PROOF OF THE CONTINUED FRACTION CONJECTURE FOR $(a,b) = (z^2, z^4+z+1)$

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Abstract. The continued fraction conjecture claims that the continued fraction defined by the (a,b)-Thue-Morse sequence is algebraic over $\mathbb{F}_2(x)$ for all pairs of distinct elements (a,b) in $\mathbb{F}_2[x]\setminus\mathbb{F}_2$. In this paper we prove the conjecture for $(a,b) = (z^2, z^4+z+1)$.

1. Introduction

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

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

as the limit of the finite continued fractions

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

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

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

admits a continued fraction expansion of form (1.1).

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

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

that we shall denote

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

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Theorem 1.1. *When $(a,b)=(z^2,z^4+z+1)$, the two power series* $\mathrm{CF}(a,b)$ *and* $\mathrm{CF}(b,a)$ *are algebraic over $\mathbb{F}_2(z)$, with minimal polynomials of the form*

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

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

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

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

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

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

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

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

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

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

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

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

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

for some positive integer d_n. Hence,

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

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

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

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

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

of the vector

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

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

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

Lemma 2.1. *We have*

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

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

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

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

Proof. We give the proof of the identity

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

the proofs of the others being similar.

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

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

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

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

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

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

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

Define

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

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

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

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

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

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

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

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

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

which can be rewritten as

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

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

$$0 = T[[w]_2] + T[[1w]_2] + T[[101w]_2] + T[[1000w]_2], \tag{2.9}$$

$$0 = T[[1w]_2] + T[[10w]_2] + T[[11w]_2] + T[[1001w]_2], \tag{2.10}$$

$$0 = T[[w]_2] + T[[10w]_2] + T[[11w]_2] + T[[100w]_2] + T[[1010w]_2], \tag{2.11}$$

$$\begin{aligned}
0 &= T[[w]_2] + T[[1w]_2] + T[[11w]_2] + T[[100w]_2] + T[[101w]_2] \\
&\quad + T[[1011w]_2],
\end{aligned} \tag{2.12}$$

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

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

$$0 = T[[w]_2] + T[[100w]_2] + T[[111w]_2], \tag{2.14}$$

$$0 = T[[w]_2] + T[[1w]_2] + T[[101w]_2] + T[[1000w]_2], \tag{2.15}$$

$$0 = T[[1w]_2] + T[[10w]_2] + T[[11w]_2] + T[[1001w]_2], \tag{2.16}$$

$$0 = T[[w]_2] + T[[10w]_2] + T[[11w]_2] + T[[100w]_2] + T[[1010w]_2], \tag{2.17}$$

$$
\begin{aligned}
0 &= T[[w]_2] + T[[1w]_2] + T[[11w]_2] + T[[100w]_2] + T[[101w]_2] \\
&\quad + T[[1011w]_2], \qquad (2.18)
\end{aligned}
$$

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

First we calculate an 2-automaton that generates T from its minimal polynomial and its first terms. This automaton has 3073 states; its transition function and output function can be found in the annex. Let $A(s,w)$ denote the state reached after reading w from right to left starting from the state s, and τ the output function. Define

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

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

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

$$0 = \tau(A(s,\epsilon)) + \tau(A(s,100)) + \tau(A(s,111)), \tag{2.20}$$

$$0 = \tau(A(s,\epsilon)) + \tau(A(s,1)) + \tau(A(s,101)) + \tau(A(s,1000)), \tag{2.21}$$

$$0 = \tau(A(s,1)) + \tau(A(s,10)) + \tau(A(s,11)) + \tau(A(s,1001)), \tag{2.22}$$

$$
\begin{aligned}
0 &= \tau(A(s,\epsilon)) + \tau(A(s,10)) + \tau(A(s,11)) + \tau(A(s,100)) \\
&\quad + \tau(A(s,1010)), \qquad (2.23)
\end{aligned}
$$

$$
\begin{aligned}
0 &= \tau(A(s,\epsilon)) + \tau(A(s,1)) + \tau(A(s,11)) + \tau(A(s,100)) \\
&\quad + \tau(A(s,101)) + \tau(A(s,1011)), \qquad (2.24)
\end{aligned}
$$

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

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

$$0 = \tau(A(s,\epsilon)) + \tau(A(s,100)) + \tau(A(s,111)), \tag{2.26}$$

$$0 = \tau(A(s,\epsilon)) + \tau(A(s,1)) + \tau(A(s,101)) + \tau(A(s,1000)), \tag{2.27}$$

$$0 = \tau(A(s,1)) + \tau(A(s,10)) + \tau(A(s,11)) + \tau(A(s,1001)), \tag{2.28}$$

$$
\begin{aligned}
0 &= \tau(A(s,\epsilon)) + \tau(A(s,10)) + \tau(A(s,11)) + \tau(A(s,100)) \\
&\quad + \tau(A(s,1010)), \qquad (2.29)
\end{aligned}
$$

$$
\begin{aligned}
0 &= \tau(A(s,\epsilon)) + \tau(A(s,1)) + \tau(A(s,11)) + \tau(A(s,100)) \\
&\quad + \tau(A(s,101)) + \tau(A(s,1011)), \qquad (2.30)
\end{aligned}
$$

for $s = A(i, 0^{2k})$. We find that $(A(i,0^{28}), E_{28}) = (A(i,0^{16}), E_{16})$, so that we only have to verify that identities (2.19) through (2.30) hold for $2 \le k \le 14$, 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 $k \ge 2$, and $u = 2^{2k-1}$,*

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

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

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

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

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

We give the proof of

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

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

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

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

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

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

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

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

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

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

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

$$\begin{aligned}
q_0(x)&=x^{24}+x^{22}+x^{21}+x^{20}+x^{19}+x^{15}+x^{14}+x^{13}+x^9+x^8+x^6,\\
q_1(x)&=x^{22}+x^{20}+x^{19}+x^{17}+x^{14}+x^{13}+x^{12}+x^{11}+x^7+x^6+x^4+x^2,\\
q_2(x)&=x^{20}+x^{16}+x^{14}+x^{12}+x^8+x^4+1,\\
q_3(x)&=x^{22}+x^{20}+x^{19}+x^{17}+x^{14}+x^{13}+x^{12}+x^{11}+x^7+x^6+x^4+x^2,\\
q_4(x)&=x^{22}+x^{21}+x^{20}+x^{19}+x^{16}+x^{15}+x^{13}+x^9+x^8+x^6+x^4.
\end{aligned}$$

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

3. Annexe

All 16 polynomials are of the form

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

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

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

$$\begin{aligned}
p_0(x)&=x^{132}+x^{130}+x^{120}+x^{118}+x^{114}+x^{112}+x^{104}+x^{100}+x^{96}+x^{94}\\
&\quad+x^{92}+x^{90}+x^{86}+x^{78}+x^{72}+x^{64}+x^{62}+x^{54}+x^{52}+x^{48}+x^{46}\\
&\quad+x^{36}+x^{34}+x^{28}+x^{24},\\
p_3(x)&=x^{126}+x^{124}+x^{122}+x^{120}+x^{118}+x^{116}+x^{114}+x^{112}+x^{110}+x^{108}\\
&\quad+x^{104}+x^{100}+x^{98}+x^{96}+x^{86}+x^{80}+x^{76}+x^{72}+x^{70}+x^{68}+x^{66}\\
&\quad+x^{64}+x^{60}+x^{56}+x^{52}+x^{50}+x^{48}+x^{46}+x^{42}+x^{34}+x^{30}+x^{28}\\
&\quad+x^{22}+x^{20},\\
p_6(x)&=x^{126}+x^{114}+x^{110}+x^{106}+x^{102}+x^{98}+x^{96}+x^{92}+x^{90}+x^{84}+x^{82}\\
&\quad+x^{80}+x^{78}+x^{70}+x^{68}+x^{64}+x^{62}+x^{58}+x^{56}+x^{54}+x^{48}+x^{40}\\
&\quad+x^{38}+x^{36}+x^{22}+x^{20}+x^{18}+x^{16}+x^{14}+x^{12}+x^4+1,\\
p_9(x)&=x^{128}+x^{124}+x^{120}+x^{118}+x^{114}+x^{108}+x^{106}+x^{104}+x^{100}+x^{98}\\
&\quad+x^{96}+x^{88}+x^{84}+x^{80}+x^{74}+x^{70}+x^{66}+x^{62}+x^{60}+x^{58}+x^{52}
\end{aligned}$$

$$+ x^{50} + x^{46} + x^{42} + x^{36} + x^{34} + x^{32} + x^{30} + x^{28} + x^{26} + x^{24} + x^{22} + x^{20} + x^{14} + x^{12} + x^{4},$$

$$p_{12}(x) = x^{128} + x^{120} + x^{112} + x^{104} + x^{96} + x^{72} + x^{64} + x^{56} + x^{48} + x^{24} + 1,$$

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

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

$$\begin{aligned}
p_0(x) = {} & x^{126} + x^{123} + x^{122} + x^{121} + x^{119} + x^{118} + x^{115} + x^{114} + x^{112} + x^{110} \\
& + x^{109} + x^{107} + x^{104} + x^{98} + x^{96} + x^{94} + x^{93} + x^{92} + x^{88} + x^{84} + x^{77} \\
& + x^{75} + x^{74} + x^{71} + x^{70} + x^{69} + x^{68} + x^{67} + x^{66} + x^{64} + x^{63} + x^{62} \\
& + x^{60} + x^{57} + x^{56} + x^{55} + x^{52} + x^{51} + x^{50} + x^{48} + x^{42} + x^{41} + x^{36} \\
& + x^{34} + x^{30}, \\
p_3(x) = {} & x^{122} + x^{121} + x^{120} + x^{117} + x^{115} + x^{114} + x^{113} + x^{109} + x^{108} + x^{105} \\
& + x^{104} + x^{101} + x^{100} + x^{98} + x^{90} + x^{89} + x^{88} + x^{85} + x^{83} + x^{80} + x^{76} \\
& + x^{75} + x^{74} + x^{72} + x^{66} + x^{65} + x^{64} + x^{61} + x^{60} + x^{58} + x^{42} + x^{41} \\
& + x^{40} + x^{37} + x^{35} + x^{34} + x^{33} + x^{29} + x^{28} + x^{25} + x^{24} + x^{21} + x^{20} \\
& + x^{18}, \\
p_6(x) = {} & x^{120} + x^{119} + x^{116} + x^{114} + x^{113} + x^{112} + x^{111} + x^{110} + x^{107} + x^{106} \\
& + x^{105} + x^{104} + x^{102} + x^{98} + x^{97} + x^{96} + x^{95} + x^{93} + x^{92} + x^{90} + x^{88} \\
& + x^{87} + x^{86} + x^{85} + x^{83} + x^{81} + x^{79} + x^{78} + x^{75} + x^{72} + x^{70} + x^{69} \\
& + x^{68} + x^{67} + x^{65} + x^{63} + x^{61} + x^{60} + x^{58} + x^{48} + x^{47} + x^{46} + x^{45} \\
& + x^{44} + x^{41} + x^{40} + x^{39} + x^{38} + x^{36} + x^{26} + x^{25} + x^{22} + x^{20} + x^{19} \\
& + x^{15} + x^{12}, \\
p_9(x) = {} & x^{118} + x^{117} + x^{116} + x^{114} + x^{110} + x^{109} + x^{107} + x^{106} + x^{105} + x^{102} \\
& + x^{98} + x^{97} + x^{95} + x^{94} + x^{93} + x^{89} + x^{87} + x^{83} + x^{81} + x^{77} + x^{76} \\
& + x^{73} + x^{71} + x^{68} + x^{66} + x^{65} + x^{63} + x^{60} + x^{58} + x^{57} + x^{56} + x^{53} \\
& + x^{51} + x^{50} + x^{49} + x^{48} + x^{47} + x^{46} + x^{45} + x^{44} + x^{43} + x^{42} + x^{41} \\
& + x^{38} + x^{34} + x^{33} + x^{32} + x^{30} + x^{28} + x^{27} + x^{26} + x^{24} + x^{22} + x^{21} \\
& + x^{19} + x^{18} + x^{17} + x^{14} + x^{10} + x^{9} + x^{8} + x^{6}, \\
p_{12}(x) = {} & x^{116} + x^{115} + x^{111} + x^{108} + x^{96} + x^{95} + x^{92} + x^{84} + x^{83} + x^{80} + x^{68} \\
& + x^{67} + x^{63} + x^{60} + x^{48} + x^{47} + x^{44} + x^{36} + x^{35} + x^{32} + x^{20} + x^{19} \\
& + x^{15} + x^{12} + x^{4} + x^{3} + 1,
\end{aligned}$$

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

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

$$\begin{aligned}
p_0(x) = {} & x^{126} + x^{123} + x^{122} + x^{121} + x^{119} + x^{118} + x^{115} + x^{114} + x^{112} + x^{110} \\
& + x^{109} + x^{107} + x^{104} + x^{98} + x^{96} + x^{94} + x^{93} + x^{92} + x^{88} + x^{84} + x^{77} \\
& + x^{75} + x^{74} + x^{71} + x^{70} + x^{69} + x^{68} + x^{67} + x^{66} + x^{64} + x^{63} + x^{62}
\end{aligned}$$

$$
\begin{aligned}
&+x^{60}+x^{57}+x^{56}+x^{55}+x^{52}+x^{51}+x^{50}+x^{48}+x^{42}+x^{41}+x^{36}\\
&+x^{34}+x^{30},\\
p_3(x)=\;&x^{122}+x^{121}+x^{120}+x^{117}+x^{115}+x^{114}+x^{113}+x^{109}+x^{108}+x^{105}\\
&+x^{104}+x^{101}+x^{100}+x^{98}+x^{90}+x^{89}+x^{88}+x^{85}+x^{83}+x^{80}+x^{76}\\
&+x^{75}+x^{74}+x^{72}+x^{66}+x^{65}+x^{64}+x^{61}+x^{60}+x^{58}+x^{42}+x^{41}\\
&+x^{40}+x^{37}+x^{35}+x^{34}+x^{33}+x^{29}+x^{28}+x^{25}+x^{24}+x^{21}+x^{20}\\
&+x^{18},\\
p_6(x)=\;&x^{120}+x^{119}+x^{116}+x^{114}+x^{113}+x^{112}+x^{111}+x^{110}+x^{107}+x^{106}\\
&+x^{105}+x^{104}+x^{102}+x^{98}+x^{97}+x^{96}+x^{95}+x^{93}+x^{92}+x^{90}+x^{88}\\
&+x^{87}+x^{86}+x^{85}+x^{83}+x^{81}+x^{79}+x^{78}+x^{75}+x^{72}+x^{70}+x^{69}\\
&+x^{68}+x^{67}+x^{65}+x^{63}+x^{61}+x^{60}+x^{58}+x^{48}+x^{47}+x^{46}+x^{45}\\
&+x^{44}+x^{41}+x^{40}+x^{39}+x^{38}+x^{36}+x^{26}+x^{25}+x^{22}+x^{20}+x^{19}\\
&+x^{15}+x^{12},\\
p_9(x)=\;&x^{118}+x^{117}+x^{116}+x^{114}+x^{110}+x^{109}+x^{107}+x^{106}+x^{105}+x^{102}\\
&+x^{98}+x^{97}+x^{95}+x^{94}+x^{93}+x^{89}+x^{87}+x^{83}+x^{81}+x^{77}+x^{76}\\
&+x^{73}+x^{71}+x^{68}+x^{66}+x^{65}+x^{63}+x^{60}+x^{58}+x^{57}+x^{56}+x^{53}\\
&+x^{51}+x^{50}+x^{49}+x^{48}+x^{47}+x^{46}+x^{45}+x^{44}+x^{43}+x^{42}+x^{41}\\
&+x^{38}+x^{34}+x^{33}+x^{32}+x^{30}+x^{28}+x^{27}+x^{26}+x^{24}+x^{22}+x^{21}\\
&+x^{19}+x^{18}+x^{17}+x^{14}+x^{10}+x^{9}+x^{8}+x^{6},\\
p_{12}(x)=\;&x^{116}+x^{115}+x^{111}+x^{108}+x^{96}+x^{95}+x^{92}+x^{84}+x^{83}+x^{80}+x^{68}\\
&+x^{67}+x^{63}+x^{60}+x^{48}+x^{47}+x^{44}+x^{36}+x^{35}+x^{32}+x^{20}+x^{19}\\
&+x^{15}+x^{12}+x^{4}+x^{3}+1,
\end{aligned}
$$

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

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

$$
\begin{aligned}
p_0(x)=\;&x^{120}+x^{118}+x^{116}+x^{112}+x^{108}+x^{104}+x^{102}+x^{96}+x^{94}+x^{92}\\
&+x^{90}+x^{86}+x^{84}+x^{82}+x^{76}+x^{70}+x^{64}+x^{62}+x^{58}+x^{52}+x^{46}\\
&+x^{40}+x^{36},\\
p_3(x)=\;&x^{108}+x^{106}+x^{104}+x^{102}+x^{98}+x^{96}+x^{92}+x^{88}+x^{82}+x^{80}+x^{70}\\
&+x^{62}+x^{60}+x^{50}+x^{48}+x^{44}+x^{34}+x^{26}+x^{22}+x^{18}+x^{16}+x^{12},\\
p_6(x)=\;&x^{108}+x^{106}+x^{100}+x^{98}+x^{96}+x^{94}+x^{92}+x^{88}+x^{86}+x^{84}+x^{80}\\
&+x^{76}+x^{74}+x^{72}+x^{70}+x^{68}+x^{62}+x^{60}+x^{56}+x^{54}+x^{50}+x^{36}\\
&+x^{34}+x^{32}+x^{30}+x^{28}+x^{22}+x^{18}+x^{16}+x^{12}+x^{10}+x^{6}+x^{4}+1,\\
p_9(x)=\;&x^{104}+x^{102}+x^{100}+x^{98}+x^{96}+x^{94}+x^{92}+x^{88}+x^{82}+x^{80}+x^{78}\\
&+x^{72}+x^{70}+x^{62}+x^{58}+x^{56}+x^{52}+x^{50}+x^{42}+x^{38}+x^{32}+x^{30}\\
&+x^{24}+x^{20}+x^{18}+x^{14}+x^{10}+x^{4},
\end{aligned}
$$

$$p_{12}(x) = x^{104} + x^{102} + x^{96} + x^{88} + x^{86} + x^{80} + x^{56} + x^{54} + x^{48} + x^{40} + x^{38} + x^{32} + x^{8} + x^{6} + 1,$$

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

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

$$p_0(x) = x^{120} + x^{118} + x^{116} + x^{110} + x^{108} + x^{104} + x^{100} + x^{96} + x^{88} + x^{80} + x^{78} + x^{74} + x^{70} + x^{66} + x^{64} + x^{62} + x^{56} + x^{52} + x^{46} + x^{38} + x^{30} + x^{28} + x^{24},$$

$$p_3(x) = x^{108} + x^{106} + x^{104} + x^{102} + x^{100} + x^{92} + x^{90} + x^{88} + x^{86} + x^{82} + x^{80} + x^{78} + x^{76} + x^{72} + x^{70} + x^{68} + x^{66} + x^{58} + x^{56} + x^{54} + x^{50} + x^{44} + x^{40} + x^{38} + x^{24} + x^{22},$$

$$p_6(x) = x^{108} + x^{106} + x^{96} + x^{92} + x^{90} + x^{88} + x^{86} + x^{82} + x^{78} + x^{70} + x^{68} + x^{66} + x^{64} + x^{62} + x^{60} + x^{54} + x^{44} + x^{40} + x^{38} + x^{34} + x^{26} + x^{24} + x^{14} + x^{10} + x^{8} + x^{6} + x^{4} + 1,$$

$$p_9(x) = x^{104} + x^{102} + x^{100} + x^{98} + x^{96} + x^{94} + x^{92} + x^{88} + x^{82} + x^{80} + x^{78} + x^{72} + x^{70} + x^{62} + x^{58} + x^{56} + x^{52} + x^{50} + x^{42} + x^{38} + x^{32} + x^{30} + x^{24} + x^{20} + x^{18} + x^{14} + x^{10} + x^{4},$$

$$p_{12}(x) = x^{104} + x^{102} + x^{96} + x^{88} + x^{86} + x^{80} + x^{56} + x^{54} + x^{48} + x^{40} + x^{38} + x^{32} + x^{8} + x^{6} + 1,$$

