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

GUO-NIU HAN* AND YINING HU*

Abstract. The continued fraction conjecture claims that the continued fraction defined by the (a, b)-Thue-Morse sequence is algebraic over $\mathbb{F}_2(x)$ for all pairs of distinct elements (a, b) in $\mathbb{F}_2[x] \setminus \mathbb{F}_2$. In this paper we prove the conjecture for $(a, b) = (z^3, z^4 + z^3 + 1)$.

1. Introduction

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

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

as the limit of the finite continued fractions

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

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

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

admits a continued fraction expansion of form (1.1).

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

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

that we shall denote

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

Date: 9/04/2020 17:26:06 .

2010 *Mathematics Subject Classification.* 11B85, 11J70, 11B50, 11Y65, 05A15.

Key words and phrases. automatic sequence, continued fraction, Thue-Morse sequence.

* This paper was automatically generated from a computer program developed by the authors, with 1.3 hours CPU time used.

Theorem 1.1. *When $(a,b)=(z^3, z^4+z^3+1)$, the two power series* $\mathrm{CF}(a,b)$ *and* $\mathrm{CF}(b,a)$ *are algebraic over $\mathbb{F}_2(z)$, with minimal polynomials of the form*

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

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

$$\begin{aligned}
p_0(z)&=z^{21}+z^{20}+z^{19}+z^{18}+z^{17}+z^{16}+z^{13}+z^{12}+z^{11}+z^9+z^7+z^3+1,\\
p_1(z)&=z^{25}+z^{24}+z^{23}+z^{22}+z^{20}+z^{19}+z^{16}+z^{15}+z^{14}+z^{12}+z^{10}+z^9\\
&\quad+z^6+z^3,\\
p_2(z)&=z^{28}+z^{24}+z^{22}+z^{20}+z^6,\\
p_3(z)&=z^{25}+z^{24}+z^{23}+z^{22}+z^{20}+z^{19}+z^{16}+z^{15}+z^{14}+z^{12}+z^{10}+z^9\\
&\quad+z^6+z^3,\\
p_4(z)&=z^{22}+z^{21}+z^{19}+z^{18}+z^{17}+z^{13}+z^{11}+z^9+z^7+z^6+z^3,
\end{aligned}$$

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

$$\begin{aligned}
p_0(z)&=z^{21}+z^{20}+z^{19}+z^{18}+z^{17}+z^{13}+z^{12}+z^{11}+z^9+z^7+z^3,\\
p_1(z)&=z^{25}+z^{24}+z^{23}+z^{22}+z^{20}+z^{19}+z^{16}+z^{15}+z^{14}+z^{12}+z^{10}+z^9\\
&\quad+z^6+z^3,\\
p_2(z)&=z^{28}+z^{24}+z^{22}+z^{20}+z^6,\\
p_3(z)&=z^{25}+z^{24}+z^{23}+z^{22}+z^{20}+z^{19}+z^{16}+z^{15}+z^{14}+z^{12}+z^{10}+z^9\\
&\quad+z^6+z^3,\\
p_4(z)&=z^{22}+z^{21}+z^{19}+z^{18}+z^{17}+z^{16}+z^{13}+z^{11}+z^9+z^7+z^6+z^3+1.
\end{aligned}$$

2. Proof

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

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

By the basic properties of continued fractions, we have

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

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

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

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

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

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

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

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

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

for some positive integer d_n. Hence,

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

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

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

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

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

of the vector

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

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

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

Lemma 2.1. *We have*

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

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

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

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

Proof. We give the proof of the identity

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

the proofs of the others being similar.

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

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

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 630 and substitute it for y in $Q(x,y)$. We get a series of valuation less than 630, which proves that $Q(x,y)$ is not an annihilating polynomial of $W^o_{0,0}M^o_{0,0}$. We find the minimal polynomial $\phi_1(x,y)$ of $W^o_{0,1}M^o_{1,0}$ in a similar way.

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

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

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 770 and substitute it for y in $Q(x,y)$. We get a series of valuation less than 770, and therefore $Q(x,y)$ is not an annihilating polynomial of $W^o_{0,0}M^o_{0,0} + W^o_{0,1}M^o_{1,0}$.

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

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 $k \ge 2$ and $u = 2^{2k-1}$, the following identities hold.*

$$\begin{aligned} M^e[:14u] = {} & M^e[:7u] + x^u M^e[:6u] + x^{4u} M^e[:3u] + x^{6u} M^e[:u] + x^u M^e[:7u] \\ & + x^{2u} M^e[:6u] + x^{5u} M^e[:3u] + x^{7u} M^e[:u] + x^{2u} M^e[:7u] \\ & + x^{3u} M^e[:6u] + x^{6u} M^e[:3u] + x^{8u} M^e[:u] + x^{3u} M^e[:7u] \\ & + x^{4u} M^e[:6u] + x^{7u} M^e[:3u] + x^{9u} M^e[:u] + x^{5u} M^e[:7u] \end{aligned}$$

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

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

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

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

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

$$+ x^{5u}T[:7u] + x^{6u}T[:6u] + x^{9u}T[:3u] + x^{11u}T[:u] + x^{6u}T[:7u]$$
$$+ x^{7u}T[:6u] + x^{10u}T[:3u] + x^{12u}T[:u] + x^{8u}T[:6u] + x^{9u}T[:5u]$$
$$+ x^{12u}T[:2u].$$

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

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

which can be rewritten as

$$0 = T[[w]_2] + T[[1w]_2] + T[[11w]_2] + T[[110w]_2] + T[[111w]_2], \tag{2.7}$$

$$0 = T[[10w]_2] + T[[11w]_2] + T[[100w]_2] + T[[110w]_2] + T[[1000w]_2], \tag{2.8}$$

$$\begin{aligned}0 &= T[[w]_2] + T[[1w]_2] + T[[100w]_2] + T[[101w]_2] + T[[110w]_2]\\ &\quad + T[[1001w]_2],\end{aligned} \tag{2.9}$$

$$0 = T[[w]_2] + T[[10w]_2] + T[[11w]_2] + T[[101w]_2] + T[[1010w]_2], \tag{2.10}$$

$$\begin{aligned}0 &= T[[w]_2] + T[[1w]_2] + T[[11w]_2] + T[[100w]_2] + T[[110w]_2]\\ &\quad + T[[1011w]_2],\end{aligned} \tag{2.11}$$

$$\begin{aligned}0 &= T[[10w]_2] + T[[11w]_2] + T[[100w]_2] + T[[101w]_2] + T[[110w]_2]\\ &\quad + T[[1100w]_2],\end{aligned} \tag{2.12}$$

$$0 = T[[1w]_2] + T[[100w]_2] + T[[101w]_2] + T[[1101w]_2], \tag{2.13}$$

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

$$0 = T[[w]_2] + T[[1w]_2] + T[[11w]_2] + T[[110w]_2] + T[[111w]_2], \tag{2.14}$$

$$0 = T[[10w]_2] + T[[11w]_2] + T[[100w]_2] + T[[110w]_2] + T[[1000w]_2], \tag{2.15}$$

$$\begin{aligned}0 &= T[[w]_2] + T[[1w]_2] + T[[100w]_2] + T[[101w]_2] + T[[110w]_2]\\ &\quad + T[[1001w]_2],\end{aligned} \tag{2.16}$$

$$0 = T[[w]_2] + T[[10w]_2] + T[[11w]_2] + T[[101w]_2] + T[[1010w]_2], \tag{2.17}$$

$$\begin{aligned}0 &= T[[w]_2] + T[[1w]_2] + T[[11w]_2] + T[[100w]_2] + T[[110w]_2]\\ &\quad + T[[1011w]_2],\end{aligned} \tag{2.18}$$

$$
\begin{aligned}
0 &= T[[10w]_2] + T[[11w]_2] + T[[100w]_2] + T[[101w]_2] + T[[110w]_2] \\
&\quad + T[[1100w]_2], && (2.19)\\
0 &= T[[1w]_2] + T[[100w]_2] + T[[101w]_2] + T[[1101w]_2], && (2.20)
\end{aligned}
$$

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

First we calculate an 2-automaton that generates T from its minimal polynomial and its first terms. This automaton has 3267 states; its transition function and output function can be found in the annex. Let $A(s, w)$ denote the state reached after reading w from right to left starting from the state s, and τ the output function. Define

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

Identities (2.7) through (2.20) can be written as

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

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

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

for $s = A(i, 0^{2k})$. We find that $(A(i, 0^{32}), E_{32}) = (A(i, 0^{20}), E_{20})$, so that we only have to verify that identities (2.21) through (2.34) hold for $2 \le k \le 16$, 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 $u = 2^{2k-1}$,*

$$M_{2k} = M^e[:7u] + x^u M^e[:6u] + x^{4u} M^e[:3u] + x^{6u} M^e[:u] + x^{7u} R^e,$$
$$W_{2k} = W^e[:7u] + x^u W^e[:6u] + x^{4u} W^e[:3u] + x^{6u} W^e[:u] + x^{7u} R^e.$$

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

$$M_{2k+1} = M^o[:7u] + x^u M^o[:6u] + x^{4u} M^o[:3u] + x^{6u} M^o[:u] + x^{7u} R^o,$$
$$W_{2k+1} = W^o[:7u] + x^u W^o[:6u] + x^{4u} W^o[:3u] + x^{6u} W^o[:u] + x^{7u} R^o.$$

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

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

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

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

For all $n \le 14$, replace the occurrences of $W^e[:n \cdot v]$ and $M^e[:n \cdot v]$ in the above expression by the reduction modulo $x^{n \cdot v}$ of the right side of the corresponding identity in Lemma 2.2 and get a new expression, which we call rhs. Define

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

Using the notation introduced above, we can represent the expressions lhs (2.35) and rhs as polynomials in $\mathbb{F}_2[a_1, ..., a_{14}, b_1, ..., b_{14}, c][X]$. Note that it is not a problem that a_j commutes with b_k while W^e does not commute with M^e, because in the expressions concerned, the products of W^e-terms and M^e-terms are always in the same order. We let the computer do the simplification and check that the difference between these two polynomials is indeed $O(X^{14})$, which completes the proof. □

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 $0 \le j,k \le 1$,

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

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

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

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

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

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

Define

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

where

$$\begin{aligned}
q_0(x) &= x^{28} + x^{25} + x^{21} + x^{19} + x^{17} + x^{16} + x^{15} + x^{12} + x^{11} + x^{10} + x^9 + x^8\\
&\quad + x^7,\\
q_1(x) &= x^{25} + x^{22} + x^{19} + x^{18} + x^{16} + x^{14} + x^{13} + x^{12} + x^9 + x^8 + x^6 + x^5 + x^4\\
&\quad + x^3,\\
q_2(x) &= x^{22} + x^8 + x^6 + x^4 + 1,\\
q_3(x) &= x^{25} + x^{22} + x^{19} + x^{18} + x^{16} + x^{14} + x^{13} + x^{12} + x^9 + x^8 + x^6 + x^5 + x^4\\
&\quad + x^3,\\
q_4(x) &= x^{25} + x^{22} + x^{21} + x^{19} + x^{17} + x^{15} + x^{11} + x^{10} + x^9 + x^7 + x^6.
\end{aligned}$$

The polynomial $Q(x,y)$ is the candidate for the minimal polynomial of $f(x)$ found by Padé-Hermite approximation. To prove that it is indeed the minimal polynomial of $f(x)$, we only need to prove that it is an irreducible factor of $P(x,y)$ of multiplicity m and $R(x,y) := P(x,y)/Q(x,y)^m$ is not an annihilating polynomial of $f(x)$. We verify the first point directly. For the second point, we find that when we truncate $f(x)$ to order 216, and substitute it for y in $R(z,y)$, we get a series with valuation smaller than 216, which proves that $R(z,y)$ is not an annihilating polynomial of $f(x)$. Finally, $z^{12}Q(1/z,y)$ is the minimal polynomial of $\mathrm{CF}(a,b) = f(1/z)$. □

3. Annexe

All 16 polynomials are of the form

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

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

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

$$\begin{aligned}
p_0(x) &= x^{150}+x^{144}+x^{142}+x^{132}+x^{128}+x^{126}+x^{122}+x^{118}+x^{114}+x^{108}\\
&\quad +x^{100}+x^{94}+x^{88}+x^{86}+x^{84}+x^{80}+x^{78}+x^{74}+x^{70}+x^{68}+x^{64}\\
&\quad +x^{60}+x^{58}+x^{54}+x^{52}+x^{44}+x^{40}+x^{38}+x^{36},\\
p_3(x) &= x^{138}+x^{136}+x^{128}+x^{126}+x^{122}+x^{120}+x^{116}+x^{114}+x^{112}+x^{104}\\
&\quad +x^{102}+x^{100}+x^{98}+x^{90}+x^{84}+x^{80}+x^{78}+x^{72}+x^{68}+x^{64}+x^{62}\\
&\quad +x^{56}+x^{50}+x^{48}+x^{46}+x^{44}+x^{42}+x^{38}+x^{36}+x^{34}+x^{28}+x^{20},\\
p_6(x) &= x^{136}+x^{132}+x^{130}+x^{128}+x^{126}+x^{120}+x^{118}+x^{116}+x^{110}+x^{106}\\
&\quad +x^{100}+x^{94}+x^{90}+x^{88}+x^{84}+x^{82}+x^{80}+x^{78}+x^{76}+x^{72}+x^{66}\\
&\quad +x^{64}+x^{60}+x^{58}+x^{50}+x^{48}+x^{42}+x^{36}+x^{30}+x^{28}+x^{20}+x^{18}\\
&\quad +x^{14}+x^{10}+x^{6}+1,\\
p_9(x) &= x^{144}+x^{138}+x^{126}+x^{124}+x^{116}+x^{114}+x^{106}+x^{98}+x^{96}+x^{94}\\
&\quad +x^{88}+x^{82}+x^{80}+x^{74}+x^{72}+x^{70}+x^{68}+x^{66}+x^{62}+x^{58}+x^{56}\\
&\quad +x^{54}+x^{50}+x^{44}+x^{42}+x^{40}+x^{36}+x^{32}+x^{30}+x^{28}+x^{24}+x^{22}\\
&\quad +x^{18}+x^{10}+x^{8}+x^{6},\\
p_{12}(x) &= x^{144}+x^{120}+x^{112}+x^{96}+x^{80}+x^{72}+x^{64}+x^{56}+x^{32}+x^{24}+x^{16}\\
&\quad +x^{8}+1,
\end{aligned}$$

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

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

$$\begin{aligned}
p_0(x) &= x^{147}+x^{144}+x^{140}+x^{139}+x^{136}+x^{133}+x^{129}+x^{128}+x^{126}+x^{125}\\
&\quad +x^{123}+x^{120}+x^{119}+x^{116}+x^{115}+x^{113}+x^{112}+x^{111}+x^{110}\\
&\quad +x^{109}+x^{105}+x^{102}+x^{101}+x^{100}+x^{99}+x^{94}+x^{90}+x^{89}+x^{87}\\
&\quad +x^{86}+x^{83}+x^{81}+x^{80}+x^{78}+x^{77}+x^{76}+x^{74}+x^{73}+x^{69}+x^{68}\\
&\quad +x^{65}+x^{64}+x^{63}+x^{62}+x^{61}+x^{60}+x^{59}+x^{55}+x^{54}+x^{53}+x^{52}\\
&\quad +x^{50}+x^{48}+x^{43}+x^{42}+x^{40}+x^{39},\\
p_3(x) &= x^{141}+x^{137}+x^{127}+x^{125}+x^{121}+x^{117}+x^{115}+x^{113}+x^{103}+x^{101}\\
&\quad +x^{97}+x^{93}+x^{91}+x^{89}+x^{79}+x^{67}+x^{63}+x^{53}+x^{51}+x^{49}+x^{47}\\
&\quad +x^{45}+x^{41}+x^{39}+x^{37}+x^{35}+x^{33}+x^{27},\\
p_6(x) &= x^{138}+x^{135}+x^{134}+x^{132}+x^{129}+x^{128}+x^{126}+x^{124}+x^{123}+x^{121}\\
&\quad +x^{119}+x^{118}+x^{117}+x^{116}+x^{112}+x^{110}+x^{109}+x^{108}+x^{107}\\
&\quad +x^{106}+x^{102}+x^{99}+x^{96}+x^{95}+x^{94}+x^{93}+x^{89}+x^{86}+x^{85}+x^{83}\\
&\quad +x^{82}+x^{81}+x^{80}+x^{78}+x^{76}+x^{75}+x^{74}+x^{73}+x^{69}+x^{66}+x^{65}\\
&\quad +x^{63}+x^{62}+x^{61}+x^{60}+x^{56}+x^{53}+x^{52}+x^{48}+x^{45}+x^{44}+x^{42}\\
&\quad +x^{40}+x^{39}+x^{37}+x^{35}+x^{34}+x^{33}+x^{32}+x^{30}+x^{28}+x^{27}+x^{25}
\end{aligned}$$

$$\begin{aligned}
&+ x^{23} + x^{21} + x^{20} + x^{19} + x^{18},\\
p_9(x) &= x^{135} + x^{131} + x^{129} + x^{125} + x^{123} + x^{113} + x^{109} + x^{105} + x^{103} + x^{97}\\
&+ x^{93} + x^{91} + x^{85} + x^{83} + x^{81} + x^{77} + x^{69} + x^{65} + x^{63} + x^{61} + x^{57}\\
&+ x^{55} + x^{51} + x^{41} + x^{37} + x^{33} + x^{21} + x^{13} + x^{11} + x^{9},\\
p_{12}(x) &= x^{132} + x^{129} + x^{128} + x^{120} + x^{117} + x^{113} + x^{112} + x^{84} + x^{81} + x^{80}\\
&+ x^{72} + x^{69} + x^{68} + x^{56} + x^{53} + x^{49} + x^{48} + x^{36} + x^{33} + x^{32} + x^{24}\\
&+ x^{21} + x^{20} + x^{8} + x^{5} + x + 1,
\end{aligned}$$

