171, 172]	919	[1463, 1464]	1752	[1271, 2255]	2585	[2202, 2964]

87	[173, 174]	920	[1465, 1466]	1753	[1130, 2310]	2586	[2069, 1086]
88	[175, 176]	921	[1467, 555]	1754	[2311, 2099]	2587	[2166, 2016]
89	[177, 178]	922	[1468, 1469]	1755	[1966, 995]	2588	[2965, 2966]
90	[179, 180]	923	[1470, 1471]	1756	[2312, 431]	2589	[2956, 2098]
91	[181, 182]	924	[1472, 8]	1757	[2238, 1996]	2590	[2967, 382]
92	[183, 184]	925	[1473, 1474]	1758	[2313, 850]	2591	[1998, 418]
93	[185, 186]	926	[1475, 1476]	1759	[2207, 2236]	2592	[2133, 999]
94	[187, 188]	927	[1477, 1478]	1760	[2276, 1001]	2593	[2968, 953]
95	[189, 190]	928	[1479, 1480]	1761	[2314, 2151]	2594	[1058, 2324]
96	[191, 192]	929	[1402, 1481]	1762	[2148, 2294]	2595	[2215, 117]
97	[193, 194]	930	[1482, 1483]	1763	[2019, 956]	2596	[904, 867]
98	[195, 196]	931	[1484, 596]	1764	[2152, 1175]	2597	[1965, 1132]
99	[197, 198]	932	[1485, 1486]	1765	[2315, 1224]	2598	[2969, 2007]
100	[199, 200]	933	[1487, 1488]	1766	[847, 1056]	2599	[2177, 2970]
101	[201, 202]	934	[1489, 476]	1767	[286, 1110]	2600	[2945, 1207]
102	[46, 203]	935	[1490, 1491]	1768	[422, 2316]	2601	[2971, 1127]
103	[204, 205]	936	[1492, 1493]	1769	[1099, 396]	2602	[1002, 2331]
104	[206, 207]	937	[1494, 719]	1770	[2317, 2274]	2603	[2972, 907]
105	[208, 209]	938	[797, 193]	1771	[951, 2318]	2604	[2973, 2222]
106	[210, 211]	939	[1495, 1445]	1772	[2183, 255]	2605	[444, 2210]
107	[212, 213]	940	[1496, 1497]	1773	[2015, 118]	2606	[2974, 84]
108	[214, 215]	941	[1498, 54]	1774	[905, 1111]	2607	[2391, 1158]
109	[216, 217]	942	[1439, 619]	1775	[2140, 2079]	2608	[2154, 1213]
110	[218, 219]	943	[1499, 1482]	1776	[419, 1062]	2609	[2975, 1217]
111	[220, 221]	944	[1500, 1501]	1777	[2319, 2142]	2610	[1196, 1130]
112	[222, 223]	945	[1502, 716]	1778	[26, 1052]	2611	[1199, 981]
113	[224, 225]	946	[1503, 1504]	1779	[2320, 875]	2612	[2320, 21]
114	[226, 227]	947	[1505, 544]	1780	[2321, 2322]	2613	[1281, 2976]
115	[228, 229]	948	[680, 1506]	1781	[996, 2093]	2614	[2977, 909]
116	[230, 231]	949	[1507, 1508]	1782	[2323, 2324]	2615	[2978, 2164]
117	[232, 233]	950	[1509, 1510]	1783	[1255, 2325]	2616	[2979, 108]
118	[234, 172]	951	[1511, 1512]	1784	[2326, 1224]	2617	[29, 2393]
119	[235, 236]	952	[1513, 1514]	1785	[2327, 2328]	2618	[2338, 2292]
120	[145, 237]	953	[1515, 1516]	1786	[2329, 2262]	2619	[2980, 2364]
121	[238, 239]	954	[1517, 1518]	1787	[1102, 1178]	2620	[1096, 2881]
122	[240, 241]	955	[1519, 1520]	1788	[1045, 1028]	2621	[1233, 2325]
123	[242, 243]	956	[1521, 1522]	1789	[1192, 985]	2622	[2981, 1230]
124	[244, 245]	957	[820, 1523]	1790	[346, 306]	2623	[2969, 2898]
125	[246, 247]	958	[1524, 1525]	1791	[2330, 838]	2624	[2247, 269]
126	[248, 249]	959	[1526, 816]	1792	[283, 2331]	2625	[2285, 936]
127	[250, 251]	960	[1527, 1528]	1793	[2077, 2332]	2626	[2044, 2982]
128	[252, 253]	961	[223, 231]	1794	[2333, 327]	2627	[2116, 1250]
129	[254, 255]	962	[747, 1529]	1795	[2295, 2334]	2628	[260, 2983]
130	[256, 257]	963	[1530, 1531]	1796	[916, 2090]	2629	[1961, 875]

131	[258, 19]	964	[1501, 1532]	1797	[2335, 1254]	2630	[2369, 445]
132	[259, 260]	965	[1533, 1534]	1798	[2336, 1258]	2631	[2205, 2984]
133	[261, 262]	966	[1535, 1536]	1799	[427, 2337]	2632	[2360, 945]
134	[263, 264]	967	[1537, 1538]	1800	[862, 1997]	2633	[2254, 2925]
135	[265, 266]	968	[1539, 804]	1801	[2338, 1005]	2634	[1200, 2266]
136	[267, 268]	969	[1320, 1540]	1802	[325, 2219]	2635	[1018, 2985]
137	[269, 270]	970	[707, 1414]	1803	[2114, 1274]	2636	[1001, 283]
138	[271, 272]	971	[1541, 795]	1804	[2339, 2340]	2637	[2986, 2875]
139	[273, 274]	972	[1542, 233]	1805	[1012, 2341]	2638	[2987, 845]
140	[275, 276]	973	[233, 1543]	1806	[2342, 2343]	2639	[2110, 2200]
141	[276, 277]	974	[1379, 1544]	1807	[2344, 2286]	2640	[2115, 1249]
142	[278, 279]	975	[1545, 1546]	1808	[251, 1077]	2641	[2420, 941]
143	[280, 115]	976	[1420, 549]	1809	[1183, 2056]	2642	[2342, 2988]
144	[281, 282]	977	[1547, 798]	1810	[261, 2345]	2643	[975, 977]
145	[283, 284]	978	[1546, 1548]	1811	[392, 2207]	2644	[977, 2165]
146	[285, 286]	979	[1430, 1549]	1812	[2066, 2091]	2645	[1221, 976]
147	[287, 288]	980	[1550, 1551]	1813	[2346, 1099]	2646	[1285, 1222]
148	[289, 290]	981	[1552, 1553]	1814	[2347, 1209]	2647	[972, 972]
149	[291, 292]	982	[1554, 1555]	1815	[1037, 1141]	2648	[956, 981]
150	[293, 294]	983	[1556, 1511]	1816	[70, 905]	2649	[2989, 357]
151	[295, 296]	984	[1557, 1558]	1817	[2326, 2348]	2650	[5, 290]
152	[297, 298]	985	[1559, 730]	1818	[2349, 1068]	2651	[364, 883]
153	[299, 300]	986	[1560, 471]	1819	[2350, 458]	2652	[2990, 2065]
154	[301, 302]	987	[1561, 724]	1820	[2118, 1162]	2653	[2250, 2037]
155	[303, 85]	988	[1562, 1563]	1821	[2351, 304]	2654	[890, 1120]
156	[304, 305]	989	[1564, 1565]	1822	[2352, 2353]	2655	[1195, 2991]
157	[94, 306]	990	[1566, 1441]	1823	[2354, 2355]	2656	[2992, 2343]
158	[307, 308]	991	[1567, 1568]	1824	[2143, 2356]	2657	[2993, 874]
159	[309, 310]	992	[1569, 763]	1825	[831, 291]	2658	[2390, 2984]
160	[311, 312]	993	[1570, 1436]	1826	[901, 1088]	2659	[2994, 2883]
161	[313, 314]	994	[1448, 1571]	1827	[2030, 2357]	2660	[26, 2995]
162	[315, 316]	995	[1572, 1573]	1828	[1040, 2174]	2661	[115, 1106]
163	[91, 317]	996	[1412, 1328]	1829	[2333, 2358]	2662	[938, 318]
164	[318, 97]	997	[1574, 1426]	1830	[2359, 2139]	2663	[2996, 1228]
165	[319, 320]	998	[1575, 483]	1831	[2360, 963]	2664	[2024, 2997]
166	[321, 322]	999	[1576, 1577]	1832	[2361, 2362]	2665	[2882, 2052]
167	[323, 324]	1000	[1549, 1578]	1833	[2363, 2364]	2666	[985, 432]
168	[325, 92]	1001	[1579, 1580]	1834	[301, 2365]	2667	[2998, 1172]
169	[326, 327]	1002	[1581, 1582]	1835	[311, 410]	2668	[406, 2999]
170	[328, 329]	1003	[1583, 1584]	1836	[1172, 2092]	2669	[3000, 2030]
171	[330, 331]	1004	[1585, 1489]	1837	[2366, 2367]	2670	[936, 3001]
172	[332, 333]	1005	[1586, 533]	1838	[2168, 1221]	2671	[2173, 293]
173	[334, 335]	1006	[1587, 722]	1839	[1187, 124]	2672	[1301, 1278]
174	[336, 337]	1007	[1588, 1589]	1840	[2368, 2147]	2673	[426, 2880]

175	[338, 339]	1008	[1590, 660]	1841	[2369, 2073]	2674	[1084, 343]
176	[340, 341]	1009	[48, 1591]	1842	[119, 1098]	2675	[2928, 2418]
177	[342, 343]	1010	[1592, 1593]	1843	[295, 2370]	2676	[2055, 2114]
178	[344, 345]	1011	[1594, 1595]	1844	[1252, 1170]	2677	[3002, 1119]
179	[346, 95]	1012	[1596, 1597]	1845	[2000, 2371]	2678	[2894, 3003]
180	[347, 348]	1013	[1598, 1599]	1846	[940, 2372]	2679	[3004, 3005]
181	[312, 349]	1014	[1600, 1601]	1847	[2373, 966]	2680	[3006, 2269]
182	[350, 351]	1015	[1602, 1603]	1848	[2225, 2374]	2681	[844, 3007]
183	[352, 278]	1016	[1604, 1605]	1849	[2375, 2287]	2682	[1089, 2103]
184	[353, 354]	1017	[1606, 1607]	1850	[68, 2376]	2683	[2398, 942]
185	[355, 356]	1018	[1608, 144]	1851	[2193, 278]	2684	[3008, 421]
186	[357, 358]	1019	[1609, 1610]	1852	[876, 2227]	2685	[983, 2944]
187	[359, 360]	1020	[1611, 504]	1853	[298, 2017]	2686	[3009, 458]
188	[361, 362]	1021	[1612, 1613]	1854	[976, 978]	2687	[3010, 1094]
189	[363, 364]	1022	[1336, 600]	1855	[297, 2016]	2688	[2424, 2172]
190	[365, 366]	1023	[1614, 1525]	1856	[259, 2222]	2689	[2092, 2375]
191	[367, 368]	1024	[1615, 1616]	1857	[312, 2189]	2690	[2943, 984]
192	[369, 328]	1025	[773, 1617]	1858	[2268, 2377]	2691	[838, 2154]
193	[370, 371]	1026	[1618, 620]	1859	[421, 2049]	2692	[2375, 3011]
194	[372, 373]	1027	[1619, 62]	1860	[2378, 850]	2693	[3012, 2318]
195	[374, 375]	1028	[1620, 766]	1861	[2062, 2346]	2694	[2940, 3013]
196	[376, 377]	1029	[1621, 1622]	1862	[388, 2346]	2695	[954, 274]
197	[273, 378]	1030	[1623, 807]	1863	[2379, 444]	2696	[112, 3014]
198	[249, 379]	1031	[1624, 1625]	1864	[2230, 2380]	2697	[2308, 1097]
199	[380, 381]	1032	[1626, 1627]	1865	[2381, 2332]	2698	[1105, 901]
200	[382, 383]	1033	[1628, 1629]	1866	[2270, 2300]	2699	[3015, 1237]
201	[384, 385]	1034	[1630, 1443]	1867	[2271, 2382]	2700	[2201, 3016]
202	[386, 387]	1035	[1631, 1632]	1868	[2383, 1993]	2701	[1133, 1046]
203	[388, 389]	1036	[1633, 1567]	1869	[2384, 2385]	2702	[2986, 2279]
204	[390, 391]	1037	[1634, 609]	1870	[2305, 2251]	2703	[3017, 2899]
205	[392, 393]	1038	[1635, 1636]	1871	[2306, 2386]	2704	[3018, 85]
206	[20, 394]	1039	[1637, 1638]	1872	[1121, 2387]	2705	[959, 3019]
207	[395, 123]	1040	[1639, 1640]	1873	[2388, 20]	2706	[2100, 1097]
208	[396, 397]	1041	[1369, 1641]	1874	[2389, 2108]	2707	[880, 2227]
209	[398, 399]	1042	[1642, 1643]	1875	[383, 310]	2708	[3020, 2055]
210	[384, 400]	1043	[629, 1514]	1876	[2390, 2206]	2709	[3021, 914]
211	[68, 401]	1044	[1644, 1645]	1877	[272, 1130]	2710	[3022, 1019]
212	[402, 352]	1045	[1646, 1495]	1878	[1185, 2173]	2711	[2972, 897]
213	[290, 403]	1046	[1647, 1334]	1879	[2391, 2203]	2712	[1181, 1054]
214	[404, 279]	1047	[1648, 1649]	1880	[947, 1205]	2713	[2005, 1233]
215	[106, 405]	1048	[1650, 1602]	1881	[2392, 108]	2714	[2383, 1316]
216	[406, 407]	1049	[559, 1651]	1882	[437, 1987]	2715	[3023, 2970]
217	[408, 409]	1050	[1652, 661]	1883	[2393, 455]	2716	[1227, 2000]
218	[410, 349]	1051	[231, 1653]	1884	[2327, 2394]	2717	[1967, 1271]