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

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

$$p_0(x) = x^{126} + x^{124} + x^{122} + x^{120} + x^{119} + x^{116} + x^{115} + x^{112} + x^{110} + x^{106} + x^{105} + x^{104} + x^{103} + x^{102} + x^{99} + x^{98} + x^{95} + x^{94} + x^{91} + x^{90} + x^{89} + x^{88} + x^{86} + x^{85} + x^{84} + x^{79} + x^{76} + x^{73} + x^{72} + x^{71} + x^{66} + x^{65} + x^{60} + x^{58} + x^{57} + x^{54} + x^{53} + x^{51} + x^{50} + x^{49} + x^{48} + x^{45} + x^{44} + x^{42} + x^{35} + x^{32} + x^{30},$$

$$p_3(x) = x^{122} + x^{121} + x^{120} + x^{117} + x^{115} + x^{114} + x^{113} + x^{109} + x^{108} + x^{105} + x^{104} + x^{101} + x^{100} + x^{98} + x^{90} + x^{89} + x^{88} + x^{85} + x^{83} + x^{80} + x^{76} + x^{75} + x^{74} + x^{72} + x^{66} + x^{65} + x^{64} + x^{61} + x^{60} + x^{58} + x^{42} + x^{41} + x^{40} + x^{37} + x^{35} + x^{34} + x^{33} + x^{29} + x^{28} + x^{25} + x^{24} + x^{21} + x^{20} + x^{18},$$

$$p_6(x) = x^{120} + x^{119} + x^{116} + x^{114} + x^{113} + x^{112} + x^{111} + x^{110} + x^{107} + x^{106} + x^{105} + x^{104} + x^{102} + x^{98} + x^{97} + x^{96} + x^{95} + x^{93} + x^{92} + x^{90} + x^{88} + x^{87} + x^{86} + x^{85} + x^{83} + x^{81} + x^{79} + x^{78} + x^{75} + x^{72} + x^{70} + x^{69} + x^{68} + x^{67} + x^{65} + x^{63} + x^{61} + x^{60} + x^{58} + x^{48} + x^{47} + x^{46} + x^{45} + x^{44} + x^{41} + x^{40} + x^{39} + x^{38} + x^{36} + x^{26} + x^{25} + x^{22} + x^{20} + x^{19}$$

$$\begin{aligned}
&+ x^{15} + x^{12},\\
p_9(x) &= x^{118} + x^{117} + x^{116} + x^{114} + x^{110} + x^{109} + x^{107} + x^{106} + x^{105} + x^{102}\\
&+ x^{98} + x^{97} + x^{95} + x^{94} + x^{93} + x^{89} + x^{87} + x^{83} + x^{81} + x^{77} + x^{76}\\
&+ x^{73} + x^{71} + x^{68} + x^{66} + x^{65} + x^{63} + x^{60} + x^{58} + x^{57} + x^{56} + x^{53}\\
&+ x^{51} + x^{50} + x^{49} + x^{48} + x^{47} + x^{46} + x^{45} + x^{44} + x^{43} + x^{42} + x^{41}\\
&+ x^{38} + x^{34} + x^{33} + x^{32} + x^{30} + x^{28} + x^{27} + x^{26} + x^{24} + x^{22} + x^{21}\\
&+ x^{19} + x^{18} + x^{17} + x^{14} + x^{10} + x^{9} + x^{8} + x^{6},\\
p_{12}(x) &= x^{116} + x^{115} + x^{111} + x^{108} + x^{96} + x^{95} + x^{92} + x^{84} + x^{83} + x^{80} + x^{68}\\
&+ x^{67} + x^{63} + x^{60} + x^{48} + x^{47} + x^{44} + x^{36} + x^{35} + x^{32} + x^{20} + x^{19}\\
&+ x^{15} + x^{12} + x^{4} + x^{3} + 1,
\end{aligned}$$

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

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

$$\begin{aligned}
p_0(x) &= x^{126} + x^{124} + x^{122} + x^{120} + x^{119} + x^{116} + x^{115} + x^{112} + x^{110} + x^{106}\\
&+ x^{105} + x^{104} + x^{103} + x^{102} + x^{99} + x^{98} + x^{95} + x^{94} + x^{91} + x^{90}\\
&+ x^{89} + x^{88} + x^{86} + x^{85} + x^{84} + x^{79} + x^{76} + x^{73} + x^{72} + x^{71} + x^{66}\\
&+ x^{65} + x^{60} + x^{58} + x^{57} + x^{54} + x^{53} + x^{51} + x^{50} + x^{49} + x^{48} + x^{45}\\
&+ x^{44} + x^{42} + x^{35} + x^{32} + x^{30},\\
p_3(x) &= x^{122} + x^{121} + x^{120} + x^{117} + x^{115} + x^{114} + x^{113} + x^{109} + x^{108} + x^{105}\\
&+ x^{104} + x^{101} + x^{100} + x^{98} + x^{90} + x^{89} + x^{88} + x^{85} + x^{83} + x^{80} + x^{76}\\
&+ x^{75} + x^{74} + x^{72} + x^{66} + x^{65} + x^{64} + x^{61} + x^{60} + x^{58} + x^{42} + x^{41}\\
&+ x^{40} + x^{37} + x^{35} + x^{34} + x^{33} + x^{29} + x^{28} + x^{25} + x^{24} + x^{21} + x^{20}\\
&+ x^{18},\\
p_6(x) &= x^{120} + x^{119} + x^{116} + x^{114} + x^{113} + x^{112} + x^{111} + x^{110} + x^{107} + x^{106}\\
&+ x^{105} + x^{104} + x^{102} + x^{98} + x^{97} + x^{96} + x^{95} + x^{93} + x^{92} + x^{90} + x^{88}\\
&+ x^{87} + x^{86} + x^{85} + x^{83} + x^{81} + x^{79} + x^{78} + x^{75} + x^{72} + x^{70} + x^{69}\\
&+ x^{68} + x^{67} + x^{65} + x^{63} + x^{61} + x^{60} + x^{58} + x^{48} + x^{47} + x^{46} + x^{45}\\
&+ x^{44} + x^{41} + x^{40} + x^{39} + x^{38} + x^{36} + x^{26} + x^{25} + x^{22} + x^{20} + x^{19}\\
&+ x^{15} + x^{12},\\
p_9(x) &= x^{118} + x^{117} + x^{116} + x^{114} + x^{110} + x^{109} + x^{107} + x^{106} + x^{105} + x^{102}\\
&+ x^{98} + x^{97} + x^{95} + x^{94} + x^{93} + x^{89} + x^{87} + x^{83} + x^{81} + x^{77} + x^{76}\\
&+ x^{73} + x^{71} + x^{68} + x^{66} + x^{65} + x^{63} + x^{60} + x^{58} + x^{57} + x^{56} + x^{53}\\
&+ x^{51} + x^{50} + x^{49} + x^{48} + x^{47} + x^{46} + x^{45} + x^{44} + x^{43} + x^{42} + x^{41}\\
&+ x^{38} + x^{34} + x^{33} + x^{32} + x^{30} + x^{28} + x^{27} + x^{26} + x^{24} + x^{22} + x^{21}\\
&+ x^{19} + x^{18} + x^{17} + x^{14} + x^{10} + x^{9} + x^{8} + x^{6},\\
p_{12}(x) &= x^{116} + x^{115} + x^{111} + x^{108} + x^{96} + x^{95} + x^{92} + x^{84} + x^{83} + x^{80} + x^{68}
\end{aligned}$$

$$+ x^{67} + x^{63} + x^{60} + x^{48} + x^{47} + x^{44} + x^{36} + x^{35} + x^{32} + x^{20} + x^{19} + x^{15} + x^{12} + x^{4} + x^{3} + 1,$$

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

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

$$\begin{aligned}
p_0(x) &= x^{132} + x^{130} + x^{128} + x^{122} + x^{114} + x^{112} + x^{110} + x^{106} + x^{96} + x^{90} \\
&\quad + x^{88} + x^{82} + x^{78} + x^{76} + x^{72} + x^{70} + x^{68} + x^{56} + x^{52} + x^{50} + x^{48} \\
&\quad + x^{42} + x^{36}, \\
p_3(x) &= x^{126} + x^{122} + x^{108} + x^{90} + x^{84} + x^{82} + x^{80} + x^{76} + x^{72} + x^{70} + x^{64} \\
&\quad + x^{62} + x^{52} + x^{48} + x^{44} + x^{42} + x^{40} + x^{28} + x^{16} + x^{12}, \\
p_6(x) &= x^{126} + x^{124} + x^{118} + x^{116} + x^{112} + x^{108} + x^{106} + x^{102} + x^{100} + x^{86} \\
&\quad + x^{84} + x^{78} + x^{76} + x^{72} + x^{70} + x^{66} + x^{64} + x^{58} + x^{54} + x^{50} + x^{46} \\
&\quad + x^{38} + x^{36} + x^{34} + x^{32} + x^{30} + x^{28} + x^{24} + x^{18} + x^{16} + x^{14} + x^{8} \\
&\quad + x^{4} + 1, \\
p_9(x) &= x^{128} + x^{124} + x^{120} + x^{118} + x^{114} + x^{108} + x^{106} + x^{104} + x^{100} + x^{98} \\
&\quad + x^{96} + x^{88} + x^{84} + x^{80} + x^{74} + x^{70} + x^{66} + x^{62} + x^{60} + x^{58} + x^{52} \\
&\quad + x^{50} + x^{46} + x^{42} + x^{36} + x^{34} + x^{32} + x^{30} + x^{28} + x^{26} + x^{24} + x^{22} \\
&\quad + x^{20} + x^{14} + x^{12} + x^{4}, \\
p_{12}(x) &= x^{128} + x^{120} + x^{112} + x^{104} + x^{96} + x^{72} + x^{64} + x^{56} + x^{48} + x^{24} + 1,
\end{aligned}$$

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

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

$$\begin{aligned}
p_0(x) &= x^{126} + x^{123} + x^{121} + x^{120} + x^{119} + x^{118} + x^{117} + x^{116} + x^{112} + x^{110} \\
&\quad + x^{107} + x^{105} + x^{104} + x^{103} + x^{101} + x^{94} + x^{92} + x^{91} + x^{90} + x^{85} \\
&\quad + x^{84} + x^{83} + x^{80} + x^{78} + x^{77} + x^{74} + x^{71} + x^{70} + x^{68} + x^{67} + x^{66} \\
&\quad + x^{61} + x^{60} + x^{59} + x^{58} + x^{57} + x^{55} + x^{51} + x^{45} + x^{44} + x^{42} + x^{41} \\
&\quad + x^{37} + x^{30} + x^{28} + x^{27} + x^{24}, \\
p_3(x) &= x^{124} + x^{123} + x^{122} + x^{120} + x^{118} + x^{116} + x^{113} + x^{110} + x^{109} + x^{104} \\
&\quad + x^{103} + x^{101} + x^{100} + x^{97} + x^{96} + x^{95} + x^{94} + x^{91} + x^{89} + x^{88} + x^{84} \\
&\quad + x^{82} + x^{81} + x^{77} + x^{75} + x^{74} + x^{72} + x^{70} + x^{69} + x^{68} + x^{67} + x^{66} \\
&\quad + x^{65} + x^{64} + x^{52} + x^{51} + x^{50} + x^{49} + x^{47} + x^{45} + x^{44} + x^{37} + x^{36} \\
&\quad + x^{34} + x^{33} + x^{32} + x^{31} + x^{30} + x^{29} + x^{28} + x^{22} + x^{20} + x^{19} + x^{16}, \\
p_6(x) &= x^{124} + x^{123} + x^{122} + x^{120} + x^{118} + x^{116} + x^{114} + x^{113} + x^{112} + x^{111} \\
&\quad + x^{109} + x^{108} + x^{107} + x^{106} + x^{105} + x^{104} + x^{102} + x^{100} + x^{98} + x^{96} \\
&\quad + x^{94} + x^{93} + x^{92} + x^{91} + x^{89} + x^{86} + x^{83} + x^{81} + x^{80} + x^{76} + x^{75} \\
&\quad + x^{74} + x^{73} + x^{72} + x^{71} + x^{69} + x^{68} + x^{67} + x^{61} + x^{60} + x^{59} + x^{56} \\
&\quad + x^{53} + x^{50} + x^{49} + x^{48} + x^{46} + x^{44} + x^{42} + x^{41} + x^{38} + x^{36} + x^{35}
\end{aligned}$$

$$
\begin{aligned}
&+ x^{34} + x^{31} + x^{30} + x^{29} + x^{28} + x^{27} + x^{26} + x^{25} + x^{23} + x^{22} + x^{21}\\
&+ x^{19} + x^{15} + x^{14} + x^{11} + x^{8} + x^{4} + x^{3} + 1,\\
p_9(x) &= x^{124} + x^{123} + x^{119} + x^{115} + x^{112} + x^{104} + x^{103} + x^{99} + x^{96} + x^{92}\\
&+ x^{91} + x^{88} + x^{76} + x^{75} + x^{71} + x^{67} + x^{64} + x^{56} + x^{55} + x^{51} + x^{48}\\
&+ x^{44} + x^{43} + x^{40} + x^{28} + x^{27} + x^{23} + x^{19} + x^{16} + x^{12} + x^{11} + x^{8},\\
p_{12}(x) &= x^{124} + x^{123} + x^{119} + x^{116} + x^{112} + x^{111} + x^{108} + x^{104} + x^{103} + x^{99}\\
&+ x^{95} + x^{91} + x^{88} + x^{84} + x^{83} + x^{80} + x^{76} + x^{75} + x^{71} + x^{68} + x^{64}\\
&+ x^{63} + x^{60} + x^{56} + x^{55} + x^{51} + x^{47} + x^{43} + x^{40} + x^{36} + x^{35} + x^{32}\\
&+ x^{28} + x^{27} + x^{23} + x^{20} + x^{16} + x^{15} + x^{11} + x^{8} + x^{4} + x^{3} + 1,
\end{aligned}
$$

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

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

$$
\begin{aligned}
p_0(x) &= x^{128} + x^{124} + x^{121} + x^{120} + x^{119} + x^{117} + x^{115} + x^{114} + x^{113} + x^{111}\\
&+ x^{106} + x^{105} + x^{104} + x^{103} + x^{99} + x^{98} + x^{96} + x^{93} + x^{92} + x^{90}\\
&+ x^{88} + x^{86} + x^{85} + x^{83} + x^{82} + x^{81} + x^{80} + x^{78} + x^{77} + x^{76} + x^{74}\\
&+ x^{72} + x^{69} + x^{65} + x^{63} + x^{62} + x^{60} + x^{59} + x^{58} + x^{57} + x^{56} + x^{55}\\
&+ x^{51} + x^{45} + x^{44} + x^{43} + x^{38} + x^{36} + x^{34} + x^{33} + x^{30},\\
p_3(x) &= x^{114} + x^{112} + x^{111} + x^{109} + x^{108} + x^{106} + x^{104} + x^{103} + x^{100} + x^{98}\\
&+ x^{82} + x^{80} + x^{79} + x^{77} + x^{76} + x^{69} + x^{64} + x^{63} + x^{60} + x^{58} + x^{34}\\
&+ x^{32} + x^{31} + x^{29} + x^{28} + x^{26} + x^{24} + x^{23} + x^{20} + x^{18},\\
p_6(x) &= x^{116} + x^{110} + x^{108} + x^{104} + x^{102} + x^{94} + x^{92} + x^{90} + x^{84} + x^{82} + x^{80}\\
&+ x^{78} + x^{76} + x^{72} + x^{66} + x^{64} + x^{62} + x^{60} + x^{58} + x^{44} + x^{42} + x^{38}\\
&+ x^{36} + x^{22} + x^{16} + x^{12},\\
p_9(x) &= x^{118} + x^{116} + x^{115} + x^{114} + x^{113} + x^{112} + x^{111} + x^{110} + x^{107} + x^{106}\\
&+ x^{104} + x^{100} + x^{99} + x^{98} + x^{97} + x^{96} + x^{95} + x^{94} + x^{91} + x^{90} + x^{88}\\
&+ x^{86} + x^{70} + x^{68} + x^{67} + x^{66} + x^{65} + x^{64} + x^{63} + x^{62} + x^{59} + x^{58}\\
&+ x^{56} + x^{52} + x^{51} + x^{50} + x^{49} + x^{48} + x^{47} + x^{46} + x^{43} + x^{42} + x^{40}\\
&+ x^{38} + x^{22} + x^{20} + x^{19} + x^{18} + x^{17} + x^{16} + x^{15} + x^{14} + x^{11} + x^{10}\\
&+ x^{8} + x^{6},\\
p_{12}(x) &= x^{120} + x^{116} + x^{108} + x^{100} + x^{96} + x^{92} + x^{88} + x^{80} + x^{72} + x^{68} + x^{60}\\
&+ x^{52} + x^{48} + x^{44} + x^{40} + x^{32} + x^{24} + x^{20} + x^{12} + x^{8} + 1,
\end{aligned}
$$

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

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

$$
\begin{aligned}
p_0(x) &= x^{132} + x^{129} + x^{127} + x^{123} + x^{121} + x^{120} + x^{119} + x^{118} + x^{117} + x^{115}\\
&+ x^{114} + x^{113} + x^{110} + x^{106} + x^{105} + x^{104} + x^{103} + x^{101} + x^{98} + x^{94}\\
&+ x^{93} + x^{87} + x^{84} + x^{83} + x^{81} + x^{77} + x^{76} + x^{75} + x^{74} + x^{73} + x^{70}
\end{aligned}
$$

$$
\begin{aligned}
&+ x^{69} + x^{67} + x^{63} + x^{59} + x^{58} + x^{57} + x^{56} + x^{54} + x^{52} + x^{51} + x^{50}\\
&+ x^{48} + x^{47} + x^{45} + x^{44} + x^{38} + x^{37} + x^{33} + x^{32} + x^{30},\\
p_3(x) &= x^{130} + x^{128} + x^{127} + x^{126} + x^{125} + x^{123} + x^{122} + x^{121} + x^{119} + x^{118}\\
&+ x^{115} + x^{111} + x^{110} + x^{109} + x^{108} + x^{106} + x^{104} + x^{103} + x^{100}\\
&+ x^{96} + x^{95} + x^{94} + x^{93} + x^{91} + x^{89} + x^{88} + x^{85} + x^{82} + x^{81} + x^{77}\\
&+ x^{76} + x^{75} + x^{74} + x^{72} + x^{70} + x^{69} + x^{64} + x^{63} + x^{60} + x^{58} + x^{50}\\
&+ x^{48} + x^{47} + x^{46} + x^{45} + x^{43} + x^{42} + x^{41} + x^{39} + x^{38} + x^{35} + x^{31}\\
&+ x^{30} + x^{29} + x^{28} + x^{26} + x^{24} + x^{23} + x^{20} + x^{18},\\
p_6(x) &= x^{132} + x^{128} + x^{126} + x^{124} + x^{122} + x^{118} + x^{114} + x^{100} + x^{98} + x^{94}\\
&+ x^{92} + x^{78} + x^{76} + x^{70} + x^{66} + x^{64} + x^{62} + x^{56} + x^{52} + x^{50} + x^{48}\\
&+ x^{44} + x^{42} + x^{36} + x^{34} + x^{32} + x^{24} + x^{22} + x^{16} + x^{12},\\
p_9(x) &= x^{134} + x^{132} + x^{131} + x^{129} + x^{125} + x^{124} + x^{120} + x^{119} + x^{116} + x^{112}\\
&+ x^{111} + x^{110} + x^{109} + x^{108} + x^{107} + x^{106} + x^{103} + x^{99} + x^{97} + x^{96}\\
&+ x^{95} + x^{94} + x^{91} + x^{90} + x^{88} + x^{84} + x^{83} + x^{81} + x^{77} + x^{76} + x^{72}\\
&+ x^{71} + x^{68} + x^{64} + x^{63} + x^{62} + x^{61} + x^{60} + x^{59} + x^{58} + x^{55} + x^{51}\\
&+ x^{49} + x^{48} + x^{47} + x^{46} + x^{43} + x^{42} + x^{40} + x^{36} + x^{35} + x^{33} + x^{29}\\
&+ x^{28} + x^{24} + x^{23} + x^{22} + x^{19} + x^{17} + x^{16} + x^{15} + x^{14} + x^{11} + x^{10}\\
&+ x^{8} + x^{6},\\
p_{12}(x) &= x^{136} + x^{128} + x^{124} + x^{108} + x^{76} + x^{60} + x^{28} + x^{24} + x^{16} + x^{8} + 1,
\end{aligned}
$$