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

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

$$\begin{aligned}
p_0(x) &= x^{147} + x^{144} + x^{140} + x^{139} + x^{136} + x^{133} + x^{129} + x^{128} + x^{126} + x^{125}\\
&+ x^{123} + x^{120} + x^{119} + x^{116} + x^{115} + x^{113} + x^{112} + x^{111} + x^{110}\\
&+ x^{109} + x^{105} + x^{102} + x^{101} + x^{100} + x^{99} + x^{94} + x^{90} + x^{89} + x^{87}\\
&+ x^{86} + x^{83} + x^{81} + x^{80} + x^{78} + x^{77} + x^{76} + x^{74} + x^{73} + x^{69} + x^{68}\\
&+ x^{65} + x^{64} + x^{63} + x^{62} + x^{61} + x^{60} + x^{59} + x^{55} + x^{54} + x^{53} + x^{52}\\
&+ x^{50} + x^{48} + x^{43} + x^{42} + x^{40} + x^{39},\\
p_3(x) &= x^{141} + x^{137} + x^{127} + x^{125} + x^{121} + x^{117} + x^{115} + x^{113} + x^{103} + x^{101}\\
&+ x^{97} + x^{93} + x^{91} + x^{89} + x^{79} + x^{67} + x^{63} + x^{53} + x^{51} + x^{49} + x^{47}\\
&+ x^{45} + x^{41} + x^{39} + x^{37} + x^{35} + x^{33} + x^{27},\\
p_6(x) &= x^{138} + x^{135} + x^{134} + x^{132} + x^{129} + x^{128} + x^{126} + x^{124} + x^{123} + x^{121}\\
&+ x^{119} + x^{118} + x^{117} + x^{116} + x^{112} + x^{110} + x^{109} + x^{108} + x^{107}\\
&+ x^{106} + x^{102} + x^{99} + x^{96} + x^{95} + x^{94} + x^{93} + x^{89} + x^{86} + x^{85} + x^{83}\\
&+ x^{82} + x^{81} + x^{80} + x^{78} + x^{76} + x^{75} + x^{74} + x^{73} + x^{69} + x^{66} + x^{65}\\
&+ x^{63} + x^{62} + x^{61} + x^{60} + x^{56} + x^{53} + x^{52} + x^{48} + x^{45} + x^{44} + x^{42}\\
&+ x^{40} + x^{39} + x^{37} + x^{35} + x^{34} + x^{33} + x^{32} + x^{30} + x^{28} + x^{27} + x^{25}\\
&+ x^{23} + x^{21} + x^{20} + x^{19} + x^{18},\\
p_9(x) &= x^{135} + x^{131} + x^{129} + x^{125} + x^{123} + x^{113} + x^{109} + x^{105} + x^{103} + x^{97}\\
&+ x^{93} + x^{91} + x^{85} + x^{83} + x^{81} + x^{77} + x^{69} + x^{65} + x^{63} + x^{61} + x^{57}\\
&+ x^{55} + x^{51} + x^{41} + x^{37} + x^{33} + x^{21} + x^{13} + x^{11} + x^{9},\\
p_{12}(x) &= x^{132} + x^{129} + x^{128} + x^{120} + x^{117} + x^{113} + x^{112} + x^{84} + x^{81} + x^{80}\\
&+ x^{72} + x^{69} + x^{68} + x^{56} + x^{53} + x^{49} + x^{48} + x^{36} + x^{33} + x^{32} + x^{24}\\
&+ x^{21} + x^{20} + x^{8} + x^{5} + x + 1,
\end{aligned}$$

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

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

$$\begin{aligned}
p_0(x) &= x^{144} + x^{136} + x^{126} + x^{114} + x^{108} + x^{100} + x^{98} + x^{92} + x^{90} + x^{82}\\
&+ x^{80} + x^{78} + x^{74} + x^{72} + x^{62} + x^{58} + x^{54} + x^{52} + x^{50} + x^{46} + x^{42},
\end{aligned}$$

$$
\begin{aligned}
p_3(x) &= x^{126} + x^{118} + x^{112} + x^{108} + x^{106} + x^{102} + x^{96} + x^{94} + x^{90} + x^{88} \\
&\quad + x^{84} + x^{80} + x^{78} + x^{72} + x^{70} + x^{66} + x^{62} + x^{60} + x^{58} + x^{56} + x^{54} \\
&\quad + x^{50} + x^{48} + x^{46} + x^{44} + x^{40} + x^{30} + x^{28} + x^{20} + x^{18}, \\
p_6(x) &= x^{126} + x^{120} + x^{118} + x^{106} + x^{102} + x^{100} + x^{96} + x^{92} + x^{88} + x^{84} \\
&\quad + x^{80} + x^{78} + x^{70} + x^{66} + x^{64} + x^{62} + x^{58} + x^{54} + x^{52} + x^{50} + x^{46} \\
&\quad + x^{44} + x^{40} + x^{38} + x^{34} + x^{26} + x^{24} + x^{22} + x^{20} + x^{16} + x^{8} + x^{6} + x^{2} \\
&\quad + 1, \\
p_9(x) &= x^{120} + x^{112} + x^{108} + x^{106} + x^{102} + x^{100} + x^{90} + x^{86} + x^{84} + x^{82} \\
&\quad + x^{80} + x^{78} + x^{76} + x^{74} + x^{72} + x^{66} + x^{64} + x^{60} + x^{56} + x^{52} + x^{50} \\
&\quad + x^{44} + x^{42} + x^{38} + x^{36} + x^{34} + x^{28} + x^{24} + x^{22} + x^{16} + x^{12} + x^{6}, \\
p_{12}(x) &= x^{120} + x^{114} + x^{112} + x^{72} + x^{66} + x^{64} + x^{56} + x^{50} + x^{48} + x^{24} + x^{18} \\
&\quad + x^{16} + x^{8} + x^{2} + 1,
\end{aligned}
$$

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

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

$$
\begin{aligned}
p_0(x) &= x^{144} + x^{136} + x^{132} + x^{124} + x^{120} + x^{114} + x^{112} + x^{108} + x^{100} + x^{98} \\
&\quad + x^{90} + x^{84} + x^{82} + x^{80} + x^{76} + x^{74} + x^{66} + x^{64} + x^{58} + x^{54} + x^{44} \\
&\quad + x^{42} + x^{36}, \\
p_3(x) &= x^{126} + x^{118} + x^{114} + x^{112} + x^{108} + x^{96} + x^{88} + x^{86} + x^{84} + x^{82} + x^{80} \\
&\quad + x^{78} + x^{72} + x^{70} + x^{62} + x^{60} + x^{56} + x^{48} + x^{44} + x^{42} + x^{40} + x^{34} \\
&\quad + x^{30} + x^{28} + x^{22} + x^{20}, \\
p_6(x) &= x^{126} + x^{120} + x^{118} + x^{114} + x^{108} + x^{102} + x^{94} + x^{92} + x^{86} + x^{82} \\
&\quad + x^{76} + x^{74} + x^{70} + x^{66} + x^{64} + x^{62} + x^{60} + x^{58} + x^{54} + x^{50} + x^{48} \\
&\quad + x^{42} + x^{36} + x^{34} + x^{28} + x^{24} + x^{22} + x^{20} + x^{14} + x^{12} + x^{8} + x^{6} + x^{2} \\
&\quad + 1, \\
p_9(x) &= x^{120} + x^{112} + x^{108} + x^{106} + x^{102} + x^{100} + x^{90} + x^{86} + x^{84} + x^{82} \\
&\quad + x^{80} + x^{78} + x^{76} + x^{74} + x^{72} + x^{66} + x^{64} + x^{60} + x^{56} + x^{52} + x^{50} \\
&\quad + x^{44} + x^{42} + x^{38} + x^{36} + x^{34} + x^{28} + x^{24} + x^{22} + x^{16} + x^{12} + x^{6}, \\
p_{12}(x) &= x^{120} + x^{114} + x^{112} + x^{72} + x^{66} + x^{64} + x^{56} + x^{50} + x^{48} + x^{24} + x^{18} \\
&\quad + x^{16} + x^{8} + x^{2} + 1,
\end{aligned}
$$

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

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

$$
\begin{aligned}
p_0(x) &= x^{147} + x^{139} + x^{138} + x^{134} + x^{132} + x^{128} + x^{127} + x^{123} + x^{115} + x^{114} \\
&\quad + x^{112} + x^{110} + x^{109} + x^{106} + x^{105} + x^{104} + x^{100} + x^{99} + x^{98} + x^{97} \\
&\quad + x^{96} + x^{90} + x^{89} + x^{86} + x^{83} + x^{82} + x^{81} + x^{80} + x^{74} + x^{72} + x^{69} \\
&\quad + x^{68} + x^{66} + x^{64} + x^{62} + x^{59} + x^{57} + x^{55} + x^{54} + x^{53} + x^{52} + x^{50} \\
&\quad + x^{48} + x^{47} + x^{46} + x^{45} + x^{44} + x^{43} + x^{42} + x^{40} + x^{39},
\end{aligned}
$$

$$
\begin{aligned}
p_3(x) &= x^{141} + x^{137} + x^{127} + x^{125} + x^{121} + x^{117} + x^{115} + x^{113} + x^{103} + x^{101} \\
&\quad + x^{97} + x^{93} + x^{91} + x^{89} + x^{79} + x^{67} + x^{63} + x^{53} + x^{51} + x^{49} + x^{47} \\
&\quad + x^{45} + x^{41} + x^{39} + x^{37} + x^{35} + x^{33} + x^{27}, \\
p_6(x) &= x^{138} + x^{135} + x^{134} + x^{132} + x^{129} + x^{128} + x^{126} + x^{124} + x^{123} + x^{121} \\
&\quad + x^{119} + x^{118} + x^{117} + x^{116} + x^{112} + x^{110} + x^{109} + x^{108} + x^{107} \\
&\quad + x^{106} + x^{102} + x^{99} + x^{96} + x^{95} + x^{94} + x^{93} + x^{89} + x^{86} + x^{85} + x^{83} \\
&\quad + x^{82} + x^{81} + x^{80} + x^{78} + x^{76} + x^{75} + x^{74} + x^{73} + x^{69} + x^{66} + x^{65} \\
&\quad + x^{63} + x^{62} + x^{61} + x^{60} + x^{56} + x^{53} + x^{52} + x^{48} + x^{45} + x^{44} + x^{42} \\
&\quad + x^{40} + x^{39} + x^{37} + x^{35} + x^{34} + x^{33} + x^{32} + x^{30} + x^{28} + x^{27} + x^{25} \\
&\quad + x^{23} + x^{21} + x^{20} + x^{19} + x^{18}, \\
p_9(x) &= x^{135} + x^{131} + x^{129} + x^{125} + x^{123} + x^{113} + x^{109} + x^{105} + x^{103} + x^{97} \\
&\quad + x^{93} + x^{91} + x^{85} + x^{83} + x^{81} + x^{77} + x^{69} + x^{65} + x^{63} + x^{61} + x^{57} \\
&\quad + x^{55} + x^{51} + x^{41} + x^{37} + x^{33} + x^{21} + x^{13} + x^{11} + x^{9}, \\
p_{12}(x) &= x^{132} + x^{129} + x^{128} + x^{120} + x^{117} + x^{113} + x^{112} + x^{84} + x^{81} + x^{80} \\
&\quad + x^{72} + x^{69} + x^{68} + x^{56} + x^{53} + x^{49} + x^{48} + x^{36} + x^{33} + x^{32} + x^{24} \\
&\quad + x^{21} + x^{20} + x^{8} + x^{5} + x + 1,
\end{aligned}
$$

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

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

$$
\begin{aligned}
p_0(x) &= x^{147} + x^{139} + x^{138} + x^{134} + x^{132} + x^{128} + x^{127} + x^{123} + x^{115} + x^{114} \\
&\quad + x^{112} + x^{110} + x^{109} + x^{106} + x^{105} + x^{104} + x^{100} + x^{99} + x^{98} + x^{97} \\
&\quad + x^{96} + x^{90} + x^{89} + x^{86} + x^{83} + x^{82} + x^{81} + x^{80} + x^{74} + x^{72} + x^{69} \\
&\quad + x^{68} + x^{66} + x^{64} + x^{62} + x^{59} + x^{57} + x^{55} + x^{54} + x^{53} + x^{52} + x^{50} \\
&\quad + x^{48} + x^{47} + x^{46} + x^{45} + x^{44} + x^{43} + x^{42} + x^{40} + x^{39}, \\
p_3(x) &= x^{141} + x^{137} + x^{127} + x^{125} + x^{121} + x^{117} + x^{115} + x^{113} + x^{103} + x^{101} \\
&\quad + x^{97} + x^{93} + x^{91} + x^{89} + x^{79} + x^{67} + x^{63} + x^{53} + x^{51} + x^{49} + x^{47} \\
&\quad + x^{45} + x^{41} + x^{39} + x^{37} + x^{35} + x^{33} + x^{27}, \\
p_6(x) &= x^{138} + x^{135} + x^{134} + x^{132} + x^{129} + x^{128} + x^{126} + x^{124} + x^{123} + x^{121} \\
&\quad + x^{119} + x^{118} + x^{117} + x^{116} + x^{112} + x^{110} + x^{109} + x^{108} + x^{107} \\
&\quad + x^{106} + x^{102} + x^{99} + x^{96} + x^{95} + x^{94} + x^{93} + x^{89} + x^{86} + x^{85} + x^{83} \\
&\quad + x^{82} + x^{81} + x^{80} + x^{78} + x^{76} + x^{75} + x^{74} + x^{73} + x^{69} + x^{66} + x^{65} \\
&\quad + x^{63} + x^{62} + x^{61} + x^{60} + x^{56} + x^{53} + x^{52} + x^{48} + x^{45} + x^{44} + x^{42} \\
&\quad + x^{40} + x^{39} + x^{37} + x^{35} + x^{34} + x^{33} + x^{32} + x^{30} + x^{28} + x^{27} + x^{25} \\
&\quad + x^{23} + x^{21} + x^{20} + x^{19} + x^{18}, \\
p_9(x) &= x^{135} + x^{131} + x^{129} + x^{125} + x^{123} + x^{113} + x^{109} + x^{105} + x^{103} + x^{97} \\
&\quad + x^{93} + x^{91} + x^{85} + x^{83} + x^{81} + x^{77} + x^{69} + x^{65} + x^{63} + x^{61} + x^{57}
\end{aligned}
$$

$$
\begin{aligned}
&+ x^{55} + x^{51} + x^{41} + x^{37} + x^{33} + x^{21} + x^{13} + x^{11} + x^{9},\\
p_{12}(x) &= x^{132} + x^{129} + x^{128} + x^{120} + x^{117} + x^{113} + x^{112} + x^{84} + x^{81} + x^{80}\\
&+ x^{72} + x^{69} + x^{68} + x^{56} + x^{53} + x^{49} + x^{48} + x^{36} + x^{33} + x^{32} + x^{24}\\
&+ x^{21} + x^{20} + x^{8} + x^{5} + x + 1,
\end{aligned}
$$

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

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

$$
\begin{aligned}
p_0(x) &= x^{150} + x^{142} + x^{138} + x^{132} + x^{130} + x^{120} + x^{110} + x^{108} + x^{104} + x^{98}\\
&+ x^{88} + x^{74} + x^{72} + x^{68} + x^{60} + x^{54} + x^{50} + x^{44} + x^{42},\\
p_3(x) &= x^{136} + x^{132} + x^{128} + x^{126} + x^{124} + x^{122} + x^{120} + x^{114} + x^{112} + x^{108}\\
&+ x^{106} + x^{104} + x^{102} + x^{100} + x^{98} + x^{90} + x^{84} + x^{82} + x^{80} + x^{78}\\
&+ x^{76} + x^{74} + x^{72} + x^{68} + x^{66} + x^{64} + x^{62} + x^{60} + x^{56} + x^{52} + x^{50}\\
&+ x^{48} + x^{46} + x^{38} + x^{36} + x^{18},\\
p_6(x) &= x^{138} + x^{136} + x^{132} + x^{130} + x^{128} + x^{126} + x^{124} + x^{118} + x^{110} + x^{108}\\
&+ x^{104} + x^{94} + x^{90} + x^{88} + x^{84} + x^{80} + x^{78} + x^{76} + x^{74} + x^{72} + x^{68}\\
&+ x^{60} + x^{58} + x^{56} + x^{52} + x^{50} + x^{48} + x^{44} + x^{40} + x^{34} + x^{30} + x^{28}\\
&+ x^{16} + x^{14} + x^{12} + x^{10} + x^{6} + 1,\\
p_9(x) &= x^{144} + x^{138} + x^{126} + x^{124} + x^{116} + x^{114} + x^{106} + x^{98} + x^{96} + x^{94}\\
&+ x^{88} + x^{82} + x^{80} + x^{74} + x^{72} + x^{70} + x^{68} + x^{66} + x^{62} + x^{58} + x^{56}\\
&+ x^{54} + x^{50} + x^{44} + x^{42} + x^{40} + x^{36} + x^{32} + x^{30} + x^{28} + x^{24} + x^{22}\\
&+ x^{18} + x^{10} + x^{8} + x^{6},\\
p_{12}(x) &= x^{144} + x^{120} + x^{112} + x^{96} + x^{80} + x^{72} + x^{64} + x^{56} + x^{32} + x^{24} + x^{16}\\
&+ x^{8} + 1,
\end{aligned}
$$

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

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

$$
\begin{aligned}
p_0(x) &= x^{147} + x^{144} + x^{141} + x^{140} + x^{139} + x^{136} + x^{130} + x^{129} + x^{128} + x^{127}\\
&+ x^{125} + x^{121} + x^{118} + x^{117} + x^{116} + x^{114} + x^{112} + x^{111} + x^{109}\\
&+ x^{107} + x^{104} + x^{103} + x^{100} + x^{98} + x^{96} + x^{95} + x^{94} + x^{93} + x^{92}\\
&+ x^{87} + x^{85} + x^{83} + x^{82} + x^{80} + x^{75} + x^{73} + x^{71} + x^{69} + x^{68} + x^{67}\\
&+ x^{64} + x^{62} + x^{60} + x^{57} + x^{55} + x^{54} + x^{51} + x^{50} + x^{49} + x^{46} + x^{43}\\
&+ x^{42} + x^{40} + x^{39} + x^{38} + x^{37} + x^{36},\\
p_3(x) &= x^{144} + x^{140} + x^{138} + x^{135} + x^{134} + x^{128} + x^{127} + x^{126} + x^{121} + x^{115}\\
&+ x^{114} + x^{113} + x^{112} + x^{108} + x^{106} + x^{105} + x^{98} + x^{97} + x^{95} + x^{94}\\
&+ x^{92} + x^{91} + x^{87} + x^{86} + x^{84} + x^{81} + x^{80} + x^{79} + x^{78} + x^{74} + x^{71}\\
&+ x^{70} + x^{67} + x^{60} + x^{57} + x^{52} + x^{51} + x^{48} + x^{44} + x^{40} + x^{39} + x^{38}\\
&+ x^{35} + x^{33} + x^{32} + x^{31} + x^{30} + x^{28} + x^{27} + x^{26} + x^{25} + x^{24},
\end{aligned}
$$

$$\begin{aligned}
p_6(x) = {} & x^{144} + x^{140} + x^{138} + x^{135} + x^{134} + x^{129} + x^{128} + x^{127} + x^{123} + x^{122} \\
& + x^{121} + x^{117} + x^{114} + x^{111} + x^{110} + x^{109} + x^{108} + x^{106} + x^{105} \\
& + x^{101} + x^{96} + x^{94} + x^{93} + x^{92} + x^{90} + x^{89} + x^{88} + x^{86} + x^{85} + x^{83} \\
& + x^{82} + x^{80} + x^{79} + x^{72} + x^{71} + x^{70} + x^{68} + x^{67} + x^{66} + x^{62} + x^{58} \\
& + x^{56} + x^{54} + x^{53} + x^{50} + x^{49} + x^{48} + x^{47} + x^{46} + x^{45} + x^{41} + x^{39} \\
& + x^{34} + x^{33} + x^{32} + x^{27} + x^{24} + x^{22} + x^{20} + x^{17} + x^{15} + x^{14} + x^{13} \\
& + x^{12} + x^{8} + x^{5} + x + 1, \\
p_9(x) = {} & x^{144} + x^{141} + x^{140} + x^{128} + x^{125} + x^{124} + x^{96} + x^{93} + x^{92} + x^{64} \\
& + x^{61} + x^{60} + x^{48} + x^{45} + x^{44} + x^{16} + x^{13} + x^{12}, \\
p_{12}(x) = {} & x^{144} + x^{141} + x^{140} + x^{132} + x^{129} + x^{125} + x^{124} + x^{120} + x^{117} + x^{113} \\
& + x^{112} + x^{96} + x^{93} + x^{92} + x^{84} + x^{81} + x^{80} + x^{72} + x^{69} + x^{68} + x^{64} \\
& + x^{61} + x^{60} + x^{56} + x^{53} + x^{49} + x^{45} + x^{44} + x^{36} + x^{33} + x^{32} + x^{24} \\
& + x^{21} + x^{20} + x^{16} + x^{13} + x^{12} + x^{8} + x^{5} + x + 1,
\end{aligned}$$