219	[411, 412]	1052	[1654, 1649]	1885	[1053, 1083]	2718	[1162, 355]
220	[413, 414]	1053	[1655, 1656]	1886	[425, 2395]	2719	[2068, 1299]
221	[415, 416]	1054	[1657, 1658]	1887	[2364, 2353]	2720	[2263, 80]
222	[417, 418]	1055	[1367, 765]	1888	[2396, 2397]	2721	[3024, 26]
223	[419, 420]	1056	[1659, 1660]	1889	[1042, 1070]	2722	[3018, 1958]
224	[421, 422]	1057	[1661, 1662]	1890	[115, 1095]	2723	[409, 1222]
225	[79, 423]	1058	[32, 1663]	1891	[2348, 1225]	2724	[3025, 1986]
226	[424, 425]	1059	[1437, 1664]	1892	[2398, 348]	2725	[338, 1962]
227	[426, 427]	1060	[1665, 1666]	1893	[1241, 2126]	2726	[1212, 2901]
228	[428, 429]	1061	[1667, 1403]	1894	[80, 439]	2727	[3009, 1139]
229	[270, 430]	1062	[1668, 1666]	1895	[1982, 1152]	2728	[2047, 304]
230	[431, 432]	1063	[1669, 1670]	1896	[2399, 1056]	2729	[2307, 2145]
231	[433, 434]	1064	[1671, 1672]	1897	[1277, 2400]	2730	[3026, 2243]
232	[435, 436]	1065	[1673, 1674]	1898	[2401, 2402]	2731	[1289, 3011]
233	[437, 438]	1066	[1675, 1676]	1899	[2403, 2404]	2732	[3027, 847]
234	[352, 404]	1067	[1677, 1678]	1900	[1206, 2405]	2733	[3028, 2381]
235	[439, 440]	1068	[1679, 1339]	1901	[2406, 2407]	2734	[1296, 2172]
236	[441, 263]	1069	[1680, 1681]	1902	[1182, 1055]	2735	[102, 2082]
237	[282, 442]	1070	[1682, 245]	1903	[2408, 872]	2736	[3029, 1103]
238	[443, 444]	1071	[1683, 1684]	1904	[2409, 332]	2737	[834, 3030]
239	[445, 446]	1072	[1685, 1686]	1905	[282, 2410]	2738	[2344, 1191]
240	[447, 448]	1073	[1687, 1688]	1906	[2085, 2380]	2739	[2957, 3031]
241	[449, 450]	1074	[1689, 1690]	1907	[413, 2411]	2740	[3032, 934]
242	[451, 452]	1075	[745, 607]	1908	[1054, 2159]	2741	[2323, 2051]
243	[453, 454]	1076	[1625, 1691]	1909	[1306, 2298]	2742	[395, 3033]
244	[30, 455]	1077	[465, 1692]	1910	[1032, 1014]	2743	[2214, 116]
245	[429, 456]	1078	[1693, 1694]	1911	[266, 121]	2744	[2433, 3034]
246	[84, 457]	1079	[1695, 513]	1912	[326, 2358]	2745	[3035, 2394]
247	[458, 459]	1080	[1544, 1696]	1913	[1317, 2412]	2746	[1142, 3036]
248	[460, 461]	1081	[1697, 1698]	1914	[278, 2413]	2747	[3004, 1149]
249	[462, 463]	1082	[1699, 1668]	1915	[2414, 1147]	2748	[2185, 3016]
250	[464, 465]	1083	[1700, 780]	1916	[27, 1017]	2749	[2368, 1001]
251	[466, 467]	1084	[1434, 1701]	1917	[2163, 2415]	2750	[1287, 3036]
252	[468, 469]	1085	[1702, 1703]	1918	[1128, 2416]	2751	[2903, 3037]
253	[470, 471]	1086	[1704, 698]	1919	[2417, 2418]	2752	[2918, 3038]
254	[472, 473]	1087	[1565, 1527]	1920	[2037, 2419]	2753	[875, 3039]
255	[474, 475]	1088	[1432, 634]	1921	[1219, 1243]	2754	[1249, 3040]
256	[476, 187]	1089	[1705, 657]	1922	[408, 1285]	2755	[2019, 1199]
257	[477, 478]	1090	[619, 1508]	1923	[2401, 72]	2756	[255, 2180]
258	[479, 480]	1091	[1706, 1491]	1924	[300, 893]	2757	[2172, 2153]
259	[481, 482]	1092	[1327, 10]	1925	[2420, 2372]	2758	[447, 2113]
260	[483, 484]	1093	[1707, 1708]	1926	[1266, 2137]	2759	[1097, 1988]
261	[485, 486]	1094	[1709, 1710]	1927	[2359, 2421]	2760	[1155, 886]
262	[487, 488]	1095	[227, 583]	1928	[920, 2422]	2761	[879, 884]

263	[489, 191]	1096	[1711, 46]	1929	[2423, 2053]	2762	[1216, 3041]
264	[490, 491]	1097	[1712, 1713]	1930	[2184, 936]	2763	[2978, 2415]
265	[492, 493]	1098	[1464, 1714]	1931	[411, 1214]	2764	[3042, 2423]
266	[494, 176]	1099	[1715, 567]	1932	[2424, 441]	2765	[2876, 3043]
267	[495, 496]	1100	[677, 1716]	1933	[2290, 2275]	2766	[894, 3044]
268	[497, 498]	1101	[1717, 1718]	1934	[2425, 116]	2767	[2406, 2105]
269	[499, 500]	1102	[1719, 1720]	1935	[65, 2426]	2768	[1035, 2400]
270	[501, 502]	1103	[1721, 1611]	1936	[1119, 1967]	2769	[1125, 353]
271	[503, 504]	1104	[1722, 1645]	1937	[1033, 1015]	2770	[1174, 3045]
272	[505, 506]	1105	[1723, 464]	1938	[2427, 91]	2771	[1056, 2024]
273	[507, 194]	1106	[1724, 1725]	1939	[75, 2386]	2772	[860, 1116]
274	[508, 48]	1107	[1651, 1726]	1940	[451, 2221]	2773	[2303, 2090]
275	[509, 510]	1108	[1727, 1419]	1941	[2428, 2340]	2774	[2093, 2437]
276	[511, 512]	1109	[1728, 1729]	1942	[2429, 1079]	2775	[2084, 2230]
277	[8, 50]	1110	[527, 1730]	1943	[404, 2413]	2776	[2048, 1997]
278	[513, 514]	1111	[1731, 1732]	1944	[2347, 1238]	2777	[3046, 2183]
279	[515, 246]	1112	[1733, 1734]	1945	[1009, 903]	2778	[2321, 931]
280	[516, 517]	1113	[1735, 1674]	1946	[2430, 1232]	2779	[3047, 2064]
281	[518, 519]	1114	[1718, 792]	1947	[2431, 2432]	2780	[2088, 3048]
282	[520, 521]	1115	[1428, 1736]	1948	[2433, 2179]	2781	[2993, 1034]
283	[522, 523]	1116	[1737, 1626]	1949	[2434, 2135]	2782	[3049, 2248]
284	[524, 525]	1117	[1738, 160]	1950	[2072, 2435]	2783	[969, 892]
285	[526, 527]	1118	[1739, 1487]	1951	[1030, 2131]	2784	[3050, 2274]
286	[528, 529]	1119	[1740, 1741]	1952	[2423, 2436]	2785	[2198, 928]
287	[62, 530]	1120	[1418, 1480]	1953	[2437, 1092]	2786	[3051, 2079]
288	[531, 532]	1121	[1589, 1742]	1954	[2187, 1223]	2787	[2931, 1100]
289	[533, 534]	1122	[1743, 1744]	1955	[116, 2438]	2788	[2396, 2404]
290	[535, 536]	1123	[1745, 502]	1956	[2439, 569]	2789	[2388, 2050]
291	[537, 538]	1124	[1640, 1323]	1957	[1924, 2440]	2790	[69, 904]
292	[539, 540]	1125	[1746, 654]	1958	[2441, 1395]	2791	[1210, 1983]
293	[541, 542]	1126	[1747, 1748]	1959	[2442, 633]	2792	[3052, 266]
294	[543, 544]	1127	[1749, 1750]	1960	[763, 1615]	2793	[2057, 2930]
295	[545, 546]	1128	[1751, 1692]	1961	[1471, 45]	2794	[2990, 1203]
296	[547, 548]	1129	[779, 1752]	1962	[771, 786]	2795	[1962, 365]
297	[549, 550]	1130	[1753, 1754]	1963	[2443, 2444]	2796	[3053, 2966]
298	[551, 552]	1131	[506, 1362]	1964	[2445, 2446]	2797	[2217, 2020]
299	[553, 554]	1132	[1755, 1756]	1965	[2447, 659]	2798	[2403, 2397]
300	[205, 555]	1133	[1385, 157]	1966	[2448, 2449]	2799	[2354, 3054]
301	[556, 557]	1134	[1757, 1431]	1967	[2450, 2451]	2800	[319, 2084]
302	[558, 559]	1135	[1610, 1758]	1968	[1741, 1747]	2801	[3055, 2302]
303	[560, 561]	1136	[1759, 1498]	1969	[1716, 1832]	2802	[3056, 2411]
304	[562, 563]	1137	[826, 581]	1970	[2452, 57]	2803	[980, 1226]
305	[564, 565]	1138	[1760, 1761]	1971	[2453, 761]	2804	[3057, 848]
306	[566, 462]	1139	[1762, 1763]	1972	[1766, 745]	2805	[1283, 273]

307	[567, 568]	1140	[1764, 1613]	1973	[525, 1570]	2806	[2980, 2352]
308	[569, 162]	1141	[1765, 1766]	1974	[2454, 2455]	2807	[2286, 2312]
309	[570, 571]	1142	[147, 1767]	1975	[2456, 1658]	2808	[2009, 906]
310	[572, 573]	1143	[1768, 1730]	1976	[2457, 2458]	2809	[3058, 1314]
311	[574, 575]	1144	[1491, 571]	1977	[2459, 786]	2810	[3059, 990]
312	[576, 577]	1145	[1769, 1770]	1978	[719, 558]	2811	[2883, 3060]
313	[578, 495]	1146	[1771, 1772]	1979	[2460, 1321]	2812	[2431, 2385]
314	[579, 580]	1147	[1773, 683]	1980	[2461, 164]	2813	[2959, 2217]
315	[581, 582]	1148	[1774, 1775]	1981	[1571, 2462]	2814	[2191, 3061]
316	[583, 584]	1149	[1776, 751]	1982	[2463, 2464]	2815	[3062, 2949]
317	[585, 236]	1150	[1777, 1385]	1983	[2465, 676]	2816	[3063, 2880]
318	[586, 587]	1151	[1778, 554]	1984	[2466, 1532]	2817	[424, 858]
319	[588, 589]	1152	[1584, 491]	1985	[1948, 2467]	2818	[3064, 3065]
320	[590, 591]	1153	[1779, 1780]	1986	[2468, 1681]	2819	[3066, 331]
321	[592, 593]	1154	[669, 1781]	1987	[2469, 481]	2820	[1240, 3067]
322	[594, 595]	1155	[1782, 679]	1988	[2470, 1874]	2821	[908, 3068]
323	[596, 597]	1156	[738, 1778]	1989	[2471, 1404]	2822	[3069, 3037]
324	[546, 598]	1157	[1783, 1784]	1990	[795, 1340]	2823	[2094, 949]
325	[599, 600]	1158	[1785, 1698]	1991	[1694, 1442]	2824	[2408, 1190]
326	[601, 602]	1159	[1786, 1550]	1992	[2472, 1929]	2825	[24, 902]
327	[603, 604]	1160	[1787, 568]	1993	[2473, 819]	2826	[1132, 271]
328	[605, 606]	1161	[1788, 1520]	1994	[2474, 2475]	2827	[1026, 1283]
329	[607, 608]	1162	[1789, 828]	1995	[1681, 168]	2828	[846, 2399]
330	[609, 610]	1163	[1790, 1791]	1996	[2458, 225]	2829	[2028, 3034]
331	[611, 200]	1164	[1792, 1793]	1997	[2476, 526]	2830	[2122, 1303]
332	[612, 613]	1165	[1794, 1795]	1998	[2477, 2478]	2831	[2874, 1238]
333	[614, 615]	1166	[1742, 1355]	1999	[2479, 1803]	2832	[2193, 404]
334	[616, 617]	1167	[1796, 1461]	2000	[2480, 2481]	2833	[1147, 309]
335	[618, 619]	1168	[1551, 1367]	2001	[2482, 2483]	2834	[1237, 854]
336	[620, 621]	1169	[1797, 1798]	2002	[2484, 31]	2835	[293, 2924]
337	[622, 623]	1170	[1799, 1640]	2003	[2485, 2486]	2836	[3028, 2077]
338	[624, 625]	1171	[1800, 1801]	2004	[58, 1890]	2837	[348, 1089]
339	[626, 627]	1172	[1802, 1803]	2005	[2487, 1873]	2838	[1165, 2161]
340	[628, 629]	1173	[631, 1804]	2006	[150, 668]	2839	[2430, 2027]
341	[630, 631]	1174	[657, 1423]	2007	[2488, 1611]	2840	[2102, 2102]
342	[632, 633]	1175	[1805, 1388]	2008	[1898, 2489]	2841	[3070, 2367]
343	[634, 635]	1176	[1726, 1806]	2009	[617, 2490]	2842	[2922, 2947]
344	[636, 637]	1177	[1807, 637]	2010	[589, 204]	2843	[1042, 3071]
345	[638, 587]	1178	[198, 1808]	2011	[2491, 543]	2844	[3059, 3072]
346	[639, 640]	1179	[1809, 1425]	2012	[2492, 2493]	2845	[1271, 1984]
347	[641, 642]	1180	[1810, 808]	2013	[2494, 2495]	2846	[2994, 2361]
348	[643, 598]	1181	[1811, 565]	2014	[2496, 163]	2847	[1211, 2900]
349	[644, 645]	1182	[1812, 1813]	2015	[2497, 1465]	2848	[3032, 1011]
350	[646, 647]	1183	[1529, 1814]	2016	[2498, 1353]	2849	[2392, 1990]