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

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

$$
\begin{aligned}
p_0(x) &= x^{126} + x^{124} + x^{120} + x^{115} + x^{114} + x^{110} + x^{106} + x^{103} + x^{102} + x^{100}\\
&+ x^{99} + x^{93} + x^{92} + x^{89} + x^{88} + x^{87} + x^{86} + x^{85} + x^{84} + x^{81} + x^{80}\\
&+ x^{77} + x^{75} + x^{72} + x^{71} + x^{70} + x^{69} + x^{68} + x^{67} + x^{64} + x^{62} + x^{61}\\
&+ x^{59} + x^{58} + x^{57} + x^{55} + x^{52} + x^{50} + x^{47} + x^{45} + x^{43} + x^{42} + x^{39}\\
&+ x^{38} + x^{36},\\
p_3(x) &= x^{124} + x^{123} + x^{122} + x^{119} + x^{118} + x^{116} + x^{115} + x^{114} + x^{111} + x^{109}\\
&+ x^{107} + x^{104} + x^{101} + x^{100} + x^{99} + x^{97} + x^{95} + x^{94} + x^{91} + x^{89}\\
&+ x^{87} + x^{84} + x^{83} + x^{80} + x^{78} + x^{77} + x^{75} + x^{73} + x^{72} + x^{69} + x^{68}\\
&+ x^{67} + x^{66} + x^{65} + x^{63} + x^{59} + x^{56} + x^{52} + x^{51} + x^{50} + x^{49} + x^{47}\\
&+ x^{45} + x^{44} + x^{40} + x^{39} + x^{37} + x^{36} + x^{35} + x^{32} + x^{29} + x^{28} + x^{27}\\
&+ x^{23} + x^{22} + x^{20},\\
p_6(x) &= x^{124} + x^{123} + x^{122} + x^{119} + x^{118} + x^{116} + x^{115} + x^{111} + x^{110} + x^{109}\\
&+ x^{108} + x^{107} + x^{103} + x^{97} + x^{95} + x^{94} + x^{91} + x^{90} + x^{89} + x^{85} + x^{83}\\
&+ x^{79} + x^{78} + x^{76} + x^{74} + x^{73} + x^{71} + x^{70} + x^{68} + x^{67} + x^{65} + x^{64}
\end{aligned}
$$

$$
\begin{aligned}
&+ x^{63} + x^{60} + x^{58} + x^{56} + x^{55} + x^{53} + x^{51} + x^{50} + x^{49} + x^{48} + x^{47}\\
&+ x^{45} + x^{42} + x^{36} + x^{35} + x^{34} + x^{32} + x^{30} + x^{29} + x^{27} + x^{24} + x^{21}\\
&+ x^{14} + x^{4} + x^{3} + 1,\\
p_9(x) &= x^{124} + x^{123} + x^{119} + x^{115} + x^{112} + x^{104} + x^{103} + x^{99} + x^{96} + x^{92}\\
&+ x^{91} + x^{88} + x^{76} + x^{75} + x^{71} + x^{67} + x^{64} + x^{56} + x^{55} + x^{51} + x^{48}\\
&+ x^{44} + x^{43} + x^{40} + x^{28} + x^{27} + x^{23} + x^{19} + x^{16} + x^{12} + x^{11} + x^{8},\\
p_{12}(x) &= x^{124} + x^{123} + x^{119} + x^{116} + x^{112} + x^{111} + x^{108} + x^{104} + x^{103} + x^{99}\\
&+ x^{95} + x^{91} + x^{88} + x^{84} + x^{83} + x^{80} + x^{76} + x^{75} + x^{71} + x^{68} + x^{64}\\
&+ x^{63} + x^{60} + x^{56} + x^{55} + x^{51} + x^{47} + x^{43} + x^{40} + x^{36} + x^{35} + x^{32}\\
&+ x^{28} + x^{27} + x^{23} + x^{20} + x^{16} + x^{15} + x^{11} + x^{8} + x^{4} + x^{3} + 1,
\end{aligned}
$$

and the initial terms are [0, 0, 0, 0, 0, 0, 1, 0, 0, 1, 0, 0, 0, 1, 1, 1].
For $\phi(W^o, 0, 0)$:

$$
\begin{aligned}
p_0(x) &= x^{126} + x^{123} + x^{121} + x^{120} + x^{119} + x^{118} + x^{117} + x^{116} + x^{112} + x^{110}\\
&+ x^{107} + x^{105} + x^{104} + x^{103} + x^{101} + x^{94} + x^{92} + x^{91} + x^{90} + x^{85}\\
&+ x^{84} + x^{83} + x^{80} + x^{78} + x^{77} + x^{74} + x^{71} + x^{70} + x^{68} + x^{67} + x^{66}\\
&+ x^{61} + x^{60} + x^{59} + x^{58} + x^{57} + x^{55} + x^{51} + x^{45} + x^{44} + x^{42} + x^{41}\\
&+ x^{37} + x^{30} + x^{28} + x^{27} + x^{24},\\
p_3(x) &= x^{124} + x^{123} + x^{122} + x^{120} + x^{118} + x^{116} + x^{113} + x^{110} + x^{109} + x^{104}\\
&+ x^{103} + x^{101} + x^{100} + x^{97} + x^{96} + x^{95} + x^{94} + x^{91} + x^{89} + x^{88} + x^{84}\\
&+ x^{82} + x^{81} + x^{77} + x^{75} + x^{74} + x^{72} + x^{70} + x^{69} + x^{68} + x^{67} + x^{66}\\
&+ x^{65} + x^{64} + x^{52} + x^{51} + x^{50} + x^{49} + x^{47} + x^{45} + x^{44} + x^{37} + x^{36}\\
&+ x^{34} + x^{33} + x^{32} + x^{31} + x^{30} + x^{29} + x^{28} + x^{22} + x^{20} + x^{19} + x^{16},\\
p_6(x) &= x^{124} + x^{123} + x^{122} + x^{120} + x^{118} + x^{116} + x^{114} + x^{113} + x^{112} + x^{111}\\
&+ x^{109} + x^{108} + x^{107} + x^{106} + x^{105} + x^{104} + x^{102} + x^{100} + x^{98} + x^{96}\\
&+ x^{94} + x^{93} + x^{92} + x^{91} + x^{89} + x^{86} + x^{83} + x^{81} + x^{80} + x^{76} + x^{75}\\
&+ x^{74} + x^{73} + x^{72} + x^{71} + x^{69} + x^{68} + x^{67} + x^{61} + x^{60} + x^{59} + x^{56}\\
&+ x^{53} + x^{50} + x^{49} + x^{48} + x^{46} + x^{44} + x^{42} + x^{41} + x^{38} + x^{36} + x^{35}\\
&+ x^{34} + x^{31} + x^{30} + x^{29} + x^{28} + x^{27} + x^{26} + x^{25} + x^{23} + x^{22} + x^{21}\\
&+ x^{19} + x^{15} + x^{14} + x^{11} + x^{8} + x^{4} + x^{3} + 1,\\
p_9(x) &= x^{124} + x^{123} + x^{119} + x^{115} + x^{112} + x^{104} + x^{103} + x^{99} + x^{96} + x^{92}\\
&+ x^{91} + x^{88} + x^{76} + x^{75} + x^{71} + x^{67} + x^{64} + x^{56} + x^{55} + x^{51} + x^{48}\\
&+ x^{44} + x^{43} + x^{40} + x^{28} + x^{27} + x^{23} + x^{19} + x^{16} + x^{12} + x^{11} + x^{8},\\
p_{12}(x) &= x^{124} + x^{123} + x^{119} + x^{116} + x^{112} + x^{111} + x^{108} + x^{104} + x^{103} + x^{99}\\
&+ x^{95} + x^{91} + x^{88} + x^{84} + x^{83} + x^{80} + x^{76} + x^{75} + x^{71} + x^{68} + x^{64}\\
&+ x^{63} + x^{60} + x^{56} + x^{55} + x^{51} + x^{47} + x^{43} + x^{40} + x^{36} + x^{35} + x^{32}
\end{aligned}
$$

$$+ x^{28} + x^{27} + x^{23} + x^{20} + x^{16} + x^{15} + x^{11} + x^{8} + x^{4} + x^{3} + 1,$$

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

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

$$\begin{aligned}
p_0(x) &= x^{132} + x^{129} + x^{127} + x^{123} + x^{121} + x^{120} + x^{119} + x^{118} + x^{117} + x^{115} \\
&\quad + x^{114} + x^{113} + x^{110} + x^{106} + x^{105} + x^{104} + x^{103} + x^{101} + x^{98} + x^{94} \\
&\quad + x^{93} + x^{87} + x^{84} + x^{83} + x^{81} + x^{77} + x^{76} + x^{75} + x^{74} + x^{73} + x^{70} \\
&\quad + x^{69} + x^{67} + x^{63} + x^{59} + x^{58} + x^{57} + x^{56} + x^{54} + x^{52} + x^{51} + x^{50} \\
&\quad + x^{48} + x^{47} + x^{45} + x^{44} + x^{38} + x^{37} + x^{33} + x^{32} + x^{30}, \\
p_3(x) &= x^{130} + x^{128} + x^{127} + x^{126} + x^{125} + x^{123} + x^{122} + x^{121} + x^{119} + x^{118} \\
&\quad + x^{115} + x^{111} + x^{110} + x^{109} + x^{108} + x^{106} + x^{104} + x^{103} + x^{100} \\
&\quad + x^{96} + x^{95} + x^{94} + x^{93} + x^{91} + x^{89} + x^{88} + x^{85} + x^{82} + x^{81} + x^{77} \\
&\quad + x^{76} + x^{75} + x^{74} + x^{72} + x^{70} + x^{69} + x^{64} + x^{63} + x^{60} + x^{58} + x^{50} \\
&\quad + x^{48} + x^{47} + x^{46} + x^{45} + x^{43} + x^{42} + x^{41} + x^{39} + x^{38} + x^{35} + x^{31} \\
&\quad + x^{30} + x^{29} + x^{28} + x^{26} + x^{24} + x^{23} + x^{20} + x^{18}, \\
p_6(x) &= x^{132} + x^{128} + x^{126} + x^{124} + x^{122} + x^{118} + x^{114} + x^{100} + x^{98} + x^{94} \\
&\quad + x^{92} + x^{78} + x^{76} + x^{70} + x^{66} + x^{64} + x^{62} + x^{56} + x^{52} + x^{50} + x^{48} \\
&\quad + x^{44} + x^{42} + x^{36} + x^{34} + x^{32} + x^{24} + x^{22} + x^{16} + x^{12}, \\
p_9(x) &= x^{134} + x^{132} + x^{131} + x^{129} + x^{125} + x^{124} + x^{120} + x^{119} + x^{116} + x^{112} \\
&\quad + x^{111} + x^{110} + x^{109} + x^{108} + x^{107} + x^{106} + x^{103} + x^{99} + x^{97} + x^{96} \\
&\quad + x^{95} + x^{94} + x^{91} + x^{90} + x^{88} + x^{84} + x^{83} + x^{81} + x^{77} + x^{76} + x^{72} \\
&\quad + x^{71} + x^{68} + x^{64} + x^{63} + x^{62} + x^{61} + x^{60} + x^{59} + x^{58} + x^{55} + x^{51} \\
&\quad + x^{49} + x^{48} + x^{47} + x^{46} + x^{43} + x^{42} + x^{40} + x^{36} + x^{35} + x^{33} + x^{29} \\
&\quad + x^{28} + x^{24} + x^{23} + x^{22} + x^{19} + x^{17} + x^{16} + x^{15} + x^{14} + x^{11} + x^{10} \\
&\quad + x^{8} + x^{6}, \\
p_{12}(x) &= x^{136} + x^{128} + x^{124} + x^{108} + x^{76} + x^{60} + x^{28} + x^{24} + x^{16} + x^{8} + 1,
\end{aligned}$$

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

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

$$\begin{aligned}
p_0(x) &= x^{128} + x^{124} + x^{121} + x^{120} + x^{119} + x^{117} + x^{115} + x^{114} + x^{113} + x^{111} \\
&\quad + x^{106} + x^{105} + x^{104} + x^{103} + x^{99} + x^{98} + x^{96} + x^{93} + x^{92} + x^{90} \\
&\quad + x^{88} + x^{86} + x^{85} + x^{83} + x^{82} + x^{81} + x^{80} + x^{78} + x^{77} + x^{76} + x^{74} \\
&\quad + x^{72} + x^{69} + x^{65} + x^{63} + x^{62} + x^{60} + x^{59} + x^{58} + x^{57} + x^{56} + x^{55} \\
&\quad + x^{51} + x^{45} + x^{44} + x^{43} + x^{38} + x^{36} + x^{34} + x^{33} + x^{30}, \\
p_3(x) &= x^{114} + x^{112} + x^{111} + x^{109} + x^{108} + x^{106} + x^{104} + x^{103} + x^{100} + x^{98} \\
&\quad + x^{82} + x^{80} + x^{79} + x^{77} + x^{76} + x^{69} + x^{64} + x^{63} + x^{60} + x^{58} + x^{34} \\
&\quad + x^{32} + x^{31} + x^{29} + x^{28} + x^{26} + x^{24} + x^{23} + x^{20} + x^{18},
\end{aligned}$$

$$\begin{aligned}
p_6(x) &= x^{116} + x^{110} + x^{108} + x^{104} + x^{102} + x^{94} + x^{92} + x^{90} + x^{84} + x^{82} + x^{80} \\
&\quad + x^{78} + x^{76} + x^{72} + x^{66} + x^{64} + x^{62} + x^{60} + x^{58} + x^{44} + x^{42} + x^{38} \\
&\quad + x^{36} + x^{22} + x^{16} + x^{12}, \\
p_9(x) &= x^{118} + x^{116} + x^{115} + x^{114} + x^{113} + x^{112} + x^{111} + x^{110} + x^{107} + x^{106} \\
&\quad + x^{104} + x^{100} + x^{99} + x^{98} + x^{97} + x^{96} + x^{95} + x^{94} + x^{91} + x^{90} + x^{88} \\
&\quad + x^{86} + x^{70} + x^{68} + x^{67} + x^{66} + x^{65} + x^{64} + x^{63} + x^{62} + x^{59} + x^{58} \\
&\quad + x^{56} + x^{52} + x^{51} + x^{50} + x^{49} + x^{48} + x^{47} + x^{46} + x^{43} + x^{42} + x^{40} \\
&\quad + x^{38} + x^{22} + x^{20} + x^{19} + x^{18} + x^{17} + x^{16} + x^{15} + x^{14} + x^{11} + x^{10} \\
&\quad + x^{8} + x^{6}, \\
p_{12}(x) &= x^{120} + x^{116} + x^{108} + x^{100} + x^{96} + x^{92} + x^{88} + x^{80} + x^{72} + x^{68} + x^{60} \\
&\quad + x^{52} + x^{48} + x^{44} + x^{40} + x^{32} + x^{24} + x^{20} + x^{12} + x^{8} + 1,
\end{aligned}$$

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

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

$$\begin{aligned}
p_0(x) &= x^{126} + x^{124} + x^{120} + x^{115} + x^{114} + x^{110} + x^{106} + x^{103} + x^{102} + x^{100} \\
&\quad + x^{99} + x^{93} + x^{92} + x^{89} + x^{88} + x^{87} + x^{86} + x^{85} + x^{84} + x^{81} + x^{80} \\
&\quad + x^{77} + x^{75} + x^{72} + x^{71} + x^{70} + x^{69} + x^{68} + x^{67} + x^{64} + x^{62} + x^{61} \\
&\quad + x^{59} + x^{58} + x^{57} + x^{55} + x^{52} + x^{50} + x^{47} + x^{45} + x^{43} + x^{42} + x^{39} \\
&\quad + x^{38} + x^{36}, \\
p_3(x) &= x^{124} + x^{123} + x^{122} + x^{119} + x^{118} + x^{116} + x^{115} + x^{114} + x^{111} + x^{109} \\
&\quad + x^{107} + x^{104} + x^{101} + x^{100} + x^{99} + x^{97} + x^{95} + x^{94} + x^{91} + x^{89} \\
&\quad + x^{87} + x^{84} + x^{83} + x^{80} + x^{78} + x^{77} + x^{75} + x^{73} + x^{72} + x^{69} + x^{68} \\
&\quad + x^{67} + x^{66} + x^{65} + x^{63} + x^{59} + x^{56} + x^{52} + x^{51} + x^{50} + x^{49} + x^{47} \\
&\quad + x^{45} + x^{44} + x^{40} + x^{39} + x^{37} + x^{36} + x^{35} + x^{32} + x^{29} + x^{28} + x^{27} \\
&\quad + x^{23} + x^{22} + x^{20}, \\
p_6(x) &= x^{124} + x^{123} + x^{122} + x^{119} + x^{118} + x^{116} + x^{115} + x^{111} + x^{110} + x^{109} \\
&\quad + x^{108} + x^{107} + x^{103} + x^{97} + x^{95} + x^{94} + x^{91} + x^{90} + x^{89} + x^{85} + x^{83} \\
&\quad + x^{79} + x^{78} + x^{76} + x^{74} + x^{73} + x^{71} + x^{70} + x^{68} + x^{67} + x^{65} + x^{64} \\
&\quad + x^{63} + x^{60} + x^{58} + x^{56} + x^{55} + x^{53} + x^{51} + x^{50} + x^{49} + x^{48} + x^{47} \\
&\quad + x^{45} + x^{42} + x^{36} + x^{35} + x^{34} + x^{32} + x^{30} + x^{29} + x^{27} + x^{24} + x^{21} \\
&\quad + x^{14} + x^{4} + x^{3} + 1, \\
p_9(x) &= x^{124} + x^{123} + x^{119} + x^{115} + x^{112} + x^{104} + x^{103} + x^{99} + x^{96} + x^{92} \\
&\quad + x^{91} + x^{88} + x^{76} + x^{75} + x^{71} + x^{67} + x^{64} + x^{56} + x^{55} + x^{51} + x^{48} \\
&\quad + x^{44} + x^{43} + x^{40} + x^{28} + x^{27} + x^{23} + x^{19} + x^{16} + x^{12} + x^{11} + x^{8}, \\
p_{12}(x) &= x^{124} + x^{123} + x^{119} + x^{116} + x^{112} + x^{111} + x^{108} + x^{104} + x^{103} + x^{99} \\
&\quad + x^{95} + x^{91} + x^{88} + x^{84} + x^{83} + x^{80} + x^{76} + x^{75} + x^{71} + x^{68} + x^{64}
\end{aligned}$$

$$+x^{63}+x^{60}+x^{56}+x^{55}+x^{51}+x^{47}+x^{43}+x^{40}+x^{36}+x^{35}+x^{32}$$
$$+x^{28}+x^{27}+x^{23}+x^{20}+x^{16}+x^{15}+x^{11}+x^{8}+x^{4}+x^{3}+1,$$

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

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]	769	[1265, 1266]	1538	[1078, 2086]	2307	[2482, 1332]
1	[3, 4]	770	[1106, 1056]	1539	[2139, 2140]	2308	[1646, 2748]
2	[5, 6]	771	[1267, 1268]	1540	[2141, 968]	2309	[2749, 1803]
3	[7, 8]	772	[1269, 1270]	1541	[2142, 917]	2310	[571, 2558]
4	[9, 10]	773	[1271, 1272]	1542	[2143, 2144]	2311	[493, 1621]
5	[11, 12]	774	[1273, 1201]	1543	[285, 330]	2312	[1846, 458]
6	[13, 14]	775	[1274, 1275]	1544	[2145, 2100]	2313	[663, 1657]
7	[15, 16]	776	[1276, 1048]	1545	[2146, 886]	2314	[2750, 684]
8	[17, 18]	777	[1174, 1277]	1546	[2147, 2010]	2315	[1644, 2751]
9	[19, 20]	778	[1278, 1279]	1547	[2148, 1963]	2316	[2752, 705]
10	[21, 22]	779	[1280, 958]	1548	[2149, 297]	2317	[1505, 453]
11	[23, 24]	780	[355, 1281]	1549	[2150, 1189]	2318	[1368, 188]
12	[25, 26]	781	[1282, 1154]	1550	[111, 2151]	2319	[2753, 2451]
13	[27, 28]	782	[1283, 1284]	1551	[1240, 363]	2320	[2726, 2510]
14	[29, 30]	783	[998, 1229]	1552	[2152, 984]	2321	[2754, 2755]
15	[31, 32]	784	[1285, 1286]	1553	[2153, 2154]	2322	[2756, 2477]
16	[33, 34]	785	[1287, 1288]	1554	[2155, 2156]	2323	[707, 2641]
17	[35, 36]	786	[1226, 1289]	1555	[2157, 2158]	2324	[1657, 2725]
18	[37, 38]	787	[119, 1290]	1556	[2159, 2160]	2325	[1495, 524]
19	[39, 40]	788	[1291, 1292]	1557	[73, 2161]	2326	[210, 1665]
20	[41, 42]	789	[1293, 1294]	1558	[2162, 374]	2327	[1360, 2475]
21	[43, 44]	790	[1295, 1263]	1559	[2163, 2164]	2328	[2467, 2757]
22	[45, 46]	791	[1296, 1297]	1560	[917, 2165]	2329	[1759, 1354]
23	[47, 48]	792	[1298, 1065]	1561	[2008, 2166]	2330	[2758, 2759]
24	[49, 50]	793	[1299, 378]	1562	[2167, 2168]	2331	[2760, 1827]
25	[51, 52]	794	[1209, 1156]	1563	[2169, 2170]	2332	[2761, 1458]
26	[53, 54]	795	[88, 79]	1564	[1255, 25]	2333	[679, 1778]
27	[55, 56]	796	[90, 314]	1565	[1973, 94]	2334	[2506, 1582]
28	[57, 58]	797	[1300, 1301]	1566	[2171, 1083]	2335	[2762, 237]
29	[59, 60]	798	[1060, 1138]	1567	[2172, 74]	2336	[1806, 2676]
30	[61, 62]	799	[1302, 1303]	1568	[2173, 2133]	2337	[2621, 2763]
31	[63, 64]	800	[1304, 1194]	1569	[2063, 1891]	2338	[631, 2764]
32	[65, 66]	801	[884, 923]	1570	[2026, 2174]	2339	[2765, 2633]
33	[67, 68]	802	[1305, 1306]	1571	[2175, 1058]	2340	[1879, 1613]
34	[69, 70]	803	[1307, 1308]	1572	[2176, 2177]	2341	[2766, 692]
35	[71, 72]	804	[1309, 1310]	1573	[2178, 2179]	2342	[1784, 2430]

36	[73, 74]	805	[686, 1311]	1574	[1036, 808]	2343	[743, 1497]
37	[75, 76]	806	[1312, 57]	1575	[2180, 2143]	2344	[2767, 2715]
38	[77, 78]	807	[1313, 1314]	1576	[934, 2181]	2345	[599, 1866]
39	[79, 80]	808	[1315, 1316]	1577	[1139, 921]	2346	[2648, 2533]
40	[81, 82]	809	[1317, 473]	1578	[2182, 2183]	2347	[1573, 1839]
41	[83, 84]	810	[1318, 1319]	1579	[2184, 2185]	2348	[765, 650]
42	[85, 86]	811	[48, 1320]	1580	[1026, 910]	2349	[463, 1343]
43	[87, 88]	812	[1321, 631]	1581	[1008, 2171]	2350	[2733, 1711]
44	[89, 90]	813	[1322, 614]	1582	[2186, 2187]	2351	[2602, 2768]
45	[91, 92]	814	[1323, 1324]	1583	[4, 1160]	2352	[1785, 2744]
46	[93, 94]	815	[1325, 1326]	1584	[2188, 1086]	2353	[1580, 594]
47	[95, 96]	816	[1327, 683]	1585	[2189, 2090]	2354	[144, 585]
48	[97, 98]	817	[778, 1328]	1586	[1194, 904]	2355	[2769, 1554]
49	[99, 100]	818	[1329, 13]	1587	[944, 2190]	2356	[1329, 543]
50	[70, 101]	819	[1330, 1331]	1588	[2102, 2191]	2357	[510, 2464]
51	[102, 103]	820	[1332, 49]	1589	[2192, 2193]	2358	[2701, 1476]
52	[104, 105]	821	[1333, 798]	1590	[2044, 919]	2359	[2770, 2480]
53	[106, 107]	822	[1334, 575]	1591	[2194, 2195]	2360	[2771, 2677]
54	[108, 109]	823	[520, 1335]	1592	[2196, 2197]	2361	[731, 1467]
55	[110, 111]	824	[1336, 1337]	1593	[1282, 2198]	2362	[2741, 2772]
56	[112, 5]	825	[1338, 1339]	1594	[2199, 1109]	2363	[160, 629]
57	[113, 114]	826	[1340, 139]	1595	[2200, 369]	2364	[2636, 2439]
58	[115, 116]	827	[467, 1341]	1596	[2201, 1015]	2365	[1384, 504]
59	[117, 118]	828	[1342, 1343]	1597	[2202, 1909]	2366	[2773, 2774]
60	[119, 120]	829	[32, 1344]	1598	[1039, 416]	2367	[561, 506]
61	[121, 70]	830	[1345, 1346]	1599	[263, 2203]	2368	[2480, 2775]
62	[122, 123]	831	[1347, 1348]	1600	[1119, 2204]	2369	[1765, 2776]
63	[124, 125]	832	[1349, 135]	1601	[2188, 1148]	2370	[2777, 1549]
64	[126, 127]	833	[1350, 1351]	1602	[1066, 448]	2371	[167, 1485]
65	[128, 129]	834	[1352, 232]	1603	[909, 2205]	2372	[1840, 2425]
66	[130, 131]	835	[627, 1353]	1604	[406, 1216]	2373	[1815, 2522]
67	[132, 133]	836	[1354, 711]	1605	[807, 1046]	2374	[2724, 1596]
68	[134, 135]	837	[1355, 1356]	1606	[2206, 1932]	2375	[146, 2708]
69	[136, 137]	838	[1357, 687]	1607	[2060, 2191]	2376	[2778, 2779]
70	[138, 139]	839	[210, 646]	1608	[1037, 2207]	2377	[2780, 2781]
71	[140, 141]	840	[1358, 1358]	1609	[2208, 2209]	2378	[1632, 2782]
72	[142, 143]	841	[1359, 1360]	1610	[2210, 2148]	2379	[2783, 1607]
73	[144, 145]	842	[1361, 1362]	1611	[2211, 2192]	2380	[2784, 1563]
74	[146, 147]	843	[1363, 1360]	1612	[2212, 2213]	2381	[2785, 1421]
75	[148, 149]	844	[1364, 1365]	1613	[2214, 2215]	2382	[2621, 1808]
76	[150, 151]	845	[581, 568]	1614	[275, 823]	2383	[560, 2786]
77	[152, 153]	846	[1366, 1367]	1615	[2216, 2217]	2384	[564, 2787]
78	[154, 155]	847	[1368, 1369]	1616	[2218, 1195]	2385	[1564, 11]
79	[156, 157]	848	[1370, 1371]	1617	[2219, 2220]	2386	[1376, 2788]