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

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

$$\begin{aligned}
p_0(x) = {} & x^{152} + x^{143} + x^{139} + x^{138} + x^{136} + x^{135} + x^{134} + x^{132} + x^{130} + x^{129} \\
& + x^{127} + x^{125} + x^{124} + x^{123} + x^{119} + x^{118} + x^{114} + x^{111} + x^{110} \\
& + x^{109} + x^{108} + x^{101} + x^{100} + x^{98} + x^{97} + x^{96} + x^{91} + x^{90} + x^{88} \\
& + x^{87} + x^{85} + x^{82} + x^{80} + x^{79} + x^{78} + x^{75} + x^{74} + x^{73} + x^{71} + x^{69} \\
& + x^{67} + x^{66} + x^{65} + x^{62} + x^{61} + x^{60} + x^{59} + x^{55} + x^{51} + x^{50} + x^{46} \\
& + x^{44} + x^{43} + x^{42} + x^{39}, \\
p_3(x) = {} & x^{131} + x^{128} + x^{125} + x^{124} + x^{122} + x^{120} + x^{118} + x^{117} + x^{116} + x^{115} \\
& + x^{107} + x^{104} + x^{101} + x^{100} + x^{98} + x^{96} + x^{94} + x^{93} + x^{92} + x^{91} \\
& + x^{83} + x^{80} + x^{77} + x^{76} + x^{74} + x^{72} + x^{70} + x^{69} + x^{68} + x^{64} + x^{61} \\
& + x^{60} + x^{58} + x^{56} + x^{54} + x^{53} + x^{52} + x^{48} + x^{45} + x^{44} + x^{43} + x^{42} \\
& + x^{38} + x^{35} + x^{34} + x^{32} + x^{30} + x^{29} + x^{28} + x^{27}, \\
p_6(x) = {} & x^{134} + x^{128} + x^{122} + x^{120} + x^{118} + x^{116} + x^{108} + x^{106} + x^{98} + x^{94} \\
& + x^{92} + x^{88} + x^{84} + x^{82} + x^{80} + x^{74} + x^{72} + x^{68} + x^{64} + x^{62} + x^{60} \\
& + x^{52} + x^{44} + x^{38} + x^{36} + x^{34} + x^{32} + x^{26} + x^{24} + x^{22} + x^{20} + x^{18}, \\
p_9(x) = {} & x^{137} + x^{134} + x^{130} + x^{126} + x^{122} + x^{121} + x^{89} + x^{86} + x^{82} + x^{78} \\
& + x^{74} + x^{70} + x^{66} + x^{62} + x^{58} + x^{57} + x^{41} + x^{38} + x^{34} + x^{30} + x^{26} \\
& + x^{22} + x^{18} + x^{14} + x^{10} + x^{9}, \\
p_{12}(x) = {} & x^{140} + x^{128} + x^{124} + x^{116} + x^{112} + x^{92} + x^{80} + x^{68} + x^{60} + x^{52} + x^{48} \\
& + x^{44} + x^{32} + x^{20} + x^{12} + x^{4} + 1,
\end{aligned}$$

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

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

$$\begin{aligned}
p_0(x) &= x^{150} + x^{147} + x^{144} + x^{143} + x^{142} + x^{141} + x^{139} + x^{137} + x^{135} + x^{133} \\
&\quad + x^{132} + x^{128} + x^{127} + x^{126} + x^{120} + x^{118} + x^{117} + x^{116} + x^{115} \\
&\quad + x^{111} + x^{108} + x^{107} + x^{104} + x^{103} + x^{98} + x^{96} + x^{95} + x^{93} + x^{92} \\
&\quad + x^{90} + x^{89} + x^{88} + x^{87} + x^{85} + x^{84} + x^{82} + x^{81} + x^{78} + x^{77} + x^{76} \\
&\quad + x^{75} + x^{70} + x^{69} + x^{68} + x^{67} + x^{65} + x^{63} + x^{59} + x^{57} + x^{56} + x^{54} \\
&\quad + x^{53} + x^{51} + x^{49} + x^{48} + x^{47} + x^{46} + x^{42} + x^{39}, \\
p_3(x) &= x^{147} + x^{144} + x^{141} + x^{140} + x^{138} + x^{136} + x^{135} + x^{134} + x^{133} + x^{129} \\
&\quad + x^{126} + x^{125} + x^{123} + x^{121} + x^{120} + x^{119} + x^{118} + x^{115} + x^{114} \\
&\quad + x^{112} + x^{111} + x^{110} + x^{109} + x^{105} + x^{102} + x^{101} + x^{99} + x^{97} + x^{96} \\
&\quad + x^{95} + x^{94} + x^{91} + x^{90} + x^{88} + x^{87} + x^{86} + x^{85} + x^{83} + x^{81} + x^{80} \\
&\quad + x^{78} + x^{76} + x^{74} + x^{73} + x^{72} + x^{68} + x^{65} + x^{64} + x^{62} + x^{60} + x^{59} \\
&\quad + x^{58} + x^{57} + x^{53} + x^{51} + x^{50} + x^{49} + x^{48} + x^{47} + x^{39} + x^{36} + x^{35} \\
&\quad + x^{33} + x^{31} + x^{30} + x^{29} + x^{28} + x^{27}, \\
p_6(x) &= x^{150} + x^{144} + x^{136} + x^{128} + x^{126} + x^{122} + x^{118} + x^{116} + x^{114} + x^{112} \\
&\quad + x^{106} + x^{104} + x^{102} + x^{100} + x^{98} + x^{94} + x^{90} + x^{88} + x^{86} + x^{84} \\
&\quad + x^{82} + x^{74} + x^{68} + x^{66} + x^{62} + x^{56} + x^{54} + x^{50} + x^{44} + x^{38} + x^{36} \\
&\quad + x^{32} + x^{30} + x^{28} + x^{20} + x^{18}, \\
p_9(x) &= x^{153} + x^{150} + x^{146} + x^{142} + x^{141} + x^{125} + x^{122} + x^{121} + x^{105} + x^{102} \\
&\quad + x^{98} + x^{94} + x^{93} + x^{89} + x^{86} + x^{82} + x^{78} + x^{74} + x^{73} + x^{61} + x^{58} \\
&\quad + x^{54} + x^{50} + x^{46} + x^{45} + x^{41} + x^{38} + x^{34} + x^{30} + x^{26} + x^{25} + x^{13} \\
&\quad + x^{10} + x^{9}, \\
p_{12}(x) &= x^{156} + x^{128} + x^{124} + x^{120} + x^{112} + x^{108} + x^{92} + x^{80} + x^{76} + x^{72} \\
&\quad + x^{56} + x^{48} + x^{44} + x^{32} + x^{28} + x^{24} + x^{12} + x^{8} + 1,
\end{aligned}$$

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

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

$$\begin{aligned}
p_0(x) &= x^{147} + x^{141} + x^{139} + x^{133} + x^{132} + x^{128} + x^{127} + x^{121} + x^{115} + x^{111} \\
&\quad + x^{109} + x^{107} + x^{104} + x^{103} + x^{102} + x^{100} + x^{99} + x^{98} + x^{94} + x^{88} \\
&\quad + x^{81} + x^{78} + x^{77} + x^{76} + x^{75} + x^{68} + x^{66} + x^{64} + x^{63} + x^{62} + x^{60} \\
&\quad + x^{56} + x^{53} + x^{52} + x^{51} + x^{50} + x^{49} + x^{45} + x^{44} + x^{43} + x^{42}, \\
p_3(x) &= x^{144} + x^{140} + x^{128} + x^{127} + x^{126} + x^{124} + x^{122} + x^{119} + x^{118} + x^{117} \\
&\quad + x^{115} + x^{111} + x^{110} + x^{108} + x^{106} + x^{105} + x^{100} + x^{93} + x^{92} + x^{91} \\
&\quad + x^{90} + x^{89} + x^{88} + x^{84} + x^{81} + x^{80} + x^{79} + x^{78} + x^{76} + x^{74} + x^{73} \\
&\quad + x^{71} + x^{70} + x^{69} + x^{67} + x^{65} + x^{64} + x^{53} + x^{52} + x^{51} + x^{50} + x^{49} \\
&\quad + x^{47} + x^{46} + x^{42} + x^{41} + x^{40} + x^{37} + x^{36} + x^{35} + x^{34} + x^{33} + x^{29}
\end{aligned}$$

$$
\begin{aligned}
&+ x^{28} + x^{27} + x^{26},\\
p_6(x) &= x^{144} + x^{140} + x^{129} + x^{128} + x^{127} + x^{126} + x^{124} + x^{122} + x^{119} + x^{118}\\
&+ x^{114} + x^{113} + x^{111} + x^{108} + x^{107} + x^{102} + x^{100} + x^{99} + x^{96} + x^{95}\\
&+ x^{93} + x^{92} + x^{90} + x^{89} + x^{84} + x^{80} + x^{79} + x^{78} + x^{76} + x^{75} + x^{74}\\
&+ x^{73} + x^{71} + x^{70} + x^{67} + x^{65} + x^{64} + x^{63} + x^{58} + x^{54} + x^{52} + x^{50}\\
&+ x^{49} + x^{47} + x^{46} + x^{42} + x^{37} + x^{36} + x^{35} + x^{33} + x^{30} + x^{29} + x^{28}\\
&+ x^{23} + x^{22} + x^{21} + x^{19} + x^{18} + x^{17} + x^{16} + x^{15} + x^{14} + x^{8} + x^{5} + x\\
&+ 1,\\
p_9(x) &= x^{144} + x^{141} + x^{140} + x^{128} + x^{125} + x^{124} + x^{96} + x^{93} + x^{92} + x^{64}\\
&+ x^{61} + x^{60} + x^{48} + x^{45} + x^{44} + x^{16} + x^{13} + x^{12},\\
p_{12}(x) &= x^{144} + x^{141} + x^{140} + x^{132} + x^{129} + x^{125} + x^{124} + x^{120} + x^{117} + x^{113}\\
&+ x^{112} + x^{96} + x^{93} + x^{92} + x^{84} + x^{81} + x^{80} + x^{72} + x^{69} + x^{68} + x^{64}\\
&+ x^{61} + x^{60} + x^{56} + x^{53} + x^{49} + x^{45} + x^{44} + x^{36} + x^{33} + x^{32} + x^{24}\\
&+ x^{21} + x^{20} + x^{16} + x^{13} + x^{12} + x^{8} + x^{5} + x + 1,
\end{aligned}
$$

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

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

$$
\begin{aligned}
p_0(x) &= x^{147} + x^{144} + x^{141} + x^{140} + x^{139} + x^{136} + x^{130} + x^{129} + x^{128} + x^{127}\\
&+ x^{125} + x^{121} + x^{118} + x^{117} + x^{116} + x^{114} + x^{112} + x^{111} + x^{109}\\
&+ x^{107} + x^{104} + x^{103} + x^{100} + x^{98} + x^{96} + x^{95} + x^{94} + x^{93} + x^{92}\\
&+ x^{87} + x^{85} + x^{83} + x^{82} + x^{80} + x^{75} + x^{73} + x^{71} + x^{69} + x^{68} + x^{67}\\
&+ x^{64} + x^{62} + x^{60} + x^{57} + x^{55} + x^{54} + x^{51} + x^{50} + x^{49} + x^{46} + x^{43}\\
&+ x^{42} + x^{40} + x^{39} + x^{38} + x^{37} + x^{36},\\
p_3(x) &= x^{144} + x^{140} + x^{138} + x^{135} + x^{134} + x^{128} + x^{127} + x^{126} + x^{121} + x^{115}\\
&+ x^{114} + x^{113} + x^{112} + x^{108} + x^{106} + x^{105} + x^{98} + x^{97} + x^{95} + x^{94}\\
&+ x^{92} + x^{91} + x^{87} + x^{86} + x^{84} + x^{81} + x^{80} + x^{79} + x^{78} + x^{74} + x^{71}\\
&+ x^{70} + x^{67} + x^{60} + x^{57} + x^{52} + x^{51} + x^{48} + x^{44} + x^{40} + x^{39} + x^{38}\\
&+ x^{35} + x^{33} + x^{32} + x^{31} + x^{30} + x^{28} + x^{27} + x^{26} + x^{25} + x^{24},\\
p_6(x) &= x^{144} + x^{140} + x^{138} + x^{135} + x^{134} + x^{129} + x^{128} + x^{127} + x^{123} + x^{122}\\
&+ x^{121} + x^{117} + x^{114} + x^{111} + x^{110} + x^{109} + x^{108} + x^{106} + x^{105}\\
&+ x^{101} + x^{96} + x^{94} + x^{93} + x^{92} + x^{90} + x^{89} + x^{88} + x^{86} + x^{85} + x^{83}\\
&+ x^{82} + x^{80} + x^{79} + x^{72} + x^{71} + x^{70} + x^{68} + x^{67} + x^{66} + x^{62} + x^{58}\\
&+ x^{56} + x^{54} + x^{53} + x^{50} + x^{49} + x^{48} + x^{47} + x^{46} + x^{45} + x^{41} + x^{39}\\
&+ x^{34} + x^{33} + x^{32} + x^{27} + x^{24} + x^{22} + x^{20} + x^{17} + x^{15} + x^{14} + x^{13}\\
&+ x^{12} + x^{8} + x^{5} + x + 1,\\
p_9(x) &= x^{144} + x^{141} + x^{140} + x^{128} + x^{125} + x^{124} + x^{96} + x^{93} + x^{92} + x^{64}
\end{aligned}
$$

$$+ x^{61} + x^{60} + x^{48} + x^{45} + x^{44} + x^{16} + x^{13} + x^{12},$$

$$\begin{aligned}
p_{12}(x) = {} & x^{144} + x^{141} + x^{140} + x^{132} + x^{129} + x^{125} + x^{124} + x^{120} + x^{117} + x^{113} \\
& + x^{112} + x^{96} + x^{93} + x^{92} + x^{84} + x^{81} + x^{80} + x^{72} + x^{69} + x^{68} + x^{64} \\
& + x^{61} + x^{60} + x^{56} + x^{53} + x^{49} + x^{45} + x^{44} + x^{36} + x^{33} + x^{32} + x^{24} \\
& + x^{21} + x^{20} + x^{16} + x^{13} + x^{12} + x^{8} + x^{5} + x + 1,
\end{aligned}$$

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

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

$$\begin{aligned}
p_0(x) = {} & x^{150} + x^{147} + x^{144} + x^{143} + x^{142} + x^{141} + x^{139} + x^{137} + x^{135} + x^{133} \\
& + x^{132} + x^{128} + x^{127} + x^{126} + x^{120} + x^{118} + x^{117} + x^{116} + x^{115} \\
& + x^{111} + x^{108} + x^{107} + x^{104} + x^{103} + x^{98} + x^{96} + x^{95} + x^{93} + x^{92} \\
& + x^{90} + x^{89} + x^{88} + x^{87} + x^{85} + x^{84} + x^{82} + x^{81} + x^{78} + x^{77} + x^{76} \\
& + x^{75} + x^{70} + x^{69} + x^{68} + x^{67} + x^{65} + x^{63} + x^{59} + x^{57} + x^{56} + x^{54} \\
& + x^{53} + x^{51} + x^{49} + x^{48} + x^{47} + x^{46} + x^{42} + x^{39}, \\
p_3(x) = {} & x^{147} + x^{144} + x^{141} + x^{140} + x^{138} + x^{136} + x^{135} + x^{134} + x^{133} + x^{129} \\
& + x^{126} + x^{125} + x^{123} + x^{121} + x^{120} + x^{119} + x^{118} + x^{115} + x^{114} \\
& + x^{112} + x^{111} + x^{110} + x^{109} + x^{105} + x^{102} + x^{101} + x^{99} + x^{97} + x^{96} \\
& + x^{95} + x^{94} + x^{91} + x^{90} + x^{88} + x^{87} + x^{86} + x^{85} + x^{83} + x^{81} + x^{80} \\
& + x^{78} + x^{76} + x^{74} + x^{73} + x^{72} + x^{68} + x^{65} + x^{64} + x^{62} + x^{60} + x^{59} \\
& + x^{58} + x^{57} + x^{53} + x^{51} + x^{50} + x^{49} + x^{48} + x^{47} + x^{39} + x^{36} + x^{35} \\
& + x^{33} + x^{31} + x^{30} + x^{29} + x^{28} + x^{27}, \\
p_6(x) = {} & x^{150} + x^{144} + x^{136} + x^{128} + x^{126} + x^{122} + x^{118} + x^{116} + x^{114} + x^{112} \\
& + x^{106} + x^{104} + x^{102} + x^{100} + x^{98} + x^{94} + x^{90} + x^{88} + x^{86} + x^{84} \\
& + x^{82} + x^{74} + x^{68} + x^{66} + x^{62} + x^{56} + x^{54} + x^{50} + x^{44} + x^{38} + x^{36} \\
& + x^{32} + x^{30} + x^{28} + x^{20} + x^{18}, \\
p_9(x) = {} & x^{153} + x^{150} + x^{146} + x^{142} + x^{141} + x^{125} + x^{122} + x^{121} + x^{105} + x^{102} \\
& + x^{98} + x^{94} + x^{93} + x^{89} + x^{86} + x^{82} + x^{78} + x^{74} + x^{73} + x^{61} + x^{58} \\
& + x^{54} + x^{50} + x^{46} + x^{45} + x^{41} + x^{38} + x^{34} + x^{30} + x^{26} + x^{25} + x^{13} \\
& + x^{10} + x^{9}, \\
p_{12}(x) = {} & x^{156} + x^{128} + x^{124} + x^{120} + x^{112} + x^{108} + x^{92} + x^{80} + x^{76} + x^{72} \\
& + x^{56} + x^{48} + x^{44} + x^{32} + x^{28} + x^{24} + x^{12} + x^{8} + 1,
\end{aligned}$$