351	[648, 649]	1184	[1815, 1816]	2017	[550, 1638]	2850	[3073, 2023]
352	[650, 651]	1185	[1817, 1818]	2018	[2499, 799]	2851	[435, 3074]
353	[652, 653]	1186	[1341, 543]	2019	[2500, 820]	2852	[1024, 1204]
354	[654, 645]	1187	[1819, 246]	2020	[2501, 1714]	2853	[2946, 1069]
355	[655, 239]	1188	[1729, 499]	2021	[2502, 1902]	2854	[1244, 3075]
356	[656, 657]	1189	[1736, 1777]	2022	[2503, 1554]	2855	[1033, 3076]
357	[658, 505]	1190	[1690, 1710]	2023	[2504, 2505]	2856	[2195, 839]
358	[659, 660]	1191	[1820, 781]	2024	[2506, 1603]	2857	[2060, 337]
359	[661, 656]	1192	[1821, 1822]	2025	[517, 140]	2858	[2025, 69]
360	[662, 663]	1193	[1357, 1530]	2026	[1353, 2507]	2859	[2319, 2088]
361	[664, 665]	1194	[1823, 1575]	2027	[1483, 2508]	2860	[16, 2323]
362	[666, 667]	1195	[1824, 1437]	2028	[2509, 2510]	2861	[898, 2997]
363	[668, 669]	1196	[1825, 1617]	2029	[640, 2511]	2862	[1983, 367]
364	[670, 671]	1197	[504, 1826]	2030	[2512, 2513]	2863	[1114, 437]
365	[672, 673]	1198	[1827, 606]	2031	[2514, 1939]	2864	[270, 2991]
366	[627, 177]	1199	[1828, 1554]	2032	[2515, 1685]	2865	[3012, 952]
367	[674, 675]	1200	[1829, 1830]	2033	[2464, 2516]	2866	[2293, 2149]
368	[676, 677]	1201	[1831, 1832]	2034	[2517, 2518]	2867	[2938, 2374]
369	[678, 607]	1202	[1833, 1732]	2035	[225, 1324]	2868	[3077, 2141]
370	[679, 680]	1203	[1834, 1529]	2036	[2519, 1887]	2869	[122, 3033]
371	[681, 682]	1204	[1835, 1389]	2037	[2520, 1478]	2870	[2036, 291]
372	[683, 684]	1205	[1836, 1767]	2038	[127, 198]	2871	[2288, 3078]
373	[571, 685]	1206	[1321, 1599]	2039	[245, 2497]	2872	[1148, 3005]
374	[686, 687]	1207	[1837, 1838]	2040	[2521, 685]	2873	[2366, 3079]
375	[688, 153]	1208	[1839, 61]	2041	[2522, 629]	2874	[3080, 1841]
376	[689, 126]	1209	[1840, 1614]	2042	[2523, 2524]	2875	[3081, 178]
377	[690, 691]	1210	[1841, 1842]	2043	[2525, 706]	2876	[3082, 2697]
378	[692, 693]	1211	[798, 1843]	2044	[600, 2526]	2877	[3083, 524]
379	[461, 547]	1212	[1844, 596]	2045	[488, 1614]	2878	[3084, 1639]
380	[694, 695]	1213	[1845, 185]	2046	[649, 2527]	2879	[3085, 2595]
381	[696, 697]	1214	[1846, 1847]	2047	[2528, 564]	2880	[756, 623]
382	[698, 243]	1215	[1848, 1849]	2048	[2529, 1823]	2881	[3086, 156]
383	[699, 478]	1216	[780, 1673]	2049	[2530, 1914]	2882	[3087, 2532]
384	[700, 701]	1217	[1850, 1851]	2050	[2531, 1895]	2883	[3088, 145]
385	[702, 703]	1218	[1852, 1615]	2051	[34, 211]	2884	[3089, 1460]
386	[704, 705]	1219	[741, 1853]	2052	[475, 751]	2885	[2848, 1865]
387	[706, 707]	1220	[552, 1854]	2053	[2532, 791]	2886	[1674, 153]
388	[573, 708]	1221	[1474, 1670]	2054	[2533, 2534]	2887	[3090, 1371]
389	[709, 710]	1222	[1855, 217]	2055	[2535, 1911]	2888	[1636, 711]
390	[711, 681]	1223	[1856, 1857]	2056	[2536, 1521]	2889	[787, 802]
391	[712, 713]	1224	[1858, 1859]	2057	[2537, 2538]	2890	[3091, 1464]
392	[714, 715]	1225	[1860, 472]	2058	[2539, 588]	2891	[3092, 578]
393	[716, 717]	1226	[1861, 1812]	2059	[2540, 508]	2892	[3093, 1551]
394	[718, 719]	1227	[1862, 1863]	2060	[2541, 2542]	2893	[1415, 215]

395	[720, 689]	1228	[1864, 1865]	2061	[789, 775]	2894	[1462, 1846]
396	[721, 722]	1229	[1866, 1867]	2062	[2543, 1715]	2895	[682, 462]
397	[723, 724]	1230	[1632, 1793]	2063	[2544, 1888]	2896	[3094, 2637]
398	[725, 726]	1231	[1868, 1869]	2064	[2545, 1890]	2897	[3095, 2796]
399	[727, 728]	1232	[1870, 1871]	2065	[1558, 2546]	2898	[3096, 1808]
400	[729, 521]	1233	[1872, 736]	2066	[1457, 2547]	2899	[3097, 1685]
401	[135, 730]	1234	[1873, 1874]	2067	[2548, 1596]	2900	[194, 636]
402	[731, 732]	1235	[759, 1546]	2068	[2549, 1452]	2901	[1843, 742]
403	[12, 573]	1236	[1875, 1876]	2069	[2550, 2503]	2902	[3098, 2509]
404	[733, 734]	1237	[1877, 1363]	2070	[2551, 2552]	2903	[164, 755]
405	[735, 736]	1238	[1878, 1719]	2071	[2553, 2554]	2904	[1937, 1333]
406	[737, 738]	1239	[1879, 579]	2072	[1851, 2530]	2905	[521, 2726]
407	[739, 740]	1240	[1880, 2]	2073	[2555, 1570]	2906	[3099, 1916]
408	[152, 741]	1241	[800, 1881]	2074	[2556, 2557]	2907	[162, 3085]
409	[742, 743]	1242	[740, 826]	2075	[2554, 2558]	2908	[3100, 1544]
410	[744, 745]	1243	[1882, 1838]	2076	[2559, 1683]	2909	[736, 710]
411	[746, 747]	1244	[1883, 1884]	2077	[2560, 1567]	2910	[3101, 470]
412	[748, 548]	1245	[1885, 137]	2078	[2561, 1548]	2911	[3102, 3090]
413	[749, 750]	1246	[1886, 1887]	2079	[2562, 2563]	2912	[3103, 535]
414	[202, 505]	1247	[1888, 1889]	2080	[2564, 1556]	2913	[3104, 205]
415	[751, 752]	1248	[1890, 1891]	2081	[2565, 1521]	2914	[1894, 1456]
416	[753, 754]	1249	[133, 498]	2082	[2566, 1406]	2915	[3105, 514]
417	[755, 756]	1250	[1892, 1754]	2083	[160, 2554]	2916	[2857, 627]
418	[757, 154]	1251	[1893, 1729]	2084	[219, 2567]	2917	[3106, 1813]
419	[758, 759]	1252	[40, 1894]	2085	[2568, 1937]	2918	[3107, 7]
420	[760, 761]	1253	[1895, 673]	2086	[2569, 2570]	2919	[3108, 2567]
421	[762, 763]	1254	[597, 1896]	2087	[2571, 1531]	2920	[3109, 1540]
422	[764, 765]	1255	[1897, 213]	2088	[1744, 1871]	2921	[1443, 3110]
423	[766, 767]	1256	[2, 1898]	2089	[2572, 675]	2922	[3111, 2441]
424	[768, 769]	1257	[1899, 165]	2090	[2573, 2483]	2923	[1656, 2474]
425	[770, 771]	1258	[1900, 575]	2091	[1459, 1668]	2924	[3112, 682]
426	[772, 773]	1259	[647, 1326]	2092	[2574, 584]	2925	[1941, 1474]
427	[774, 775]	1260	[1901, 473]	2093	[2575, 2576]	2926	[168, 545]
428	[776, 777]	1261	[1814, 1902]	2094	[2577, 1458]	2927	[3113, 2456]
429	[778, 779]	1262	[1903, 485]	2095	[54, 735]	2928	[3114, 3115]
430	[500, 780]	1263	[1568, 38]	2096	[2578, 1878]	2929	[3116, 1738]
431	[781, 782]	1264	[1780, 1904]	2097	[2579, 1387]	2930	[3117, 237]
432	[783, 196]	1265	[1905, 1402]	2098	[2580, 1336]	2931	[3118, 1717]
433	[784, 785]	1266	[1906, 574]	2099	[1331, 185]	2932	[3119, 3120]
434	[653, 523]	1267	[1907, 1461]	2100	[2581, 201]	2933	[1531, 3121]
435	[786, 787]	1268	[7, 661]	2101	[2101, 2101]	2934	[3122, 1629]
436	[788, 789]	1269	[1908, 1446]	2102	[2582, 649]	2935	[602, 576]
437	[790, 791]	1270	[1528, 1849]	2103	[2583, 1457]	2936	[3123, 3124]
438	[792, 152]	1271	[1909, 707]	2104	[693, 704]	2937	[3125, 2676]

439	[158, 793]	1272	[1910, 595]	2105	[2584, 1463]	2938	[3126, 3127]
440	[794, 795]	1273	[691, 1623]	2106	[684, 2486]	2939	[3128, 2568]
441	[796, 797]	1274	[1911, 777]	2107	[2585, 767]	2940	[1720, 3129]
442	[519, 798]	1275	[1912, 1610]	2108	[2516, 734]	2941	[3130, 1736]
443	[799, 800]	1276	[1913, 1522]	2109	[1386, 1725]	2942	[1889, 1406]
444	[801, 802]	1277	[1914, 1915]	2110	[625, 2586]	2943	[3131, 2476]
445	[803, 804]	1278	[1916, 740]	2111	[2587, 2588]	2944	[1795, 2505]
446	[805, 693]	1279	[1770, 1697]	2112	[2589, 1940]	2945	[3132, 2454]
447	[241, 806]	1280	[1917, 677]	2113	[2590, 1424]	2946	[3133, 1682]
448	[807, 808]	1281	[1918, 1919]	2114	[2591, 1596]	2947	[2599, 1741]
449	[809, 810]	1282	[1920, 1334]	2115	[2592, 2593]	2948	[743, 648]
450	[811, 812]	1283	[1730, 508]	2116	[2594, 2595]	2949	[56, 716]
451	[813, 814]	1284	[1921, 631]	2117	[2596, 1575]	2950	[3134, 141]
452	[815, 816]	1285	[1922, 1718]	2118	[2597, 662]	2951	[3135, 624]
453	[817, 818]	1286	[188, 822]	2119	[36, 1587]	2952	[3136, 3135]
454	[819, 820]	1287	[1923, 1506]	2120	[2598, 2599]	2953	[3137, 583]
455	[821, 822]	1288	[1887, 651]	2121	[1775, 2600]	2954	[1553, 1643]
456	[606, 823]	1289	[154, 1924]	2122	[2601, 1561]	2955	[3138, 177]
457	[824, 676]	1290	[1925, 1926]	2123	[1488, 805]	2956	[3139, 1765]
458	[825, 826]	1291	[1927, 1324]	2124	[2602, 1903]	2957	[3140, 3141]
459	[827, 828]	1292	[1928, 728]	2125	[2603, 2604]	2958	[14, 1369]
460	[829, 103]	1293	[761, 1929]	2126	[2605, 1763]	2959	[804, 817]
461	[343, 830]	1294	[1930, 1564]	2127	[2606, 1819]	2960	[3142, 2101]
462	[831, 832]	1295	[1931, 735]	2128	[1538, 2607]	2961	[1945, 1628]
463	[833, 834]	1296	[717, 1932]	2129	[610, 690]	2962	[3143, 192]
464	[835, 836]	1297	[1933, 1934]	2130	[2608, 2609]	2963	[3144, 1439]
465	[837, 838]	1298	[1849, 133]	2131	[1881, 1636]	2964	[467, 613]
466	[839, 840]	1299	[1935, 10]	2132	[1781, 1463]	2965	[3145, 3146]
467	[841, 341]	1300	[1936, 1937]	2133	[2610, 2592]	2966	[3147, 815]
468	[842, 843]	1301	[1365, 1938]	2134	[1816, 1608]	2967	[3148, 516]
469	[844, 845]	1302	[1481, 1750]	2135	[2611, 1778]	2968	[1750, 1517]
470	[846, 847]	1303	[215, 1939]	2136	[484, 2612]	2969	[3149, 2549]
471	[848, 849]	1304	[1940, 732]	2137	[2613, 2614]	2970	[3150, 1374]
472	[329, 456]	1305	[1853, 1941]	2138	[2615, 2616]	2971	[3151, 1788]
473	[850, 416]	1306	[1942, 1943]	2139	[2617, 526]	2972	[2526, 173]
474	[851, 852]	1307	[1944, 1945]	2140	[2618, 2619]	2973	[3152, 3153]
475	[431, 853]	1308	[1946, 1762]	2141	[2620, 2484]	2974	[3154, 824]
476	[854, 855]	1309	[1947, 1948]	2142	[2621, 2508]	2975	[3155, 1946]
477	[856, 857]	1310	[1532, 1895]	2143	[2622, 2623]	2976	[645, 766]
478	[858, 859]	1311	[1949, 1553]	2144	[2624, 793]	2977	[1857, 1607]
479	[860, 861]	1312	[1950, 823]	2145	[593, 1851]	2978	[3156, 1868]
480	[862, 863]	1313	[1951, 803]	2146	[2455, 487]	2979	[1548, 216]
481	[864, 438]	1314	[1952, 1896]	2147	[2625, 524]	2980	[3157, 2810]
482	[865, 866]	1315	[1953, 1401]	2148	[1351, 1930]	2981	[3127, 3158]