80	[158, 159]	849	[1372, 658]	1618	[2143, 276]	2387	[2789, 2717]
81	[160, 161]	850	[1373, 1374]	1619	[2221, 76]	2388	[1824, 2614]
82	[39, 162]	851	[682, 1375]	1620	[1168, 2222]	2389	[1660, 740]
83	[163, 164]	852	[171, 1376]	1621	[2223, 371]	2390	[2501, 1720]
84	[165, 166]	853	[1377, 1378]	1622	[111, 913]	2391	[2790, 793]
85	[167, 168]	854	[1379, 1380]	1623	[2224, 2098]	2392	[1438, 1715]
86	[169, 170]	855	[1381, 635]	1624	[2225, 1928]	2393	[1585, 215]
87	[171, 156]	856	[1382, 1383]	1625	[2226, 361]	2394	[2791, 2792]
88	[172, 158]	857	[1384, 1385]	1626	[271, 2227]	2395	[2611, 2711]
89	[173, 174]	858	[1386, 1387]	1627	[2228, 265]	2396	[1784, 521]
90	[175, 176]	859	[213, 1388]	1628	[2078, 1975]	2397	[2790, 1539]
91	[177, 178]	860	[564, 541]	1629	[2229, 288]	2398	[1429, 2672]
92	[58, 179]	861	[1389, 1373]	1630	[2230, 1145]	2399	[2433, 1592]
93	[180, 181]	862	[775, 1390]	1631	[2231, 2232]	2400	[1328, 703]
94	[182, 183]	863	[201, 1391]	1632	[2233, 406]	2401	[609, 164]
95	[184, 185]	864	[1392, 466]	1633	[2234, 367]	2402	[1474, 563]
96	[186, 187]	865	[1393, 154]	1634	[2235, 2064]	2403	[2657, 2682]
97	[188, 150]	866	[1394, 683]	1635	[886, 1063]	2404	[682, 2793]
98	[189, 190]	867	[1395, 1396]	1636	[2236, 1097]	2405	[2649, 735]
99	[191, 192]	868	[1397, 1398]	1637	[2237, 2238]	2406	[2794, 1376]
100	[193, 194]	869	[1399, 207]	1638	[2017, 1220]	2407	[2654, 1699]
101	[195, 196]	870	[746, 1400]	1639	[2239, 2240]	2408	[1810, 1395]
102	[197, 198]	871	[1401, 1402]	1640	[2241, 100]	2409	[1608, 1362]
103	[199, 200]	872	[1357, 771]	1641	[325, 272]	2410	[2795, 776]
104	[201, 202]	873	[32, 1403]	1642	[2242, 2243]	2411	[1804, 2680]
105	[203, 204]	874	[1404, 1405]	1643	[384, 836]	2412	[2796, 2450]
106	[205, 206]	875	[1406, 1407]	1644	[361, 2244]	2413	[718, 1572]
107	[207, 208]	876	[465, 1408]	1645	[1206, 1947]	2414	[2797, 1572]
108	[209, 210]	877	[223, 1409]	1646	[2245, 385]	2415	[2549, 2535]
109	[211, 12]	878	[1410, 1411]	1647	[246, 876]	2416	[1350, 216]
110	[212, 213]	879	[1412, 1413]	1648	[1218, 2246]	2417	[3, 946]
111	[214, 215]	880	[733, 1414]	1649	[2247, 1057]	2418	[2798, 2355]
112	[216, 217]	881	[203, 738]	1650	[1040, 345]	2419	[118, 2379]
113	[218, 219]	882	[1415, 724]	1651	[2248, 1013]	2420	[2799, 1977]
114	[220, 221]	883	[50, 1416]	1652	[1210, 2249]	2421	[2800, 1060]
115	[222, 223]	884	[1417, 1418]	1653	[1121, 2250]	2422	[245, 875]
116	[224, 225]	885	[1419, 777]	1654	[915, 2251]	2423	[2330, 874]
117	[226, 227]	886	[1351, 1420]	1655	[432, 2252]	2424	[2293, 2084]
118	[228, 229]	887	[1421, 1422]	1656	[2253, 2254]	2425	[2801, 839]
119	[230, 231]	888	[1423, 1424]	1657	[2255, 2256]	2426	[2802, 895]
120	[232, 233]	889	[1425, 1426]	1658	[965, 1901]	2427	[2803, 1101]
121	[234, 195]	890	[585, 539]	1659	[946, 2257]	2428	[2036, 2280]
122	[235, 236]	891	[1427, 726]	1660	[1176, 2258]	2429	[2804, 827]
123	[237, 238]	892	[41, 1428]	1661	[2259, 2110]	2430	[2805, 2275]

124	[239, 240]	893	[1429, 1372]	1662	[2260, 1949]	2431	[2806, 1010]
125	[241, 242]	894	[1430, 1431]	1663	[976, 2261]	2432	[1169, 1018]
126	[243, 244]	895	[1432, 716]	1664	[1883, 372]	2433	[2807, 2093]
127	[245, 246]	896	[1433, 1351]	1665	[2262, 1927]	2434	[2808, 2809]
128	[247, 248]	897	[1434, 630]	1666	[403, 1133]	2435	[1197, 2810]
129	[249, 250]	898	[1435, 1436]	1667	[2263, 1959]	2436	[304, 1186]
130	[251, 252]	899	[1437, 525]	1668	[1057, 408]	2437	[2811, 2812]
131	[100, 253]	900	[1438, 639]	1669	[2264, 2265]	2438	[2813, 2085]
132	[254, 255]	901	[218, 143]	1670	[2266, 1075]	2439	[2116, 1094]
133	[256, 257]	902	[1439, 1440]	1671	[2267, 1179]	2440	[2814, 810]
134	[258, 259]	903	[1441, 1442]	1672	[2128, 1102]	2441	[2803, 2128]
135	[260, 261]	904	[1443, 1444]	1673	[960, 444]	2442	[2815, 2816]
136	[262, 263]	905	[1445, 1379]	1674	[2268, 284]	2443	[1127, 2817]
137	[264, 265]	906	[525, 1446]	1675	[1087, 2269]	2444	[2818, 2819]
138	[266, 267]	907	[1447, 1448]	1676	[1128, 2270]	2445	[2162, 2307]
139	[268, 269]	908	[1449, 1450]	1677	[2049, 338]	2446	[1120, 1036]
140	[270, 271]	909	[1451, 530]	1678	[432, 927]	2447	[2376, 828]
141	[272, 273]	910	[1452, 1453]	1679	[2271, 2233]	2448	[888, 915]
142	[274, 275]	911	[1454, 1455]	1680	[1895, 2123]	2449	[427, 2820]
143	[276, 277]	912	[1456, 183]	1681	[2050, 2272]	2450	[2821, 352]
144	[278, 279]	913	[213, 713]	1682	[2128, 2273]	2451	[850, 873]
145	[280, 281]	914	[1457, 1458]	1683	[2274, 2275]	2452	[1932, 2822]
146	[282, 283]	915	[1459, 1460]	1684	[250, 2276]	2453	[1183, 1988]
147	[284, 285]	916	[1461, 1462]	1685	[2277, 1258]	2454	[1897, 2823]
148	[286, 287]	917	[1463, 1464]	1686	[2278, 431]	2455	[248, 340]
149	[288, 289]	918	[1465, 1466]	1687	[2279, 2280]	2456	[2013, 2099]
150	[290, 291]	919	[1467, 601]	1688	[291, 281]	2457	[2824, 2009]
151	[292, 293]	920	[1468, 1469]	1689	[1919, 2281]	2458	[2825, 372]
152	[294, 295]	921	[1308, 221]	1690	[2282, 1042]	2459	[2131, 2826]
153	[296, 297]	922	[204, 1470]	1691	[1943, 2065]	2460	[1932, 1272]
154	[298, 299]	923	[1471, 1472]	1692	[322, 2121]	2461	[2089, 315]
155	[300, 301]	924	[1473, 1435]	1693	[828, 1116]	2462	[865, 263]
156	[302, 303]	925	[1474, 1409]	1694	[449, 1989]	2463	[1936, 299]
157	[304, 305]	926	[1475, 1476]	1695	[2187, 353]	2464	[2827, 2160]
158	[306, 307]	927	[771, 613]	1696	[2283, 2112]	2465	[1942, 2153]
159	[308, 309]	928	[1477, 1478]	1697	[18, 451]	2466	[320, 284]
160	[310, 311]	929	[1479, 1480]	1698	[2284, 106]	2467	[2069, 918]
161	[312, 313]	930	[543, 1481]	1699	[2285, 278]	2468	[2247, 407]
162	[314, 315]	931	[587, 796]	1700	[1171, 2286]	2469	[1978, 256]
163	[316, 317]	932	[1482, 1395]	1701	[1191, 1970]	2470	[2828, 2829]
164	[318, 319]	933	[1483, 1484]	1702	[1966, 2287]	2471	[2830, 2831]
165	[320, 321]	934	[52, 1485]	1703	[2288, 282]	2472	[2832, 1208]
166	[322, 323]	935	[1486, 784]	1704	[1273, 2289]	2473	[1951, 1110]
167	[324, 309]	936	[1487, 1389]	1705	[2144, 2290]	2474	[2833, 2834]

168	[325, 326]	937	[1335, 1488]	1706	[1099, 2291]	2475	[1955, 2327]
169	[327, 328]	938	[1489, 1490]	1707	[269, 316]	2476	[2835, 1129]
170	[329, 330]	939	[1491, 1492]	1708	[2292, 1953]	2477	[2204, 2138]
171	[331, 304]	940	[570, 802]	1709	[2293, 1267]	2478	[2836, 2322]
172	[332, 308]	941	[14, 1493]	1710	[2294, 2295]	2479	[2837, 2371]
173	[333, 334]	942	[1494, 598]	1711	[2296, 2297]	2480	[2838, 990]
174	[335, 336]	943	[1495, 1496]	1712	[2298, 2299]	2481	[1291, 1913]
175	[337, 338]	944	[1497, 1498]	1713	[2212, 2209]	2482	[2826, 2306]
176	[339, 340]	945	[1499, 1500]	1714	[1203, 1134]	2483	[413, 2839]
177	[341, 342]	946	[1501, 1502]	1715	[2300, 2301]	2484	[1155, 961]
178	[343, 344]	947	[1503, 1504]	1716	[2302, 2303]	2485	[870, 969]
179	[345, 346]	948	[1505, 201]	1717	[2304, 2305]	2486	[2104, 307]
180	[347, 348]	949	[1506, 1472]	1718	[1125, 2306]	2487	[2126, 2840]
181	[349, 350]	950	[1507, 1508]	1719	[2136, 2225]	2488	[2798, 1925]
182	[351, 352]	951	[128, 1450]	1720	[1959, 2307]	2489	[2167, 2841]
183	[353, 354]	952	[1509, 476]	1721	[2308, 239]	2490	[2011, 2842]
184	[5, 355]	953	[738, 1470]	1722	[2309, 1059]	2491	[2843, 436]
185	[356, 357]	954	[1510, 1511]	1723	[2310, 2053]	2492	[2821, 1269]
186	[358, 359]	955	[1512, 488]	1724	[2038, 2311]	2493	[932, 80]
187	[360, 361]	956	[1431, 224]	1725	[2312, 1286]	2494	[2264, 336]
188	[362, 363]	957	[1513, 1514]	1726	[941, 2004]	2495	[384, 2005]
189	[364, 365]	958	[1515, 1373]	1727	[253, 1917]	2496	[2414, 2193]
190	[366, 367]	959	[1369, 789]	1728	[1216, 1192]	2497	[86, 2844]
191	[368, 369]	960	[1516, 786]	1729	[2313, 1087]	2498	[1276, 333]
192	[370, 371]	961	[1517, 1518]	1730	[1196, 378]	2499	[2845, 1259]
193	[372, 373]	962	[1519, 1461]	1731	[981, 2314]	2500	[2846, 2189]
194	[374, 375]	963	[1520, 1521]	1732	[1107, 1022]	2501	[2173, 1985]
195	[261, 376]	964	[1522, 681]	1733	[2315, 2168]	2502	[2847, 1062]
196	[377, 72]	965	[1523, 1524]	1734	[83, 2140]	2503	[1985, 2848]
197	[378, 345]	966	[1525, 1369]	1735	[2316, 411]	2504	[360, 996]
198	[379, 380]	967	[1428, 1526]	1736	[253, 2317]	2505	[108, 2849]
199	[381, 382]	968	[1527, 1374]	1737	[331, 1150]	2506	[2402, 2850]
200	[383, 384]	969	[1528, 759]	1738	[2318, 2055]	2507	[1250, 1227]
201	[385, 386]	970	[1400, 610]	1739	[2319, 2302]	2508	[990, 1898]
202	[387, 388]	971	[1409, 564]	1740	[240, 2188]	2509	[283, 2234]
203	[389, 390]	972	[1529, 1530]	1741	[1109, 2320]	2510	[400, 1114]
204	[391, 392]	973	[1531, 1532]	1742	[2321, 1260]	2511	[315, 1968]
205	[393, 394]	974	[161, 1533]	1743	[1032, 2064]	2512	[314, 1967]
206	[395, 396]	975	[1383, 785]	1744	[1918, 2322]	2513	[2851, 2852]
207	[293, 397]	976	[1534, 1535]	1745	[2171, 2323]	2514	[864, 1031]
208	[398, 399]	977	[1536, 1537]	1746	[1195, 269]	2515	[2515, 2515]
209	[400, 401]	978	[1353, 1538]	1747	[2324, 2325]	2516	[2853, 2854]
210	[402, 403]	979	[1539, 1540]	1748	[2225, 994]	2517	[313, 97]
211	[404, 405]	980	[1541, 580]	1749	[2326, 2116]	2518	[2802, 2330]

212	[406, 243]	981	[1542, 1543]	1750	[906, 855]	2519	[2855, 2856]
213	[407, 408]	982	[1544, 1501]	1751	[2240, 2327]	2520	[2857, 1966]
214	[343, 409]	983	[758, 1346]	1752	[1208, 1095]	2521	[2114, 2858]
215	[410, 411]	984	[1545, 1546]	1753	[2328, 278]	2522	[2859, 388]
216	[299, 412]	985	[1547, 1525]	1754	[2329, 1996]	2523	[330, 1982]
217	[413, 414]	986	[719, 1548]	1755	[2330, 956]	2524	[2860, 253]
218	[415, 416]	987	[1549, 721]	1756	[1096, 1962]	2525	[2861, 2862]
219	[417, 418]	988	[1550, 1551]	1757	[1262, 448]	2526	[2815, 2179]
220	[419, 420]	989	[1552, 1553]	1758	[2331, 2332]	2527	[2828, 105]
221	[421, 373]	990	[1554, 572]	1759	[2333, 1188]	2528	[2863, 1052]
222	[422, 423]	991	[1555, 1556]	1760	[1041, 2334]	2529	[2864, 1181]
223	[424, 425]	992	[1557, 1522]	1761	[2335, 122]	2530	[1298, 1261]
224	[426, 316]	993	[197, 58]	1762	[2336, 2060]	2531	[2865, 1209]
225	[427, 428]	994	[1558, 1559]	1763	[2138, 1037]	2532	[2283, 1008]
226	[429, 430]	995	[1560, 1353]	1764	[2271, 987]	2533	[2866, 1289]
227	[431, 432]	996	[1561, 511]	1765	[2337, 1001]	2534	[1225, 2866]
228	[433, 434]	997	[670, 1448]	1766	[2338, 2249]	2535	[867, 2867]
229	[435, 436]	998	[1353, 1562]	1767	[2189, 353]	2536	[361, 997]
230	[437, 438]	999	[727, 1563]	1768	[2266, 2339]	2537	[2868, 2066]
231	[319, 439]	1000	[1564, 211]	1769	[387, 2340]	2538	[64, 2869]
232	[440, 441]	1001	[1565, 1566]	1770	[922, 1220]	2539	[438, 2870]
233	[442, 432]	1002	[1567, 1568]	1771	[932, 2341]	2540	[1064, 2259]
234	[443, 377]	1003	[1569, 510]	1772	[2342, 2047]	2541	[2871, 2237]
235	[444, 445]	1004	[1570, 1571]	1773	[2343, 344]	2542	[281, 2380]
236	[446, 447]	1005	[1572, 1573]	1774	[2344, 2345]	2543	[2872, 252]
237	[448, 449]	1006	[1574, 1556]	1775	[2346, 860]	2544	[2312, 2873]
238	[450, 451]	1007	[1575, 1576]	1776	[1006, 2347]	2545	[2874, 2875]
239	[452, 453]	1008	[1577, 1578]	1777	[240, 1085]	2546	[966, 2876]
240	[454, 455]	1009	[1579, 1580]	1778	[2348, 2349]	2547	[2877, 2125]
241	[456, 457]	1010	[1328, 736]	1779	[1994, 842]	2548	[2799, 293]
242	[458, 459]	1011	[1581, 1582]	1780	[2000, 2076]	2549	[2064, 2878]
243	[460, 461]	1012	[1583, 676]	1781	[6, 1096]	2550	[2240, 2879]
244	[462, 463]	1013	[153, 1584]	1782	[395, 2350]	2551	[2088, 314]
245	[464, 465]	1014	[1585, 1586]	1783	[2351, 1930]	2552	[1145, 2880]
246	[466, 467]	1015	[164, 518]	1784	[2054, 916]	2553	[916, 2344]
247	[468, 469]	1016	[779, 548]	1785	[2352, 2353]	2554	[1956, 2101]
248	[470, 471]	1017	[1587, 1588]	1786	[823, 2354]	2555	[1084, 2881]
249	[472, 473]	1018	[1589, 1590]	1787	[398, 2282]	2556	[2882, 2239]
250	[474, 475]	1019	[1591, 197]	1788	[247, 339]	2557	[2117, 1900]
251	[476, 477]	1020	[1592, 225]	1789	[2355, 2356]	2558	[2883, 323]
252	[478, 479]	1021	[1593, 686]	1790	[433, 925]	2559	[2377, 2199]
253	[192, 480]	1022	[476, 792]	1791	[342, 975]	2560	[2813, 1078]
254	[481, 482]	1023	[624, 1545]	1792	[831, 1132]	2561	[107, 970]
255	[483, 484]	1024	[1440, 1320]	1793	[2357, 1239]	2562	[2406, 2884]