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

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

$$\begin{aligned}
p_0(x) = {} & x^{152} + x^{143} + x^{139} + x^{138} + x^{136} + x^{135} + x^{134} + x^{132} + x^{130} + x^{129} \\
& + x^{127} + x^{125} + x^{124} + x^{123} + x^{119} + x^{118} + x^{114} + x^{111} + x^{110} \\
& + x^{109} + x^{108} + x^{101} + x^{100} + x^{98} + x^{97} + x^{96} + x^{91} + x^{90} + x^{88}
\end{aligned}$$

$$
\begin{aligned}
&+ x^{87} + x^{85} + x^{82} + x^{80} + x^{79} + x^{78} + x^{75} + x^{74} + x^{73} + x^{71} + x^{69}\\
&+ x^{67} + x^{66} + x^{65} + x^{62} + x^{61} + x^{60} + x^{59} + x^{55} + x^{51} + x^{50} + x^{46}\\
&+ x^{44} + x^{43} + x^{42} + x^{39},\\
p_3(x) &= x^{131} + x^{128} + x^{125} + x^{124} + x^{122} + x^{120} + x^{118} + x^{117} + x^{116} + x^{115}\\
&+ x^{107} + x^{104} + x^{101} + x^{100} + x^{98} + x^{96} + x^{94} + x^{93} + x^{92} + x^{91}\\
&+ x^{83} + x^{80} + x^{77} + x^{76} + x^{74} + x^{72} + x^{70} + x^{69} + x^{68} + x^{64} + x^{61}\\
&+ x^{60} + x^{58} + x^{56} + x^{54} + x^{53} + x^{52} + x^{48} + x^{45} + x^{44} + x^{43} + x^{42}\\
&+ x^{38} + x^{35} + x^{34} + x^{32} + x^{30} + x^{29} + x^{28} + x^{27},\\
p_6(x) &= x^{134} + x^{128} + x^{122} + x^{120} + x^{118} + x^{116} + x^{108} + x^{106} + x^{98} + x^{94}\\
&+ x^{92} + x^{88} + x^{84} + x^{82} + x^{80} + x^{74} + x^{72} + x^{68} + x^{64} + x^{62} + x^{60}\\
&+ x^{52} + x^{44} + x^{38} + x^{36} + x^{34} + x^{32} + x^{26} + x^{24} + x^{22} + x^{20} + x^{18},\\
p_9(x) &= x^{137} + x^{134} + x^{130} + x^{126} + x^{122} + x^{121} + x^{89} + x^{86} + x^{82} + x^{78}\\
&+ x^{74} + x^{70} + x^{66} + x^{62} + x^{58} + x^{57} + x^{41} + x^{38} + x^{34} + x^{30} + x^{26}\\
&+ x^{22} + x^{18} + x^{14} + x^{10} + x^{9},\\
p_{12}(x) &= x^{140} + x^{128} + x^{124} + x^{116} + x^{112} + x^{92} + x^{80} + x^{68} + x^{60} + x^{52} + x^{48}\\
&+ x^{44} + x^{32} + x^{20} + x^{12} + x^{4} + 1,
\end{aligned}
$$

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

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

$$
\begin{aligned}
p_0(x) &= x^{147} + x^{141} + x^{139} + x^{133} + x^{132} + x^{128} + x^{127} + x^{121} + x^{115} + x^{111}\\
&+ x^{109} + x^{107} + x^{104} + x^{103} + x^{102} + x^{100} + x^{99} + x^{98} + x^{94} + x^{88}\\
&+ x^{81} + x^{78} + x^{77} + x^{76} + x^{75} + x^{68} + x^{66} + x^{64} + x^{63} + x^{62} + x^{60}\\
&+ x^{56} + x^{53} + x^{52} + x^{51} + x^{50} + x^{49} + x^{45} + x^{44} + x^{43} + x^{42},\\
p_3(x) &= x^{144} + x^{140} + x^{128} + x^{127} + x^{126} + x^{124} + x^{122} + x^{119} + x^{118} + x^{117}\\
&+ x^{115} + x^{111} + x^{110} + x^{108} + x^{106} + x^{105} + x^{100} + x^{93} + x^{92} + x^{91}\\
&+ x^{90} + x^{89} + x^{88} + x^{84} + x^{81} + x^{80} + x^{79} + x^{78} + x^{76} + x^{74} + x^{73}\\
&+ x^{71} + x^{70} + x^{69} + x^{67} + x^{65} + x^{64} + x^{53} + x^{52} + x^{51} + x^{50} + x^{49}\\
&+ x^{47} + x^{46} + x^{42} + x^{41} + x^{40} + x^{37} + x^{36} + x^{35} + x^{34} + x^{33} + x^{29}\\
&+ x^{28} + x^{27} + x^{26},\\
p_6(x) &= x^{144} + x^{140} + x^{129} + x^{128} + x^{127} + x^{126} + x^{124} + x^{122} + x^{119} + x^{118}\\
&+ x^{114} + x^{113} + x^{111} + x^{108} + x^{107} + x^{102} + x^{100} + x^{99} + x^{96} + x^{95}\\
&+ x^{93} + x^{92} + x^{90} + x^{89} + x^{84} + x^{80} + x^{79} + x^{78} + x^{76} + x^{75} + x^{74}\\
&+ x^{73} + x^{71} + x^{70} + x^{67} + x^{65} + x^{64} + x^{63} + x^{58} + x^{54} + x^{52} + x^{50}\\
&+ x^{49} + x^{47} + x^{46} + x^{42} + x^{37} + x^{36} + x^{35} + x^{33} + x^{30} + x^{29} + x^{28}\\
&+ x^{23} + x^{22} + x^{21} + x^{19} + x^{18} + x^{17} + x^{16} + x^{15} + x^{14} + x^{8} + x^{5} + x\\
&+ 1,
\end{aligned}
$$

$$p_9(x) = x^{144} + x^{141} + x^{140} + x^{128} + x^{125} + x^{124} + x^{96} + x^{93} + x^{92} + x^{64} + x^{61} + x^{60} + x^{48} + x^{45} + x^{44} + x^{16} + x^{13} + x^{12},$$
$$p_{12}(x) = x^{144} + x^{141} + x^{140} + x^{132} + x^{129} + x^{125} + x^{124} + x^{120} + x^{117} + x^{113} + x^{112} + x^{96} + x^{93} + x^{92} + x^{84} + x^{81} + x^{80} + x^{72} + x^{69} + x^{68} + x^{64} + x^{61} + x^{60} + x^{56} + x^{53} + x^{49} + x^{45} + x^{44} + x^{36} + x^{33} + x^{32} + x^{24} + x^{21} + x^{20} + x^{16} + x^{13} + x^{12} + x^8 + x^5 + x + 1,$$

and the initial terms are [0, 0, 0, 0, 0, 0, 0, 1, 1, 1, 1, 0, 1, 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]	817	[1328, 165]	1634	[2222, 1242]	2451	[2814, 2064]
1	[3, 4]	818	[217, 1299]	1635	[2109, 2223]	2452	[2133, 2815]
2	[5, 6]	819	[1329, 1330]	1636	[1165, 1951]	2453	[2816, 1094]
3	[7, 8]	820	[1331, 696]	1637	[2154, 1871]	2454	[2768, 1024]
4	[9, 10]	821	[1332, 464]	1638	[2224, 2225]	2455	[2817, 2127]
5	[11, 12]	822	[1333, 545]	1639	[996, 2226]	2456	[2684, 2818]
6	[13, 14]	823	[1334, 1335]	1640	[2156, 1245]	2457	[2819, 2308]
7	[15, 16]	824	[482, 697]	1641	[2227, 99]	2458	[2820, 2702]
8	[17, 18]	825	[1336, 487]	1642	[1750, 2228]	2459	[2821, 2024]
9	[19, 20]	826	[1337, 1338]	1643	[997, 2229]	2460	[2822, 2823]
10	[21, 22]	827	[1339, 618]	1644	[1718, 2054]	2461	[1798, 1972]
11	[23, 24]	828	[491, 676]	1645	[2230, 1200]	2462	[1025, 2824]
12	[25, 26]	829	[720, 1340]	1646	[2231, 883]	2463	[1825, 2825]
13	[27, 28]	830	[1341, 1340]	1647	[2232, 1929]	2464	[2826, 2827]
14	[29, 30]	831	[1342, 215]	1648	[782, 2233]	2465	[2034, 1793]
15	[31, 32]	832	[1343, 1344]	1649	[1237, 340]	2466	[1966, 2828]
16	[33, 34]	833	[1309, 1345]	1650	[2234, 377]	2467	[2157, 1246]
17	[35, 36]	834	[1346, 468]	1651	[2235, 1078]	2468	[2829, 2830]
18	[37, 38]	835	[1347, 1348]	1652	[2236, 2237]	2469	[2831, 2832]
19	[39, 40]	836	[1349, 1350]	1653	[2238, 2239]	2470	[79, 403]
20	[41, 42]	837	[1351, 579]	1654	[2240, 2241]	2471	[2833, 2715]
21	[43, 36]	838	[633, 1352]	1655	[2242, 2243]	2472	[2140, 2834]
22	[44, 45]	839	[540, 1353]	1656	[2244, 2245]	2473	[2835, 938]
23	[46, 47]	840	[1354, 1355]	1657	[2246, 2247]	2474	[2836, 2837]
24	[48, 49]	841	[1356, 1318]	1658	[2248, 854]	2475	[2838, 1860]
25	[50, 51]	842	[1357, 1358]	1659	[2249, 1136]	2476	[1050, 2839]
26	[52, 53]	843	[226, 664]	1660	[2250, 2251]	2477	[2021, 2840]
27	[54, 55]	844	[1359, 559]	1661	[2252, 2253]	2478	[2725, 1231]
28	[56, 57]	845	[1360, 1361]	1662	[2254, 2225]	2479	[2841, 2834]
29	[58, 59]	846	[1362, 1363]	1663	[2255, 2256]	2480	[2842, 2843]
30	[60, 61]	847	[1364, 1365]	1664	[2257, 2258]	2481	[2844, 2707]

31	[62, 63]	848	[226, 1366]	1665	[1772, 781]	2482	[2845, 2050]
32	[64, 65]	849	[1367, 664]	1666	[2259, 2260]	2483	[2846, 242]
33	[66, 67]	850	[569, 1368]	1667	[1797, 87]	2484	[2847, 896]
34	[68, 69]	851	[1369, 1350]	1668	[2261, 1085]	2485	[1087, 1745]
35	[70, 71]	852	[1370, 553]	1669	[2262, 2263]	2486	[2848, 2114]
36	[72, 73]	853	[615, 610]	1670	[1036, 428]	2487	[832, 2043]
37	[74, 75]	854	[710, 1371]	1671	[2264, 113]	2488	[2849, 2237]
38	[76, 77]	855	[1372, 1373]	1672	[2240, 2265]	2489	[1953, 115]
39	[78, 79]	856	[150, 480]	1673	[2266, 1728]	2490	[1126, 2850]
40	[80, 81]	857	[1374, 587]	1674	[2267, 850]	2491	[2065, 2851]
41	[82, 83]	858	[1375, 130]	1675	[2268, 2241]	2492	[2816, 1832]
42	[84, 85]	859	[1376, 1377]	1676	[2269, 2198]	2493	[2852, 2853]
43	[86, 87]	860	[1378, 1379]	1677	[2270, 2271]	2494	[2854, 2855]
44	[88, 89]	861	[1380, 184]	1678	[1872, 2272]	2495	[1168, 1037]
45	[90, 91]	862	[1259, 732]	1679	[2273, 1003]	2496	[2856, 2857]
46	[92, 93]	863	[1381, 1270]	1680	[2274, 995]	2497	[87, 1972]
47	[94, 95]	864	[1307, 1382]	1681	[2275, 873]	2498	[1143, 2858]
48	[96, 97]	865	[574, 725]	1682	[2276, 1086]	2499	[2859, 2778]
49	[98, 99]	866	[1383, 674]	1683	[2277, 2229]	2500	[2860, 77]
50	[100, 101]	867	[11, 56]	1684	[2278, 2279]	2501	[1002, 2861]
51	[102, 103]	868	[1384, 1385]	1685	[2280, 2281]	2502	[2862, 2863]
52	[104, 105]	869	[537, 603]	1686	[1053, 2282]	2503	[1172, 904]
53	[106, 107]	870	[1386, 128]	1687	[2283, 2284]	2504	[2266, 2159]
54	[108, 109]	871	[1356, 1301]	1688	[2210, 1009]	2505	[2864, 101]
55	[110, 111]	872	[1387, 459]	1689	[2285, 2286]	2506	[2865, 934]
56	[112, 113]	873	[1388, 1389]	1690	[2287, 2288]	2507	[356, 2866]
57	[114, 115]	874	[1390, 1301]	1691	[1927, 911]	2508	[2038, 2087]
58	[116, 117]	875	[223, 216]	1692	[2289, 20]	2509	[2867, 2868]
59	[118, 119]	876	[1391, 1392]	1693	[1794, 2009]	2510	[2869, 240]
60	[120, 121]	877	[56, 685]	1694	[2290, 2291]	2511	[2870, 2871]
61	[122, 118]	878	[1393, 649]	1695	[2292, 2162]	2512	[843, 2872]
62	[123, 124]	879	[523, 215]	1696	[2293, 2294]	2513	[2873, 2863]
63	[125, 126]	880	[513, 1394]	1697	[2295, 2296]	2514	[2874, 434]
64	[127, 128]	881	[1395, 1396]	1698	[2297, 412]	2515	[2077, 358]
65	[129, 130]	882	[1397, 1398]	1699	[1830, 1195]	2516	[2875, 1801]
66	[131, 132]	883	[1326, 197]	1700	[2298, 2152]	2517	[2876, 2877]
67	[133, 134]	884	[458, 1399]	1701	[2299, 1244]	2518	[2878, 778]
68	[135, 136]	885	[1400, 564]	1702	[2300, 2301]	2519	[2879, 388]
69	[137, 138]	886	[1401, 1402]	1703	[2017, 1817]	2520	[2880, 2881]
70	[139, 140]	887	[33, 622]	1704	[2302, 884]	2521	[2252, 1090]
71	[141, 142]	888	[629, 1403]	1705	[2303, 2304]	2522	[2882, 318]
72	[143, 144]	889	[1404, 636]	1706	[2305, 1788]	2523	[2883, 2884]
73	[145, 146]	890	[42, 1405]	1707	[2306, 2307]	2524	[2123, 2885]
74	[147, 148]	891	[1406, 566]	1708	[2308, 2309]	2525	[257, 1947]

75	[149, 150]	892	[1407, 1368]	1709	[1721, 1786]	2526	[291, 2886]
76	[143, 151]	893	[1408, 1409]	1710	[2310, 2193]	2527	[2738, 805]
77	[152, 153]	894	[1410, 1411]	1711	[2311, 2312]	2528	[2887, 2208]
78	[154, 132]	895	[1337, 1412]	1712	[2313, 1056]	2529	[2292, 1121]
79	[155, 156]	896	[192, 1371]	1713	[2314, 2071]	2530	[973, 802]
80	[157, 158]	897	[477, 1355]	1714	[2315, 2316]	2531	[1798, 2888]
81	[159, 160]	898	[129, 1413]	1715	[2086, 2317]	2532	[2162, 1122]
82	[161, 45]	899	[8, 1414]	1716	[2306, 1202]	2533	[2889, 2890]
83	[162, 163]	900	[10, 1415]	1717	[2087, 2318]	2534	[2891, 2892]
84	[164, 165]	901	[1269, 602]	1718	[2319, 672]	2535	[1737, 2893]
85	[166, 167]	902	[37, 511]	1719	[2320, 1529]	2536	[2894, 2895]
86	[168, 169]	903	[683, 472]	1720	[2321, 622]	2537	[2896, 2166]
87	[170, 171]	904	[723, 473]	1721	[1349, 2322]	2538	[1799, 2897]
88	[172, 173]	905	[1416, 1399]	1722	[528, 1352]	2539	[2898, 2899]
89	[174, 175]	906	[1264, 1417]	1723	[2323, 518]	2540	[2882, 2900]
90	[176, 177]	907	[1418, 1419]	1724	[1280, 2324]	2541	[2901, 1963]
91	[175, 178]	908	[1420, 14]	1725	[2325, 1425]	2542	[750, 2902]
92	[179, 180]	909	[1421, 598]	1726	[1562, 658]	2543	[2164, 2903]
93	[181, 182]	910	[1422, 659]	1727	[1336, 1556]	2544	[2051, 377]
94	[183, 184]	911	[1423, 1424]	1728	[2326, 648]	2545	[2054, 252]
95	[1, 185]	912	[702, 1425]	1729	[489, 1322]	2546	[2904, 2905]
96	[186, 187]	913	[716, 747]	1730	[1694, 1353]	2547	[2906, 813]
97	[188, 189]	914	[1426, 1427]	1731	[2327, 2328]	2548	[2907, 1120]
98	[190, 191]	915	[1428, 703]	1732	[2329, 568]	2549	[2908, 2909]
99	[192, 193]	916	[1429, 214]	1733	[493, 449]	2550	[820, 919]
100	[194, 195]	917	[1430, 1431]	1734	[1575, 1479]	2551	[2697, 876]
101	[196, 197]	918	[472, 1432]	1735	[2330, 2331]	2552	[1167, 326]
102	[198, 199]	919	[719, 1433]	1736	[2332, 1527]	2553	[2910, 380]
103	[200, 201]	920	[513, 1434]	1737	[1298, 221]	2554	[2693, 2911]
104	[202, 173]	921	[1435, 623]	1738	[2333, 141]	2555	[2254, 912]
105	[203, 204]	922	[1426, 211]	1739	[2334, 559]	2556	[2793, 2912]
106	[205, 206]	923	[1436, 1437]	1740	[2335, 2336]	2557	[2913, 887]
107	[207, 208]	924	[481, 165]	1741	[144, 542]	2558	[1107, 2914]
108	[209, 210]	925	[1438, 673]	1742	[2337, 2324]	2559	[2915, 430]
109	[134, 211]	926	[534, 620]	1743	[1401, 1455]	2560	[2095, 385]
110	[212, 199]	927	[175, 1439]	1744	[2338, 737]	2561	[75, 2916]
111	[213, 214]	928	[1440, 204]	1745	[1501, 478]	2562	[2917, 2918]
112	[215, 216]	929	[562, 1441]	1746	[2339, 2340]	2563	[2919, 868]
113	[217, 218]	930	[1442, 1311]	1747	[2341, 458]	2564	[1079, 381]
114	[219, 220]	931	[1443, 1444]	1748	[2342, 607]	2565	[2920, 2921]
115	[221, 222]	932	[1331, 539]	1749	[2343, 2344]	2566	[2922, 2286]
116	[223, 224]	933	[1445, 34]	1750	[579, 649]	2567	[2701, 2923]
117	[225, 226]	934	[1446, 1447]	1751	[2345, 543]	2568	[247, 2022]
118	[227, 228]	935	[1448, 1449]	1752	[2346, 2347]	2569	[2924, 426]