483	[867, 868]	1316	[1884, 209]	2149	[2626, 2627]	2982	[3159, 1719]
484	[333, 869]	1317	[1954, 1760]	2150	[1563, 1647]	2983	[3160, 1854]
485	[870, 871]	1318	[1955, 1766]	2151	[2628, 1662]	2984	[1806, 1595]
486	[872, 873]	1319	[1956, 397]	2152	[2629, 487]	2985	[1601, 698]
487	[874, 98]	1320	[1957, 836]	2153	[2630, 1462]	2986	[532, 3102]
488	[875, 22]	1321	[1096, 316]	2154	[2631, 1555]	2987	[3161, 3162]
489	[876, 369]	1322	[303, 1958]	2155	[2632, 2633]	2988	[1486, 746]
490	[877, 124]	1323	[923, 1959]	2156	[734, 2493]	2989	[730, 2735]
491	[878, 879]	1324	[422, 1960]	2157	[2634, 1373]	2990	[3163, 1386]
492	[880, 369]	1325	[423, 439]	2158	[2635, 581]	2991	[3164, 634]
493	[881, 882]	1326	[1961, 21]	2159	[2636, 1914]	2992	[3165, 2453]
494	[883, 884]	1327	[1962, 1040]	2160	[2637, 2638]	2993	[3166, 195]
495	[885, 886]	1328	[1963, 1031]	2161	[2639, 752]	2994	[1838, 2818]
496	[887, 888]	1329	[1964, 387]	2162	[2640, 717]	2995	[3167, 635]
497	[889, 890]	1330	[359, 355]	2163	[2641, 1912]	2996	[708, 2482]
498	[260, 891]	1331	[1965, 357]	2164	[2642, 1380]	2997	[3168, 1822]
499	[892, 893]	1332	[1966, 311]	2165	[2643, 551]	2998	[2728, 155]
500	[894, 895]	1333	[1967, 1968]	2166	[2644, 2645]	2999	[724, 1772]
501	[896, 897]	1334	[1106, 315]	2167	[2646, 742]	3000	[3169, 1644]
502	[898, 899]	1335	[342, 1047]	2168	[2647, 1420]	3001	[3170, 1894]
503	[900, 901]	1336	[1969, 399]	2169	[2648, 2649]	3002	[480, 2606]
504	[902, 903]	1337	[1970, 1971]	2170	[2650, 1897]	3003	[3171, 190]
505	[904, 905]	1338	[847, 1134]	2171	[2651, 557]	3004	[1714, 3172]
506	[906, 354]	1339	[1255, 1234]	2172	[2495, 2652]	3005	[1345, 1953]
507	[896, 907]	1340	[1287, 1972]	2173	[2653, 2654]	3006	[3173, 3174]
508	[908, 909]	1341	[67, 965]	2174	[2655, 1488]	3007	[705, 533]
509	[910, 16]	1342	[967, 1973]	2175	[2478, 2656]	3008	[3175, 2615]
510	[911, 912]	1343	[1974, 1975]	2176	[2657, 2455]	3009	[3176, 3177]
511	[913, 914]	1344	[1976, 1977]	2177	[2658, 2659]	3010	[2505, 2751]
512	[915, 916]	1345	[946, 340]	2178	[548, 1626]	3011	[3178, 1660]
513	[917, 918]	1346	[1978, 1979]	2179	[2493, 1945]	3012	[3179, 2479]
514	[919, 920]	1347	[1980, 1956]	2180	[2660, 567]	3013	[1534, 512]
515	[375, 921]	1348	[1981, 1982]	2181	[2661, 1582]	3014	[1493, 1471]
516	[922, 923]	1349	[1218, 1983]	2182	[1756, 474]	3015	[710, 1535]
517	[924, 276]	1350	[1968, 1984]	2183	[2662, 163]	3016	[3180, 1351]
518	[298, 925]	1351	[1002, 284]	2184	[623, 2663]	3017	[3181, 2522]
519	[926, 927]	1352	[1985, 1986]	2185	[2664, 175]	3018	[1904, 171]
520	[99, 928]	1353	[1987, 974]	2186	[2665, 1423]	3019	[3182, 184]
521	[883, 929]	1354	[1988, 1989]	2187	[2666, 2667]	3020	[1577, 2591]
522	[930, 931]	1355	[1990, 109]	2188	[2668, 741]	3021	[1339, 2544]
523	[932, 933]	1356	[1991, 1992]	2189	[1573, 785]	3022	[3183, 3184]
524	[934, 935]	1357	[1315, 1993]	2190	[816, 2669]	3023	[2534, 3185]
525	[936, 937]	1358	[1994, 1995]	2191	[777, 1485]	3024	[1405, 1654]
526	[263, 938]	1359	[1996, 1959]	2192	[2670, 1434]	3025	[3186, 1455]

527	[939, 908]	1360	[1997, 1194]	2193	[2586, 540]	3026	[3187, 556]
528	[940, 941]	1361	[1998, 1999]	2194	[2671, 1589]	3027	[3188, 1659]
529	[942, 943]	1362	[905, 868]	2195	[1454, 1387]	3028	[791, 3189]
530	[944, 945]	1363	[2000, 2001]	2196	[2672, 1786]	3029	[3190, 1588]
531	[946, 841]	1364	[2002, 2003]	2197	[2673, 1360]	3030	[3191, 1889]
532	[947, 948]	1365	[1161, 359]	2198	[1396, 2674]	3031	[3192, 771]
533	[949, 916]	1366	[1159, 2004]	2199	[2675, 2676]	3032	[2772, 2704]
534	[950, 251]	1367	[2005, 1255]	2200	[1378, 513]	3033	[1867, 683]
535	[951, 952]	1368	[2006, 2007]	2201	[557, 2677]	3034	[3193, 1465]
536	[953, 954]	1369	[1210, 1023]	2202	[2449, 1375]	3035	[3194, 2838]
537	[854, 955]	1370	[1186, 2008]	2203	[2678, 1911]	3036	[3195, 577]
538	[956, 957]	1371	[2009, 353]	2204	[2679, 2550]	3037	[3196, 183]
539	[84, 958]	1372	[2010, 2011]	2205	[2680, 468]	3038	[2513, 591]
540	[959, 960]	1373	[913, 2012]	2206	[2681, 476]	3039	[3197, 582]
541	[287, 961]	1374	[1286, 249]	2207	[2682, 1697]	3040	[3198, 1826]
542	[412, 962]	1375	[988, 391]	2208	[2683, 663]	3041	[523, 1458]
543	[963, 964]	1376	[2013, 1318]	2209	[203, 2684]	3042	[1670, 3199]
544	[965, 401]	1377	[1259, 2014]	2210	[2685, 1623]	3043	[752, 1580]
545	[966, 855]	1378	[2015, 919]	2211	[221, 1812]	3044	[3200, 547]
546	[967, 968]	1379	[2016, 2017]	2212	[1360, 2451]	3045	[3201, 552]
547	[103, 969]	1380	[1979, 302]	2213	[1801, 2686]	3046	[3202, 3203]
548	[970, 971]	1381	[1074, 2018]	2214	[2645, 2687]	3047	[3204, 2768]
549	[972, 973]	1382	[1184, 2019]	2215	[502, 532]	3048	[3205, 1616]
550	[974, 408]	1383	[1103, 1007]	2216	[1713, 1410]	3049	[667, 501]
551	[975, 976]	1384	[2020, 2021]	2217	[1603, 819]	3050	[3206, 3207]
552	[977, 978]	1385	[1956, 307]	2218	[2688, 1949]	3051	[2619, 2519]
553	[979, 980]	1386	[1275, 2022]	2219	[2689, 1528]	3052	[3208, 238]
554	[981, 982]	1387	[2023, 1202]	2220	[2690, 729]	3053	[243, 1907]
555	[391, 371]	1388	[1073, 933]	2221	[2691, 1530]	3054	[1939, 2576]
556	[983, 984]	1389	[2024, 899]	2222	[2692, 1857]	3055	[3209, 2706]
557	[985, 853]	1390	[2025, 1066]	2223	[2693, 1364]	3056	[1578, 3156]
558	[986, 987]	1391	[2026, 1206]	2224	[2694, 2695]	3057	[3210, 1352]
559	[957, 982]	1392	[1231, 2027]	2225	[1919, 2515]	3058	[2747, 3211]
560	[988, 370]	1393	[882, 2028]	2226	[2696, 139]	3059	[3212, 1433]
561	[989, 990]	1394	[2029, 2030]	2227	[2697, 799]	3060	[3213, 550]
562	[991, 992]	1395	[1088, 1084]	2228	[2698, 2699]	3061	[1506, 1656]
563	[446, 993]	1396	[2020, 454]	2229	[1613, 703]	3062	[2793, 2760]
564	[994, 322]	1397	[252, 2031]	2230	[2700, 1891]	3063	[3211, 3214]
565	[995, 312]	1398	[1168, 1054]	2231	[2567, 542]	3064	[2695, 3215]
566	[996, 833]	1399	[83, 2032]	2232	[2701, 2572]	3065	[3216, 536]
567	[997, 998]	1400	[1086, 2022]	2233	[2702, 2703]	3066	[3217, 2536]
568	[999, 1000]	1401	[2033, 2034]	2234	[2546, 221]	3067	[1381, 1363]
569	[1001, 1002]	1402	[2035, 2036]	2235	[2704, 41]	3068	[3218, 186]
570	[1003, 1004]	1403	[1970, 1060]	2236	[2705, 42]	3069	[3219, 1680]

571	[1005, 1006]	1404	[2037, 2038]	2237	[663, 529]	3070	[3220, 2488]
572	[1007, 1008]	1405	[2039, 362]	2238	[2706, 2442]	3071	[3221, 499]
573	[24, 1009]	1406	[2040, 256]	2239	[2707, 2708]	3072	[808, 653]
574	[1010, 872]	1407	[249, 997]	2240	[2709, 2710]	3073	[3222, 1833]
575	[1011, 935]	1408	[1228, 2001]	2241	[701, 182]	3074	[635, 44]
576	[1012, 1013]	1409	[1067, 2041]	2242	[190, 2711]	3075	[1466, 1534]
577	[1014, 1015]	1410	[2042, 937]	2243	[2712, 2627]	3076	[3223, 1430]
578	[1016, 1017]	1411	[963, 392]	2244	[2713, 475]	3077	[1638, 3224]
579	[1018, 1019]	1412	[2043, 1964]	2245	[2714, 2715]	3078	[1754, 1493]
580	[1007, 1020]	1413	[2044, 2045]	2246	[2716, 1924]	3079	[823, 2446]
581	[1021, 1022]	1414	[1180, 895]	2247	[2717, 2690]	3080	[919, 119]
582	[1023, 1024]	1415	[2046, 75]	2248	[2718, 604]	3081	[2961, 3225]
583	[425, 859]	1416	[1178, 1215]	2249	[2719, 1518]	3082	[1136, 961]
584	[427, 1025]	1417	[2047, 856]	2250	[2720, 2721]	3083	[1100, 3226]
585	[1026, 953]	1418	[2048, 863]	2251	[512, 1558]	3084	[924, 1115]
586	[997, 1027]	1419	[2049, 1960]	2252	[2722, 1490]	3085	[2967, 1147]
587	[1028, 79]	1420	[438, 974]	2253	[2723, 2724]	3086	[1115, 3227]
588	[1029, 412]	1421	[2050, 394]	2254	[1536, 1625]	3087	[2167, 1284]
589	[1030, 1031]	1422	[980, 1000]	2255	[1480, 715]	3088	[1188, 2950]
590	[1032, 1033]	1423	[1058, 2051]	2256	[192, 129]	3089	[1134, 2024]
591	[1034, 98]	1424	[2052, 2053]	2257	[2440, 727]	3090	[71, 2402]
592	[1035, 1036]	1425	[2054, 2055]	2258	[2725, 2726]	3091	[2150, 3228]
593	[1037, 74]	1426	[2056, 1261]	2259	[2727, 2728]	3092	[1197, 2310]
594	[1038, 1039]	1427	[2057, 88]	2260	[2729, 2730]	3093	[1065, 3229]
595	[339, 1040]	1428	[2058, 2059]	2261	[2731, 2732]	3094	[3006, 2377]
596	[354, 434]	1429	[2060, 2061]	2262	[2733, 1340]	3095	[2168, 975]
597	[1041, 1042]	1430	[1983, 1024]	2263	[2734, 559]	3096	[2080, 3230]
598	[1043, 1044]	1431	[861, 1117]	2264	[2735, 2736]	3097	[2248, 1195]
599	[1045, 1046]	1432	[2062, 389]	2265	[2737, 2600]	3098	[2197, 99]
600	[1047, 830]	1433	[2063, 2064]	2266	[2738, 726]	3099	[360, 2309]
601	[333, 840]	1434	[1202, 2065]	2267	[1325, 2614]	3100	[2933, 3231]
602	[1048, 1014]	1435	[2066, 2067]	2268	[2607, 2739]	3101	[2065, 2953]
603	[1049, 1050]	1436	[2068, 1247]	2269	[2740, 1691]	3102	[3232, 2034]
604	[1051, 1052]	1437	[256, 1144]	2270	[2741, 199]	3103	[1292, 440]
605	[900, 1053]	1438	[2069, 1275]	2271	[2742, 2743]	3104	[6, 3233]
606	[1054, 1055]	1439	[272, 1197]	2272	[1710, 2464]	3105	[90, 1293]
607	[1056, 898]	1440	[1064, 286]	2273	[2744, 2745]	3106	[1236, 2373]
608	[1057, 1058]	1441	[945, 964]	2274	[2746, 2633]	3107	[2907, 2426]
609	[1059, 1060]	1442	[2070, 888]	2275	[2538, 229]	3108	[108, 3234]
610	[1061, 364]	1443	[2071, 1151]	2276	[810, 2747]	3109	[91, 3235]
611	[1062, 1063]	1444	[1247, 1300]	2277	[2748, 2749]	3110	[3236, 1282]
612	[1064, 1065]	1445	[2072, 421]	2278	[2750, 1440]	3111	[1239, 2879]
613	[1066, 70]	1446	[2073, 446]	2279	[2751, 60]	3112	[2035, 831]
614	[1067, 1068]	1447	[1135, 68]	2280	[1830, 40]	3113	[2039, 2132]