256	[485, 486]	1025	[1594, 1595]	1794	[2326, 1093]	2563	[1045, 266]
257	[487, 488]	1026	[38, 191]	1795	[435, 2358]	2564	[987, 406]
258	[489, 490]	1027	[1596, 1372]	1796	[2359, 2303]	2565	[2885, 1999]
259	[491, 492]	1028	[1597, 1598]	1797	[2360, 2192]	2566	[2886, 2015]
260	[493, 494]	1029	[1599, 1600]	1798	[2361, 2044]	2567	[2857, 971]
261	[495, 496]	1030	[1601, 680]	1799	[870, 107]	2568	[1131, 2887]
262	[497, 498]	1031	[621, 1602]	1800	[1242, 1142]	2569	[291, 1124]
263	[179, 499]	1032	[628, 1538]	1801	[2362, 2353]	2570	[2888, 2889]
264	[500, 501]	1033	[1603, 1604]	1802	[1189, 2363]	2571	[2811, 2197]
265	[502, 218]	1034	[1352, 1486]	1803	[2364, 1906]	2572	[1928, 2808]
266	[503, 504]	1035	[1369, 150]	1804	[439, 2365]	2573	[1885, 283]
267	[505, 506]	1036	[1605, 1606]	1805	[271, 1081]	2574	[1165, 2054]
268	[507, 508]	1037	[1607, 1608]	1806	[2322, 250]	2575	[864, 2890]
269	[509, 510]	1038	[612, 747]	1807	[2366, 2367]	2576	[2808, 2056]
270	[511, 512]	1039	[1609, 1590]	1808	[1052, 2181]	2577	[2891, 1950]
271	[513, 514]	1040	[1610, 1611]	1809	[2368, 2133]	2578	[1173, 2031]
272	[515, 516]	1041	[1612, 1613]	1810	[2090, 2019]	2579	[2892, 1912]
273	[517, 518]	1042	[143, 1614]	1811	[2070, 960]	2580	[1194, 2218]
274	[519, 520]	1043	[1615, 1616]	1812	[2108, 835]	2581	[2394, 2834]
275	[521, 522]	1044	[1617, 1618]	1813	[2369, 2359]	2582	[2087, 2893]
276	[523, 524]	1045	[161, 1619]	1814	[2370, 2371]	2583	[960, 358]
277	[525, 526]	1046	[1620, 1621]	1815	[2372, 2373]	2584	[418, 2863]
278	[527, 528]	1047	[56, 1622]	1816	[1057, 2374]	2585	[1993, 2080]
279	[529, 530]	1048	[1623, 632]	1817	[2375, 2237]	2586	[21, 1298]
280	[531, 532]	1049	[578, 1452]	1818	[2376, 1115]	2587	[392, 2799]
281	[533, 534]	1050	[181, 1624]	1819	[2175, 2309]	2588	[808, 2207]
282	[535, 536]	1051	[1625, 672]	1820	[2377, 1950]	2589	[2894, 2895]
283	[537, 538]	1052	[1626, 1627]	1821	[6, 1281]	2590	[940, 1288]
284	[145, 539]	1053	[1491, 1628]	1822	[923, 2139]	2591	[2853, 311]
285	[540, 541]	1054	[458, 175]	1823	[1892, 2052]	2592	[2103, 1092]
286	[542, 543]	1055	[1629, 190]	1824	[2378, 2277]	2593	[1204, 1135]
287	[544, 545]	1056	[1630, 736]	1825	[966, 1902]	2594	[120, 2896]
288	[546, 547]	1057	[1631, 1632]	1826	[933, 2379]	2595	[2897, 1230]
289	[548, 549]	1058	[1633, 1380]	1827	[2380, 1100]	2596	[2031, 1277]
290	[550, 533]	1059	[35, 1584]	1828	[2381, 2382]	2597	[1117, 2898]
291	[551, 552]	1060	[756, 1634]	1829	[1078, 806]	2598	[1908, 879]
292	[553, 554]	1061	[1635, 1636]	1830	[373, 328]	2599	[289, 2200]
293	[555, 556]	1062	[1335, 1637]	1831	[1033, 2164]	2600	[281, 1099]
294	[557, 558]	1063	[777, 1638]	1832	[2383, 953]	2601	[930, 2899]
295	[559, 560]	1064	[737, 1583]	1833	[2384, 2385]	2602	[2351, 1978]
296	[561, 562]	1065	[44, 795]	1834	[2114, 1954]	2603	[2900, 1292]
297	[563, 564]	1066	[1639, 1640]	1835	[2386, 887]	2604	[2901, 1245]
298	[565, 566]	1067	[1641, 1635]	1836	[1000, 108]	2605	[2864, 1297]
299	[567, 568]	1068	[1532, 146]	1837	[2387, 2388]	2606	[2308, 1250]

300	[569, 570]	1069	[1642, 1643]	1838	[2344, 2165]	2607	[2346, 2902]
301	[571, 572]	1070	[1644, 1645]	1839	[2177, 2147]	2608	[2220, 1103]
302	[573, 574]	1071	[483, 1434]	1840	[817, 1997]	2609	[2404, 1961]
303	[575, 576]	1072	[459, 1646]	1841	[1144, 2267]	2610	[1222, 887]
304	[577, 578]	1073	[1647, 552]	1842	[2389, 2095]	2611	[945, 4]
305	[579, 580]	1074	[1648, 1649]	1843	[2390, 1060]	2612	[305, 1187]
306	[581, 582]	1075	[1332, 62]	1844	[2082, 1191]	2613	[2302, 2903]
307	[583, 136]	1076	[42, 1650]	1845	[2119, 2391]	2614	[1979, 940]
308	[584, 585]	1077	[796, 1651]	1846	[2265, 2097]	2615	[1994, 2882]
309	[586, 136]	1078	[730, 1313]	1847	[366, 2392]	2616	[2904, 814]
310	[587, 588]	1079	[1434, 1652]	1848	[259, 386]	2617	[2031, 2905]
311	[589, 590]	1080	[1653, 1628]	1849	[93, 2393]	2618	[1116, 2183]
312	[591, 592]	1081	[464, 528]	1850	[2394, 2395]	2619	[1292, 2906]
313	[593, 189]	1082	[1576, 1618]	1851	[950, 2396]	2620	[1265, 2907]
314	[174, 594]	1083	[1578, 525]	1852	[2397, 2022]	2621	[430, 2139]
315	[176, 595]	1084	[1654, 1495]	1853	[2398, 1924]	2622	[1181, 2908]
316	[508, 596]	1085	[453, 1391]	1854	[2399, 2301]	2623	[2389, 2909]
317	[597, 598]	1086	[455, 744]	1855	[2282, 825]	2624	[969, 2910]
318	[599, 600]	1087	[1655, 1656]	1856	[2400, 2396]	2625	[846, 2911]
319	[236, 601]	1088	[1657, 643]	1857	[2398, 2401]	2626	[944, 897]
320	[602, 603]	1089	[1658, 1323]	1858	[308, 889]	2627	[2912, 2867]
321	[604, 605]	1090	[1659, 719]	1859	[2402, 863]	2628	[1928, 995]
322	[183, 606]	1091	[1660, 605]	1860	[1933, 2403]	2629	[2913, 2150]
323	[607, 155]	1092	[1661, 1662]	1861	[2404, 1117]	2630	[2914, 1159]
324	[608, 576]	1093	[1663, 1664]	1862	[2159, 2405]	2631	[2387, 2276]
325	[609, 517]	1094	[1665, 1666]	1863	[2406, 2238]	2632	[920, 902]
326	[558, 610]	1095	[1667, 1668]	1864	[118, 2407]	2633	[2915, 1916]
327	[611, 612]	1096	[1669, 1670]	1865	[1887, 2408]	2634	[2916, 2856]
328	[613, 614]	1097	[1671, 1553]	1866	[2157, 2409]	2635	[316, 2007]
329	[615, 616]	1098	[468, 1672]	1867	[1958, 2162]	2636	[2917, 1236]
330	[605, 617]	1099	[552, 1673]	1868	[2410, 1076]	2637	[2918, 2204]
331	[618, 579]	1100	[1674, 146]	1869	[319, 2120]	2638	[2071, 2919]
332	[619, 586]	1101	[1675, 1386]	1870	[2110, 1940]	2639	[2278, 442]
333	[620, 621]	1102	[557, 1400]	1871	[2193, 2035]	2640	[1148, 832]
334	[622, 623]	1103	[1676, 1677]	1872	[888, 1300]	2641	[2384, 2382]
335	[170, 624]	1104	[1638, 1328]	1873	[2210, 391]	2642	[2223, 2920]
336	[625, 626]	1105	[647, 1678]	1874	[2102, 2411]	2643	[95, 990]
337	[627, 628]	1106	[1679, 1631]	1875	[1161, 1294]	2644	[2347, 2154]
338	[149, 629]	1107	[610, 1680]	1876	[449, 2412]	2645	[985, 965]
339	[484, 630]	1108	[1681, 1525]	1877	[2216, 380]	2646	[1290, 1112]
340	[631, 632]	1109	[1682, 1683]	1878	[2084, 2413]	2647	[2921, 1080]
341	[633, 634]	1110	[1684, 1363]	1879	[2414, 2034]	2648	[2922, 2923]
342	[635, 636]	1111	[1685, 1686]	1880	[1998, 2415]	2649	[2211, 2414]
343	[637, 638]	1112	[1687, 1688]	1881	[1069, 2349]	2650	[2882, 843]

344	[639, 640]	1113	[1689, 1690]	1882	[2416, 1925]	2651	[2153, 2924]
345	[641, 642]	1114	[1691, 785]	1883	[2417, 688]	2652	[300, 2925]
346	[643, 644]	1115	[1692, 1645]	1884	[2418, 2419]	2653	[30, 1125]
347	[645, 646]	1116	[1341, 1693]	1885	[151, 1688]	2654	[1136, 2926]
348	[647, 127]	1117	[238, 1694]	1886	[2420, 1379]	2655	[2307, 375]
349	[648, 649]	1118	[1695, 1456]	1887	[643, 2421]	2656	[2310, 1165]
350	[650, 651]	1119	[1696, 1697]	1888	[1376, 157]	2657	[336, 2927]
351	[652, 653]	1120	[1698, 1699]	1889	[2422, 497]	2658	[2086, 807]
352	[654, 655]	1121	[1700, 1701]	1890	[2423, 2424]	2659	[2871, 2406]
353	[656, 657]	1122	[1702, 1571]	1891	[1798, 1589]	2660	[2285, 364]
354	[658, 659]	1123	[1527, 468]	1892	[2425, 2426]	2661	[1262, 928]
355	[660, 661]	1124	[1703, 1674]	1893	[2427, 2428]	2662	[2846, 2187]
356	[662, 140]	1125	[1413, 590]	1894	[2429, 1882]	2663	[2914, 2928]
357	[663, 664]	1126	[1704, 1319]	1895	[2430, 2431]	2664	[67, 938]
358	[665, 666]	1127	[1705, 11]	1896	[1869, 10]	2665	[2309, 2929]
359	[667, 668]	1128	[1706, 1707]	1897	[1687, 2432]	2666	[2851, 2297]
360	[669, 670]	1129	[1708, 1608]	1898	[185, 780]	2667	[1068, 2930]
361	[671, 672]	1130	[1709, 1357]	1899	[1856, 1835]	2668	[2915, 920]
362	[673, 674]	1131	[1710, 1711]	1900	[2433, 224]	2669	[2399, 2931]
363	[675, 676]	1132	[1712, 1713]	1901	[2434, 2435]	2670	[2362, 2932]
364	[677, 678]	1133	[728, 1714]	1902	[1524, 1413]	2671	[2861, 882]
365	[679, 191]	1134	[1715, 640]	1903	[2436, 1759]	2672	[2933, 1117]
366	[536, 583]	1135	[1637, 1716]	1904	[2437, 1412]	2673	[313, 2087]
367	[680, 681]	1136	[1717, 1718]	1905	[2438, 1775]	2674	[804, 2016]
368	[547, 682]	1137	[1719, 181]	1906	[588, 39]	2675	[2934, 1279]
369	[683, 521]	1138	[1720, 1387]	1907	[2439, 747]	2676	[2935, 1219]
370	[684, 685]	1139	[1634, 204]	1908	[1761, 61]	2677	[1297, 1182]
371	[686, 556]	1140	[1721, 1722]	1909	[2440, 2441]	2678	[2874, 1098]
372	[687, 613]	1141	[1723, 1459]	1910	[2442, 1744]	2679	[264, 844]
373	[688, 689]	1142	[1724, 1725]	1911	[2443, 1512]	2680	[2318, 313]
374	[690, 691]	1143	[226, 1725]	1912	[183, 1378]	2681	[2936, 2904]
375	[692, 189]	1144	[1726, 1727]	1913	[2444, 1623]	2682	[1274, 1233]
376	[198, 179]	1145	[1728, 766]	1914	[1868, 2445]	2683	[332, 324]
377	[693, 694]	1146	[1729, 633]	1915	[2446, 2447]	2684	[818, 5]
378	[664, 643]	1147	[1339, 1730]	1916	[514, 765]	2685	[2236, 2874]
379	[695, 696]	1148	[1731, 1732]	1917	[194, 1830]	2686	[263, 78]
380	[233, 697]	1149	[1733, 1490]	1918	[1792, 2448]	2687	[2284, 870]
381	[185, 698]	1150	[1511, 1734]	1919	[2449, 2450]	2688	[2314, 2937]
382	[699, 700]	1151	[1735, 1432]	1920	[2451, 203]	2689	[1039, 2938]
383	[701, 702]	1152	[596, 689]	1921	[2452, 32]	2690	[2863, 934]
384	[703, 704]	1153	[1736, 1737]	1922	[680, 2453]	2691	[422, 1168]
385	[705, 706]	1154	[1428, 1650]	1923	[2454, 2455]	2692	[1071, 896]
386	[490, 38]	1155	[1738, 1519]	1924	[1746, 2456]	2693	[2012, 2098]
387	[707, 708]	1156	[1739, 1637]	1925	[2457, 2445]	2694	[294, 1044]

388	[200, 642]	1157	[1740, 35]	1926	[216, 1420]	2695	[1937, 988]
389	[709, 619]	1158	[1741, 1742]	1927	[580, 1560]	2696	[2174, 2939]
390	[710, 711]	1159	[572, 1463]	1928	[2458, 1822]	2697	[2888, 2107]
391	[712, 713]	1160	[8, 496]	1929	[2459, 2460]	2698	[2940, 89]
392	[714, 715]	1161	[1704, 1743]	1930	[2461, 1530]	2699	[1016, 288]
393	[716, 651]	1162	[701, 1744]	1931	[2438, 2462]	2700	[2913, 1188]
394	[717, 42]	1163	[1745, 1746]	1932	[1796, 1602]	2701	[249, 2387]
395	[718, 169]	1164	[1747, 455]	1933	[1481, 2463]	2702	[1302, 2363]
396	[719, 196]	1165	[1627, 1461]	1934	[2464, 682]	2703	[2241, 2860]
397	[720, 721]	1166	[1748, 1749]	1935	[1795, 621]	2704	[1191, 2941]
398	[722, 723]	1167	[1750, 1751]	1936	[1674, 741]	2705	[828, 2182]
399	[694, 724]	1168	[1464, 1752]	1937	[2465, 1552]	2706	[1004, 865]
400	[471, 587]	1169	[1559, 1753]	1938	[1386, 2466]	2707	[1292, 1914]
401	[725, 726]	1170	[1754, 746]	1939	[2467, 800]	2708	[2942, 2810]
402	[727, 728]	1171	[528, 1408]	1940	[1582, 1566]	2709	[2800, 2033]
403	[696, 664]	1172	[1555, 1755]	1941	[2468, 2469]	2710	[2943, 2944]
404	[729, 730]	1173	[1756, 1757]	1942	[492, 780]	2711	[1005, 1942]
405	[731, 236]	1174	[1758, 1759]	1943	[2470, 561]	2712	[880, 2376]
406	[732, 733]	1175	[1711, 625]	1944	[2471, 193]	2713	[393, 116]
407	[734, 735]	1176	[1760, 1761]	1945	[2472, 1464]	2714	[1920, 2367]
408	[736, 704]	1177	[1762, 1763]	1946	[2473, 2474]	2715	[2369, 2302]
409	[737, 675]	1178	[154, 1764]	1947	[1484, 1806]	2716	[1904, 980]
410	[738, 739]	1179	[1765, 1752]	1948	[1684, 1359]	2717	[2294, 2305]
411	[740, 617]	1180	[1766, 1767]	1949	[2475, 2473]	2718	[1055, 2088]
412	[741, 147]	1181	[1768, 712]	1950	[475, 1684]	2719	[871, 945]
413	[742, 220]	1182	[757, 1345]	1951	[2476, 1806]	2720	[2830, 1984]
414	[743, 744]	1183	[1769, 1770]	1952	[2477, 1762]	2721	[2945, 404]
415	[745, 746]	1184	[1771, 154]	1953	[2474, 1826]	2722	[2021, 2946]
416	[747, 655]	1185	[1772, 1773]	1954	[2478, 1484]	2723	[2239, 1955]
417	[748, 749]	1186	[1774, 1775]	1955	[1362, 1483]	2724	[81, 2947]
418	[147, 750]	1187	[578, 1776]	1956	[2479, 1375]	2725	[2948, 2259]
419	[751, 752]	1188	[1460, 1777]	1957	[1399, 2480]	2726	[2949, 2950]
420	[50, 131]	1189	[1778, 1401]	1958	[2481, 2482]	2727	[2220, 347]
421	[753, 754]	1190	[667, 1779]	1959	[674, 159]	2728	[358, 445]
422	[237, 500]	1191	[614, 1668]	1960	[1594, 1881]	2729	[2921, 271]
423	[755, 756]	1192	[733, 626]	1961	[2483, 567]	2730	[975, 440]
424	[757, 758]	1193	[200, 1780]	1962	[2484, 551]	2731	[2034, 2951]
425	[759, 760]	1194	[1488, 1716]	1963	[2485, 555]	2732	[2934, 2952]
426	[761, 762]	1195	[1442, 479]	1964	[616, 2486]	2733	[987, 1215]
427	[763, 764]	1196	[1781, 641]	1965	[471, 795]	2734	[2855, 2953]
428	[765, 716]	1197	[1782, 138]	1966	[2487, 2488]	2735	[2922, 2062]
429	[766, 767]	1198	[1740, 153]	1967	[2489, 1747]	2736	[2206, 1271]
430	[768, 769]	1199	[1746, 1783]	1968	[594, 1500]	2737	[2184, 1003]
431	[770, 771]	1200	[1327, 1784]	1969	[2490, 1817]	2738	[2218, 268]

432	[772, 773]	1201	[1785, 533]	1970	[2491, 767]	2739	[2814, 24]
433	[710, 774]	1202	[1786, 45]	1971	[744, 1498]	2740	[2954, 1906]
434	[775, 776]	1203	[1787, 1788]	1972	[2492, 2493]	2741	[1213, 2955]
435	[777, 778]	1204	[1789, 675]	1973	[1563, 1714]	2742	[2956, 2080]
436	[779, 773]	1205	[219, 1790]	1974	[517, 2494]	2743	[2847, 2957]
437	[780, 781]	1206	[1317, 1791]	1975	[136, 486]	2744	[2958, 1266]
438	[782, 783]	1207	[1792, 1683]	1976	[2495, 2496]	2745	[2288, 1885]
439	[784, 697]	1208	[1793, 238]	1977	[2497, 779]	2746	[2199, 1951]
440	[636, 459]	1209	[1794, 1715]	1978	[2498, 487]	2747	[2144, 277]
441	[785, 786]	1210	[1795, 1796]	1979	[2499, 1735]	2748	[1246, 1254]
442	[787, 788]	1211	[1410, 691]	1980	[2500, 177]	2749	[1911, 2959]
443	[653, 142]	1212	[1797, 1798]	1981	[2501, 1386]	2750	[2121, 2960]
444	[789, 151]	1213	[698, 1799]	1982	[616, 1422]	2751	[2023, 2515]
445	[790, 766]	1214	[1798, 1609]	1983	[478, 2502]	2752	[265, 2961]
446	[791, 792]	1215	[1800, 1801]	1984	[1846, 636]	2753	[338, 2235]
447	[793, 794]	1216	[721, 1802]	1985	[2503, 166]	2754	[2221, 2962]
448	[795, 796]	1217	[1419, 1803]	1986	[748, 760]	2755	[2963, 2256]
449	[797, 798]	1218	[1804, 1805]	1987	[1372, 1832]	2756	[2964, 933]
450	[799, 800]	1219	[1806, 475]	1988	[1656, 498]	2757	[2174, 1051]
451	[801, 802]	1220	[1807, 1808]	1989	[796, 39]	2758	[1263, 2247]
452	[803, 804]	1221	[1809, 706]	1990	[2504, 571]	2759	[2298, 974]
453	[805, 431]	1222	[1810, 1423]	1991	[2505, 1647]	2760	[2274, 2965]
454	[72, 399]	1223	[1656, 1811]	1992	[2506, 1565]	2761	[2904, 2966]
455	[806, 807]	1224	[219, 1614]	1993	[2507, 2508]	2762	[2967, 450]
456	[808, 809]	1225	[747, 1812]	1994	[2509, 2510]	2763	[2917, 2220]
457	[810, 811]	1226	[1773, 1456]	1995	[1860, 2511]	2764	[110, 912]
458	[812, 339]	1227	[1813, 1814]	1996	[2512, 1596]	2765	[2092, 2968]
459	[813, 814]	1228	[1815, 1577]	1997	[125, 1777]	2766	[2307, 2969]
460	[815, 816]	1229	[1347, 1673]	1998	[2513, 2514]	2767	[2877, 2970]
461	[63, 817]	1230	[1367, 1776]	1999	[1358, 2515]	2768	[2259, 1012]
462	[818, 819]	1231	[1756, 1407]	2000	[2516, 2517]	2769	[1204, 2971]
463	[820, 821]	1232	[1816, 1515]	2001	[47, 1440]	2770	[2149, 2972]
464	[822, 823]	1233	[1632, 1718]	2002	[692, 1629]	2771	[877, 2857]
465	[824, 246]	1234	[519, 1817]	2003	[500, 1694]	2772	[984, 1136]
466	[825, 826]	1235	[1472, 1625]	2004	[2518, 2519]	2773	[2963, 2973]
467	[827, 828]	1236	[1818, 545]	2005	[2520, 1370]	2774	[1130, 101]
468	[829, 830]	1237	[1819, 1820]	2006	[2521, 1398]	2775	[254, 2325]
469	[831, 403]	1238	[597, 1821]	2007	[510, 547]	2776	[2329, 384]
470	[832, 833]	1239	[802, 1822]	2008	[2522, 1437]	2777	[952, 2974]
471	[834, 835]	1240	[758, 1823]	2009	[2480, 208]	2778	[2954, 1919]
472	[836, 837]	1241	[489, 37]	2010	[2523, 1546]	2779	[883, 429]
473	[838, 839]	1242	[1824, 1825]	2011	[1647, 1347]	2780	[275, 302]
474	[840, 841]	1243	[1826, 1763]	2012	[1719, 2524]	2781	[1065, 1262]
475	[842, 843]	1244	[1827, 1333]	2013	[2525, 2526]	2782	[437, 122]