119	[229, 230]	936	[1450, 1451]	1753	[1670, 2348]	2570	[2925, 1189]
120	[231, 232]	937	[1452, 610]	1754	[2349, 221]	2571	[2926, 1227]
121	[233, 234]	938	[728, 1453]	1755	[2350, 701]	2572	[1874, 408]
122	[194, 235]	939	[1454, 1455]	1756	[2351, 1449]	2573	[2927, 1165]
123	[236, 237]	940	[1456, 44]	1757	[2352, 2353]	2574	[2911, 2282]
124	[238, 239]	941	[1457, 1458]	1758	[2354, 504]	2575	[2928, 2918]
125	[240, 91]	942	[1459, 1460]	1759	[2355, 1574]	2576	[2104, 2929]
126	[241, 242]	943	[1461, 645]	1760	[1486, 1479]	2577	[2726, 835]
127	[243, 244]	944	[1462, 127]	1761	[2332, 1491]	2578	[2930, 2931]
128	[245, 246]	945	[1463, 1464]	1762	[180, 2356]	2579	[2932, 2933]
129	[247, 248]	946	[1383, 1465]	1763	[2357, 1416]	2580	[2934, 2935]
130	[249, 250]	947	[1466, 1419]	1764	[1493, 2344]	2581	[1933, 2936]
131	[251, 252]	948	[1281, 1467]	1765	[538, 696]	2582	[962, 2258]
132	[253, 254]	949	[1463, 1468]	1766	[2333, 741]	2583	[1844, 85]
133	[255, 256]	950	[576, 1469]	1767	[1488, 601]	2584	[954, 2937]
134	[257, 258]	951	[1470, 519]	1768	[2358, 579]	2585	[2938, 2939]
135	[259, 260]	952	[1471, 1282]	1769	[2359, 734]	2586	[2940, 338]
136	[261, 262]	953	[1472, 583]	1770	[1378, 1641]	2587	[2941, 857]
137	[263, 264]	954	[1473, 233]	1771	[1511, 1670]	2588	[1057, 2942]
138	[265, 266]	955	[1474, 1475]	1772	[2338, 142]	2589	[2943, 972]
139	[267, 268]	956	[1476, 1288]	1773	[2360, 2361]	2590	[2944, 1968]
140	[269, 270]	957	[739, 158]	1774	[2362, 530]	2591	[2945, 1097]
141	[271, 272]	958	[10, 1477]	1775	[1714, 156]	2592	[2946, 1103]
142	[273, 274]	959	[1478, 1338]	1776	[2363, 536]	2593	[2947, 815]
143	[275, 276]	960	[1479, 1480]	1777	[2364, 1666]	2594	[2948, 2949]
144	[277, 278]	961	[619, 535]	1778	[2365, 1708]	2595	[2950, 282]
145	[279, 280]	962	[1481, 1335]	1779	[1418, 233]	2596	[1835, 2924]
146	[281, 282]	963	[1482, 637]	1780	[724, 575]	2597	[2947, 2276]
147	[283, 284]	964	[1483, 1484]	1781	[2366, 1277]	2598	[2951, 2952]
148	[285, 286]	965	[708, 1485]	1782	[2367, 1366]	2599	[1743, 1270]
149	[287, 288]	966	[1486, 668]	1783	[2368, 1280]	2600	[2728, 2953]
150	[289, 290]	967	[1487, 44]	1784	[1420, 2369]	2601	[2954, 2955]
151	[291, 272]	968	[1488, 172]	1785	[1319, 1715]	2602	[781, 2956]
152	[292, 293]	969	[177, 174]	1786	[1579, 1426]	2603	[2957, 1161]
153	[294, 295]	970	[1380, 1489]	1787	[2370, 1257]	2604	[440, 2958]
154	[296, 297]	971	[1490, 1491]	1788	[2371, 138]	2605	[2959, 1108]
155	[298, 299]	972	[584, 182]	1789	[1478, 1412]	2606	[260, 403]
156	[300, 301]	973	[1492, 506]	1790	[1581, 2372]	2607	[2960, 2961]
157	[302, 303]	974	[1328, 168]	1791	[2373, 2374]	2608	[2962, 2025]
158	[304, 305]	975	[740, 141]	1792	[2375, 511]	2609	[2963, 1158]
159	[236, 306]	976	[177, 600]	1793	[1613, 1308]	2610	[2964, 1738]
160	[307, 308]	977	[1493, 1494]	1794	[2376, 612]	2611	[825, 67]
161	[309, 310]	978	[1447, 51]	1795	[133, 1426]	2612	[2965, 764]
162	[311, 312]	979	[207, 684]	1796	[1602, 1566]	2613	[2724, 2966]

163	[313, 314]	980	[1495, 55]	1797	[2377, 1683]	2614	[2948, 2786]
164	[315, 316]	981	[233, 1496]	1798	[450, 1621]	2615	[2967, 2754]
165	[317, 318]	982	[1497, 1498]	1799	[2378, 1581]	2616	[2962, 2968]
166	[319, 320]	983	[213, 1499]	1800	[1406, 171]	2617	[1861, 264]
167	[23, 321]	984	[1500, 150]	1801	[1287, 2379]	2618	[2969, 1989]
168	[322, 323]	985	[1374, 549]	1802	[741, 737]	2619	[2200, 2113]
169	[316, 324]	986	[1501, 1355]	1803	[2380, 1373]	2620	[2970, 789]
170	[325, 326]	987	[737, 1502]	1804	[547, 1415]	2621	[1068, 1864]
171	[327, 328]	988	[1503, 631]	1805	[2381, 2382]	2622	[2971, 2972]
172	[329, 330]	989	[503, 1451]	1806	[2383, 2384]	2623	[2973, 2974]
173	[331, 332]	990	[1504, 555]	1807	[2385, 126]	2624	[2206, 2306]
174	[333, 334]	991	[1505, 1506]	1808	[1589, 1506]	2625	[2975, 1903]
175	[335, 336]	992	[1507, 1508]	1809	[2386, 2387]	2626	[2976, 2040]
176	[89, 337]	993	[463, 1361]	1810	[2388, 612]	2627	[2912, 2977]
177	[338, 339]	994	[1509, 1510]	1811	[2389, 2390]	2628	[2978, 888]
178	[340, 274]	995	[1511, 1358]	1812	[1577, 1425]	2629	[2979, 328]
179	[341, 342]	996	[567, 474]	1813	[1442, 1660]	2630	[2023, 1247]
180	[343, 344]	997	[1512, 600]	1814	[2319, 169]	2631	[2108, 103]
181	[345, 346]	998	[512, 177]	1815	[188, 1286]	2632	[2197, 1016]
182	[347, 348]	999	[1278, 1513]	1816	[2391, 2392]	2633	[2980, 2981]
183	[349, 247]	1000	[592, 150]	1817	[2393, 1634]	2634	[2041, 2982]
184	[350, 351]	1001	[164, 168]	1818	[2394, 56]	2635	[2289, 2983]
185	[341, 352]	1002	[1514, 1402]	1819	[2395, 1396]	2636	[1081, 2984]
186	[353, 354]	1003	[621, 34]	1820	[1684, 2396]	2637	[2985, 2038]
187	[355, 356]	1004	[1515, 1510]	1821	[1687, 1492]	2638	[2059, 2986]
188	[357, 358]	1005	[1516, 449]	1822	[2397, 2398]	2639	[2826, 2987]
189	[359, 360]	1006	[167, 1469]	1823	[231, 200]	2640	[2988, 2989]
190	[361, 362]	1007	[150, 1517]	1824	[2399, 1498]	2641	[2990, 2139]
191	[363, 364]	1008	[1518, 652]	1825	[1578, 678]	2642	[2906, 2991]
192	[365, 366]	1009	[692, 1265]	1826	[1386, 158]	2643	[2283, 2294]
193	[367, 236]	1010	[44, 598]	1827	[2400, 1272]	2644	[1852, 2916]
194	[277, 368]	1011	[600, 175]	1828	[1361, 2401]	2645	[2093, 2992]
195	[369, 370]	1012	[1519, 1421]	1829	[2402, 620]	2646	[394, 1015]
196	[371, 372]	1013	[603, 1520]	1830	[1416, 459]	2647	[2993, 2994]
197	[373, 374]	1014	[176, 599]	1831	[2403, 541]	2648	[2915, 2995]
198	[375, 376]	1015	[536, 605]	1832	[1591, 2404]	2649	[2996, 1935]
199	[377, 378]	1016	[172, 536]	1833	[2405, 2406]	2650	[752, 1913]
200	[379, 380]	1017	[469, 1439]	1834	[2407, 2408]	2651	[2997, 2689]
201	[381, 382]	1018	[671, 1520]	1835	[2409, 693]	2652	[1820, 1027]
202	[383, 384]	1019	[1521, 744]	1836	[2410, 1479]	2653	[2873, 2998]
203	[385, 386]	1020	[1522, 673]	1837	[494, 1489]	2654	[2999, 1784]
204	[387, 388]	1021	[1523, 1441]	1838	[568, 1558]	2655	[3000, 3001]
205	[389, 390]	1022	[716, 1524]	1839	[1474, 496]	2656	[2054, 3002]
206	[391, 392]	1023	[635, 8]	1840	[1398, 2411]	2657	[2961, 1835]

207	[393, 394]	1024	[1525, 1526]	1841	[167, 577]	2658	[3003, 21]
208	[395, 396]	1025	[1258, 497]	1842	[2358, 648]	2659	[3004, 3005]
209	[6, 397]	1026	[1490, 1527]	1843	[2412, 2413]	2660	[3006, 2773]
210	[398, 399]	1027	[744, 222]	1844	[1646, 1642]	2661	[3007, 3008]
211	[256, 400]	1028	[1528, 1529]	1845	[1445, 622]	2662	[121, 2180]
212	[401, 402]	1029	[1530, 1531]	1846	[2349, 744]	2663	[3009, 1895]
213	[403, 404]	1030	[1532, 1310]	1847	[2414, 2415]	2664	[3010, 3011]
214	[405, 406]	1031	[1533, 1534]	1848	[2385, 2416]	2665	[1747, 2846]
215	[407, 408]	1032	[550, 612]	1849	[1341, 59]	2666	[2314, 3012]
216	[409, 410]	1033	[155, 1535]	1850	[1333, 2417]	2667	[1053, 3013]
217	[411, 412]	1034	[1536, 1477]	1851	[1552, 2418]	2668	[3014, 1221]
218	[413, 414]	1035	[1537, 1538]	1852	[2419, 2420]	2669	[2951, 2921]
219	[415, 416]	1036	[1250, 511]	1853	[2378, 609]	2670	[3015, 6]
220	[417, 418]	1037	[206, 1292]	1854	[731, 1260]	2671	[3016, 2692]
221	[419, 420]	1038	[1539, 55]	1855	[1638, 1484]	2672	[3017, 3018]
222	[421, 422]	1039	[1540, 1460]	1856	[471, 10]	2673	[1858, 2984]
223	[423, 424]	1040	[1541, 197]	1857	[2421, 564]	2674	[626, 1615]
224	[425, 426]	1041	[1542, 1543]	1858	[2422, 2423]	2675	[3019, 2654]
225	[427, 428]	1042	[1544, 1468]	1859	[1346, 1305]	2676	[677, 530]
226	[429, 430]	1043	[485, 566]	1860	[2364, 1297]	2677	[3020, 3021]
227	[431, 432]	1044	[1293, 720]	1861	[186, 1708]	2678	[1532, 1345]
228	[433, 434]	1045	[1545, 146]	1862	[473, 568]	2679	[3022, 3023]
229	[435, 436]	1046	[1546, 505]	1863	[2424, 180]	2680	[1436, 228]
230	[437, 438]	1047	[1547, 1548]	1864	[1601, 1419]	2681	[1422, 2636]
231	[439, 440]	1048	[1285, 189]	1865	[135, 2425]	2682	[3024, 1671]
232	[441, 440]	1049	[1407, 570]	1866	[2360, 124]	2683	[2529, 40]
233	[442, 443]	1050	[475, 594]	1867	[449, 184]	2684	[227, 1437]
234	[444, 445]	1051	[1366, 665]	1868	[566, 616]	2685	[3025, 156]
235	[446, 447]	1052	[1549, 1358]	1869	[124, 2426]	2686	[3026, 458]
236	[448, 449]	1053	[1550, 496]	1870	[2427, 1442]	2687	[1699, 1508]
237	[450, 451]	1054	[1551, 1310]	1871	[2422, 2412]	2688	[1360, 464]
238	[452, 453]	1055	[596, 1524]	1872	[1306, 36]	2689	[693, 1403]
239	[1, 454]	1056	[1552, 1553]	1873	[2428, 2429]	2690	[1675, 1484]
240	[455, 456]	1057	[471, 547]	1874	[2430, 168]	2691	[2363, 173]
241	[457, 149]	1058	[1554, 129]	1875	[1482, 2431]	2692	[1347, 462]
242	[458, 459]	1059	[1555, 1262]	1876	[123, 2361]	2693	[2633, 1464]
243	[460, 456]	1060	[486, 1556]	1877	[2432, 2433]	2694	[3027, 3028]
244	[461, 462]	1061	[552, 1557]	1878	[2434, 690]	2695	[2648, 216]
245	[463, 464]	1062	[474, 1558]	1879	[1633, 2322]	2696	[1643, 2453]
246	[465, 466]	1063	[1559, 1560]	1880	[2383, 614]	2697	[1334, 574]
247	[467, 468]	1064	[516, 195]	1881	[1541, 661]	2698	[2557, 1313]
248	[174, 469]	1065	[1561, 1441]	1882	[2435, 1595]	2699	[3029, 1478]
249	[470, 471]	1066	[1562, 1534]	1883	[2436, 1622]	2700	[3030, 1273]
250	[472, 230]	1067	[1521, 221]	1884	[2437, 2438]	2701	[1586, 1468]

251	[473, 474]	1068	[1563, 1564]	1885	[1316, 1373]	2702	[2437, 3031]
252	[475, 476]	1069	[1565, 1566]	1886	[2439, 2440]	2703	[2642, 3028]
253	[477, 478]	1070	[517, 1458]	1887	[2441, 2442]	2704	[2635, 659]
254	[479, 480]	1071	[12, 57]	1888	[1372, 1317]	2705	[3032, 692]
255	[481, 168]	1072	[1567, 620]	1889	[1375, 1413]	2706	[151, 694]
256	[482, 220]	1073	[461, 1348]	1890	[2443, 1415]	2707	[2414, 3033]
257	[483, 224]	1074	[1568, 1335]	1891	[1662, 1655]	2708	[2543, 1435]
258	[484, 485]	1075	[1569, 1416]	1892	[2444, 2445]	2709	[3034, 3035]
259	[486, 487]	1076	[1570, 1276]	1893	[573, 601]	2710	[707, 148]
260	[488, 144]	1077	[1571, 1572]	1894	[578, 648]	2711	[1388, 1315]
261	[489, 490]	1078	[1573, 1574]	1895	[1545, 2446]	2712	[3036, 3037]
262	[491, 492]	1079	[1575, 668]	1896	[722, 40]	2713	[545, 3038]
263	[493, 494]	1080	[1576, 14]	1897	[134, 1427]	2714	[3039, 229]
264	[495, 496]	1081	[1577, 703]	1898	[58, 1340]	2715	[1423, 2641]
265	[452, 497]	1082	[1578, 530]	1899	[2447, 50]	2716	[2388, 551]
266	[498, 191]	1083	[1579, 134]	1900	[127, 158]	2717	[3040, 3041]
267	[499, 500]	1084	[1580, 1286]	1901	[1667, 1689]	2718	[2376, 551]
268	[501, 502]	1085	[608, 1581]	1902	[2448, 631]	2719	[2326, 579]
269	[503, 504]	1086	[47, 1582]	1903	[1547, 1692]	2720	[3042, 1320]
270	[505, 506]	1087	[1583, 136]	1904	[2449, 1557]	2721	[2661, 10]
271	[507, 508]	1088	[1584, 1585]	1905	[2408, 1592]	2722	[2441, 1632]
272	[509, 218]	1089	[1586, 1464]	1906	[2450, 1513]	2723	[1571, 1484]
273	[510, 511]	1090	[726, 1587]	1907	[2355, 2451]	2724	[1705, 1355]
274	[45, 512]	1091	[1588, 1585]	1908	[1653, 1615]	2725	[2671, 500]
275	[507, 513]	1092	[1589, 1590]	1909	[1505, 1590]	2726	[3043, 469]
276	[514, 515]	1093	[483, 216]	1910	[2452, 539]	2727	[2629, 1488]
277	[516, 235]	1094	[166, 576]	1911	[1397, 2453]	2728	[1263, 148]
278	[41, 53]	1095	[1591, 743]	1912	[713, 1616]	2729	[53, 2620]
279	[517, 518]	1096	[165, 169]	1913	[505, 1442]	2730	[3044, 2511]
280	[519, 520]	1097	[1592, 1338]	1914	[2454, 2455]	2731	[1626, 221]
281	[521, 522]	1098	[1593, 1594]	1915	[579, 2456]	2732	[2325, 703]
282	[523, 483]	1099	[1595, 1596]	1916	[623, 1612]	2733	[2487, 688]
283	[524, 525]	1100	[1597, 1598]	1917	[2457, 1322]	2734	[3045, 1564]
284	[526, 527]	1101	[715, 596]	1918	[2392, 623]	2735	[3046, 1280]
285	[528, 529]	1102	[1599, 1600]	1919	[2458, 124]	2736	[2578, 636]
286	[530, 531]	1103	[1601, 233]	1920	[2459, 187]	2737	[3047, 1621]
287	[205, 47]	1104	[1602, 1603]	1921	[1466, 233]	2738	[651, 1513]
288	[532, 533]	1105	[1254, 1385]	1922	[2460, 1268]	2739	[2453, 3048]
289	[534, 535]	1106	[1299, 666]	1923	[125, 2416]	2740	[3049, 2467]
290	[536, 537]	1107	[1539, 1604]	1924	[1373, 2461]	2741	[1656, 235]
291	[538, 539]	1108	[1605, 1606]	1925	[2462, 506]	2742	[3050, 1515]
292	[540, 541]	1109	[1607, 647]	1926	[2463, 1606]	2743	[2518, 3051]
293	[151, 542]	1110	[1608, 1609]	1927	[2464, 40]	2744	[2596, 1553]
294	[521, 543]	1111	[1610, 690]	1928	[2465, 2366]	2745	[3052, 2606]