615	[1069, 1070]	1448	[2074, 1122]	2281	[2752, 656]	3114	[449, 992]
616	[1071, 107]	1449	[2075, 400]	2282	[1902, 720]	3115	[3237, 2941]
617	[1072, 1073]	1450	[2076, 1295]	2283	[2753, 2439]	3116	[2935, 311]
618	[1074, 1075]	1451	[2077, 2078]	2284	[2754, 191]	3117	[2235, 2388]
619	[1076, 1077]	1452	[2079, 2036]	2285	[2755, 1494]	3118	[976, 2165]
620	[1078, 1079]	1453	[101, 1989]	2286	[1347, 1380]	3119	[2136, 1267]
621	[1080, 282]	1454	[1118, 1073]	2287	[584, 1431]	3120	[3238, 2334]
622	[1081, 1082]	1455	[2080, 2081]	2288	[2756, 2678]	3121	[3239, 1050]
623	[1083, 1084]	1456	[829, 2082]	2289	[2757, 2524]	3122	[95, 248]
624	[1085, 1086]	1457	[439, 2083]	2290	[2758, 55]	3123	[2071, 2920]
625	[1087, 959]	1458	[1120, 1968]	2291	[2759, 1943]	3124	[3240, 2913]
626	[1088, 342]	1459	[2084, 2085]	2292	[2760, 1347]	3125	[1046, 2263]
627	[1089, 1090]	1460	[2086, 2087]	2293	[2761, 1910]	3126	[2160, 1166]
628	[372, 1091]	1461	[2088, 2089]	2294	[2762, 558]	3127	[3021, 2012]
629	[834, 1092]	1462	[2090, 2091]	2295	[2763, 2764]	3128	[1048, 1033]
630	[1093, 1094]	1463	[2092, 1289]	2296	[129, 170]	3129	[3241, 75]
631	[978, 297]	1464	[2093, 834]	2297	[2765, 569]	3130	[970, 2071]
632	[1095, 1096]	1465	[456, 1129]	2298	[2766, 1578]	3131	[1991, 2241]
633	[1097, 101]	1466	[2094, 915]	2299	[1540, 136]	3132	[1143, 257]
634	[920, 1098]	1467	[994, 2095]	2300	[2767, 1516]	3133	[328, 429]
635	[389, 1099]	1468	[910, 1057]	2301	[2768, 2769]	3134	[2364, 3242]
636	[371, 948]	1469	[2096, 2097]	2302	[2770, 680]	3135	[3063, 427]
637	[1100, 1101]	1470	[2002, 2098]	2303	[2771, 1370]	3136	[1085, 1275]
638	[1102, 1103]	1471	[2099, 92]	2304	[178, 461]	3137	[1996, 3243]
639	[300, 1104]	1472	[2100, 100]	2305	[2686, 2772]	3138	[2317, 344]
640	[1105, 1053]	1473	[2101, 2102]	2306	[1943, 1744]	3139	[354, 2181]
641	[1106, 1096]	1474	[2017, 1220]	2307	[2773, 2601]	3140	[3244, 852]
642	[1107, 1108]	1475	[943, 2103]	2308	[2612, 2494]	3141	[3245, 1212]
643	[1023, 367]	1476	[2104, 2105]	2309	[2774, 1482]	3142	[2428, 3246]
644	[1109, 877]	1477	[389, 1980]	2310	[2775, 1536]	3143	[2182, 254]
645	[1065, 1110]	1478	[2106, 1021]	2311	[2769, 183]	3144	[250, 1076]
646	[867, 1111]	1479	[861, 2107]	2312	[2776, 1359]	3145	[954, 378]
647	[879, 929]	1480	[856, 305]	2313	[1748, 2777]	3146	[3247, 2982]
648	[1112, 1113]	1481	[2034, 2108]	2314	[2778, 2779]	3147	[2132, 1307]
649	[1114, 864]	1482	[2065, 2109]	2315	[170, 1860]	3148	[922, 1996]
650	[275, 1115]	1483	[2110, 402]	2316	[2780, 1842]	3149	[2437, 3030]
651	[1116, 1117]	1484	[2111, 350]	2317	[665, 638]	3150	[2156, 2433]
652	[1118, 932]	1485	[2112, 2113]	2318	[2781, 2513]	3151	[80, 1292]
653	[1119, 1120]	1486	[1081, 2114]	2319	[2649, 2782]	3152	[978, 2166]
654	[1121, 1122]	1487	[2115, 2116]	2320	[2783, 2784]	3153	[3248, 927]
655	[902, 1123]	1488	[2117, 379]	2321	[2785, 2786]	3154	[73, 1141]
656	[16, 1058]	1489	[2118, 359]	2322	[2787, 636]	3155	[957, 1140]
657	[366, 1124]	1490	[2119, 1005]	2323	[2788, 525]	3156	[2981, 2258]
658	[1125, 906]	1491	[1958, 86]	2324	[2789, 1684]	3157	[2076, 1272]

659	[1126, 1127]	1492	[2120, 2121]	2325	[2790, 202]	3158	[3249, 3031]
660	[1128, 1129]	1493	[348, 943]	2326	[2791, 2792]	3159	[1214, 3250]
661	[1040, 366]	1494	[2122, 986]	2327	[1508, 2793]	3160	[3064, 3251]
662	[1130, 1131]	1495	[2123, 2073]	2328	[2489, 797]	3161	[2896, 2280]
663	[1132, 358]	1496	[2124, 2014]	2329	[1362, 2738]	3162	[3252, 2883]
664	[264, 318]	1497	[2125, 2126]	2330	[2794, 1612]	3163	[2119, 2292]
665	[1133, 1028]	1498	[2127, 1109]	2331	[2795, 1663]	3164	[415, 3253]
666	[363, 878]	1499	[2128, 1977]	2332	[2796, 551]	3165	[1290, 2356]
667	[1134, 898]	1500	[2129, 375]	2333	[1666, 2625]	3166	[2129, 376]
668	[1135, 965]	1501	[1003, 1982]	2334	[2797, 1395]	3167	[1208, 89]
669	[1136, 288]	1502	[271, 1196]	2335	[1784, 2798]	3168	[1997, 3254]
670	[1041, 1069]	1503	[973, 972]	2336	[2490, 189]	3169	[2971, 1268]
671	[1137, 1095]	1504	[2130, 436]	2337	[2799, 506]	3170	[265, 120]
672	[1138, 425]	1505	[1963, 2131]	2338	[2800, 2801]	3171	[872, 3255]
673	[1139, 459]	1506	[1146, 1279]	2339	[732, 2802]	3172	[3256, 402]
674	[981, 1140]	1507	[361, 2132]	2340	[2803, 1486]	3173	[885, 1156]
675	[1046, 79]	1508	[1197, 1131]	2341	[2659, 2454]	3174	[3257, 2382]
676	[1141, 1142]	1509	[2133, 980]	2342	[2711, 2804]	3175	[78, 2375]
677	[1143, 1144]	1510	[2134, 2135]	2343	[2805, 138]	3176	[3047, 2068]
678	[15, 1057]	1511	[2136, 2137]	2344	[2806, 1821]	3177	[3258, 2355]
679	[1145, 1146]	1512	[2138, 2139]	2345	[2807, 615]	3178	[1982, 3259]
680	[1147, 383]	1513	[2140, 2035]	2346	[2749, 2439]	3179	[842, 3067]
681	[1148, 1149]	1514	[2141, 1101]	2347	[2674, 1790]	3180	[2253, 1038]
682	[381, 1150]	1515	[329, 1128]	2348	[750, 1383]	3181	[1976, 2916]
683	[971, 1151]	1516	[2142, 2089]	2349	[1752, 2632]	3182	[330, 3260]
684	[118, 920]	1517	[2143, 1291]	2350	[1450, 827]	3183	[3244, 1251]
685	[1004, 1152]	1518	[832, 1288]	2351	[2808, 2809]	3184	[3261, 2945]
686	[1153, 833]	1519	[1969, 2144]	2352	[1926, 138]	3185	[3262, 340]
687	[1154, 18]	1520	[1292, 2083]	2353	[2810, 779]	3186	[1979, 2365]
688	[1155, 1156]	1521	[1192, 431]	2354	[1818, 1755]	3187	[2312, 985]
689	[1157, 1158]	1522	[320, 2085]	2355	[2811, 1327]	3188	[1087, 1193]
690	[1159, 912]	1523	[2145, 915]	2356	[2812, 2563]	3189	[3263, 1113]
691	[364, 879]	1524	[17, 2146]	2357	[2813, 1422]	3190	[964, 2207]
692	[986, 1160]	1525	[2147, 1002]	2358	[2814, 500]	3191	[934, 2040]
693	[379, 998]	1526	[2148, 2149]	2359	[2815, 1856]	3192	[1167, 1280]
694	[1161, 1162]	1527	[2150, 2151]	2360	[2816, 2817]	3193	[1164, 3264]
695	[1163, 1164]	1528	[2152, 261]	2361	[818, 2741]	3194	[1009, 1123]
696	[1165, 1166]	1529	[1168, 1182]	2362	[2818, 2645]	3195	[2023, 2990]
697	[1167, 917]	1530	[2153, 938]	2363	[2779, 2819]	3196	[386, 3265]
698	[1000, 1168]	1531	[2154, 1022]	2364	[2820, 746]	3197	[2927, 1974]
699	[1169, 959]	1532	[375, 377]	2365	[2821, 158]	3198	[443, 2234]
700	[394, 1170]	1533	[1176, 2155]	2366	[1419, 2822]	3199	[3266, 2370]
701	[1171, 1172]	1534	[2156, 2028]	2367	[2823, 705]	3200	[2434, 970]
702	[1173, 1174]	1535	[2157, 2158]	2368	[2824, 1581]	3201	[3053, 3267]

703	[1175, 262]	1536	[1188, 125]	2369	[2825, 492]	3202	[365, 2174]
704	[1176, 1177]	1537	[1182, 2159]	2370	[2826, 1847]	3203	[3062, 2087]
705	[1178, 1007]	1538	[2160, 2161]	2371	[2827, 2547]	3204	[3232, 2389]
706	[1179, 1180]	1539	[1146, 2162]	2372	[2828, 1653]	3205	[2242, 1978]
707	[1181, 1182]	1540	[397, 308]	2373	[582, 1343]	3206	[2989, 1132]
708	[1183, 1184]	1541	[2163, 2164]	2374	[2739, 1676]	3207	[3268, 1167]
709	[1185, 1186]	1542	[2165, 2166]	2375	[2829, 472]	3208	[2123, 445]
710	[1187, 1188]	1543	[2166, 298]	2376	[2830, 782]	3209	[2074, 2387]
711	[1189, 381]	1544	[409, 1219]	2377	[1390, 467]	3210	[864, 1987]
712	[1010, 1190]	1545	[438, 2167]	2378	[2831, 753]	3211	[2335, 2005]
713	[1191, 1192]	1546	[1243, 864]	2379	[2832, 1942]	3212	[2910, 2341]
714	[1169, 1193]	1547	[2017, 2168]	2380	[2833, 2489]	3213	[865, 3269]
715	[863, 1194]	1548	[2167, 408]	2381	[2510, 2480]	3214	[3270, 2919]
716	[1195, 430]	1549	[2169, 1184]	2382	[2834, 1489]	3215	[3271, 2192]
717	[1196, 1197]	1550	[2170, 2005]	2383	[2835, 146]	3216	[1127, 2118]
718	[1082, 1198]	1551	[2050, 1252]	2384	[1876, 2836]	3217	[2349, 2041]
719	[1199, 957]	1552	[343, 2171]	2385	[2837, 1365]	3218	[837, 2106]
720	[1200, 1201]	1553	[2172, 263]	2386	[2527, 481]	3219	[2090, 2067]
721	[1202, 1203]	1554	[2173, 2008]	2387	[2836, 150]	3220	[966, 955]
722	[74, 1142]	1555	[2174, 1124]	2388	[1374, 1948]	3221	[1179, 894]
723	[367, 1204]	1556	[2175, 2176]	2389	[2838, 815]	3222	[2974, 2032]
724	[1127, 1161]	1557	[2177, 2178]	2390	[2839, 770]	3223	[25, 1051]
725	[371, 1205]	1558	[2028, 2179]	2391	[1599, 1661]	3224	[3272, 2934]
726	[1206, 1207]	1559	[81, 2180]	2392	[2840, 2841]	3225	[1404, 1577]
727	[1208, 29]	1560	[433, 2181]	2393	[2842, 483]	3226	[3273, 743]
728	[1209, 1210]	1561	[2182, 2183]	2394	[2843, 2652]	3227	[3274, 1436]
729	[1211, 1212]	1562	[2184, 2042]	2395	[2844, 1459]	3228	[2481, 34]
730	[264, 96]	1563	[2185, 2186]	2396	[2845, 2781]	3229	[3275, 187]
731	[1000, 1181]	1564	[2187, 871]	2397	[2846, 1716]	3230	[211, 1816]
732	[943, 1090]	1565	[1262, 2152]	2398	[2652, 1499]	3231	[1422, 1601]
733	[1021, 1213]	1566	[841, 2188]	2399	[775, 2695]	3232	[3276, 3277]
734	[993, 1009]	1567	[410, 2189]	2400	[2847, 2480]	3233	[3278, 684]
735	[1109, 1187]	1568	[2190, 1964]	2401	[1518, 2848]	3234	[3279, 1853]
736	[1214, 962]	1569	[2191, 2192]	2402	[2849, 2741]	3235	[3280, 1466]
737	[1215, 1008]	1570	[935, 256]	2403	[1555, 2850]	3236	[1520, 1397]
738	[1216, 1217]	1571	[1153, 2093]	2404	[2743, 2484]	3237	[3281, 1484]
739	[1209, 1218]	1572	[1145, 1278]	2405	[2851, 792]	3238	[3203, 1633]
740	[838, 1021]	1573	[402, 2193]	2406	[2852, 1356]	3239	[3282, 2523]
741	[1219, 1114]	1574	[93, 2194]	2407	[486, 667]	3240	[660, 2758]
742	[1220, 1221]	1575	[2195, 333]	2408	[1763, 1394]	3241	[3283, 3284]
743	[1222, 1114]	1576	[2196, 1263]	2409	[2853, 614]	3242	[3285, 608]
744	[870, 1223]	1577	[2197, 2198]	2410	[2854, 549]	3243	[3286, 1701]
745	[1224, 1225]	1578	[1024, 368]	2411	[2855, 1756]	3244	[3287, 1829]
746	[1226, 1168]	1579	[380, 2199]	2412	[1793, 9]	3245	[3288, 3289]