476	[844, 845]	1245	[1828, 550]	2014	[158, 2527]	2783	[2975, 2409]
477	[846, 847]	1246	[1580, 1499]	2015	[2429, 466]	2784	[2141, 2976]
478	[848, 849]	1247	[652, 502]	2016	[2528, 1807]	2785	[2977, 2978]
479	[15, 850]	1248	[1400, 714]	2017	[2529, 1809]	2786	[2945, 1171]
480	[369, 851]	1249	[1829, 454]	2018	[2530, 790]	2787	[2943, 893]
481	[16, 852]	1250	[1753, 1830]	2019	[2531, 793]	2788	[2331, 2170]
482	[853, 854]	1251	[220, 1831]	2020	[1867, 2457]	2789	[352, 2979]
483	[855, 856]	1252	[1832, 659]	2021	[1832, 2532]	2790	[1226, 2980]
484	[857, 858]	1253	[1833, 1834]	2022	[2533, 554]	2791	[2981, 2982]
485	[859, 860]	1254	[1835, 1693]	2023	[2534, 2535]	2792	[86, 962]
486	[439, 861]	1255	[1836, 53]	2024	[150, 1687]	2793	[2194, 2254]
487	[862, 863]	1256	[1837, 1838]	2025	[212, 712]	2794	[2370, 2983]
488	[333, 864]	1257	[170, 1839]	2026	[165, 2536]	2795	[2086, 27]
489	[865, 77]	1258	[1635, 141]	2027	[2537, 1471]	2796	[2984, 2321]
490	[866, 368]	1259	[1802, 1589]	2028	[2538, 1469]	2797	[321, 329]
491	[867, 868]	1260	[1840, 1313]	2029	[2539, 2540]	2798	[744, 2985]
492	[869, 870]	1261	[1841, 1842]	2030	[1882, 1856]	2799	[2986, 720]
493	[871, 3]	1262	[1843, 797]	2031	[646, 1666]	2800	[1343, 2987]
494	[855, 341]	1263	[1776, 1453]	2032	[56, 2541]	2801	[2988, 2989]
495	[101, 872]	1264	[1667, 1844]	2033	[2542, 2543]	2802	[589, 2990]
496	[16, 873]	1265	[1845, 1846]	2034	[2544, 527]	2803	[1589, 2991]
497	[874, 393]	1266	[1339, 1734]	2035	[1572, 170]	2804	[462, 1342]
498	[875, 876]	1267	[1847, 1567]	2036	[2545, 1541]	2805	[2992, 2993]
499	[116, 877]	1268	[1685, 1848]	2037	[2546, 1383]	2806	[189, 2994]
500	[878, 879]	1269	[1849, 1766]	2038	[1324, 2547]	2807	[572, 2472]
501	[880, 827]	1270	[653, 218]	2039	[2427, 2548]	2808	[2995, 2606]
502	[881, 882]	1271	[1850, 1851]	2040	[2545, 579]	2809	[1587, 2996]
503	[883, 884]	1272	[1852, 1560]	2041	[2549, 2]	2810	[2603, 499]
504	[885, 886]	1273	[773, 1853]	2042	[2471, 1559]	2811	[720, 1797]
505	[887, 888]	1274	[1467, 1854]	2043	[2550, 2551]	2812	[2550, 661]
506	[889, 890]	1275	[1641, 140]	2044	[1480, 1324]	2813	[2796, 2997]
507	[342, 891]	1276	[1855, 1392]	2045	[1816, 1389]	2814	[1602, 2998]
508	[892, 893]	1277	[1856, 1341]	2046	[583, 485]	2815	[2708, 2999]
509	[894, 895]	1278	[1857, 478]	2047	[2552, 1506]	2816	[2688, 509]
510	[896, 897]	1279	[684, 54]	2048	[2430, 522]	2817	[184, 492]
511	[898, 899]	1280	[1858, 505]	2049	[2553, 2554]	2818	[1389, 1527]
512	[900, 901]	1281	[12, 550]	2050	[1771, 607]	2819	[742, 1308]
513	[902, 428]	1282	[1747, 743]	2051	[2555, 1871]	2820	[1642, 2759]
514	[903, 904]	1283	[1452, 1859]	2052	[619, 583]	2821	[1835, 3000]
515	[272, 905]	1284	[1860, 1861]	2053	[2556, 2557]	2822	[1325, 2699]
516	[906, 907]	1285	[1862, 1863]	2054	[2558, 1463]	2823	[1473, 1370]
517	[908, 851]	1286	[1827, 797]	2055	[2559, 2560]	2824	[3001, 3002]
518	[909, 910]	1287	[1864, 1504]	2056	[1559, 194]	2825	[1397, 3003]
519	[100, 911]	1288	[1735, 765]	2057	[2561, 46]	2826	[3004, 2433]

520	[912, 913]	1289	[177, 1767]	2058	[2562, 1357]	2827	[2464, 2479]
521	[914, 915]	1290	[1865, 1866]	2059	[2563, 2564]	2828	[3005, 1489]
522	[916, 917]	1291	[1867, 1868]	2060	[2565, 2475]	2829	[3006, 1310]
523	[918, 919]	1292	[1374, 1672]	2061	[1340, 2566]	2830	[3007, 2417]
524	[920, 427]	1293	[62, 130]	2062	[511, 2567]	2831	[1862, 2424]
525	[921, 922]	1294	[1759, 710]	2063	[2568, 1793]	2832	[613, 1667]
526	[429, 923]	1295	[1638, 1630]	2064	[629, 1533]	2833	[2475, 2756]
527	[924, 925]	1296	[1869, 1870]	2065	[2522, 1578]	2834	[2742, 1483]
528	[926, 927]	1297	[1871, 1622]	2066	[2569, 663]	2835	[1359, 2565]
529	[928, 929]	1298	[1872, 1843]	2067	[2570, 723]	2836	[1484, 474]
530	[930, 931]	1299	[8, 1873]	2068	[1706, 2571]	2837	[2533, 3008]
531	[830, 932]	1300	[1874, 1875]	2069	[2572, 2573]	2838	[1809, 3009]
532	[117, 933]	1301	[1424, 235]	2070	[699, 2574]	2839	[637, 1732]
533	[26, 934]	1302	[1876, 1877]	2071	[1691, 1516]	2840	[2620, 1807]
534	[811, 420]	1303	[1878, 1820]	2072	[1797, 1802]	2841	[1829, 1747]
535	[935, 936]	1304	[1879, 1443]	2073	[2575, 124]	2842	[3010, 223]
536	[937, 938]	1305	[1880, 1881]	2074	[1689, 1842]	2843	[544, 3011]
537	[939, 940]	1306	[1882, 467]	2075	[771, 1322]	2844	[1648, 2557]
538	[941, 290]	1307	[1883, 421]	2076	[1602, 764]	2845	[3012, 1840]
539	[942, 289]	1308	[1884, 1885]	2077	[725, 2576]	2846	[559, 656]
540	[943, 944]	1309	[1014, 1886]	2078	[1445, 1633]	2847	[3013, 1415]
541	[945, 946]	1310	[1887, 1888]	2079	[234, 719]	2848	[1836, 684]
542	[18, 947]	1311	[1889, 92]	2080	[2577, 1363]	2849	[2992, 1331]
543	[948, 949]	1312	[956, 115]	2081	[1424, 731]	2850	[3005, 1733]
544	[950, 951]	1313	[1890, 975]	2082	[790, 2491]	2851	[594, 3014]
545	[952, 953]	1314	[1213, 1891]	2083	[1489, 2578]	2852	[1520, 574]
546	[954, 955]	1315	[1892, 1893]	2084	[2579, 526]	2853	[3015, 3016]
547	[895, 956]	1316	[1894, 1230]	2085	[2580, 2581]	2854	[1430, 2433]
548	[957, 817]	1317	[1895, 1896]	2086	[1651, 162]	2855	[650, 3017]
549	[958, 267]	1318	[1188, 1302]	2087	[2582, 700]	2856	[2425, 1314]
550	[24, 811]	1319	[1897, 390]	2088	[2583, 1861]	2857	[3018, 1529]
551	[959, 960]	1320	[96, 1898]	2089	[2584, 2585]	2858	[2780, 229]
552	[961, 962]	1321	[1027, 1084]	2090	[2586, 791]	2859	[1578, 2579]
553	[963, 964]	1322	[1899, 1900]	2091	[2587, 2588]	2860	[3019, 2996]
554	[965, 966]	1323	[1281, 941]	2092	[2589, 2590]	2861	[3006, 3020]
555	[967, 968]	1324	[1901, 1902]	2093	[1481, 1493]	2862	[1782, 1340]
556	[969, 970]	1325	[1093, 1903]	2094	[585, 2591]	2863	[3021, 2499]
557	[971, 972]	1326	[278, 365]	2095	[610, 715]	2864	[1455, 757]
558	[973, 974]	1327	[1904, 1905]	2096	[2592, 2593]	2865	[1817, 1739]
559	[975, 976]	1328	[1906, 1907]	2097	[624, 2523]	2866	[3022, 3023]
560	[977, 978]	1329	[1908, 29]	2098	[1502, 1345]	2867	[2417, 596]
561	[979, 980]	1330	[1909, 1910]	2099	[2524, 1624]	2868	[2653, 1717]
562	[981, 425]	1331	[1911, 1912]	2100	[2594, 1773]	2869	[148, 160]
563	[982, 945]	1332	[1913, 1914]	2101	[2595, 2596]	2870	[1750, 1600]

564	[425, 983]	1333	[1915, 1916]	2102	[2597, 2598]	2871	[2659, 3024]
565	[984, 356]	1334	[1889, 1004]	2103	[2599, 2600]	2872	[1681, 1368]
566	[985, 447]	1335	[911, 1917]	2104	[2601, 1671]	2873	[3025, 1640]
567	[986, 987]	1336	[1918, 249]	2105	[2602, 1426]	2874	[3026, 1447]
568	[988, 989]	1337	[1919, 1907]	2106	[198, 2603]	2875	[1321, 1623]
569	[990, 991]	1338	[1920, 1921]	2107	[560, 657]	2876	[1741, 60]
570	[992, 993]	1339	[1922, 901]	2108	[2604, 2605]	2877	[785, 3027]
571	[994, 995]	1340	[1923, 1924]	2109	[2553, 2606]	2878	[3001, 2610]
572	[996, 997]	1341	[1925, 1926]	2110	[2607, 37]	2879	[1696, 2598]
573	[998, 999]	1342	[1927, 1928]	2111	[2608, 210]	2880	[2753, 756]
574	[1000, 1001]	1343	[819, 6]	2112	[2609, 2610]	2881	[1769, 2675]
575	[1002, 1003]	1344	[1929, 1213]	2113	[2611, 2612]	2882	[3028, 2656]
576	[1004, 262]	1345	[1930, 256]	2114	[2613, 2614]	2883	[3029, 2561]
577	[1005, 1006]	1346	[1250, 240]	2115	[2615, 2616]	2884	[2667, 52]
578	[1007, 1008]	1347	[1931, 1932]	2116	[1396, 235]	2885	[1608, 2742]
579	[1009, 1010]	1348	[1933, 1934]	2117	[2617, 2618]	2886	[2766, 593]
580	[1011, 1012]	1349	[248, 1935]	2118	[2619, 1405]	2887	[2988, 788]
581	[1013, 301]	1350	[1936, 1937]	2119	[2620, 2621]	2888	[1702, 3030]
582	[1014, 1015]	1351	[1938, 414]	2120	[2622, 1617]	2889	[1509, 791]
583	[936, 439]	1352	[259, 1939]	2121	[2623, 2429]	2890	[2446, 1851]
584	[1016, 942]	1353	[1012, 1940]	2122	[2624, 608]	2891	[2478, 2476]
585	[1017, 1018]	1354	[1941, 1942]	2123	[1455, 1502]	2892	[1529, 3031]
586	[1019, 1020]	1355	[1032, 1943]	2124	[2625, 1728]	2893	[1579, 174]
587	[1021, 1022]	1356	[258, 385]	2125	[191, 1401]	2894	[2765, 3032]
588	[1023, 1024]	1357	[1944, 1945]	2126	[2570, 2626]	2895	[1658, 1480]
589	[1025, 1026]	1358	[1946, 1947]	2127	[1754, 557]	2896	[709, 536]
590	[1027, 848]	1359	[1948, 1949]	2128	[2627, 2628]	2897	[3033, 3034]
591	[1028, 1029]	1360	[1950, 1951]	2129	[2629, 2630]	2898	[2492, 3023]
592	[321, 285]	1361	[1952, 1243]	2130	[1878, 2631]	2899	[3015, 1478]
593	[1030, 366]	1362	[1953, 1954]	2131	[2632, 2633]	2900	[2524, 3035]
594	[334, 1031]	1363	[843, 1955]	2132	[2537, 1506]	2901	[3025, 3036]
595	[338, 1032]	1364	[1956, 1957]	2133	[2634, 671]	2902	[2785, 616]
596	[891, 440]	1365	[1958, 1959]	2134	[2538, 2635]	2903	[2773, 2543]
597	[1033, 1034]	1366	[305, 1960]	2135	[2636, 612]	2904	[3037, 3038]
598	[381, 1035]	1367	[1961, 1118]	2136	[801, 2458]	2905	[2617, 2779]
599	[354, 985]	1368	[1962, 290]	2137	[2481, 1761]	2906	[2504, 1554]
600	[1036, 1037]	1369	[1963, 292]	2138	[2637, 2473]	2907	[1366, 578]
601	[1038, 1039]	1370	[1964, 1965]	2139	[1418, 2456]	2908	[1542, 2526]
602	[1040, 1041]	1371	[1966, 972]	2140	[1472, 671]	2909	[1593, 555]
603	[1042, 826]	1372	[1967, 1968]	2141	[2638, 2461]	2910	[2685, 516]
604	[885, 286]	1373	[1969, 1970]	2142	[2639, 1486]	2911	[591, 2435]
605	[1043, 1044]	1374	[1149, 1971]	2143	[2640, 2641]	2912	[2761, 3039]
606	[1045, 958]	1375	[956, 393]	2144	[2642, 484]	2913	[529, 3040]
607	[1046, 1047]	1376	[1972, 1973]	2145	[1440, 2595]	2914	[1524, 589]

608	[1048, 864]	1377	[1974, 1975]	2146	[1379, 2643]	2915	[621, 763]
609	[1049, 909]	1378	[352, 1270]	2147	[2644, 710]	2916	[3010, 1474]
610	[1050, 1051]	1379	[1976, 1180]	2148	[2645, 553]	2917	[2608, 645]
611	[1052, 1053]	1380	[1977, 397]	2149	[2452, 2646]	2918	[1360, 2637]
612	[1054, 1055]	1381	[1978, 1090]	2150	[2647, 160]	2919	[2459, 461]
613	[1056, 1057]	1382	[1979, 1287]	2151	[2648, 553]	2920	[2736, 779]
614	[1058, 1059]	1383	[1980, 1226]	2152	[2649, 2650]	2921	[3041, 464]
615	[1060, 803]	1384	[1116, 1981]	2153	[2651, 2630]	2922	[2562, 770]
616	[1061, 1062]	1385	[1176, 1982]	2154	[780, 1799]	2923	[3041, 527]
617	[286, 1063]	1386	[1983, 1984]	2155	[2652, 2653]	2924	[2762, 1793]
618	[1064, 1011]	1387	[1985, 1986]	2156	[459, 176]	2925	[2592, 187]
619	[92, 262]	1388	[1105, 1263]	2157	[2654, 2655]	2926	[2495, 1713]
620	[1065, 1066]	1389	[1987, 1988]	2158	[2513, 2656]	2927	[1700, 2441]
621	[1067, 1068]	1390	[1127, 1221]	2159	[2657, 2658]	2928	[2589, 1749]
622	[1069, 1070]	1391	[804, 921]	2160	[2653, 1632]	2929	[3042, 570]
623	[1071, 944]	1392	[929, 1989]	2161	[2659, 1551]	2930	[3013, 694]
624	[1072, 1073]	1393	[1990, 300]	2162	[2660, 692]	2931	[1531, 1674]
625	[1074, 1075]	1394	[1141, 914]	2163	[1828, 1785]	2932	[1833, 2585]
626	[877, 1076]	1395	[1991, 1934]	2164	[2604, 1462]	2933	[1772, 1695]
627	[1077, 1078]	1396	[1992, 1888]	2165	[1486, 233]	2934	[1637, 3043]
628	[1079, 22]	1397	[1993, 1994]	2166	[2661, 759]	2935	[2676, 2577]
629	[1080, 1081]	1398	[1995, 1073]	2167	[463, 2627]	2936	[1333, 3044]
630	[856, 342]	1399	[377, 398]	2168	[1646, 595]	2937	[673, 158]
631	[1082, 1083]	1400	[1996, 836]	2169	[2561, 2662]	2938	[2500, 1766]
632	[1084, 849]	1401	[907, 341]	2170	[1395, 1424]	2939	[2771, 511]
633	[1085, 1086]	1402	[935, 319]	2171	[2663, 560]	2940	[3045, 3046]
634	[1087, 1088]	1403	[64, 1997]	2172	[575, 2664]	2941	[1745, 1418]
635	[1089, 813]	1404	[69, 1130]	2173	[2661, 748]	2942	[1415, 3047]
636	[1090, 257]	1405	[1998, 1999]	2174	[2665, 2457]	2943	[1592, 3048]
637	[889, 1091]	1406	[2000, 2001]	2175	[2603, 2666]	2944	[2454, 1356]
638	[830, 79]	1407	[2002, 1257]	2176	[2436, 2644]	2945	[2721, 3049]
639	[1092, 1039]	1408	[823, 303]	2177	[1839, 2523]	2946	[2777, 720]
640	[1093, 1094]	1409	[423, 2003]	2178	[2667, 167]	2947	[1591, 57]
641	[1029, 1095]	1410	[2004, 280]	2179	[1613, 1444]	2948	[639, 3050]
642	[1096, 941]	1411	[832, 1971]	2180	[2668, 523]	2949	[2491, 3051]
643	[1097, 1098]	1412	[2005, 1027]	2181	[2499, 514]	2950	[1736, 1814]
644	[1099, 1100]	1413	[2006, 2007]	2182	[2669, 502]	2951	[2468, 1518]
645	[1101, 1102]	1414	[2008, 2009]	2183	[1343, 2628]	2952	[2696, 2499]
646	[1103, 1104]	1415	[1910, 2010]	2184	[2546, 1691]	2953	[2555, 56]
647	[1105, 1106]	1416	[2011, 350]	2185	[2670, 762]	2954	[596, 3052]
648	[1107, 1108]	1417	[2012, 2013]	2186	[1617, 2671]	2955	[2599, 2755]
649	[1109, 1110]	1418	[2014, 2015]	2187	[2672, 658]	2956	[1708, 1361]
650	[1111, 396]	1419	[2016, 2017]	2188	[2673, 1733]	2957	[132, 1788]
651	[120, 1112]	1420	[1937, 412]	2189	[2674, 2675]	2958	[670, 3053]

652	[1038, 415]	1421	[267, 850]	2190	[43, 471]	2959	[3029, 45]
653	[899, 276]	1422	[803, 1139]	2191	[2676, 1684]	2960	[2760, 1843]
654	[1113, 1114]	1423	[2018, 444]	2192	[135, 1848]	2961	[2601, 1552]
655	[1055, 90]	1424	[2019, 446]	2193	[2677, 2567]	2962	[230, 666]
656	[1115, 1116]	1425	[2013, 2020]	2194	[2439, 654]	2963	[736, 3054]
657	[976, 441]	1426	[2021, 2022]	2195	[1544, 1455]	2964	[1762, 2783]
658	[1015, 853]	1427	[2023, 2023]	2196	[2539, 2678]	2965	[456, 1801]
659	[1117, 1118]	1428	[1001, 109]	2197	[543, 14]	2966	[2418, 1466]
660	[1119, 1120]	1429	[412, 989]	2198	[2638, 1529]	2967	[3042, 801]
661	[1121, 1024]	1430	[268, 426]	2199	[2679, 2680]	2968	[2505, 551]
662	[103, 1122]	1431	[1916, 427]	2200	[2681, 2682]	2969	[1837, 2560]
663	[1123, 1097]	1432	[2024, 120]	2201	[182, 1377]	2970	[2712, 1877]
664	[1124, 1099]	1433	[28, 2025]	2202	[1665, 2683]	2971	[1857, 1442]
665	[1125, 1126]	1434	[837, 848]	2203	[1855, 2429]	2972	[602, 2488]
666	[19, 1020]	1435	[447, 966]	2204	[1763, 1607]	2973	[1557, 680]
667	[922, 1127]	1436	[2026, 1050]	2205	[2652, 1631]	2974	[2752, 1809]
668	[1128, 1129]	1437	[2027, 429]	2206	[1541, 1852]	2975	[2783, 1708]
669	[1130, 1131]	1438	[940, 2028]	2207	[2473, 2477]	2976	[2706, 34]
670	[1132, 1133]	1439	[1977, 2029]	2208	[1613, 2684]	2977	[1506, 2634]
671	[1134, 1135]	1440	[2030, 2031]	2209	[1539, 794]	2978	[2668, 1495]
672	[1136, 357]	1441	[958, 15]	2210	[2685, 2686]	2979	[1721, 1365]
673	[403, 1137]	1442	[2032, 912]	2211	[1625, 2687]	2980	[2422, 1656]
674	[1138, 1139]	1443	[2033, 1138]	2212	[2688, 1569]	2981	[194, 3055]
675	[1140, 71]	1444	[2034, 2035]	2213	[2437, 1524]	2982	[2689, 769]
676	[1141, 888]	1445	[2036, 2037]	2214	[2689, 2690]	2983	[1738, 1627]
677	[1142, 1143]	1446	[2038, 993]	2215	[1435, 1371]	2984	[465, 3056]
678	[1144, 1145]	1447	[2039, 324]	2216	[2523, 2691]	2985	[2981, 949]
679	[1146, 907]	1448	[1131, 872]	2217	[1575, 1617]	2986	[1886, 1202]
680	[1147, 847]	1449	[256, 2040]	2218	[2692, 509]	2987	[1283, 2156]
681	[1148, 1149]	1450	[2041, 841]	2219	[1582, 2693]	2988	[2321, 3057]
682	[955, 1150]	1451	[1238, 2042]	2220	[1803, 1638]	2989	[1041, 346]
683	[1151, 1152]	1452	[2043, 931]	2221	[125, 2694]	2990	[2818, 858]
684	[1153, 1154]	1453	[1008, 1082]	2222	[2695, 567]	2991	[2145, 1956]
685	[1155, 86]	1454	[2044, 2045]	2223	[2696, 513]	2992	[1995, 3058]
686	[964, 1156]	1455	[2046, 1930]	2224	[728, 2697]	2993	[2016, 922]
687	[1157, 1058]	1456	[2047, 2048]	2225	[2698, 2699]	2994	[2313, 1180]
688	[1158, 1159]	1457	[2049, 1237]	2226	[1552, 2700]	2995	[2806, 3059]
689	[946, 1160]	1458	[2050, 1224]	2227	[1336, 678]	2996	[2113, 1953]
690	[1161, 1162]	1459	[2051, 2052]	2228	[2695, 581]	2997	[66, 2048]
691	[87, 830]	1460	[2053, 2054]	2229	[2701, 2702]	2998	[102, 261]
692	[1163, 1164]	1461	[2055, 97]	2230	[2472, 1765]	2999	[2949, 1164]
693	[1165, 1166]	1462	[265, 845]	2231	[1852, 627]	3000	[2372, 978]
694	[1167, 1168]	1463	[995, 2056]	2232	[773, 549]	3001	[315, 3060]
695	[1169, 1170]	1464	[323, 2057]	2233	[2703, 2540]	3002	[2355, 1926]