295	[544, 545]	1112	[1611, 1424]	1929	[1324, 189]	2746	[2417, 3038]
296	[546, 547]	1113	[1294, 59]	1930	[2466, 2467]	2747	[1332, 1361]
297	[548, 549]	1114	[465, 1612]	1931	[688, 1531]	2748	[1342, 483]
298	[550, 551]	1115	[161, 598]	1932	[2468, 1345]	2749	[2672, 631]
299	[552, 553]	1116	[1613, 1382]	1933	[1503, 2469]	2750	[1635, 3053]
300	[554, 555]	1117	[1614, 1615]	1934	[2443, 1477]	2751	[2439, 559]
301	[556, 557]	1118	[556, 1538]	1935	[1522, 1383]	2752	[178, 2629]
302	[558, 559]	1119	[183, 1489]	1936	[508, 1394]	2753	[3054, 129]
303	[560, 561]	1120	[498, 712]	1937	[32, 1363]	2754	[2371, 736]
304	[562, 563]	1121	[733, 1616]	1938	[40, 2470]	2755	[563, 3055]
305	[564, 565]	1122	[1377, 1617]	1939	[730, 476]	2756	[1499, 3056]
306	[170, 566]	1123	[1303, 170]	1940	[50, 2406]	2757	[1609, 2660]
307	[567, 568]	1124	[221, 745]	1941	[1421, 45]	2758	[2380, 1317]
308	[569, 570]	1125	[1514, 1455]	1942	[671, 604]	2759	[1448, 1600]
309	[571, 177]	1126	[1335, 725]	1943	[2471, 1396]	2760	[2464, 662]
310	[572, 573]	1127	[1618, 1317]	1944	[2472, 2473]	2761	[2527, 1645]
311	[574, 575]	1128	[588, 1619]	1945	[2474, 502]	2762	[1651, 647]
312	[576, 577]	1129	[1620, 1621]	1946	[1637, 1453]	2763	[709, 185]
313	[578, 579]	1130	[1622, 1623]	1947	[1647, 1433]	2764	[617, 2637]
314	[580, 581]	1131	[1624, 1421]	1948	[1447, 2406]	2765	[448, 494]
315	[582, 583]	1132	[537, 671]	1949	[532, 473]	2766	[2367, 664]
316	[584, 585]	1133	[45, 176]	1950	[1430, 49]	2767	[180, 1617]
317	[586, 587]	1134	[1320, 1625]	1951	[662, 2470]	2768	[2602, 1582]
318	[588, 589]	1135	[1626, 744]	1952	[2395, 718]	2769	[2583, 522]
319	[590, 177]	1136	[1627, 167]	1953	[2475, 2367]	2770	[2477, 191]
320	[591, 204]	1137	[591, 1628]	1954	[1343, 564]	2771	[2617, 1658]
321	[457, 592]	1138	[1428, 1425]	1955	[1419, 234]	2772	[648, 2456]
322	[593, 594]	1139	[1629, 717]	1956	[2476, 1582]	2773	[629, 721]
323	[595, 185]	1140	[1630, 479]	1957	[653, 1485]	2774	[2341, 1416]
324	[583, 596]	1141	[1631, 1632]	1958	[1588, 1710]	2775	[624, 497]
325	[46, 206]	1142	[566, 610]	1959	[1435, 465]	2776	[3057, 2510]
326	[52, 42]	1143	[1633, 1350]	1960	[2477, 712]	2777	[1580, 189]
327	[597, 2]	1144	[679, 1634]	1961	[1679, 657]	2778	[1473, 1419]
328	[598, 512]	1145	[1635, 1636]	1962	[530, 2478]	2779	[1492, 1442]
329	[599, 174]	1146	[1637, 729]	1963	[2479, 609]	2780	[3058, 2438]
330	[600, 469]	1147	[1638, 1572]	1964	[1366, 1682]	2781	[1661, 1272]
331	[601, 173]	1148	[149, 479]	1965	[139, 148]	2782	[2475, 226]
332	[469, 178]	1149	[675, 151]	1966	[1573, 2451]	2783	[2375, 38]
333	[602, 602]	1150	[1639, 715]	1967	[1614, 627]	2784	[162, 2429]
334	[603, 604]	1151	[1640, 1641]	1968	[2480, 1712]	2785	[3059, 1409]
335	[512, 599]	1152	[1302, 508]	1969	[1512, 174]	2786	[2593, 2610]
336	[599, 600]	1153	[1627, 576]	1970	[533, 474]	2787	[3060, 585]
337	[173, 537]	1154	[698, 1642]	1971	[2370, 2420]	2788	[3061, 138]
338	[601, 536]	1155	[1643, 1398]	1972	[1683, 594]	2789	[2497, 1492]

339	[173, 605]	1156	[1610, 1325]	1973	[171, 616]	2790	[3062, 136]
340	[605, 603]	1157	[1644, 1645]	1974	[2481, 720]	2791	[1261, 1701]
341	[606, 566]	1158	[1646, 699]	1975	[678, 2478]	2792	[3060, 182]
342	[499, 607]	1159	[1647, 645]	1976	[179, 1377]	2793	[147, 140]
343	[608, 609]	1160	[1294, 1340]	1977	[2482, 519]	2794	[2368, 2399]
344	[171, 610]	1161	[1509, 1648]	1978	[1400, 1344]	2795	[2574, 1273]
345	[611, 612]	1162	[1649, 469]	1979	[519, 2483]	2796	[2513, 2590]
346	[613, 614]	1163	[203, 1628]	1980	[2452, 696]	2797	[2357, 458]
347	[615, 616]	1164	[39, 662]	1981	[2350, 2484]	2798	[3063, 2663]
348	[617, 618]	1165	[706, 592]	1982	[2485, 2486]	2799	[3064, 668]
349	[619, 620]	1166	[547, 1477]	1983	[1650, 1325]	2800	[1395, 718]
350	[621, 622]	1167	[1650, 690]	1984	[1561, 563]	2801	[3065, 693]
351	[623, 466]	1168	[1651, 1652]	1985	[2487, 1530]	2802	[3066, 2516]
352	[624, 453]	1169	[1362, 650]	1986	[2351, 1600]	2803	[1693, 1557]
353	[8, 625]	1170	[1653, 627]	1987	[1703, 2488]	2804	[2453, 2411]
354	[626, 627]	1171	[1654, 1655]	1988	[1504, 2489]	2805	[2492, 720]
355	[628, 529]	1172	[1656, 195]	1989	[1654, 1663]	2806	[642, 2566]
356	[132, 629]	1173	[1657, 1658]	1990	[604, 1456]	2807	[178, 572]
357	[630, 631]	1174	[1659, 746]	1991	[2490, 2396]	2808	[3067, 134]
358	[632, 56]	1175	[506, 1660]	1992	[2491, 1399]	2809	[1497, 2324]
359	[633, 529]	1176	[1323, 725]	1993	[141, 737]	2810	[3068, 1330]
360	[634, 492]	1177	[1550, 1475]	1994	[2492, 1294]	2811	[214, 3069]
361	[635, 636]	1178	[1661, 527]	1995	[2493, 2494]	2812	[3070, 3071]
362	[637, 129]	1179	[1662, 1663]	1996	[1692, 2495]	2813	[3072, 627]
363	[638, 142]	1180	[1664, 699]	1997	[212, 746]	2814	[3073, 529]
364	[639, 640]	1181	[1335, 575]	1998	[2496, 717]	2815	[2454, 2473]
365	[641, 518]	1182	[485, 171]	1999	[2497, 505]	2816	[1568, 574]
366	[642, 643]	1183	[1665, 1435]	2000	[2498, 1574]	2817	[1390, 1318]
367	[644, 645]	1184	[571, 599]	2001	[2365, 187]	2818	[40, 663]
368	[646, 647]	1185	[1296, 1666]	2002	[2499, 2500]	2819	[3045, 2595]
369	[648, 649]	1186	[636, 1414]	2003	[1249, 465]	2820	[2645, 1670]
370	[32, 650]	1187	[1667, 1668]	2004	[2501, 500]	2821	[3074, 1596]
371	[651, 652]	1188	[1669, 1350]	2005	[734, 1274]	2822	[2323, 1458]
372	[653, 654]	1189	[1284, 1659]	2006	[2343, 1494]	2823	[1419, 1496]
373	[655, 185]	1190	[1549, 1670]	2007	[2337, 1498]	2824	[2620, 3075]
374	[656, 657]	1191	[1671, 1592]	2008	[687, 1530]	2825	[1351, 648]
375	[658, 659]	1192	[1672, 492]	2009	[628, 1352]	2826	[1283, 530]
376	[660, 208]	1193	[1673, 1674]	2010	[558, 2440]	2827	[3076, 3077]
377	[196, 661]	1194	[1675, 1572]	2011	[2502, 1335]	2828	[3078, 3079]
378	[662, 663]	1195	[53, 1405]	2012	[2335, 515]	2829	[582, 715]
379	[494, 184]	1196	[606, 171]	2013	[54, 1604]	2830	[3080, 2503]
380	[664, 665]	1197	[1676, 1677]	2014	[2503, 520]	2831	[2607, 1361]
381	[666, 667]	1198	[1370, 1557]	2015	[2408, 1478]	2832	[2447, 1447]
382	[668, 669]	1199	[1678, 1338]	2016	[2504, 206]	2833	[2526, 235]

383	[670, 671]	1200	[1679, 1680]	2017	[611, 551]	2834	[3058, 3031]
384	[605, 671]	1201	[1681, 453]	2018	[2505, 1577]	2835	[3027, 2643]
385	[165, 672]	1202	[664, 1682]	2019	[2354, 1451]	2836	[3081, 475]
386	[673, 674]	1203	[1683, 476]	2020	[1267, 2506]	2837	[684, 2599]
387	[675, 144]	1204	[695, 539]	2021	[2507, 494]	2838	[3043, 175]
388	[634, 676]	1205	[1684, 1392]	2022	[1304, 468]	2839	[1597, 2340]
389	[677, 678]	1206	[1659, 199]	2023	[2508, 609]	2840	[684, 2646]
390	[679, 680]	1207	[1344, 1685]	2024	[595, 454]	2841	[2507, 449]
391	[157, 128]	1208	[1387, 1399]	2025	[1525, 2509]	2842	[2638, 1353]
392	[681, 589]	1209	[1592, 1412]	2026	[2510, 2511]	2843	[2614, 1674]
393	[202, 536]	1210	[497, 1686]	2027	[2512, 180]	2844	[2576, 508]
394	[455, 682]	1211	[1687, 505]	2028	[2513, 2514]	2845	[3039, 472]
395	[683, 229]	1212	[1640, 1379]	2029	[2515, 2516]	2846	[48, 1431]
396	[660, 684]	1213	[1688, 1689]	2030	[35, 2]	2847	[3082, 502]
397	[12, 685]	1214	[1321, 490]	2031	[2449, 553]	2848	[3083, 1294]
398	[686, 199]	1215	[678, 531]	2032	[2517, 1553]	2849	[2632, 3053]
399	[687, 688]	1216	[1690, 1449]	2033	[2518, 2519]	2850	[3084, 2663]
400	[168, 672]	1217	[1691, 1692]	2034	[2520, 603]	2851	[501, 2387]
401	[689, 690]	1218	[1693, 553]	2035	[573, 172]	2852	[3085, 3023]
402	[691, 692]	1219	[1694, 541]	2036	[1456, 1421]	2853	[1548, 2495]
403	[132, 693]	1220	[1672, 676]	2037	[1344, 565]	2854	[3086, 2456]
404	[144, 694]	1221	[1695, 1696]	2038	[1357, 1670]	2855	[2346, 61]
405	[695, 696]	1222	[1607, 1652]	2039	[1630, 150]	2856	[2553, 200]
406	[219, 697]	1223	[1697, 1698]	2040	[2521, 2522]	2857	[2503, 2483]
407	[698, 699]	1224	[1699, 1700]	2041	[2523, 1526]	2858	[3087, 1577]
408	[700, 701]	1225	[1516, 494]	2042	[2524, 1301]	2859	[1251, 1409]
409	[702, 703]	1226	[673, 1465]	2043	[1280, 1498]	2860	[3025, 1535]
410	[232, 201]	1227	[1555, 1701]	2044	[206, 1582]	2861	[2444, 561]
411	[590, 599]	1228	[1702, 1564]	2045	[2525, 51]	2862	[3088, 2409]
412	[704, 682]	1229	[1703, 1411]	2046	[691, 1264]	2863	[2393, 680]
413	[705, 472]	1230	[1681, 497]	2047	[742, 2404]	2864	[3089, 472]
414	[706, 149]	1231	[568, 1704]	2048	[508, 1434]	2865	[2345, 522]
415	[707, 140]	1232	[1705, 478]	2049	[2526, 195]	2866	[3090, 2374]
416	[708, 654]	1233	[159, 1706]	2050	[2527, 2528]	2867	[3073, 1352]
417	[709, 454]	1234	[467, 1305]	2051	[2529, 662]	2868	[152, 581]
418	[710, 193]	1235	[1438, 1383]	2052	[470, 9]	2869	[2554, 1305]
419	[593, 476]	1236	[1454, 1402]	2053	[2530, 475]	2870	[1551, 1345]
420	[711, 712]	1237	[1327, 45]	2054	[495, 1475]	2871	[200, 2604]
421	[713, 714]	1238	[705, 229]	2055	[229, 1432]	2872	[1358, 2673]
422	[715, 716]	1239	[1707, 1708]	2056	[2531, 2532]	2873	[2585, 1556]
423	[717, 718]	1240	[1709, 1587]	2057	[460, 682]	2874	[3091, 1290]
424	[719, 645]	1241	[1584, 1710]	2058	[1520, 1519]	2875	[3092, 1621]
425	[720, 59]	1242	[1711, 1712]	2059	[1457, 518]	2876	[2613, 465]
426	[693, 721]	1243	[586, 549]	2060	[2533, 1652]	2877	[2639, 2539]

427	[670, 603]	1244	[1713, 160]	2061	[2534, 1313]	2878	[3093, 1677]
428	[597, 36]	1245	[1714, 1535]	2062	[1544, 1464]	2879	[3094, 156]
429	[722, 662]	1246	[1715, 1716]	2063	[2535, 134]	2880	[1295, 174]
430	[723, 533]	1247	[666, 1290]	2064	[145, 2446]	2881	[572, 1488]
431	[724, 725]	1248	[609, 1717]	2065	[449, 1489]	2882	[2666, 2361]
432	[726, 727]	1249	[238, 783]	2066	[1289, 667]	2883	[1669, 2322]
433	[655, 454]	1250	[1718, 251]	2067	[2536, 2537]	2884	[3095, 2390]
434	[728, 729]	1251	[1719, 277]	2068	[2538, 693]	2885	[218, 666]
435	[730, 594]	1252	[1720, 295]	2069	[1695, 2539]	2886	[2472, 2455]
436	[731, 732]	1253	[1721, 1722]	2070	[1715, 1625]	2887	[3096, 1272]
437	[733, 714]	1254	[1723, 1724]	2071	[692, 1417]	2888	[2410, 668]
438	[734, 735]	1255	[1725, 1726]	2072	[479, 1517]	2889	[2459, 1708]
439	[137, 736]	1256	[1727, 1728]	2073	[2540, 200]	2890	[3063, 2654]
440	[737, 738]	1257	[1729, 1730]	2074	[1605, 2541]	2891	[2664, 1344]
441	[739, 128]	1258	[1225, 1731]	2075	[2542, 625]	2892	[2463, 2541]
442	[215, 224]	1259	[755, 786]	2076	[681, 1619]	2893	[514, 2336]
443	[740, 741]	1260	[1732, 1230]	2077	[1472, 715]	2894	[1618, 1373]
444	[742, 743]	1261	[1733, 97]	2078	[1487, 1421]	2895	[1713, 1706]
445	[744, 745]	1262	[1734, 420]	2079	[2543, 2392]	2896	[1256, 2420]
446	[198, 746]	1263	[1735, 1736]	2080	[2544, 1659]	2897	[1405, 3075]
447	[596, 747]	1264	[1737, 1738]	2081	[1355, 2545]	2898	[3097, 2451]
448	[748, 350]	1265	[1739, 909]	2082	[1599, 1449]	2899	[2458, 2361]
449	[749, 750]	1266	[974, 1740]	2083	[2546, 1451]	2900	[1465, 3098]
450	[751, 752]	1267	[388, 1741]	2084	[1384, 1255]	2901	[3019, 2663]
451	[753, 754]	1268	[1742, 1031]	2085	[2329, 474]	2902	[560, 2445]
452	[755, 756]	1269	[393, 1014]	2086	[2479, 1581]	2903	[2418, 2569]
453	[757, 758]	1270	[1270, 1270]	2087	[1620, 451]	2904	[630, 2469]
454	[759, 760]	1271	[1743, 1743]	2088	[2547, 2548]	2905	[3099, 1603]
455	[761, 762]	1272	[1744, 439]	2089	[2549, 144]	2906	[3100, 1622]
456	[763, 764]	1273	[1745, 900]	2090	[2550, 699]	2907	[3101, 1593]
457	[765, 766]	1274	[267, 1209]	2091	[2391, 1435]	2908	[1569, 458]
458	[767, 768]	1275	[379, 1746]	2092	[2551, 2552]	2909	[1644, 2528]
459	[769, 770]	1276	[1747, 241]	2093	[2553, 232]	2910	[3102, 2536]
460	[771, 772]	1277	[886, 1010]	2094	[2550, 1642]	2911	[533, 568]
461	[773, 774]	1278	[1748, 239]	2095	[1391, 2396]	2912	[3103, 2425]
462	[775, 776]	1279	[395, 1749]	2096	[1452, 616]	2913	[3065, 629]
463	[777, 778]	1280	[932, 1153]	2097	[656, 1680]	2914	[2559, 3104]
464	[779, 780]	1281	[1730, 1750]	2098	[2554, 468]	2915	[658, 2636]
465	[781, 782]	1282	[1751, 1752]	2099	[2555, 676]	2916	[2418, 3105]
466	[783, 784]	1283	[1191, 1753]	2100	[2556, 661]	2917	[2622, 1556]
467	[785, 786]	1284	[1754, 1755]	2101	[2557, 2510]	2918	[2544, 198]
468	[787, 788]	1285	[1756, 1757]	2102	[2558, 1255]	2919	[3106, 714]
469	[789, 790]	1286	[1758, 952]	2103	[2559, 2560]	2920	[2512, 1377]
470	[791, 792]	1287	[361, 1759]	2104	[2561, 132]	2921	[1691, 1548]

471	[793, 794]	1288	[1760, 1761]	2105	[2389, 2559]	2922	[3062, 2425]
472	[795, 796]	1289	[412, 336]	2106	[2562, 2563]	2923	[2366, 125]
473	[797, 798]	1290	[414, 918]	2107	[2564, 200]	2924	[2592, 2571]
474	[799, 337]	1291	[756, 1186]	2108	[2565, 2566]	2925	[3107, 1320]
475	[800, 801]	1292	[93, 1762]	2109	[2567, 1402]	2926	[3108, 1257]
476	[802, 803]	1293	[1763, 1764]	2110	[2428, 163]	2927	[1534, 2636]
477	[804, 805]	1294	[1765, 1766]	2111	[2568, 1414]	2928	[2561, 2409]
478	[806, 807]	1295	[863, 1767]	2112	[2400, 527]	2929	[3034, 3077]
479	[766, 808]	1296	[1126, 848]	2113	[1553, 2569]	2930	[3109, 1515]
480	[809, 86]	1297	[1768, 1730]	2114	[2392, 465]	2931	[2373, 3110]
481	[810, 811]	1298	[1769, 1770]	2115	[2570, 2571]	2932	[2624, 1320]
482	[812, 813]	1299	[275, 1766]	2116	[1690, 1600]	2933	[2481, 1294]
483	[814, 815]	1300	[1771, 950]	2117	[2572, 2573]	2934	[1461, 1433]
484	[816, 327]	1301	[1772, 1773]	2118	[2574, 734]	2935	[3111, 1631]
485	[817, 818]	1302	[1774, 1775]	2119	[2564, 232]	2936	[3112, 2399]
486	[819, 820]	1303	[1776, 1777]	2120	[2575, 2423]	2937	[583, 716]
487	[821, 822]	1304	[1778, 1226]	2121	[2576, 513]	2938	[3113, 1560]
488	[823, 824]	1305	[1779, 1105]	2122	[2577, 637]	2939	[1530, 3114]
489	[825, 355]	1306	[1780, 1781]	2123	[2578, 8]	2940	[1440, 1628]
490	[826, 827]	1307	[400, 1782]	2124	[2579, 563]	2941	[3054, 1375]
491	[828, 829]	1308	[1783, 1784]	2125	[1429, 1499]	2942	[1553, 3105]
492	[830, 831]	1309	[1785, 1786]	2126	[554, 2489]	2943	[3115, 1409]
493	[832, 833]	1310	[1787, 1788]	2127	[2480, 2580]	2944	[3116, 1502]
494	[834, 835]	1311	[1789, 1790]	2128	[2581, 496]	2945	[3117, 1593]
495	[836, 837]	1312	[921, 1791]	2129	[1273, 735]	2946	[3118, 1273]
496	[838, 839]	1313	[1792, 1793]	2130	[2359, 1273]	2947	[2504, 47]
497	[840, 841]	1314	[1794, 1795]	2131	[2582, 2583]	2948	[1546, 1492]
498	[842, 843]	1315	[1796, 908]	2132	[1441, 2584]	2949	[2589, 2514]
499	[844, 273]	1316	[1797, 1798]	2133	[1664, 1642]	2950	[2321, 34]
500	[845, 846]	1317	[1799, 1736]	2134	[2468, 1310]	2951	[3119, 2595]
501	[847, 848]	1318	[1800, 1801]	2135	[2496, 2471]	2952	[3120, 3121]
502	[849, 850]	1319	[1802, 353]	2136	[2585, 487]	2953	[3122, 3123]
503	[851, 852]	1320	[1803, 1804]	2137	[613, 2384]	2954	[2540, 232]
504	[853, 854]	1321	[1805, 1806]	2138	[2586, 2416]	2955	[1540, 2320]
505	[855, 856]	1322	[1807, 1808]	2139	[1711, 2580]	2956	[3072, 1615]
506	[857, 858]	1323	[1203, 1809]	2140	[1707, 187]	2957	[2570, 1559]
507	[859, 860]	1324	[1810, 1811]	2141	[1276, 125]	2958	[736, 3124]
508	[861, 862]	1325	[1812, 1813]	2142	[2587, 1492]	2959	[3125, 596]
509	[863, 864]	1326	[1814, 1815]	2143	[2588, 583]	2960	[154, 2409]
510	[865, 866]	1327	[901, 869]	2144	[2589, 2590]	2961	[3083, 720]
511	[867, 868]	1328	[1816, 1817]	2145	[1649, 175]	2962	[2450, 652]
512	[869, 333]	1329	[1759, 897]	2146	[2591, 1362]	2963	[3126, 3037]
513	[870, 871]	1330	[1818, 438]	2147	[2592, 1559]	2964	[2471, 718]
514	[872, 873]	1331	[1819, 1820]	2148	[1567, 535]	2965	[3127, 714]