747	[1227, 1228]	1580	[2200, 2193]	2413	[540, 1400]	3246	[1591, 1688]
748	[1229, 1230]	1581	[2201, 2186]	2414	[2817, 699]	3247	[3290, 2675]
749	[379, 1027]	1582	[1190, 873]	2415	[469, 781]	3248	[229, 1569]
750	[1231, 1232]	1583	[1061, 878]	2416	[2856, 2510]	3249	[3291, 3180]
751	[1233, 1234]	1584	[2202, 2097]	2417	[2570, 2857]	3250	[3292, 2546]
752	[1062, 1235]	1585	[323, 335]	2418	[2858, 2481]	3251	[728, 14]
753	[1236, 1237]	1586	[1157, 2203]	2419	[2859, 2674]	3252	[3293, 3294]
754	[1238, 1210]	1587	[2204, 2011]	2420	[2623, 2812]	3253	[3295, 1591]
755	[1239, 268]	1588	[2205, 2206]	2421	[697, 1378]	3254	[3296, 463]
756	[1240, 843]	1589	[2207, 1310]	2422	[2860, 818]	3255	[3297, 1325]
757	[1241, 1242]	1590	[266, 2208]	2423	[2861, 1953]	3256	[3298, 1500]
758	[1222, 1243]	1591	[95, 1286]	2424	[2862, 489]	3257	[642, 3299]
759	[1244, 1245]	1592	[1083, 342]	2425	[2863, 232]	3258	[3300, 509]
760	[366, 1246]	1593	[2209, 1180]	2426	[2542, 647]	3259	[3301, 193]
761	[1247, 1248]	1594	[1980, 396]	2427	[1932, 585]	3260	[637, 1713]
762	[892, 1104]	1595	[2210, 2211]	2428	[2864, 2626]	3261	[3302, 1837]
763	[1249, 1250]	1596	[2198, 2212]	2429	[2865, 1585]	3262	[1854, 630]
764	[851, 1251]	1597	[2213, 1191]	2430	[2866, 1893]	3263	[2563, 2580]
765	[1252, 1253]	1598	[2214, 2215]	2431	[2867, 2868]	3264	[3303, 1523]
766	[877, 1188]	1599	[101, 2216]	2432	[1859, 563]	3265	[3304, 1747]
767	[1254, 1255]	1600	[2112, 448]	2433	[2869, 1752]	3266	[3305, 3306]
768	[1256, 1186]	1601	[2217, 453]	2434	[2870, 1541]	3267	[675, 2518]
769	[1257, 1258]	1602	[2218, 1164]	2435	[782, 812]	3268	[1333, 3140]
770	[1259, 1260]	1603	[2219, 93]	2436	[2871, 1379]	3269	[1446, 1859]
771	[1261, 956]	1604	[334, 324]	2437	[2872, 1481]	3270	[2798, 2528]
772	[1262, 1263]	1605	[2220, 2221]	2438	[2873, 1543]	3271	[3307, 2865]
773	[1264, 1265]	1606	[1171, 77]	2439	[1095, 315]	3272	[3308, 2496]
774	[1266, 1267]	1607	[2222, 891]	2440	[2874, 1209]	3273	[2936, 3309]
775	[428, 329]	1608	[2223, 2224]	2441	[2278, 2875]	3274	[1313, 3310]
776	[1126, 1268]	1609	[254, 81]	2442	[2876, 2877]	3275	[2029, 1043]
777	[1269, 1270]	1610	[358, 272]	2443	[310, 1091]	3276	[949, 2303]
778	[1120, 1271]	1611	[2030, 1044]	2444	[2878, 339]	3277	[3311, 2116]
779	[1272, 1071]	1612	[2225, 2226]	2445	[267, 2879]	3278	[2218, 2905]
780	[893, 1273]	1613	[1203, 2109]	2446	[2435, 2049]	3279	[1093, 3312]
781	[1082, 1274]	1614	[98, 2198]	2447	[429, 1128]	3280	[2902, 2156]
782	[1162, 360]	1615	[1104, 1273]	2448	[1029, 1214]	3281	[417, 1999]
783	[1275, 1276]	1616	[2227, 328]	2449	[2075, 385]	3282	[893, 2291]
784	[1277, 1036]	1617	[1263, 261]	2450	[2351, 856]	3283	[1221, 977]
785	[1278, 1279]	1618	[70, 867]	2451	[2880, 1025]	3284	[3313, 2289]
786	[1280, 918]	1619	[1272, 106]	2452	[315, 2881]	3285	[1257, 3314]
787	[1281, 1282]	1620	[2170, 1254]	2453	[2882, 2423]	3286	[2204, 3315]
788	[369, 428]	1621	[1307, 118]	2454	[2008, 294]	3287	[2175, 2121]
789	[1283, 954]	1622	[2228, 986]	2455	[2883, 2362]	3288	[1987, 2167]
790	[1220, 975]	1623	[394, 1253]	2456	[2884, 1167]	3289	[3316, 2937]

791	[1284, 409]	1624	[281, 2229]	2457	[2417, 2885]	3290	[1269, 2194]
792	[1285, 1219]	1625	[2230, 2231]	2458	[991, 450]	3291	[2223, 314]
793	[306, 1286]	1626	[969, 300]	2459	[2070, 2886]	3292	[2378, 415]
794	[1141, 1287]	1627	[2232, 2142]	2460	[2429, 1304]	3293	[1284, 1285]
795	[291, 1288]	1628	[2233, 1201]	2461	[1957, 2311]	3294	[3317, 1245]
796	[390, 370]	1629	[2234, 1306]	2462	[2887, 2877]	3295	[2884, 2267]
797	[309, 372]	1630	[1261, 1199]	2463	[2888, 2889]	3296	[1264, 3318]
798	[925, 1220]	1631	[832, 292]	2464	[23, 993]	3297	[939, 2977]
799	[78, 1289]	1632	[2235, 19]	2465	[935, 1143]	3298	[1981, 1004]
800	[1290, 1291]	1633	[1173, 848]	2466	[1958, 2890]	3299	[3319, 420]
801	[423, 1292]	1634	[1072, 932]	2467	[2891, 2892]	3300	[1059, 1971]
802	[1293, 317]	1635	[393, 2236]	2468	[2311, 325]	3301	[2301, 3320]
803	[1294, 1295]	1636	[1299, 1248]	2469	[2016, 925]	3302	[925, 2168]
804	[964, 393]	1637	[1112, 2237]	2470	[2261, 2893]	3303	[2054, 1081]
805	[1296, 441]	1638	[973, 973]	2471	[874, 2197]	3304	[2260, 1969]
806	[1297, 113]	1639	[2238, 923]	2472	[114, 1137]	3305	[2049, 2316]
807	[889, 1119]	1640	[1115, 277]	2473	[2894, 2895]	3306	[3321, 3003]
808	[1298, 351]	1641	[2239, 908]	2474	[2896, 1309]	3307	[1047, 2171]
809	[1299, 1300]	1642	[2240, 2241]	2475	[2897, 2077]	3308	[1280, 2284]
810	[1301, 1146]	1643	[2135, 971]	2476	[2006, 2898]	3309	[1658, 697]
811	[1049, 1302]	1644	[2242, 2243]	2477	[2245, 2155]	3310	[237, 1873]
812	[1303, 987]	1645	[1268, 1161]	2478	[2124, 1260]	3311	[3322, 1892]
813	[1078, 1304]	1646	[92, 1269]	2479	[1994, 2899]	3312	[2483, 1393]
814	[1305, 1038]	1647	[2196, 2152]	2480	[839, 869]	3313	[1803, 3323]
815	[444, 1306]	1648	[307, 2244]	2481	[2900, 2901]	3314	[2508, 1573]
816	[1307, 919]	1649	[362, 2015]	2482	[2902, 882]	3315	[498, 2654]
817	[1308, 1309]	1650	[2099, 2219]	2483	[1184, 1261]	3316	[1676, 603]
818	[393, 1310]	1651	[2245, 1177]	2484	[1071, 405]	3317	[1595, 3324]
819	[1164, 1311]	1652	[1224, 2246]	2485	[2903, 2904]	3318	[1929, 671]
820	[93, 1270]	1653	[420, 1235]	2486	[2905, 1311]	3319	[1543, 3325]
821	[1076, 1312]	1654	[2247, 2248]	2487	[2033, 2389]	3320	[726, 713]
822	[360, 356]	1655	[1294, 1272]	2488	[2906, 2283]	3321	[3326, 2680]
823	[1053, 1088]	1656	[383, 372]	2489	[6, 403]	3322	[835, 2311]
824	[1313, 1314]	1657	[96, 2249]	2490	[2907, 66]	3323	[3327, 968]
825	[1315, 1316]	1658	[2132, 2015]	2491	[2900, 2908]	3324	[3328, 2018]
826	[1218, 1023]	1659	[1138, 858]	2492	[2906, 2909]	3325	[3329, 3065]
827	[1317, 1318]	1660	[1193, 960]	2493	[2265, 1975]	3326	[318, 2249]
828	[1295, 1071]	1661	[2250, 64]	2494	[2910, 1013]	3327	[822, 2520]
829	[1319, 1320]	1662	[2251, 1202]	2495	[2911, 332]	3328	[1842, 1925]
830	[633, 1321]	1663	[64, 2038]	2496	[2912, 2913]	3329	[3330, 2767]
831	[1322, 1323]	1664	[2252, 1011]	2497	[2914, 2094]	3330	[453, 2021]
832	[1324, 1325]	1665	[2253, 2254]	2498	[1243, 437]		

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	556	1	1112	1	1668	1	2224	1	2780	1
1	0	557	1	1113	0	1669	1	2225	0	2781	0
2	0	558	1	1114	0	1670	1	2226	0	2782	0
3	0	559	1	1115	1	1671	1	2227	1	2783	1
4	0	560	1	1116	1	1672	0	2228	1	2784	1
5	0	561	1	1117	0	1673	0	2229	1	2785	1
6	0	562	0	1118	0	1674	0	2230	1	2786	0
7	0	563	1	1119	0	1675	1	2231	1	2787	0
8	1	564	1	1120	0	1676	0	2232	0	2788	0
9	0	565	0	1121	0	1677	1	2233	1	2789	1
10	1	566	0	1122	0	1678	1	2234	0	2790	0
11	0	567	1	1123	0	1679	1	2235	0	2791	1
12	1	568	1	1124	1	1680	0	2236	1	2792	0
13	0	569	1	1125	0	1681	0	2237	1	2793	0
14	1	570	0	1126	1	1682	1	2238	0	2794	0
15	0	571	1	1127	1	1683	1	2239	1	2795	1
16	0	572	1	1128	1	1684	1	2240	1	2796	0
17	1	573	1	1129	1	1685	1	2241	1	2797	0
18	1	574	1	1130	0	1686	1	2242	1	2798	1
19	0	575	1	1131	1	1687	1	2243	1	2799	0
20	1	576	1	1132	1	1688	1	2244	0	2800	1
21	1	577	0	1133	0	1689	0	2245	1	2801	1
22	1	578	1	1134	0	1690	0	2246	1	2802	1
23	0	579	0	1135	1	1691	1	2247	1	2803	0
24	1	580	1	1136	0	1692	1	2248	1	2804	0
25	1	581	0	1137	0	1693	1	2249	1	2805	0
26	0	582	1	1138	1	1694	0	2250	1	2806	0
27	0	583	0	1139	1	1695	0	2251	0	2807	1
28	0	584	0	1140	0	1696	1	2252	0	2808	1
29	1	585	1	1141	0	1697	1	2253	1	2809	1
30	1	586	1	1142	1	1698	1	2254	0	2810	0
31	0	587	0	1143	0	1699	0	2255	1	2811	0
32	1	588	1	1144	0	1700	1	2256	0	2812	1
33	0	589	0	1145	0	1701	0	2257	0	2813	0
34	0	590	1	1146	1	1702	1	2258	1	2814	0
35	1	591	1	1147	0	1703	0	2259	1	2815	0
36	0	592	0	1148	0	1704	0	2260	1	2816	1
37	1	593	1	1149	0	1705	0	2261	1	2817	0
38	0	594	1	1150	1	1706	0	2262	1	2818	1
39	0	595	0	1151	0	1707	1	2263	1	2819	0
40	1	596	0	1152	1	1708	1	2264	1	2820	1
41	1	597	1	1153	1	1709	0	2265	1	2821	0
42	1	598	1	1154	0	1710	1	2266	0	2822	0