696	[326, 273]	1465	[1042, 2058]	2234	[2704, 2428]	3003	[1909, 2147]
697	[1171, 405]	1466	[2059, 2060]	2235	[2705, 2522]	3004	[2886, 3061]
698	[1172, 1035]	1467	[2061, 2062]	2236	[2706, 2707]	3005	[1244, 3062]
699	[1173, 1174]	1468	[1929, 2063]	2237	[2646, 1403]	3006	[988, 3063]
700	[1175, 242]	1469	[1049, 1026]	2238	[2708, 750]	3007	[838, 3064]
701	[285, 1176]	1470	[2064, 2065]	2239	[2709, 2571]	3008	[2073, 1965]
702	[1142, 1177]	1471	[1156, 1134]	2240	[2710, 2711]	3009	[2180, 899]
703	[1178, 1048]	1472	[2066, 1136]	2241	[2712, 2713]	3010	[2147, 3065]
704	[1145, 1179]	1473	[900, 2067]	2242	[802, 2714]	3011	[1886, 853]
705	[1180, 1088]	1474	[309, 890]	2243	[1726, 2715]	3012	[856, 1890]
706	[1181, 1182]	1475	[2041, 2068]	2244	[1845, 635]	3013	[1175, 3066]
707	[1183, 1184]	1476	[2069, 2044]	2245	[675, 2716]	3014	[2936, 813]
708	[418, 26]	1477	[2070, 2018]	2246	[2563, 2717]	3015	[875, 3067]
709	[369, 1185]	1478	[2071, 2072]	2247	[2718, 2719]	3016	[879, 30]
710	[1186, 1187]	1479	[2073, 2074]	2248	[1868, 2720]	3017	[2342, 66]
711	[1188, 1189]	1480	[2075, 2076]	2249	[1761, 1332]	3018	[879, 2131]
712	[1190, 1191]	1481	[2077, 2072]	2250	[2587, 752]	3019	[1205, 331]
713	[243, 1192]	1482	[2078, 2079]	2251	[2721, 1664]	3020	[354, 446]
714	[1193, 1194]	1483	[1243, 1177]	2252	[2516, 754]	3021	[1304, 903]
715	[836, 1027]	1484	[2080, 842]	2253	[2722, 2723]	3022	[66, 3068]
716	[904, 1195]	1485	[103, 376]	2254	[1401, 480]	3023	[1990, 1013]
717	[1196, 1040]	1486	[2081, 1171]	2255	[2724, 1429]	3024	[392, 292]
718	[1197, 1198]	1487	[2082, 1969]	2256	[1324, 538]	3025	[2260, 3069]
719	[1199, 326]	1488	[2083, 2084]	2257	[1781, 200]	3026	[2872, 3070]
720	[1200, 1201]	1489	[2085, 2086]	2258	[2575, 1459]	3027	[2865, 964]
721	[1202, 854]	1490	[2087, 98]	2259	[2725, 644]	3028	[116, 2410]
722	[1203, 1204]	1491	[2088, 2089]	2260	[2726, 2727]	3029	[3071, 93]
723	[1205, 955]	1492	[2090, 354]	2261	[2625, 790]	3030	[2084, 1268]
724	[1166, 916]	1493	[28, 1047]	2262	[1503, 2728]	3031	[815, 2232]
725	[1206, 1207]	1494	[421, 327]	2263	[740, 2729]	3032	[915, 1301]
726	[1028, 1208]	1495	[2091, 1956]	2264	[2629, 2730]	3033	[2200, 908]
727	[1209, 1203]	1496	[2092, 2093]	2265	[2731, 463]	3034	[2314, 983]
728	[1150, 305]	1497	[2094, 2095]	2266	[1519, 2604]	3035	[2894, 821]
729	[1210, 1211]	1498	[807, 28]	2267	[2732, 668]	3036	[438, 123]
730	[1212, 1213]	1499	[2096, 1165]	2268	[563, 540]	3037	[373, 3072]
731	[1214, 1038]	1500	[336, 2097]	2269	[481, 1611]	3038	[1264, 275]
732	[394, 877]	1501	[2098, 2099]	2270	[2507, 1316]	3039	[2148, 392]
733	[1215, 1216]	1502	[2100, 2101]	2271	[2733, 732]	3040	[1942, 2347]
734	[853, 1217]	1503	[2059, 2102]	2272	[1510, 1339]	3041	[431, 926]
735	[1218, 1219]	1504	[2103, 1038]	2273	[1615, 206]	3042	[1894, 1305]
736	[1220, 1221]	1505	[2104, 2105]	2274	[211, 1828]	3043	[2378, 1068]
737	[1222, 1141]	1506	[2106, 2107]	2275	[1711, 733]	3044	[2977, 2215]
738	[1223, 1224]	1507	[2108, 2109]	2276	[2477, 1826]	3045	[1166, 2142]
739	[1225, 1226]	1508	[1168, 2003]	2277	[2734, 2735]	3046	[347, 1104]

740	[1227, 1085]	1509	[2110, 2111]	2278	[2736, 772]	3047	[2134, 1152]
741	[1228, 1229]	1510	[923, 83]	2279	[487, 2737]	3048	[2984, 1259]
742	[1230, 1231]	1511	[1076, 971]	2280	[1567, 634]	3049	[1230, 1306]
743	[1232, 1233]	1512	[2112, 1082]	2281	[2722, 1662]	3050	[2940, 1055]
744	[399, 1042]	1513	[2113, 2114]	2282	[2738, 1340]	3051	[2242, 1945]
745	[1208, 1234]	1514	[2004, 291]	2283	[233, 2739]	3052	[443, 71]
746	[1235, 1050]	1515	[1086, 1149]	2284	[2595, 2740]	3053	[2967, 18]
747	[1236, 347]	1516	[2115, 2116]	2285	[490, 679]	3054	[2868, 984]
748	[1237, 1032]	1517	[2117, 2118]	2286	[2572, 783]	3055	[2202, 2177]
749	[1238, 1239]	1518	[2119, 1252]	2287	[2443, 487]	3056	[3071, 1973]
750	[283, 366]	1519	[2120, 861]	2288	[1323, 537]	3057	[1536, 2581]
751	[1240, 1241]	1520	[1885, 1030]	2289	[2741, 2519]	3058	[648, 532]
752	[1242, 1243]	1521	[2121, 2057]	2290	[1729, 1567]	3059	[1507, 2719]
753	[942, 866]	1522	[22, 1065]	2291	[565, 2735]	3060	[2743, 8]
754	[1244, 1245]	1523	[269, 2006]	2292	[2742, 2478]	3061	[3033, 623]
755	[1246, 1247]	1524	[2122, 2123]	2293	[134, 1685]	3062	[1603, 1670]
756	[1248, 391]	1525	[2124, 2125]	2294	[1569, 546]	3063	[669, 1447]
757	[1249, 1250]	1526	[2126, 114]	2295	[1513, 1875]	3064	[2615, 1677]
758	[1251, 1252]	1527	[2127, 2128]	2296	[2743, 495]	3065	[695, 663]
759	[1253, 1254]	1528	[2002, 2129]	2297	[1817, 1335]	3066	[3045, 1535]
760	[928, 449]	1529	[2130, 82]	2298	[2744, 2745]	3067	[3012, 730]
761	[810, 419]	1530	[2131, 1125]	2299	[1858, 561]	3068	[2624, 575]
762	[1255, 418]	1531	[811, 2132]	2300	[2619, 2746]	3069	[2791, 1606]
763	[1256, 1257]	1532	[2133, 1986]	2301	[2744, 534]	3070	[3007, 508]
764	[1068, 1258]	1533	[289, 368]	2302	[1320, 2596]	3071	[1695, 182]
765	[1259, 1260]	1534	[2134, 2135]	2303	[2451, 1634]	3072	[1597, 3038]
766	[1261, 1262]	1535	[2136, 1927]	2304	[2670, 2747]		
767	[1263, 1056]	1536	[410, 2137]	2305	[124, 1460]		
768	[1264, 822]	1537	[1120, 2138]	2306	[62, 50]		

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	513	1	1026	1	1539	0	2052	0	2565	1
1	0	514	0	1027	0	1540	1	2053	1	2566	1
2	0	515	0	1028	1	1541	0	2054	0	2567	0
3	0	516	1	1029	0	1542	1	2055	1	2568	1
4	0	517	0	1030	0	1543	1	2056	1	2569	0
5	0	518	0	1031	0	1544	0	2057	0	2570	0
6	0	519	0	1032	1	1545	1	2058	1	2571	1
7	0	520	1	1033	0	1546	1	2059	1	2572	1
8	1	521	1	1034	1	1547	0	2060	1	2573	1
9	0	522	1	1035	0	1548	1	2061	0	2574	0
10	0	523	0	1036	1	1549	0	2062	1	2575	1
11	0	524	1	1037	1	1550	0	2063	1	2576	0

12	0	525	1	1038	0	1551	0	2064	0	2577	0
13	0	526	1	1039	0	1552	1	2065	1	2578	1
14	1	527	1	1040	1	1553	0	2066	0	2579	0
15	0	528	0	1041	1	1554	1	2067	0	2580	1
16	0	529	1	1042	0	1555	0	2068	0	2581	0
17	1	530	1	1043	0	1556	0	2069	1	2582	0
18	1	531	1	1044	1	1557	1	2070	1	2583	1
19	0	532	1	1045	1	1558	0	2071	1	2584	1
20	1	533	1	1046	0	1559	1	2072	0	2585	1
21	0	534	1	1047	1	1560	1	2073	1	2586	0
22	1	535	0	1048	1	1561	1	2074	0	2587	1
23	0	536	1	1049	0	1562	1	2075	1	2588	0
24	0	537	1	1050	0	1563	0	2076	1	2589	0
25	0	538	1	1051	1	1564	0	2077	0	2590	1
26	1	539	1	1052	1	1565	0	2078	1	2591	0
27	0	540	1	1053	1	1566	1	2079	0	2592	1
28	1	541	1	1054	0	1567	0	2080	0	2593	1
29	1	542	1	1055	1	1568	0	2081	0	2594	1
30	0	543	1	1056	0	1569	1	2082	0	2595	1
31	0	544	0	1057	1	1570	1	2083	1	2596	0
32	1	545	1	1058	0	1571	1	2084	0	2597	0
33	0	546	0	1059	1	1572	0	2085	1	2598	0
34	1	547	0	1060	0	1573	1	2086	1	2599	1
35	1	548	1	1061	0	1574	1	2087	0	2600	1
36	1	549	0	1062	1	1575	0	2088	1	2601	1
37	1	550	0	1063	1	1576	0	2089	1	2602	1
38	1	551	0	1064	0	1577	0	2090	0	2603	1
39	0	552	0	1065	0	1578	1	2091	1	2604	0
40	1	553	1	1066	1	1579	1	2092	0	2605	0
41	1	554	0	1067	0	1580	1	2093	0	2606	1
42	1	555	0	1068	1	1581	0	2094	0	2607	1
43	0	556	1	1069	0	1582	1	2095	0	2608	0
44	0	557	1	1070	0	1583	0	2096	1	2609	1
45	1	558	1	1071	0	1584	0	2097	1	2610	0
46	1	559	0	1072	1	1585	1	2098	1	2611	1
47	0	560	0	1073	1	1586	1	2099	1	2612	1
48	1	561	0	1074	0	1587	0	2100	1	2613	0
49	0	562	1	1075	1	1588	0	2101	1	2614	0
50	1	563	0	1076	1	1589	1	2102	0	2615	1
51	0	564	0	1077	0	1590	1	2103	1	2616	0
52	0	565	1	1078	0	1591	1	2104	1	2617	0
53	1	566	0	1079	1	1592	0	2105	1	2618	0
54	1	567	1	1080	0	1593	1	2106	1	2619	0
55	0	568	0	1081	0	1594	1	2107	0	2620	1

56	1	569	1	1082	0	1595	1	2108	0	2621	1
57	1	570	1	1083	1	1596	0	2109	1	2622	1
58	0	571	0	1084	1	1597	1	2110	1	2623	1
59	1	572	1	1085	1	1598	0	2111	0	2624	1
60	1	573	0	1086	0	1599	0	2112	1	2625	1
61	0	574	0	1087	1	1600	1	2113	1	2626	0
62	1	575	0	1088	1	1601	0	2114	0	2627	0
63	0	576	1	1089	0	1602	1	2115	1	2628	1
64	0	577	0	1090	1	1603	0	2116	1	2629	1
65	1	578	0	1091	1	1604	0	2117	0	2630	1
66	0	579	1	1092	1	1605	1	2118	0	2631	0
67	0	580	0	1093	0	1606	0	2119	1	2632	1
68	0	581	0	1094	1	1607	1	2120	1	2633	0
69	1	582	1	1095	1	1608	1	2121	1	2634	1
70	1	583	0	1096	1	1609	0	2122	1	2635	1
71	1	584	0	1097	0	1610	1	2123	0	2636	0
72	0	585	0	1098	1	1611	1	2124	1	2637	0
73	1	586	1	1099	0	1612	1	2125	0	2638	1
74	0	587	1	1100	0	1613	0	2126	0	2639	0
75	1	588	1	1101	1	1614	1	2127	0	2640	1
76	0	589	1	1102	1	1615	0	2128	0	2641	0
77	1	590	0	1103	0	1616	0	2129	1	2642	1
78	1	591	1	1104	0	1617	1	2130	0	2643	0
79	0	592	0	1105	1	1618	1	2131	1	2644	1
80	0	593	0	1106	0	1619	0	2132	0	2645	0
81	1	594	0	1107	0	1620	0	2133	1	2646	0
82	0	595	0	1108	1	1621	1	2134	0	2647	0
83	1	596	1	1109	0	1622	0	2135	0	2648	1
84	1	597	0	1110	1	1623	1	2136	0	2649	1
85	1	598	1	1111	0	1624	1	2137	0	2650	1
86	1	599	1	1112	0	1625	1	2138	0	2651	0
87	0	600	1	1113	0	1626	1	2139	0	2652	1
88	0	601	0	1114	1	1627	0	2140	0	2653	0
89	0	602	1	1115	1	1628	1	2141	1	2654	0
90	0	603	0	1116	0	1629	1	2142	0	2655	1
91	1	604	0	1117	0	1630	0	2143	1	2656	0
92	0	605	0	1118	0	1631	1	2144	1	2657	0
93	1	606	1	1119	1	1632	1	2145	0	2658	1
94	0	607	0	1120	1	1633	0	2146	1	2659	1
95	0	608	1	1121	0	1634	0	2147	1	2660	0
96	0	609	0	1122	0	1635	0	2148	0	2661	0
97	1	610	0	1123	0	1636	1	2149	1	2662	0
98	0	611	1	1124	0	1637	0	2150	0	2663	1
99	0	612	0	1125	0	1638	0	2151	1	2664	0

100	0	613	0	1126	0	1639	1	2152	1	2665	1
101	0	614	0	1127	1	1640	1	2153	0	2666	0
102	0	615	0	1128	0	1641	0	2154	1	2667	1
103	1	616	0	1129	0	1642	0	2155	1	2668	0
104	0	617	1	1130	0	1643	1	2156	1	2669	1
105	1	618	0	1131	1	1644	0	2157	0	2670	0
106	1	619	0	1132	0	1645	0	2158	0	2671	0
107	0	620	0	1133	1	1646	1	2159	0	2672	0
108	1	621	0	1134	0	1647	1	2160	0	2673	0
109	1	622	0	1135	0	1648	0	2161	1	2674	1
110	0	623	0	1136	0	1649	1	2162	0	2675	0
111	0	624	1	1137	0	1650	1	2163	1	2676	1
112	1	625	0	1138	1	1651	1	2164	0	2677	0
113	1	626	0	1139	0	1652	1	2165	0	2678	1
114	0	627	0	1140	1	1653	0	2166	0	2679	1
115	0	628	1	1141	0	1654	1	2167	1	2680	0
116	1	629	0	1142	0	1655	1	2168	1	2681	1
117	1	630	0	1143	1	1656	0	2169	0	2682	0
118	0	631	0	1144	1	1657	1	2170	1	2683	0
119	1	632	1	1145	1	1658	0	2171	1	2684	0
120	1	633	1	1146	0	1659	1	2172	0	2685	1
121	0	634	1	1147	0	1660	1	2173	0	2686	0
122	1	635	0	1148	1	1661	1	2174	1	2687	1
123	0	636	1	1149	0	1662	0	2175	1	2688	1
124	0	637	0	1150	1	1663	0	2176	0	2689	0
125	0	638	1	1151	1	1664	0	2177	0	2690	0
126	0	639	1	1152	1	1665	1	2178	1	2691	0
127	0	640	0	1153	0	1666	1	2179	0	2692	0
128	1	641	0	1154	0	1667	1	2180	0	2693	0
129	1	642	1	1155	0	1668	1	2181	0	2694	1
130	0	643	0	1156	0	1669	1	2182	1	2695	0
131	0	644	0	1157	0	1670	1	2183	1	2696	1
132	0	645	1	1158	0	1671	0	2184	1	2697	0
133	0	646	0	1159	1	1672	0	2185	0	2698	1
134	0	647	1	1160	1	1673	1	2186	1	2699	0
135	1	648	0	1161	0	1674	0	2187	0	2700	1
136	1	649	0	1162	1	1675	1	2188	0	2701	1
137	1	650	0	1163	1	1676	0	2189	1	2702	0
138	1	651	1	1164	1	1677	1	2190	0	2703	1
139	0	652	0	1165	0	1678	1	2191	1	2704	0
140	1	653	0	1166	1	1679	0	2192	1	2705	0
141	0	654	0	1167	1	1680	0	2193	0	2706	1
142	0	655	1	1168	0	1681	1	2194	1	2707	0
143	0	656	1	1169	1	1682	0	2195	0	2708	0

144	1	657	0	1170	0	1683	1	2196	0	2709	1
145	1	658	1	1171	0	1684	1	2197	1	2710	0
146	0	659	0	1172	0	1685	0	2198	1	2711	0
147	1	660	1	1173	1	1686	0	2199	1	2712	1
148	1	661	0	1174	1	1687	0	2200	1	2713	1
149	0	662	1	1175	1	1688	0	2201	0	2714	1
150	0	663	0	1176	1	1689	0	2202	1	2715	1
151	1	664	0	1177	0	1690	0	2203	0	2716	1
152	1	665	0	1178	1	1691	1	2204	0	2717	1
153	0	666	0	1179	1	1692	1	2205	1	2718	1
154	1	667	1	1180	0	1693	0	2206	0	2719	1
155	1	668	0	1181	1	1694	0	2207	1	2720	1
156	0	669	0	1182	0	1695	0	2208	0	2721	1
157	0	670	0	1183	0	1696	1	2209	0	2722	0
158	0	671	0	1184	1	1697	1	2210	1	2723	1
159	0	672	0	1185	0	1698	1	2211	1	2724	1
160	1	673	1	1186	0	1699	0	2212	1	2725	1
161	1	674	1	1187	0	1700	0	2213	1	2726	0
162	0	675	1	1188	1	1701	0	2214	0	2727	0
163	1	676	0	1189	1	1702	0	2215	1	2728	0
164	1	677	0	1190	1	1703	0	2216	0	2729	0
165	1	678	1	1191	0	1704	0	2217	0	2730	0
166	1	679	0	1192	1	1705	1	2218	0	2731	1
167	1	680	0	1193	1	1706	0	2219	1	2732	0
168	0	681	1	1194	1	1707	0	2220	0	2733	0
169	1	682	1	1195	1	1708	0	2221	0	2734	0
170	0	683	1	1196	0	1709	0	2222	0	2735	1
171	0	684	0	1197	1	1710	1	2223	1	2736	0
172	0	685	0	1198	0	1711	1	2224	1	2737	1
173	0	686	1	1199	1	1712	0	2225	1	2738	0
174	0	687	0	1200	1	1713	1	2226	1	2739	1
175	0	688	0	1201	1	1714	1	2227	1	2740	1
176	0	689	1	1202	1	1715	0	2228	0	2741	0
177	1	690	0	1203	1	1716	0	2229	1	2742	0
178	0	691	0	1204	1	1717	0	2230	0	2743	1
179	0	692	1	1205	1	1718	0	2231	1	2744	0
180	1	693	0	1206	0	1719	0	2232	0	2745	0
181	0	694	1	1207	1	1720	1	2233	1	2746	1
182	0	695	1	1208	1	1721	1	2234	0	2747	1
183	1	696	1	1209	0	1722	1	2235	0	2748	1
184	0	697	0	1210	1	1723	0	2236	1	2749	1
185	1	698	0	1211	1	1724	0	2237	0	2750	1
186	0	699	1	1212	0	1725	1	2238	0	2751	1
187	0	700	1	1213	0	1726	1	2239	1	2752	1