515	[874, 301]	1332	[1821, 1822]	2149	[2448, 2469]	2966	[674, 3128]
516	[875, 876]	1333	[1823, 1824]	2150	[2593, 2573]	2967	[3097, 1574]
517	[868, 877]	1334	[1825, 1214]	2151	[2546, 504]	2968	[741, 142]
518	[878, 879]	1335	[1826, 1827]	2152	[13, 2369]	2969	[2524, 1318]
519	[820, 798]	1336	[1828, 1172]	2153	[1364, 1622]	2970	[2334, 2440]
520	[406, 880]	1337	[1829, 88]	2154	[641, 1458]	2971	[1696, 2532]
521	[881, 882]	1338	[26, 1830]	2155	[2594, 47]	2972	[1499, 3069]
522	[883, 884]	1339	[1831, 993]	2156	[1369, 2322]	2973	[3059, 1252]
523	[885, 397]	1340	[1832, 311]	2157	[2549, 151]	2974	[3070, 3121]
524	[766, 886]	1341	[1833, 1834]	2158	[1354, 478]	2975	[2588, 715]
525	[887, 888]	1342	[1835, 425]	2159	[2457, 490]	2976	[3108, 2420]
526	[889, 890]	1343	[1836, 959]	2160	[2409, 629]	2977	[3129, 3130]
527	[891, 892]	1344	[1837, 1838]	2161	[1563, 2595]	2978	[2583, 543]
528	[893, 894]	1345	[1839, 308]	2162	[2394, 12]	2979	[1519, 44]
529	[895, 896]	1346	[872, 1840]	2163	[2596, 2418]	2980	[1698, 2331]
530	[897, 898]	1347	[1096, 1841]	2164	[2431, 1375]	2981	[2386, 502]
531	[899, 900]	1348	[1842, 262]	2165	[2597, 1366]	2982	[1484, 3131]
532	[901, 902]	1349	[1843, 1844]	2166	[1313, 525]	2983	[646, 1652]
533	[903, 904]	1350	[1845, 1752]	2167	[1688, 1668]	2984	[564, 1685]
534	[905, 906]	1351	[1846, 1847]	2168	[2598, 1603]	2985	[644, 1433]
535	[907, 908]	1352	[1848, 1179]	2169	[2436, 1365]	2986	[2390, 3104]
536	[22, 909]	1353	[1849, 1850]	2170	[208, 2599]	2987	[3095, 2559]
537	[330, 248]	1354	[1851, 1852]	2171	[2555, 492]	2988	[2538, 629]
538	[910, 911]	1355	[1853, 1854]	2172	[2600, 2396]	2989	[1673, 2615]
539	[912, 913]	1356	[1855, 1856]	2173	[2601, 739]	2990	[3096, 527]
540	[839, 914]	1357	[1857, 1858]	2174	[2602, 1292]	2991	[1671, 1478]
541	[915, 916]	1358	[1859, 1860]	2175	[2508, 1581]	2992	[3066, 3049]
542	[917, 918]	1359	[1861, 1862]	2176	[711, 191]	2993	[3132, 3133]
543	[919, 920]	1360	[1863, 1864]	2177	[1365, 2603]	2994	[2398, 543]
544	[921, 922]	1361	[1865, 1866]	2178	[2567, 1455]	2995	[1657, 2618]
545	[401, 923]	1362	[1867, 1868]	2179	[1523, 563]	2996	[3134, 508]
546	[924, 925]	1363	[63, 1869]	2180	[232, 2604]	2997	[2573, 3135]
547	[926, 927]	1364	[1870, 1871]	2181	[2605, 475]	2998	[2505, 702]
548	[928, 394]	1365	[1872, 1873]	2182	[2539, 2606]	2999	[1253, 182]
549	[929, 930]	1366	[428, 1013]	2183	[2607, 464]	3000	[3136, 736]
550	[931, 932]	1367	[1874, 1875]	2184	[60, 2347]	3001	[674, 3098]
551	[933, 934]	1368	[1876, 796]	2185	[2430, 165]	3002	[3064, 1479]
552	[935, 936]	1369	[1877, 1878]	2186	[2608, 2415]	3003	[1624, 44]
553	[937, 938]	1370	[1879, 1880]	2187	[2609, 2382]	3004	[2419, 1257]
554	[939, 940]	1371	[1881, 1882]	2188	[1678, 1412]	3005	[1572, 3137]
555	[321, 785]	1372	[1883, 1884]	2189	[1393, 2456]	3006	[3138, 2626]
556	[941, 942]	1373	[1885, 284]	2190	[544, 2417]	3007	[2594, 206]
557	[943, 944]	1374	[1886, 1116]	2191	[2572, 2610]	3008	[1570, 2366]
558	[945, 946]	1375	[750, 1018]	2192	[2498, 2451]	3009	[2623, 490]

559	[947, 948]	1376	[759, 1887]	2193	[2521, 640]	3010	[3139, 1593]
560	[949, 950]	1377	[1888, 1889]	2194	[2611, 2612]	3011	[2620, 3140]
561	[951, 952]	1378	[1756, 1770]	2195	[2613, 623]	3012	[2621, 3051]
562	[953, 954]	1379	[1890, 1891]	2196	[2614, 2615]	3013	[3141, 3142]
563	[955, 956]	1380	[428, 1892]	2197	[2616, 456]	3014	[3143, 1362]
564	[957, 958]	1381	[1115, 1893]	2198	[2434, 1325]	3015	[3106, 1616]
565	[959, 960]	1382	[1894, 1895]	2199	[2617, 2618]	3016	[3144, 1628]
566	[961, 329]	1383	[1896, 376]	2200	[2523, 2509]	3017	[3145, 2401]
567	[962, 963]	1384	[360, 1897]	2201	[142, 1502]	3018	[688, 3114]
568	[902, 333]	1385	[1898, 1899]	2202	[1317, 2619]	3019	[2943, 3146]
569	[964, 965]	1386	[1137, 799]	2203	[1518, 1513]	3020	[1075, 2245]
570	[966, 436]	1387	[1900, 1901]	2204	[42, 2620]	3021	[2133, 818]
571	[967, 968]	1388	[1902, 1903]	2205	[2530, 1683]	3022	[754, 1824]
572	[336, 329]	1389	[1904, 1045]	2206	[2597, 664]	3023	[3147, 3148]
573	[969, 927]	1390	[1733, 1905]	2207	[2586, 126]	3024	[2880, 1073]
574	[970, 971]	1391	[1906, 1907]	2208	[1537, 557]	3025	[1188, 3149]
575	[972, 973]	1392	[1908, 1909]	2209	[636, 625]	3026	[3150, 1917]
576	[974, 975]	1393	[1910, 1911]	2210	[2534, 2510]	3027	[3151, 3152]
577	[320, 976]	1394	[1912, 1913]	2211	[2621, 2519]	3028	[2941, 2899]
578	[106, 977]	1395	[112, 1914]	2212	[2622, 487]	3029	[2714, 3153]
579	[978, 979]	1396	[1915, 1916]	2213	[2623, 1322]	3030	[3154, 267]
580	[980, 981]	1397	[967, 801]	2214	[2624, 1715]	3031	[3155, 948]
581	[982, 983]	1398	[1763, 979]	2215	[1381, 602]	3032	[3156, 2784]
582	[984, 985]	1399	[1917, 1918]	2216	[1266, 12]	3033	[3157, 827]
583	[986, 987]	1400	[1919, 1007]	2217	[1471, 1467]	3034	[259, 79]
584	[988, 989]	1401	[1920, 306]	2218	[2577, 2431]	3035	[3158, 418]
585	[990, 991]	1402	[1921, 1922]	2219	[2625, 2626]	3036	[3159, 3160]
586	[394, 992]	1403	[1923, 1924]	2220	[2627, 2584]	3037	[3161, 1959]
587	[993, 994]	1404	[1925, 1926]	2221	[2417, 2628]	3038	[1824, 2871]
588	[995, 946]	1405	[105, 339]	2222	[1536, 1415]	3039	[3162, 3163]
589	[996, 956]	1406	[1927, 1928]	2223	[1439, 2629]	3040	[2734, 93]
590	[997, 998]	1407	[1190, 1929]	2224	[2630, 716]	3041	[3164, 2764]
591	[999, 1000]	1408	[1930, 1931]	2225	[2575, 2412]	3042	[1058, 3165]
592	[1001, 809]	1409	[1932, 983]	2226	[1543, 2631]	3043	[2691, 3166]
593	[902, 1002]	1410	[1933, 316]	2227	[2632, 1636]	3044	[289, 3167]
594	[1003, 1004]	1411	[1934, 1092]	2228	[1515, 1648]	3045	[3168, 1167]
595	[1005, 1006]	1412	[1935, 1936]	2229	[704, 456]	3046	[3169, 3170]
596	[985, 1007]	1413	[258, 1181]	2230	[2474, 2387]	3047	[3171, 2089]
597	[1008, 1009]	1414	[16, 1937]	2231	[2525, 2406]	3048	[2229, 1011]
598	[808, 1010]	1415	[20, 1938]	2232	[2633, 1468]	3049	[3172, 1773]
599	[1010, 789]	1416	[1939, 1761]	2233	[2361, 2634]	3050	[3173, 2066]
600	[998, 1011]	1417	[1163, 332]	2234	[2635, 2636]	3051	[3174, 2217]
601	[1012, 1013]	1418	[1135, 444]	2235	[2491, 459]	3052	[2200, 3175]
602	[1014, 1015]	1419	[1940, 241]	2236	[190, 712]	3053	[3176, 400]

603	[1016, 976]	1420	[1219, 1160]	2237	[1339, 2637]	3054	[2864, 249]
604	[248, 1017]	1421	[1941, 1942]	2238	[1312, 2510]	3055	[2933, 3177]
605	[384, 1018]	1422	[1943, 1944]	2239	[218, 1289]	3056	[1955, 305]
606	[1019, 1020]	1423	[1780, 1884]	2240	[2638, 541]	3057	[1823, 2870]
607	[1021, 1022]	1424	[1945, 1946]	2241	[2639, 1696]	3058	[2904, 954]
608	[1023, 1024]	1425	[1947, 1181]	2242	[2600, 1392]	3059	[3178, 3179]
609	[1025, 1026]	1426	[1948, 1949]	2243	[2640, 2441]	3060	[1216, 3180]
610	[1020, 1027]	1427	[1950, 1951]	2244	[2405, 51]	3061	[1147, 3004]
611	[1028, 1029]	1428	[1952, 1953]	2245	[1611, 2641]	3062	[3181, 3182]
612	[1030, 1031]	1429	[1954, 1955]	2246	[2476, 1292]	3063	[3183, 2825]
613	[1032, 1033]	1430	[1956, 1957]	2247	[1314, 1389]	3064	[3184, 2780]
614	[1034, 1035]	1431	[1958, 1891]	2248	[2642, 2643]	3065	[1885, 1923]
615	[1036, 1012]	1432	[1033, 1959]	2249	[717, 1396]	3066	[2708, 1811]
616	[326, 1037]	1433	[1960, 1961]	2250	[1277, 2416]	3067	[1164, 1950]
617	[1038, 1039]	1434	[1775, 1962]	2251	[478, 2644]	3068	[3185, 760]
618	[1040, 1041]	1435	[1963, 1964]	2252	[2645, 1358]	3069	[3186, 246]
619	[1042, 1043]	1436	[1965, 1966]	2253	[208, 2646]	3070	[3171, 1775]
620	[1044, 1045]	1437	[1967, 1968]	2254	[2647, 55]	3071	[3187, 1118]
621	[1046, 1047]	1438	[1969, 1137]	2255	[2533, 647]	3072	[3188, 312]
622	[1048, 1049]	1439	[1011, 969]	2256	[2517, 2418]	3073	[2878, 3189]
623	[1050, 1051]	1440	[1176, 1970]	2257	[2648, 224]	3074	[2970, 1125]
624	[1052, 1053]	1441	[1971, 1919]	2258	[700, 2484]	3075	[85, 1096]
625	[1054, 1055]	1442	[1972, 1973]	2259	[1279, 2399]	3076	[3181, 1212]
626	[1056, 1057]	1443	[756, 253]	2260	[2460, 2506]	3077	[3190, 1171]
627	[1058, 1059]	1444	[1974, 1975]	2261	[2649, 1478]	3078	[2169, 432]
628	[1060, 1061]	1445	[1976, 1977]	2262	[1460, 2650]	3079	[2788, 1827]
629	[252, 1062]	1446	[1978, 1979]	2263	[61, 2651]	3080	[3191, 406]
630	[1063, 1064]	1447	[1980, 1981]	2264	[2502, 574]	3081	[3192, 3193]
631	[1065, 1066]	1448	[1982, 1983]	2265	[1548, 2652]	3082	[3194, 3195]
632	[1067, 114]	1449	[1984, 1985]	2266	[131, 2409]	3083	[3196, 118]
633	[1068, 1069]	1450	[1986, 1987]	2267	[2653, 2654]	3084	[3197, 2191]
634	[1070, 1071]	1451	[1988, 1989]	2268	[2655, 1509]	3085	[3198, 3199]
635	[324, 1054]	1452	[1859, 1990]	2269	[2656, 2657]	3086	[122, 3200]
636	[1072, 1073]	1453	[1991, 1225]	2270	[2579, 1441]	3087	[2121, 1981]
637	[1074, 258]	1454	[1992, 1993]	2271	[1629, 2471]	3088	[2699, 3201]
638	[1075, 1076]	1455	[1994, 1219]	2272	[1439, 572]	3089	[3202, 437]
639	[1077, 1078]	1456	[940, 808]	2273	[2403, 1353]	3090	[3150, 2719]
640	[1079, 323]	1457	[1995, 1996]	2274	[2490, 1392]	3091	[3203, 3204]
641	[1080, 1081]	1458	[1997, 1998]	2275	[1483, 1572]	3092	[3205, 3206]
642	[1082, 1083]	1459	[1999, 752]	2276	[2658, 9]	3093	[3207, 3208]
643	[1084, 1085]	1460	[2000, 1059]	2277	[2402, 535]	3094	[1102, 3209]
644	[1086, 1087]	1461	[2001, 2002]	2278	[1275, 672]	3095	[3007, 1112]
645	[1088, 1035]	1462	[2003, 245]	2279	[1709, 727]	3096	[1077, 3210]
646	[1089, 1090]	1463	[2004, 1026]	2280	[1277, 126]	3097	[2759, 3211]

647	[1091, 1092]	1464	[936, 2005]	2281	[138, 2659]	3098	[1136, 445]
648	[1093, 1094]	1465	[302, 1942]	2282	[1358, 2348]	3099	[3212, 269]
649	[1095, 1096]	1466	[1896, 2006]	2283	[1367, 1366]	3100	[3213, 2957]
650	[1097, 1098]	1467	[2007, 2008]	2284	[1543, 2660]	3101	[2698, 2896]
651	[1099, 1100]	1468	[2009, 921]	2285	[2661, 547]	3102	[3214, 2711]
652	[989, 1101]	1469	[2010, 1133]	2286	[639, 2522]	3103	[3215, 2987]
653	[1102, 1103]	1470	[2011, 2012]	2287	[464, 2657]	3104	[2983, 1938]
654	[1104, 1105]	1471	[2013, 2014]	2288	[2347, 2662]	3105	[2120, 410]
655	[964, 1106]	1472	[2015, 1203]	2289	[1534, 659]	3106	[2859, 3216]
656	[1107, 1108]	1473	[2016, 923]	2290	[1495, 1604]	3107	[1043, 2318]
657	[1109, 1110]	1474	[2017, 2018]	2291	[2399, 2324]	3108	[3217, 3218]
658	[1111, 1112]	1475	[2019, 2020]	2292	[2424, 1377]	3109	[2799, 1051]
659	[1113, 1114]	1476	[2021, 1240]	2293	[2653, 2663]	3110	[3219, 364]
660	[1115, 1116]	1477	[925, 385]	2294	[1476, 2379]	3111	[3220, 2806]
661	[1117, 1118]	1478	[2022, 1017]	2295	[2664, 564]	3112	[3221, 2680]
662	[1119, 1120]	1479	[2023, 2024]	2296	[1459, 2320]	3113	[1929, 3222]
663	[1121, 1122]	1480	[2025, 2026]	2297	[2616, 682]	3114	[2994, 351]
664	[349, 330]	1481	[2027, 2028]	2298	[2665, 519]	3115	[3223, 291]
665	[1123, 1124]	1482	[383, 750]	2299	[2666, 124]	3116	[2030, 2036]
666	[1125, 790]	1483	[1913, 2029]	2300	[2667, 2413]	3117	[3224, 1177]
667	[117, 1126]	1484	[2030, 21]	2301	[545, 2628]	3118	[786, 1186]
668	[1127, 1128]	1485	[2031, 788]	2302	[2658, 471]	3119	[3225, 3226]
669	[1129, 1130]	1486	[2032, 2033]	2303	[2668, 1365]	3120	[3205, 860]
670	[1131, 1132]	1487	[2034, 2035]	2304	[2669, 2670]	3121	[3227, 374]
671	[909, 1133]	1488	[2036, 22]	2305	[1500, 479]	3122	[2973, 1047]
672	[811, 1134]	1489	[833, 2037]	2306	[2671, 607]	3123	[3228, 292]
673	[1135, 1136]	1490	[2038, 1043]	2307	[2339, 1598]	3124	[264, 1837]
674	[1137, 89]	1491	[2039, 2040]	2308	[1450, 504]	3125	[1127, 3229]
675	[413, 917]	1492	[1085, 1789]	2309	[1377, 2356]	3126	[3230, 352]
676	[1138, 1139]	1493	[1992, 2041]	2310	[1554, 1375]	3127	[2917, 3231]
677	[1140, 1141]	1494	[2042, 991]	2311	[2647, 1604]	3128	[402, 2044]
678	[352, 1142]	1495	[1784, 2043]	2312	[2565, 643]	3129	[2163, 1966]
679	[1143, 1144]	1496	[923, 2044]	2313	[2556, 197]	3130	[3010, 971]
680	[1145, 1146]	1497	[2045, 2046]	2314	[1404, 8]	3131	[2147, 1169]
681	[1147, 1148]	1498	[2047, 2048]	2315	[2672, 2469]	3132	[3232, 2978]
682	[1149, 292]	1499	[2049, 2050]	2316	[1410, 2488]	3133	[3233, 3234]
683	[1150, 1151]	1500	[2051, 2052]	2317	[474, 1704]	3134	[1999, 1912]
684	[1152, 1153]	1501	[2053, 2054]	2318	[1670, 2673]	3135	[424, 1124]
685	[24, 785]	1502	[278, 2055]	2319	[441, 2674]	3136	[995, 3235]
686	[1154, 1155]	1503	[2056, 1765]	2320	[2675, 1201]	3137	[2225, 913]
687	[356, 109]	1504	[2057, 2058]	2321	[2676, 2677]	3138	[3236, 1795]
688	[1156, 1157]	1505	[2059, 1926]	2322	[2678, 2008]	3139	[2181, 3237]
689	[1158, 1159]	1506	[2060, 2061]	2323	[2679, 1113]	3140	[2705, 2818]
690	[1160, 1161]	1507	[2062, 843]	2324	[2680, 905]	3141	[3151, 416]