43	1	599	1	1155	0	1711	1	2267	1	2823	0
44	0	600	1	1156	0	1712	0	2268	0	2824	0
45	1	601	1	1157	1	1713	1	2269	1	2825	1
46	1	602	0	1158	1	1714	1	2270	0	2826	1
47	0	603	1	1159	0	1715	0	2271	0	2827	1
48	0	604	1	1160	1	1716	1	2272	1	2828	1
49	1	605	0	1161	1	1717	0	2273	1	2829	0
50	1	606	0	1162	1	1718	0	2274	1	2830	0
51	1	607	1	1163	1	1719	1	2275	1	2831	0
52	1	608	1	1164	0	1720	1	2276	1	2832	0
53	0	609	1	1165	0	1721	0	2277	0	2833	0
54	0	610	0	1166	1	1722	1	2278	0	2834	0
55	0	611	1	1167	0	1723	1	2279	1	2835	1
56	0	612	1	1168	0	1724	1	2280	0	2836	1
57	0	613	1	1169	1	1725	0	2281	0	2837	1
58	0	614	1	1170	0	1726	0	2282	1	2838	0
59	1	615	0	1171	1	1727	1	2283	0	2839	0
60	0	616	1	1172	1	1728	0	2284	0	2840	1
61	1	617	1	1173	1	1729	0	2285	0	2841	0
62	1	618	0	1174	0	1730	0	2286	1	2842	0
63	0	619	1	1175	1	1731	1	2287	0	2843	1
64	0	620	1	1176	0	1732	1	2288	0	2844	0
65	1	621	1	1177	0	1733	1	2289	1	2845	0
66	0	622	1	1178	1	1734	0	2290	1	2846	0
67	0	623	1	1179	0	1735	0	2291	0	2847	0
68	1	624	1	1180	0	1736	0	2292	0	2848	1
69	0	625	0	1181	1	1737	1	2293	0	2849	1
70	1	626	0	1182	1	1738	0	2294	0	2850	0
71	1	627	0	1183	0	1739	0	2295	1	2851	0
72	0	628	0	1184	1	1740	0	2296	1	2852	1
73	0	629	1	1185	1	1741	1	2297	0	2853	0
74	1	630	1	1186	0	1742	1	2298	1	2854	0
75	1	631	1	1187	0	1743	0	2299	0	2855	1
76	0	632	0	1188	0	1744	1	2300	1	2856	0
77	0	633	0	1189	0	1745	0	2301	0	2857	0
78	1	634	0	1190	0	1746	0	2302	0	2858	0
79	0	635	1	1191	0	1747	1	2303	1	2859	1
80	0	636	0	1192	1	1748	1	2304	0	2860	0
81	1	637	0	1193	0	1749	1	2305	1	2861	1
82	1	638	1	1194	0	1750	0	2306	0	2862	0
83	1	639	1	1195	1	1751	1	2307	1	2863	0
84	0	640	1	1196	1	1752	0	2308	1	2864	0
85	1	641	1	1197	1	1753	0	2309	1	2865	0
86	1	642	1	1198	0	1754	0	2310	0	2866	0

87	1	643	1	1199	0	1755	1	2311	0	2867	1
88	1	644	0	1200	0	1756	0	2312	0	2868	1
89	0	645	0	1201	1	1757	0	2313	1	2869	1
90	1	646	1	1202	1	1758	1	2314	1	2870	0
91	1	647	0	1203	1	1759	0	2315	0	2871	0
92	1	648	1	1204	1	1760	1	2316	1	2872	0
93	1	649	0	1205	1	1761	1	2317	0	2873	1
94	0	650	1	1206	1	1762	1	2318	0	2874	0
95	1	651	1	1207	1	1763	0	2319	1	2875	0
96	0	652	0	1208	0	1764	0	2320	1	2876	0
97	0	653	0	1209	0	1765	0	2321	1	2877	0
98	1	654	0	1210	1	1766	0	2322	0	2878	0
99	0	655	1	1211	0	1767	1	2323	0	2879	1
100	1	656	0	1212	1	1768	0	2324	1	2880	1
101	0	657	0	1213	0	1769	0	2325	0	2881	1
102	1	658	0	1214	1	1770	0	2326	1	2882	0
103	0	659	1	1215	0	1771	1	2327	1	2883	0
104	1	660	1	1216	0	1772	0	2328	0	2884	0
105	1	661	0	1217	1	1773	0	2329	0	2885	1
106	0	662	0	1218	0	1774	0	2330	0	2886	0
107	1	663	1	1219	1	1775	1	2331	1	2887	1
108	0	664	1	1220	1	1776	0	2332	0	2888	1
109	0	665	0	1221	1	1777	1	2333	0	2889	1
110	0	666	1	1222	0	1778	0	2334	0	2890	0
111	0	667	0	1223	0	1779	1	2335	1	2891	1
112	0	668	1	1224	0	1780	1	2336	0	2892	0
113	0	669	0	1225	0	1781	0	2337	0	2893	0
114	0	670	1	1226	0	1782	0	2338	1	2894	0
115	1	671	0	1227	1	1783	1	2339	1	2895	0
116	0	672	1	1228	1	1784	1	2340	0	2896	1
117	0	673	1	1229	0	1785	1	2341	0	2897	0
118	1	674	0	1230	0	1786	0	2342	1	2898	1
119	1	675	1	1231	1	1787	1	2343	0	2899	1
120	0	676	0	1232	1	1788	1	2344	0	2900	0
121	1	677	0	1233	0	1789	1	2345	1	2901	0
122	1	678	0	1234	1	1790	1	2346	0	2902	0
123	1	679	0	1235	0	1791	0	2347	1	2903	1
124	1	680	0	1236	1	1792	0	2348	1	2904	1
125	0	681	0	1237	0	1793	1	2349	0	2905	1
126	0	682	0	1238	1	1794	0	2350	0	2906	0
127	0	683	0	1239	0	1795	1	2351	1	2907	0
128	0	684	1	1240	1	1796	0	2352	0	2908	1
129	1	685	0	1241	0	1797	1	2353	0	2909	1
130	1	686	1	1242	0	1798	0	2354	0	2910	0

131	1	687	0	1243	1	1799	0	2355	0	2911	1
132	0	688	0	1244	0	1800	1	2356	1	2912	0
133	0	689	1	1245	1	1801	1	2357	0	2913	0
134	0	690	0	1246	0	1802	1	2358	0	2914	0
135	1	691	1	1247	0	1803	1	2359	0	2915	1
136	1	692	1	1248	1	1804	1	2360	1	2916	0
137	0	693	0	1249	0	1805	1	2361	1	2917	1
138	0	694	1	1250	0	1806	1	2362	1	2918	0
139	0	695	1	1251	0	1807	0	2363	1	2919	0
140	1	696	0	1252	1	1808	0	2364	1	2920	1
141	0	697	0	1253	1	1809	0	2365	0	2921	1
142	1	698	1	1254	1	1810	0	2366	1	2922	0
143	1	699	1	1255	1	1811	1	2367	0	2923	1
144	0	700	0	1256	0	1812	1	2368	0	2924	0
145	0	701	1	1257	1	1813	0	2369	1	2925	0
146	0	702	1	1258	1	1814	1	2370	1	2926	1
147	1	703	1	1259	0	1815	1	2371	1	2927	0
148	1	704	0	1260	1	1816	1	2372	1	2928	1
149	1	705	1	1261	1	1817	1	2373	1	2929	0
150	1	706	0	1262	0	1818	0	2374	1	2930	0
151	0	707	1	1263	1	1819	0	2375	0	2931	0
152	0	708	0	1264	1	1820	0	2376	0	2932	1
153	0	709	1	1265	0	1821	1	2377	0	2933	1
154	1	710	0	1266	0	1822	0	2378	0	2934	1
155	1	711	0	1267	0	1823	0	2379	0	2935	0
156	0	712	1	1268	0	1824	1	2380	0	2936	1
157	0	713	0	1269	0	1825	1	2381	0	2937	1
158	1	714	1	1270	0	1826	0	2382	0	2938	1
159	0	715	0	1271	0	1827	0	2383	1	2939	0
160	1	716	1	1272	1	1828	0	2384	0	2940	1
161	1	717	1	1273	1	1829	0	2385	1	2941	1
162	0	718	0	1274	1	1830	0	2386	1	2942	1
163	1	719	0	1275	1	1831	1	2387	1	2943	0
164	1	720	0	1276	1	1832	1	2388	1	2944	1
165	1	721	1	1277	1	1833	1	2389	0	2945	0
166	0	722	1	1278	0	1834	1	2390	0	2946	0
167	0	723	0	1279	0	1835	1	2391	0	2947	0
168	1	724	1	1280	0	1836	1	2392	1	2948	0
169	1	725	0	1281	1	1837	1	2393	0	2949	0
170	0	726	1	1282	1	1838	0	2394	1	2950	1
171	1	727	0	1283	0	1839	0	2395	0	2951	1
172	1	728	0	1284	1	1840	0	2396	0	2952	1
173	1	729	0	1285	0	1841	1	2397	0	2953	0
174	1	730	1	1286	1	1842	1	2398	0	2954	1

175	1	731	1	1287	0	1843	0	2399	1	2955	0
176	0	732	1	1288	1	1844	1	2400	0	2956	0
177	0	733	0	1289	1	1845	0	2401	0	2957	1
178	0	734	0	1290	0	1846	1	2402	1	2958	1
179	1	735	0	1291	0	1847	1	2403	1	2959	0
180	1	736	1	1292	0	1848	0	2404	1	2960	0
181	1	737	0	1293	0	1849	0	2405	0	2961	0
182	1	738	0	1294	1	1850	1	2406	1	2962	0
183	1	739	0	1295	0	1851	0	2407	1	2963	0
184	0	740	0	1296	1	1852	0	2408	0	2964	1
185	1	741	1	1297	1	1853	0	2409	0	2965	1
186	0	742	1	1298	0	1854	0	2410	0	2966	0
187	0	743	0	1299	1	1855	0	2411	1	2967	1
188	1	744	0	1300	0	1856	0	2412	1	2968	0
189	1	745	0	1301	1	1857	1	2413	1	2969	0
190	1	746	0	1302	1	1858	0	2414	0	2970	0
191	0	747	1	1303	0	1859	0	2415	0	2971	0
192	0	748	0	1304	1	1860	0	2416	0	2972	1
193	0	749	0	1305	0	1861	0	2417	0	2973	1
194	0	750	1	1306	0	1862	1	2418	0	2974	0
195	1	751	0	1307	1	1863	0	2419	1	2975	1
196	1	752	1	1308	0	1864	1	2420	0	2976	0
197	0	753	1	1309	1	1865	0	2421	0	2977	1
198	1	754	1	1310	0	1866	0	2422	0	2978	1
199	1	755	0	1311	0	1867	0	2423	1	2979	0
200	1	756	1	1312	0	1868	1	2424	0	2980	0
201	0	757	0	1313	0	1869	0	2425	0	2981	1
202	0	758	0	1314	1	1870	1	2426	1	2982	1
203	1	759	0	1315	0	1871	0	2427	0	2983	1
204	0	760	0	1316	1	1872	0	2428	0	2984	1
205	1	761	0	1317	1	1873	1	2429	0	2985	0
206	1	762	0	1318	0	1874	0	2430	0	2986	1
207	0	763	0	1319	0	1875	1	2431	1	2987	1
208	1	764	0	1320	1	1876	0	2432	0	2988	1
209	0	765	1	1321	1	1877	0	2433	1	2989	1
210	0	766	1	1322	1	1878	1	2434	0	2990	0
211	1	767	1	1323	1	1879	0	2435	1	2991	0
212	1	768	0	1324	0	1880	1	2436	0	2992	0
213	1	769	1	1325	1	1881	1	2437	0	2993	0
214	0	770	0	1326	0	1882	1	2438	1	2994	0
215	0	771	1	1327	1	1883	0	2439	0	2995	0
216	0	772	0	1328	1	1884	1	2440	0	2996	0
217	0	773	1	1329	1	1885	1	2441	0	2997	1
218	0	774	0	1330	0	1886	0	2442	0	2998	0