188	1	701	1	1214	0	1727	0	2240	0	2753	0
189	0	702	0	1215	1	1728	1	2241	1	2754	0
190	1	703	1	1216	1	1729	0	2242	0	2755	0
191	0	704	1	1217	0	1730	0	2243	1	2756	0
192	0	705	0	1218	0	1731	1	2244	1	2757	1
193	0	706	1	1219	0	1732	0	2245	1	2758	1
194	0	707	0	1220	0	1733	0	2246	1	2759	0
195	0	708	1	1221	1	1734	1	2247	1	2760	1
196	0	709	1	1222	0	1735	1	2248	1	2761	0
197	0	710	0	1223	0	1736	0	2249	0	2762	0
198	1	711	1	1224	1	1737	0	2250	1	2763	0
199	1	712	1	1225	1	1738	0	2251	1	2764	0
200	1	713	0	1226	1	1739	0	2252	0	2765	0
201	0	714	1	1227	1	1740	0	2253	0	2766	1
202	0	715	1	1228	1	1741	0	2254	1	2767	0
203	1	716	1	1229	1	1742	0	2255	1	2768	1
204	1	717	0	1230	1	1743	1	2256	0	2769	1
205	1	718	1	1231	1	1744	1	2257	0	2770	1
206	1	719	1	1232	1	1745	1	2258	1	2771	0
207	0	720	1	1233	1	1746	1	2259	1	2772	1
208	1	721	1	1234	0	1747	1	2260	0	2773	0
209	1	722	1	1235	0	1748	1	2261	1	2774	0
210	0	723	1	1236	1	1749	0	2262	1	2775	0
211	1	724	1	1237	1	1750	1	2263	1	2776	0
212	0	725	0	1238	0	1751	0	2264	1	2777	1
213	0	726	1	1239	0	1752	1	2265	1	2778	1
214	0	727	0	1240	0	1753	1	2266	1	2779	1
215	0	728	1	1241	0	1754	0	2267	0	2780	1
216	1	729	1	1242	1	1755	1	2268	0	2781	0
217	1	730	0	1243	1	1756	1	2269	0	2782	1
218	1	731	0	1244	1	1757	0	2270	1	2783	1
219	1	732	0	1245	1	1758	1	2271	0	2784	1
220	0	733	1	1246	1	1759	0	2272	0	2785	1
221	1	734	0	1247	0	1760	1	2273	0	2786	1
222	0	735	0	1248	0	1761	0	2274	1	2787	0
223	0	736	0	1249	0	1762	0	2275	1	2788	1
224	1	737	0	1250	1	1763	0	2276	0	2789	0
225	0	738	0	1251	0	1764	0	2277	0	2790	1
226	1	739	1	1252	0	1765	1	2278	0	2791	0
227	0	740	1	1253	0	1766	0	2279	0	2792	1
228	0	741	1	1254	1	1767	1	2280	0	2793	1
229	1	742	1	1255	0	1768	1	2281	0	2794	1
230	1	743	1	1256	0	1769	0	2282	0	2795	1
231	1	744	1	1257	0	1770	1	2283	1	2796	1

232	1	745	1	1258	0	1771	1	2284	1	2797	0
233	1	746	0	1259	1	1772	0	2285	0	2798	1
234	0	747	1	1260	1	1773	1	2286	1	2799	0
235	1	748	1	1261	1	1774	0	2287	1	2800	1
236	1	749	0	1262	0	1775	1	2288	0	2801	0
237	0	750	1	1263	1	1776	1	2289	0	2802	1
238	0	751	0	1264	1	1777	0	2290	0	2803	1
239	0	752	1	1265	1	1778	1	2291	1	2804	0
240	0	753	1	1266	0	1779	1	2292	0	2805	0
241	0	754	1	1267	1	1780	0	2293	0	2806	0
242	0	755	1	1268	0	1781	0	2294	1	2807	1
243	0	756	0	1269	1	1782	1	2295	1	2808	0
244	0	757	0	1270	0	1783	1	2296	1	2809	0
245	0	758	0	1271	0	1784	0	2297	0	2810	1
246	1	759	0	1272	1	1785	1	2298	0	2811	1
247	1	760	1	1273	0	1786	1	2299	0	2812	0
248	1	761	1	1274	0	1787	1	2300	0	2813	1
249	1	762	0	1275	0	1788	1	2301	0	2814	1
250	1	763	0	1276	0	1789	1	2302	0	2815	0
251	0	764	1	1277	1	1790	0	2303	1	2816	1
252	0	765	1	1278	1	1791	0	2304	0	2817	0
253	0	766	1	1279	0	1792	1	2305	0	2818	1
254	0	767	1	1280	0	1793	1	2306	1	2819	1
255	0	768	1	1281	0	1794	0	2307	1	2820	0
256	0	769	1	1282	1	1795	1	2308	1	2821	1
257	0	770	0	1283	0	1796	1	2309	1	2822	0
258	0	771	1	1284	0	1797	0	2310	0	2823	1
259	1	772	1	1285	0	1798	0	2311	1	2824	0
260	1	773	0	1286	1	1799	0	2312	1	2825	1
261	0	774	0	1287	0	1800	1	2313	0	2826	1
262	1	775	0	1288	1	1801	0	2314	1	2827	1
263	0	776	0	1289	1	1802	1	2315	0	2828	1
264	1	777	1	1290	0	1803	0	2316	1	2829	0
265	1	778	1	1291	0	1804	0	2317	1	2830	1
266	1	779	0	1292	0	1805	1	2318	0	2831	0
267	1	780	1	1293	1	1806	0	2319	0	2832	0
268	0	781	1	1294	0	1807	0	2320	0	2833	1
269	0	782	0	1295	0	1808	1	2321	0	2834	0
270	1	783	0	1296	1	1809	1	2322	0	2835	1
271	1	784	0	1297	0	1810	0	2323	0	2836	0
272	0	785	0	1298	0	1811	1	2324	1	2837	0
273	0	786	1	1299	1	1812	0	2325	1	2838	1
274	0	787	1	1300	0	1813	1	2326	0	2839	0
275	1	788	0	1301	0	1814	1	2327	0	2840	1

276	0	789	1	1302	0	1815	1	2328	1	2841	0
277	1	790	0	1303	0	1816	1	2329	0	2842	1
278	1	791	1	1304	0	1817	0	2330	1	2843	0
279	1	792	0	1305	0	1818	1	2331	1	2844	0
280	1	793	1	1306	0	1819	1	2332	0	2845	0
281	1	794	0	1307	0	1820	1	2333	0	2846	0
282	0	795	0	1308	1	1821	0	2334	1	2847	1
283	1	796	0	1309	1	1822	0	2335	0	2848	0
284	1	797	0	1310	0	1823	0	2336	0	2849	0
285	1	798	0	1311	0	1824	1	2337	1	2850	1
286	1	799	0	1312	0	1825	1	2338	0	2851	0
287	0	800	0	1313	1	1826	1	2339	0	2852	1
288	0	801	0	1314	0	1827	1	2340	0	2853	0
289	1	802	0	1315	0	1828	1	2341	1	2854	0
290	0	803	0	1316	0	1829	0	2342	0	2855	0
291	0	804	1	1317	0	1830	0	2343	1	2856	0
292	1	805	1	1318	1	1831	0	2344	0	2857	0
293	0	806	0	1319	0	1832	0	2345	1	2858	1
294	1	807	1	1320	0	1833	0	2346	1	2859	1
295	0	808	0	1321	0	1834	0	2347	1	2860	1
296	0	809	0	1322	1	1835	1	2348	1	2861	0
297	0	810	1	1323	0	1836	0	2349	1	2862	1
298	1	811	1	1324	0	1837	0	2350	0	2863	0
299	1	812	0	1325	0	1838	0	2351	1	2864	0
300	1	813	1	1326	1	1839	0	2352	1	2865	0
301	0	814	0	1327	1	1840	1	2353	1	2866	0
302	0	815	0	1328	1	1841	1	2354	1	2867	0
303	0	816	1	1329	0	1842	1	2355	1	2868	0
304	0	817	1	1330	1	1843	0	2356	0	2869	1
305	1	818	0	1331	1	1844	0	2357	1	2870	1
306	0	819	1	1332	1	1845	1	2358	1	2871	1
307	0	820	1	1333	1	1846	1	2359	1	2872	1
308	0	821	1	1334	0	1847	1	2360	0	2873	0
309	1	822	0	1335	1	1848	1	2361	0	2874	1
310	1	823	1	1336	1	1849	1	2362	0	2875	0
311	1	824	1	1337	0	1850	0	2363	1	2876	0
312	1	825	1	1338	1	1851	0	2364	0	2877	0
313	0	826	0	1339	0	1852	1	2365	0	2878	0
314	0	827	0	1340	0	1853	1	2366	0	2879	1
315	0	828	0	1341	0	1854	1	2367	0	2880	0
316	1	829	1	1342	0	1855	0	2368	1	2881	0
317	0	830	1	1343	1	1856	1	2369	1	2882	1
318	1	831	1	1344	1	1857	1	2370	1	2883	0
319	1	832	1	1345	1	1858	0	2371	1	2884	1

320	1	833	0	1346	1	1859	1	2372	1	2885	1
321	0	834	1	1347	1	1860	0	2373	1	2886	1
322	1	835	0	1348	0	1861	1	2374	1	2887	0
323	0	836	1	1349	1	1862	0	2375	0	2888	0
324	1	837	1	1350	0	1863	1	2376	1	2889	1
325	0	838	1	1351	0	1864	0	2377	1	2890	1
326	1	839	0	1352	1	1865	0	2378	1	2891	0
327	1	840	1	1353	0	1866	0	2379	1	2892	0
328	0	841	1	1354	1	1867	0	2380	1	2893	1
329	0	842	0	1355	1	1868	1	2381	1	2894	0
330	0	843	0	1356	0	1869	1	2382	1	2895	0
331	0	844	0	1357	1	1870	1	2383	0	2896	1
332	0	845	0	1358	1	1871	0	2384	0	2897	1
333	0	846	1	1359	1	1872	0	2385	0	2898	1
334	0	847	0	1360	0	1873	1	2386	1	2899	0
335	0	848	0	1361	0	1874	0	2387	0	2900	1
336	0	849	1	1362	1	1875	0	2388	1	2901	0
337	0	850	1	1363	0	1876	0	2389	1	2902	1
338	0	851	1	1364	0	1877	0	2390	0	2903	0
339	0	852	0	1365	0	1878	0	2391	1	2904	0
340	0	853	0	1366	1	1879	0	2392	1	2905	0
341	1	854	1	1367	1	1880	0	2393	1	2906	0
342	0	855	0	1368	0	1881	0	2394	0	2907	1
343	0	856	0	1369	0	1882	0	2395	1	2908	1
344	1	857	0	1370	0	1883	0	2396	0	2909	1
345	0	858	0	1371	0	1884	1	2397	1	2910	1
346	0	859	0	1372	1	1885	1	2398	1	2911	1
347	1	860	0	1373	1	1886	0	2399	1	2912	0
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349	0	862	0	1375	0	1888	1	2401	0	2914	1
350	0	863	0	1376	1	1889	0	2402	1	2915	0
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352	0	865	0	1378	0	1891	0	2404	1	2917	0
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354	1	867	1	1380	1	1893	1	2406	1	2919	1
355	1	868	1	1381	0	1894	0	2407	0	2920	0
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357	0	870	0	1383	0	1896	1	2409	1	2922	1
358	0	871	1	1384	0	1897	0	2410	1	2923	0
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361	0	874	1	1387	0	1900	1	2413	1	2926	1
362	1	875	0	1388	1	1901	0	2414	0	2927	0
363	1	876	1	1389	1	1902	1	2415	0	2928	0

364	0	877	0	1390	1	1903	0	2416	0	2929	0
365	0	878	1	1391	1	1904	1	2417	0	2930	1
366	1	879	0	1392	1	1905	1	2418	1	2931	1
367	0	880	1	1393	0	1906	1	2419	0	2932	0
368	0	881	1	1394	0	1907	1	2420	0	2933	0
369	1	882	0	1395	1	1908	0	2421	1	2934	0
370	0	883	1	1396	1	1909	1	2422	0	2935	1
371	1	884	0	1397	1	1910	0	2423	1	2936	1
372	0	885	0	1398	0	1911	1	2424	0	2937	1
373	0	886	0	1399	0	1912	1	2425	0	2938	0
374	0	887	1	1400	0	1913	1	2426	1	2939	0
375	1	888	0	1401	1	1914	1	2427	1	2940	1
376	1	889	0	1402	0	1915	1	2428	1	2941	1
377	0	890	0	1403	0	1916	0	2429	0	2942	0
378	0	891	1	1404	1	1917	0	2430	0	2943	0
379	1	892	1	1405	0	1918	1	2431	0	2944	0
380	1	893	1	1406	0	1919	0	2432	1	2945	1
381	1	894	0	1407	1	1920	1	2433	1	2946	1
382	1	895	0	1408	1	1921	1	2434	0	2947	1
383	1	896	1	1409	1	1922	0	2435	1	2948	1
384	1	897	1	1410	1	1923	0	2436	0	2949	0
385	0	898	1	1411	1	1924	1	2437	1	2950	0
386	0	899	0	1412	0	1925	0	2438	1	2951	1
387	0	900	1	1413	0	1926	1	2439	1	2952	1
388	1	901	1	1414	1	1927	0	2440	1	2953	1
389	1	902	1	1415	0	1928	1	2441	1	2954	1
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391	1	904	1	1417	0	1930	1	2443	1	2956	0
392	1	905	1	1418	0	1931	1	2444	1	2957	0
393	1	906	1	1419	0	1932	1	2445	0	2958	0
394	0	907	1	1420	0	1933	0	2446	1	2959	0
395	1	908	0	1421	1	1934	1	2447	1	2960	1
396	1	909	0	1422	0	1935	1	2448	0	2961	1
397	1	910	0	1423	0	1936	0	2449	0	2962	1
398	1	911	1	1424	0	1937	0	2450	1	2963	0
399	1	912	1	1425	0	1938	0	2451	1	2964	0
400	1	913	0	1426	0	1939	1	2452	1	2965	0
401	0	914	1	1427	1	1940	1	2453	0	2966	1
402	0	915	1	1428	0	1941	1	2454	0	2967	0
403	1	916	1	1429	1	1942	0	2455	1	2968	1
404	1	917	1	1430	0	1943	1	2456	0	2969	0
405	0	918	0	1431	0	1944	1	2457	0	2970	1
406	0	919	0	1432	0	1945	0	2458	1	2971	1
407	0	920	1	1433	1	1946	1	2459	1	2972	1

408	0	921	1	1434	1	1947	0	2460	1	2973	1
409	0	922	1	1435	1	1948	1	2461	1	2974	1
410	0	923	0	1436	1	1949	1	2462	0	2975	1
411	1	924	1	1437	0	1950	0	2463	0	2976	1
412	1	925	1	1438	1	1951	1	2464	1	2977	1
413	1	926	0	1439	1	1952	0	2465	0	2978	0
414	1	927	1	1440	0	1953	1	2466	1	2979	1
415	1	928	1	1441	0	1954	0	2467	1	2980	0
416	1	929	1	1442	1	1955	1	2468	1	2981	0
417	1	930	1	1443	1	1956	0	2469	0	2982	0
418	1	931	1	1444	1	1957	0	2470	1	2983	0
419	0	932	1	1445	1	1958	0	2471	1	2984	1
420	1	933	1	1446	0	1959	1	2472	0	2985	0
421	1	934	0	1447	1	1960	1	2473	1	2986	0
422	0	935	0	1448	1	1961	1	2474	1	2987	0
423	1	936	0	1449	0	1962	0	2475	1	2988	0
424	0	937	1	1450	0	1963	0	2476	1	2989	1
425	0	938	1	1451	0	1964	0	2477	0	2990	1
426	1	939	1	1452	0	1965	1	2478	0	2991	0
427	0	940	1	1453	0	1966	0	2479	0	2992	0
428	1	941	1	1454	1	1967	1	2480	1	2993	0
429	1	942	1	1455	0	1968	0	2481	0	2994	0
430	1	943	1	1456	1	1969	1	2482	1	2995	0
431	0	944	0	1457	1	1970	0	2483	1	2996	1
432	1	945	1	1458	1	1971	1	2484	0	2997	0
433	0	946	1	1459	1	1972	1	2485	0	2998	0
434	0	947	1	1460	1	1973	0	2486	1	2999	0
435	1	948	1	1461	1	1974	0	2487	0	3000	1
436	0	949	1	1462	1	1975	1	2488	1	3001	0
437	1	950	0	1463	1	1976	1	2489	1	3002	1
438	0	951	1	1464	0	1977	1	2490	1	3003	1
439	0	952	1	1465	0	1978	0	2491	0	3004	1
440	1	953	0	1466	1	1979	0	2492	1	3005	1
441	0	954	0	1467	0	1980	0	2493	1	3006	0
442	1	955	1	1468	1	1981	0	2494	1	3007	1
443	0	956	0	1469	0	1982	0	2495	1	3008	1
444	1	957	1	1470	0	1983	0	2496	0	3009	0
445	0	958	0	1471	0	1984	1	2497	1	3010	1
446	1	959	0	1472	0	1985	0	2498	0	3011	0
447	1	960	1	1473	1	1986	1	2499	0	3012	0
448	0	961	0	1474	1	1987	1	2500	0	3013	1
449	0	962	1	1475	0	1988	0	2501	0	3014	1
450	0	963	1	1476	1	1989	0	2502	1	3015	0
451	0	964	1	1477	1	1990	0	2503	0	3016	0

452	0	965	0	1478	1	1991	1	2504	0	3017	0
453	1	966	1	1479	1	1992	1	2505	1	3018	0
454	0	967	0	1480	1	1993	1	2506	1	3019	1
455	0	968	0	1481	0	1994	1	2507	1	3020	1
456	0	969	1	1482	1	1995	0	2508	1	3021	0
457	1	970	0	1483	1	1996	0	2509	1	3022	0
458	0	971	1	1484	0	1997	0	2510	1	3023	0
459	1	972	0	1485	1	1998	0	2511	0	3024	1
460	0	973	1	1486	0	1999	1	2512	0	3025	0
461	0	974	1	1487	0	2000	0	2513	0	3026	1
462	0	975	0	1488	1	2001	0	2514	1	3027	0
463	1	976	0	1489	1	2002	1	2515	0	3028	1
464	0	977	0	1490	0	2003	1	2516	0	3029	0
465	1	978	0	1491	1	2004	1	2517	0	3030	0
466	1	979	0	1492	0	2005	0	2518	1	3031	0
467	0	980	0	1493	1	2006	0	2519	0	3032	1
468	1	981	1	1494	1	2007	1	2520	0	3033	1
469	1	982	0	1495	1	2008	1	2521	0	3034	1
470	1	983	0	1496	0	2009	1	2522	1	3035	0
471	1	984	1	1497	0	2010	0	2523	0	3036	0
472	1	985	0	1498	1	2011	1	2524	1	3037	0
473	1	986	1	1499	1	2012	0	2525	0	3038	1
474	1	987	0	1500	0	2013	0	2526	0	3039	0
475	0	988	0	1501	1	2014	0	2527	1	3040	0
476	0	989	1	1502	1	2015	0	2528	0	3041	0
477	1	990	1	1503	1	2016	0	2529	0	3042	0
478	0	991	0	1504	1	2017	0	2530	0	3043	1
479	0	992	1	1505	1	2018	0	2531	0	3044	1
480	1	993	0	1506	1	2019	0	2532	1	3045	1
481	0	994	0	1507	0	2020	0	2533	0	3046	1
482	0	995	1	1508	0	2021	0	2534	1	3047	0
483	0	996	1	1509	1	2022	0	2535	1	3048	1
484	0	997	0	1510	0	2023	1	2536	0	3049	1
485	0	998	0	1511	1	2024	0	2537	0	3050	1
486	0	999	0	1512	1	2025	0	2538	0	3051	0
487	0	1000	0	1513	1	2026	1	2539	0	3052	0
488	0	1001	0	1514	1	2027	0	2540	0	3053	0
489	0	1002	0	1515	0	2028	0	2541	1	3054	0
490	0	1003	1	1516	1	2029	0	2542	1	3055	1
491	1	1004	1	1517	0	2030	0	2543	1	3056	0
492	0	1005	0	1518	1	2031	0	2544	1	3057	0
493	1	1006	1	1519	1	2032	1	2545	1	3058	0
494	0	1007	0	1520	1	2033	1	2546	1	3059	0
495	0	1008	0	1521	1	2034	1	2547	0	3060	1

496	0	1009	1	1522	1	2035	0	2548	0	3061	1
497	1	1010	1	1523	0	2036	1	2549	0	3062	0
498	0	1011	0	1524	1	2037	1	2550	0	3063	0
499	1	1012	0	1525	1	2038	0	2551	1	3064	1
500	1	1013	0	1526	0	2039	1	2552	1	3065	1
501	1	1014	1	1527	0	2040	1	2553	1	3066	1
502	1	1015	1	1528	1	2041	0	2554	0	3067	0
503	1	1016	0	1529	0	2042	1	2555	1	3068	1
504	0	1017	0	1530	1	2043	0	2556	1	3069	0
505	1	1018	1	1531	1	2044	1	2557	0	3070	1
506	0	1019	1	1532	1	2045	1	2558	0	3071	0
507	0	1020	0	1533	1	2046	0	2559	1	3072	1
508	1	1021	1	1534	0	2047	1	2560	1		
509	0	1022	0	1535	0	2048	0	2561	0		
510	1	1023	1	1536	0	2049	1	2562	1		
511	1	1024	0	1537	1	2050	1	2563	1		
512	1	1025	1	1538	0	2051	1	2564	0		

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