219	0	775	1	1331	0	1887	1	2443	1	2999	1
220	0	776	1	1332	1	1888	0	2444	0	3000	0
221	0	777	0	1333	1	1889	1	2445	1	3001	1
222	0	778	0	1334	1	1890	1	2446	1	3002	1
223	0	779	1	1335	0	1891	1	2447	0	3003	1
224	0	780	0	1336	1	1892	0	2448	1	3004	1
225	0	781	0	1337	0	1893	0	2449	1	3005	1
226	0	782	1	1338	0	1894	0	2450	1	3006	1
227	0	783	1	1339	1	1895	1	2451	1	3007	1
228	1	784	1	1340	0	1896	1	2452	0	3008	1
229	0	785	0	1341	0	1897	1	2453	0	3009	1
230	0	786	0	1342	1	1898	0	2454	0	3010	0
231	1	787	1	1343	0	1899	1	2455	0	3011	1
232	0	788	0	1344	0	1900	1	2456	0	3012	0
233	1	789	0	1345	1	1901	1	2457	0	3013	0
234	1	790	1	1346	0	1902	1	2458	0	3014	1
235	1	791	1	1347	1	1903	0	2459	1	3015	0
236	0	792	0	1348	1	1904	0	2460	0	3016	1
237	0	793	0	1349	0	1905	0	2461	1	3017	0
238	1	794	0	1350	1	1906	0	2462	1	3018	0
239	1	795	1	1351	1	1907	0	2463	1	3019	1
240	1	796	0	1352	1	1908	0	2464	0	3020	0
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242	1	798	0	1354	1	1910	1	2466	0	3022	1
243	0	799	1	1355	1	1911	1	2467	1	3023	1
244	1	800	0	1356	0	1912	1	2468	0	3024	0
245	0	801	1	1357	0	1913	1	2469	1	3025	0
246	0	802	0	1358	1	1914	1	2470	1	3026	0
247	0	803	1	1359	0	1915	0	2471	0	3027	0
248	0	804	0	1360	1	1916	0	2472	0	3028	1
249	1	805	1	1361	1	1917	0	2473	0	3029	0
250	0	806	1	1362	0	1918	1	2474	1	3030	0
251	0	807	0	1363	0	1919	0	2475	0	3031	0
252	0	808	0	1364	1	1920	1	2476	1	3032	1
253	1	809	1	1365	1	1921	1	2477	1	3033	0
254	1	810	1	1366	0	1922	0	2478	1	3034	0
255	0	811	1	1367	0	1923	0	2479	1	3035	0
256	1	812	0	1368	1	1924	1	2480	0	3036	1
257	1	813	1	1369	1	1925	0	2481	0	3037	0
258	1	814	0	1370	0	1926	0	2482	0	3038	1
259	0	815	1	1371	1	1927	0	2483	1	3039	0
260	1	816	1	1372	0	1928	0	2484	1	3040	1
261	0	817	0	1373	0	1929	1	2485	1	3041	0
262	0	818	1	1374	1	1930	1	2486	1	3042	1

263	0	819	0	1375	1	1931	0	2487	0	3043	1
264	1	820	1	1376	0	1932	0	2488	0	3044	0
265	1	821	1	1377	0	1933	1	2489	0	3045	0
266	1	822	0	1378	0	1934	0	2490	0	3046	1
267	1	823	1	1379	1	1935	1	2491	0	3047	1
268	0	824	0	1380	0	1936	0	2492	0	3048	1
269	0	825	0	1381	0	1937	1	2493	1	3049	0
270	0	826	0	1382	1	1938	0	2494	0	3050	1
271	0	827	1	1383	0	1939	1	2495	1	3051	0
272	0	828	0	1384	1	1940	1	2496	0	3052	0
273	0	829	0	1385	0	1941	0	2497	0	3053	0
274	0	830	0	1386	1	1942	0	2498	1	3054	1
275	1	831	1	1387	1	1943	0	2499	1	3055	1
276	0	832	0	1388	1	1944	1	2500	0	3056	1
277	1	833	0	1389	0	1945	0	2501	1	3057	0
278	1	834	1	1390	0	1946	0	2502	1	3058	1
279	0	835	0	1391	1	1947	1	2503	0	3059	0
280	1	836	1	1392	1	1948	1	2504	1	3060	0
281	0	837	1	1393	1	1949	0	2505	0	3061	1
282	0	838	0	1394	1	1950	0	2506	0	3062	0
283	0	839	0	1395	0	1951	0	2507	1	3063	1
284	0	840	0	1396	1	1952	1	2508	0	3064	1
285	0	841	1	1397	0	1953	0	2509	0	3065	1
286	1	842	0	1398	0	1954	1	2510	0	3066	0
287	1	843	1	1399	1	1955	0	2511	1	3067	0
288	1	844	0	1400	0	1956	0	2512	0	3068	1
289	1	845	0	1401	0	1957	1	2513	1	3069	0
290	1	846	1	1402	0	1958	0	2514	0	3070	0
291	1	847	0	1403	0	1959	0	2515	1	3071	0
292	0	848	1	1404	1	1960	0	2516	0	3072	0
293	1	849	1	1405	0	1961	0	2517	1	3073	0
294	1	850	1	1406	1	1962	1	2518	1	3074	1
295	0	851	0	1407	1	1963	1	2519	0	3075	0
296	0	852	1	1408	1	1964	1	2520	1	3076	1
297	0	853	0	1409	1	1965	0	2521	1	3077	1
298	0	854	1	1410	1	1966	1	2522	0	3078	0
299	0	855	0	1411	1	1967	1	2523	1	3079	1
300	1	856	1	1412	0	1968	1	2524	1	3080	0
301	1	857	0	1413	1	1969	1	2525	0	3081	0
302	1	858	1	1414	0	1970	0	2526	1	3082	0
303	1	859	1	1415	0	1971	0	2527	1	3083	0
304	0	860	1	1416	1	1972	0	2528	0	3084	0
305	1	861	0	1417	0	1973	0	2529	0	3085	1
306	0	862	1	1418	0	1974	0	2530	1	3086	1

307	1	863	0	1419	1	1975	0	2531	0	3087	0
308	1	864	0	1420	0	1976	0	2532	1	3088	0
309	0	865	0	1421	0	1977	1	2533	1	3089	0
310	1	866	1	1422	0	1978	0	2534	1	3090	1
311	1	867	1	1423	1	1979	0	2535	0	3091	0
312	1	868	0	1424	0	1980	1	2536	0	3092	1
313	1	869	1	1425	1	1981	1	2537	0	3093	0
314	0	870	0	1426	0	1982	1	2538	1	3094	1
315	0	871	1	1427	0	1983	0	2539	1	3095	0
316	0	872	1	1428	1	1984	0	2540	0	3096	1
317	1	873	1	1429	0	1985	1	2541	0	3097	1
318	1	874	0	1430	0	1986	0	2542	1	3098	0
319	1	875	0	1431	0	1987	1	2543	0	3099	0
320	1	876	0	1432	0	1988	1	2544	0	3100	1
321	0	877	1	1433	0	1989	0	2545	0	3101	0
322	1	878	0	1434	1	1990	1	2546	0	3102	1
323	0	879	0	1435	1	1991	0	2547	1	3103	0
324	1	880	1	1436	1	1992	0	2548	1	3104	0
325	1	881	1	1437	1	1993	0	2549	1	3105	1
326	1	882	1	1438	0	1994	1	2550	0	3106	1
327	1	883	1	1439	0	1995	0	2551	1	3107	0
328	0	884	1	1440	1	1996	0	2552	0	3108	0
329	1	885	1	1441	0	1997	1	2553	1	3109	1
330	1	886	1	1442	1	1998	1	2554	1	3110	0
331	1	887	0	1443	1	1999	1	2555	0	3111	0
332	1	888	1	1444	0	2000	0	2556	1	3112	0
333	1	889	0	1445	0	2001	0	2557	1	3113	0
334	1	890	1	1446	0	2002	1	2558	1	3114	1
335	0	891	0	1447	1	2003	1	2559	0	3115	0
336	1	892	0	1448	1	2004	0	2560	1	3116	0
337	1	893	0	1449	1	2005	0	2561	1	3117	0
338	1	894	1	1450	0	2006	1	2562	1	3118	0
339	0	895	1	1451	1	2007	0	2563	0	3119	1
340	0	896	0	1452	1	2008	0	2564	1	3120	0
341	1	897	0	1453	0	2009	1	2565	0	3121	0
342	0	898	1	1454	0	2010	0	2566	1	3122	1
343	0	899	0	1455	1	2011	0	2567	1	3123	1
344	0	900	0	1456	0	2012	0	2568	0	3124	1
345	1	901	0	1457	1	2013	0	2569	1	3125	1
346	1	902	1	1458	0	2014	0	2570	0	3126	1
347	1	903	1	1459	0	2015	0	2571	1	3127	1
348	1	904	0	1460	1	2016	1	2572	0	3128	0
349	0	905	0	1461	1	2017	1	2573	0	3129	1
350	1	906	1	1462	0	2018	1	2574	0	3130	1

351	1	907	1	1463	0	2019	0	2575	1	3131	0
352	1	908	0	1464	1	2020	1	2576	1	3132	0
353	0	909	0	1465	0	2021	1	2577	0	3133	0
354	0	910	1	1466	0	2022	0	2578	0	3134	1
355	1	911	1	1467	1	2023	1	2579	0	3135	1
356	0	912	1	1468	1	2024	0	2580	0	3136	1
357	0	913	0	1469	0	2025	0	2581	0	3137	0
358	1	914	1	1470	1	2026	1	2582	1	3138	0
359	0	915	0	1471	0	2027	0	2583	0	3139	0
360	0	916	0	1472	0	2028	0	2584	0	3140	1
361	1	917	1	1473	0	2029	1	2585	1	3141	1
362	1	918	1	1474	1	2030	0	2586	0	3142	0
363	1	919	0	1475	1	2031	0	2587	1	3143	0
364	1	920	0	1476	0	2032	1	2588	1	3144	0
365	1	921	1	1477	1	2033	0	2589	0	3145	1
366	0	922	1	1478	1	2034	1	2590	1	3146	0
367	0	923	1	1479	0	2035	0	2591	1	3147	0
368	0	924	0	1480	1	2036	0	2592	1	3148	1
369	0	925	0	1481	1	2037	1	2593	0	3149	0
370	0	926	1	1482	0	2038	0	2594	1	3150	0
371	0	927	1	1483	0	2039	0	2595	1	3151	0
372	0	928	0	1484	1	2040	1	2596	0	3152	1
373	1	929	0	1485	0	2041	0	2597	0	3153	0
374	1	930	0	1486	1	2042	1	2598	0	3154	0
375	0	931	1	1487	1	2043	0	2599	0	3155	1
376	1	932	0	1488	0	2044	1	2600	0	3156	1
377	0	933	1	1489	0	2045	0	2601	0	3157	0
378	1	934	0	1490	0	2046	0	2602	1	3158	0
379	0	935	0	1491	0	2047	0	2603	1	3159	1
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381	0	937	0	1493	1	2049	1	2605	1	3161	1
382	1	938	0	1494	0	2050	0	2606	0	3162	1
383	1	939	0	1495	0	2051	0	2607	0	3163	0
384	0	940	1	1496	1	2052	0	2608	1	3164	0
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386	0	942	0	1498	0	2054	1	2610	1	3166	0
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389	1	945	0	1501	0	2057	0	2613	1	3169	0
390	0	946	1	1502	0	2058	1	2614	1	3170	1
391	1	947	1	1503	1	2059	0	2615	1	3171	1
392	1	948	0	1504	1	2060	0	2616	0	3172	1
393	1	949	1	1505	1	2061	0	2617	1	3173	1
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395	0	951	1	1507	1	2063	0	2619	0	3175	1
396	1	952	1	1508	1	2064	0	2620	1	3176	1
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398	0	954	1	1510	1	2066	1	2622	1	3178	1
399	0	955	1	1511	1	2067	1	2623	0	3179	0
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403	1	959	1	1515	1	2071	1	2627	1	3183	1
404	0	960	0	1516	0	2072	0	2628	1	3184	0
405	0	961	0	1517	1	2073	0	2629	0	3185	0
406	0	962	1	1518	0	2074	1	2630	1	3186	0
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408	0	964	0	1520	0	2076	0	2632	1	3188	0
409	1	965	0	1521	1	2077	1	2633	0	3189	0
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411	0	967	1	1523	1	2079	1	2635	0	3191	0
412	0	968	1	1524	1	2080	1	2636	1	3192	0
413	0	969	1	1525	0	2081	0	2637	1	3193	0
414	0	970	1	1526	1	2082	1	2638	1	3194	0
415	0	971	0	1527	0	2083	1	2639	0	3195	1
416	1	972	0	1528	0	2084	0	2640	1	3196	0
417	0	973	1	1529	0	2085	0	2641	0	3197	0
418	0	974	1	1530	1	2086	1	2642	1	3198	1
419	0	975	0	1531	1	2087	1	2643	0	3199	1
420	0	976	0	1532	0	2088	1	2644	1	3200	0
421	0	977	1	1533	0	2089	0	2645	1	3201	0
422	0	978	1	1534	0	2090	0	2646	0	3202	1
423	1	979	0	1535	0	2091	0	2647	0	3203	0
424	0	980	0	1536	0	2092	0	2648	1	3204	1
425	0	981	0	1537	1	2093	1	2649	1	3205	1
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427	0	983	1	1539	1	2095	0	2651	1	3207	1
428	1	984	0	1540	0	2096	0	2652	0	3208	0
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430	1	986	1	1542	0	2098	0	2654	1	3210	0
431	0	987	0	1543	1	2099	0	2655	1	3211	1
432	1	988	1	1544	1	2100	0	2656	0	3212	0
433	1	989	1	1545	0	2101	0	2657	0	3213	0
434	0	990	1	1546	1	2102	1	2658	0	3214	1
435	0	991	0	1547	1	2103	0	2659	0	3215	1
436	0	992	0	1548	0	2104	0	2660	0	3216	1
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438	0	994	1	1550	0	2106	1	2662	0	3218	1

439	1	995	0	1551	0	2107	1	2663	0	3219	0
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441	0	997	1	1553	1	2109	1	2665	0	3221	0
442	1	998	0	1554	1	2110	0	2666	1	3222	0
443	1	999	1	1555	1	2111	1	2667	0	3223	1
444	1	1000	1	1556	1	2112	0	2668	0	3224	0
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553	0	1109	0	1665	1	2221	0	2777	1		
554	0	1110	0	1666	0	2222	0	2778	1		
555	1	1111	1	1667	0	2223	0	2779	1		

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