691	[1162, 1163]	1508	[2063, 2064]	2325	[2681, 2682]	3142	[3238, 81]
692	[1164, 1165]	1509	[2065, 1097]	2326	[2683, 2684]	3143	[1760, 3239]
693	[297, 1166]	1510	[2066, 2067]	2327	[2187, 1083]	3144	[2710, 3240]
694	[824, 1126]	1511	[2068, 2069]	2328	[2685, 73]	3145	[1852, 3241]
695	[1167, 1168]	1512	[411, 335]	2329	[2686, 2302]	3146	[3112, 1280]
696	[829, 1169]	1513	[1722, 2070]	2330	[105, 2687]	3147	[3086, 649]
697	[1170, 1171]	1514	[2044, 2071]	2331	[2688, 2689]	3148	[1446, 50]
698	[1172, 1173]	1515	[1900, 2072]	2332	[2690, 906]	3149	[3242, 3041]
699	[1174, 1175]	1516	[2073, 2074]	2333	[2691, 2692]	3150	[3243, 2392]
700	[1176, 1177]	1517	[2052, 378]	2334	[242, 1148]	3151	[3244, 1553]
701	[1178, 1179]	1518	[2075, 2076]	2335	[2693, 1053]	3152	[1299, 1289]
702	[1180, 975]	1519	[976, 290]	2336	[2694, 2097]	3153	[2465, 1276]
703	[101, 250]	1520	[1132, 1941]	2337	[2695, 2696]	3154	[2649, 1592]
704	[1181, 1182]	1521	[2077, 421]	2338	[2697, 1235]	3155	[2598, 1566]
705	[1183, 1033]	1522	[2078, 1873]	2339	[2698, 1000]	3156	[2520, 671]
706	[1184, 1185]	1523	[2079, 2080]	2340	[2699, 780]	3157	[3082, 2387]
707	[1186, 1187]	1524	[987, 2081]	2341	[2700, 769]	3158	[3245, 1290]
708	[1188, 1189]	1525	[2082, 1818]	2342	[2229, 1234]	3159	[3084, 2654]
709	[1190, 1191]	1526	[2083, 2084]	2343	[2701, 2702]	3160	[3141, 2548]
710	[1192, 1193]	1527	[2085, 2086]	2344	[2703, 348]	3161	[488, 151]
711	[1194, 1195]	1528	[2087, 2088]	2345	[2704, 2705]	3162	[3107, 1715]
712	[1196, 343]	1529	[2089, 1962]	2346	[1959, 2706]	3163	[3076, 3035]
713	[1197, 1198]	1530	[2090, 256]	2347	[1910, 2707]	3164	[3245, 667]
714	[1199, 1200]	1531	[2043, 2037]	2348	[2115, 1114]	3165	[1631, 2442]
715	[1201, 1202]	1532	[2091, 2092]	2349	[2708, 2709]	3166	[2629, 573]
716	[1203, 959]	1533	[2093, 877]	2350	[2710, 2711]	3167	[1507, 1700]
717	[1204, 1205]	1534	[2094, 2095]	2351	[2712, 2713]	3168	[3246, 2650]
718	[1206, 1207]	1535	[2096, 2097]	2352	[2714, 2715]	3169	[1481, 574]
719	[1208, 965]	1536	[2098, 331]	2353	[1158, 809]	3170	[2608, 3033]
720	[1064, 414]	1537	[2099, 845]	2354	[2716, 2717]	3171	[1676, 2382]
721	[1209, 1210]	1538	[2100, 2101]	2355	[2718, 2719]	3172	[3247, 2509]
722	[1211, 1212]	1539	[2102, 2103]	2356	[342, 1142]	3173	[3101, 2536]
723	[309, 244]	1540	[2104, 2105]	2357	[2720, 1144]	3174	[3127, 1616]
724	[985, 1213]	1541	[311, 2106]	2358	[84, 1095]	3175	[3129, 3079]
725	[1214, 1215]	1542	[2107, 2108]	2359	[2721, 2722]	3176	[225, 2367]
726	[1216, 1217]	1543	[2109, 2110]	2360	[2723, 2041]	3177	[1320, 1716]
727	[1218, 1219]	1544	[2111, 2112]	2361	[2724, 2076]	3178	[2423, 1444]
728	[1220, 1221]	1545	[262, 369]	2362	[1732, 2725]	3179	[214, 3056]
729	[1222, 1223]	1546	[71, 2113]	2363	[2726, 2727]	3180	[3120, 3071]
730	[799, 1224]	1547	[1019, 1820]	2364	[2728, 2729]	3181	[1408, 1252]
731	[1225, 1226]	1548	[1943, 794]	2365	[2730, 1128]	3182	[3248, 3249]
732	[1140, 1227]	1549	[2114, 2115]	2366	[2011, 443]	3183	[2609, 1677]
733	[1228, 1229]	1550	[2116, 2117]	2367	[2731, 1123]	3184	[3081, 1683]
734	[1230, 1231]	1551	[2118, 1217]	2368	[1152, 2047]	3185	[3250, 1526]

735	[1186, 254]	1552	[2119, 2120]	2369	[2732, 2733]	3186	[2610, 3135]
736	[1232, 1233]	1553	[2098, 1163]	2370	[2734, 2735]	3187	[3116, 738]
737	[1234, 969]	1554	[2121, 2122]	2371	[2736, 2247]	3188	[2668, 1622]
738	[1235, 865]	1555	[2123, 1957]	2372	[1024, 353]	3189	[3242, 3251]
739	[1236, 902]	1556	[2124, 2125]	2373	[2143, 2150]	3190	[3252, 1502]
740	[1237, 273]	1557	[2126, 2127]	2374	[2737, 343]	3191	[3134, 513]
741	[1238, 278]	1558	[798, 920]	2375	[2738, 2739]	3192	[3253, 32]
742	[1239, 1240]	1559	[2128, 1230]	2376	[2740, 2741]	3193	[3090, 3110]
743	[1241, 1242]	1560	[1103, 2129]	2377	[2742, 1003]	3194	[3057, 1313]
744	[1243, 1244]	1561	[2130, 2131]	2378	[2690, 2743]	3195	[637, 1375]
745	[1245, 1246]	1562	[2114, 1113]	2379	[62, 768]	3196	[3089, 229]
746	[1159, 86]	1563	[2132, 2133]	2380	[2744, 2200]	3197	[3119, 1564]
747	[1247, 1248]	1564	[2134, 2135]	2381	[2745, 2746]	3198	[3254, 2369]
748	[1249, 623]	1565	[2136, 2137]	2382	[2747, 2748]	3199	[2390, 2560]
749	[1250, 38]	1566	[2138, 2139]	2383	[2749, 1151]	3200	[3032, 1264]
750	[510, 38]	1567	[2140, 2141]	2384	[2750, 1961]	3201	[1609, 2631]
751	[1251, 1252]	1568	[2142, 972]	2385	[2751, 2752]	3202	[3118, 734]
752	[632, 12]	1569	[2143, 2144]	2386	[2256, 2729]	3203	[3144, 204]
753	[1253, 585]	1570	[2145, 240]	2387	[2753, 2754]	3204	[604, 1519]
754	[1254, 1255]	1571	[2146, 2147]	2388	[2755, 2756]	3205	[1702, 2595]
755	[7, 636]	1572	[2148, 792]	2389	[924, 2095]	3206	[2352, 3249]
756	[1256, 1257]	1573	[2149, 2150]	2390	[423, 1123]	3207	[2571, 2486]
757	[1258, 453]	1574	[2151, 2152]	2391	[1800, 2757]	3208	[61, 2662]
758	[1259, 1260]	1575	[2153, 1129]	2392	[2758, 2201]	3209	[1565, 1603]
759	[638, 737]	1576	[2154, 1812]	2393	[2759, 769]	3210	[2431, 129]
760	[1261, 1262]	1577	[1983, 321]	2394	[2760, 2761]	3211	[3046, 2399]
761	[1263, 140]	1578	[4, 899]	2395	[25, 2762]	3212	[3115, 1252]
762	[1264, 1265]	1579	[2155, 1157]	2396	[2763, 2764]	3213	[3255, 1509]
763	[1266, 56]	1580	[2156, 2157]	2397	[2686, 883]	3214	[3244, 2418]
764	[1267, 1268]	1581	[2158, 2112]	2398	[1878, 107]	3215	[3093, 2382]
765	[1269, 1270]	1582	[2159, 2160]	2399	[2741, 396]	3216	[3099, 1566]
766	[43, 2]	1583	[2161, 2162]	2400	[2765, 2766]	3217	[2381, 1677]
767	[1271, 549]	1584	[2163, 2164]	2401	[1864, 2767]	3218	[3087, 702]
768	[526, 1272]	1585	[2165, 1963]	2402	[2768, 1802]	3219	[3250, 2509]
769	[181, 585]	1586	[2166, 2167]	2403	[2171, 2769]	3220	[2421, 1344]
770	[1273, 1274]	1587	[2168, 1922]	2404	[2770, 1146]	3221	[3026, 1416]
771	[1275, 169]	1588	[2169, 2170]	2405	[1948, 2771]	3222	[2547, 3142]
772	[1276, 1277]	1589	[2171, 16]	2406	[2772, 2773]	3223	[3256, 3055]
773	[1278, 652]	1590	[2172, 2173]	2407	[1131, 18]	3224	[3100, 1365]
774	[9, 547]	1591	[2174, 1759]	2408	[2774, 26]	3225	[2516, 2433]
775	[1279, 1280]	1592	[18, 1941]	2409	[2775, 1209]	3226	[2347, 2651]
776	[1281, 1282]	1593	[2175, 2176]	2410	[2776, 2025]	3227	[3091, 667]
777	[1283, 678]	1594	[1177, 2177]	2411	[1002, 334]	3228	[3094, 1535]
778	[1284, 198]	1595	[2178, 864]	2412	[2777, 2775]	3229	[1465, 3128]

779	[1285, 1286]	1596	[2179, 2180]	2413	[2778, 2779]	3230	[3047, 451]
780	[1287, 1288]	1597	[2181, 386]	2414	[771, 2780]	3231	[3040, 3251]
781	[548, 587]	1598	[296, 1866]	2415	[2781, 1808]	3232	[3257, 210]
782	[142, 738]	1599	[2182, 1180]	2416	[2782, 880]	3233	[686, 746]
783	[1289, 1290]	1600	[2183, 2184]	2417	[1154, 2186]	3234	[1533, 658]
784	[453, 1291]	1601	[2185, 2186]	2418	[2783, 2784]	3235	[2669, 2328]
785	[47, 1292]	1602	[2187, 285]	2419	[2785, 2786]	3236	[3243, 1435]
786	[592, 479]	1603	[2188, 1946]	2420	[2787, 2260]	3237	[2327, 2670]
787	[1293, 1294]	1604	[2189, 2190]	2421	[2788, 2280]	3238	[3136, 138]
788	[580, 153]	1605	[2027, 2191]	2422	[2789, 2778]	3239	[1405, 3140]
789	[602, 1270]	1606	[2192, 2193]	2423	[2790, 2791]	3240	[1398, 3048]
790	[598, 176]	1607	[1037, 2194]	2424	[362, 2209]	3241	[3078, 3130]
791	[1295, 600]	1608	[2195, 2196]	2425	[2792, 776]	3242	[3217, 390]
792	[1296, 1297]	1609	[2197, 320]	2426	[237, 1867]	3243	[1782, 1050]
793	[1298, 744]	1610	[2198, 2199]	2427	[2158, 2250]	3244	[885, 3258]
794	[509, 1299]	1611	[70, 2200]	2428	[2793, 1057]	3245	[3259, 2979]
795	[1271, 587]	1612	[2201, 2202]	2429	[2794, 754]	3246	[1024, 986]
796	[1300, 1301]	1613	[2203, 2204]	2430	[2795, 2796]	3247	[1032, 3161]
797	[1302, 513]	1614	[2205, 2015]	2431	[2797, 1949]	3248	[2996, 1205]
798	[1303, 485]	1615	[2206, 1201]	2432	[2798, 2799]	3249	[2198, 288]
799	[1304, 1305]	1616	[2207, 2208]	2433	[358, 422]	3250	[2749, 3260]
800	[1306, 2]	1617	[2209, 898]	2434	[2800, 1755]	3251	[3261, 1909]
801	[1307, 1308]	1618	[2210, 2211]	2435	[2801, 2688]	3252	[2148, 3262]
802	[1309, 1310]	1619	[984, 1919]	2436	[422, 2802]	3253	[1788, 2072]
803	[506, 1311]	1620	[2212, 2105]	2437	[2716, 2080]	3254	[1220, 3263]
804	[1312, 1313]	1621	[2213, 314]	2438	[2803, 828]	3255	[1773, 782]
805	[1314, 1315]	1622	[1829, 1137]	2439	[2246, 2804]	3256	[1815, 1836]
806	[1316, 1317]	1623	[1871, 1813]	2440	[2805, 828]	3257	[3264, 409]
807	[1300, 1318]	1624	[2145, 90]	2441	[939, 766]	3258	[2515, 3049]
808	[1270, 602]	1625	[353, 987]	2442	[2806, 1207]	3259	[1359, 2440]
809	[484, 170]	1626	[2214, 1245]	2443	[2783, 2807]	3260	[3248, 2353]
810	[1319, 1320]	1627	[2215, 2110]	2444	[884, 1856]	3261	[3252, 738]
811	[1321, 1322]	1628	[2216, 2217]	2445	[2808, 360]	3262	[1520, 1456]
812	[1323, 575]	1629	[1918, 1915]	2446	[2809, 2135]	3263	[1692, 2652]
813	[1324, 1286]	1630	[1754, 2218]	2447	[2160, 2772]	3264	[3265, 1385]
814	[689, 1325]	1631	[2057, 1185]	2448	[2810, 2811]	3265	[2273, 3266]
815	[1326, 661]	1632	[2219, 1916]	2449	[1902, 2812]	3266	[2398, 522]
816	[1327, 598]	1633	[2220, 2221]	2450	[2026, 2813]		

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	545	1	1090	0	1635	0	2180	1	2725	0
1	0	546	0	1091	1	1636	1	2181	1	2726	1
2	0	547	0	1092	1	1637	1	2182	1	2727	1

3	0	548	1	1093	1	1638	0	2183	0	2728	0
4	0	549	0	1094	0	1639	1	2184	0	2729	1
5	0	550	1	1095	1	1640	1	2185	1	2730	0
6	0	551	0	1096	0	1641	1	2186	1	2731	0
7	0	552	1	1097	1	1642	0	2187	1	2732	0
8	1	553	0	1098	0	1643	0	2188	0	2733	0
9	0	554	1	1099	0	1644	1	2189	0	2734	1
10	1	555	0	1100	1	1645	1	2190	1	2735	1
11	0	556	0	1101	1	1646	1	2191	1	2736	1
12	1	557	0	1102	1	1647	1	2192	0	2737	1
13	0	558	0	1103	1	1648	0	2193	1	2738	0
14	1	559	1	1104	1	1649	0	2194	1	2739	0
15	0	560	0	1105	1	1650	1	2195	1	2740	1
16	0	561	1	1106	1	1651	1	2196	1	2741	0
17	1	562	0	1107	0	1652	0	2197	1	2742	0
18	1	563	0	1108	1	1653	1	2198	0	2743	0
19	0	564	1	1109	0	1654	0	2199	1	2744	0
20	1	565	0	1110	1	1655	0	2200	0	2745	0
21	1	566	1	1111	0	1656	0	2201	0	2746	0
22	0	567	1	1112	1	1657	0	2202	1	2747	1
23	0	568	1	1113	0	1658	0	2203	0	2748	0
24	1	569	1	1114	1	1659	1	2204	0	2749	0
25	1	570	1	1115	1	1660	1	2205	0	2750	0
26	0	571	1	1116	0	1661	1	2206	0	2751	0
27	0	572	0	1117	0	1662	1	2207	1	2752	1
28	0	573	1	1118	0	1663	1	2208	1	2753	0
29	1	574	0	1119	1	1664	0	2209	0	2754	1
30	0	575	1	1120	0	1665	0	2210	1	2755	0
31	0	576	1	1121	0	1666	1	2211	1	2756	0
32	0	577	1	1122	1	1667	0	2212	0	2757	1
33	0	578	1	1123	1	1668	0	2213	0	2758	0
34	1	579	0	1124	1	1669	0	2214	0	2759	1
35	1	580	1	1125	0	1670	1	2215	1	2760	1
36	1	581	1	1126	1	1671	1	2216	1	2761	0
37	1	582	0	1127	1	1672	0	2217	0	2762	1
38	1	583	0	1128	1	1673	0	2218	1	2763	0
39	0	584	1	1129	0	1674	0	2219	1	2764	0
40	0	585	0	1130	1	1675	1	2220	0	2765	0
41	1	586	0	1131	0	1676	1	2221	0	2766	0
42	0	587	1	1132	0	1677	0	2222	1	2767	0
43	1	588	1	1133	1	1678	0	2223	0	2768	1
44	0	589	1	1134	0	1679	1	2224	0	2769	1
45	1	590	0	1135	0	1680	1	2225	1	2770	1
46	0	591	1	1136	1	1681	1	2226	0	2771	1

47	1	592	0	1137	1	1682	0	2227	1	2772	1
48	1	593	1	1138	1	1683	1	2228	0	2773	0
49	0	594	1	1139	0	1684	0	2229	1	2774	0
50	1	595	1	1140	1	1685	1	2230	1	2775	0
51	0	596	0	1141	0	1686	0	2231	1	2776	0
52	0	597	0	1142	1	1687	1	2232	1	2777	1
53	1	598	0	1143	0	1688	1	2233	1	2778	0
54	0	599	0	1144	0	1689	1	2234	1	2779	0
55	1	600	0	1145	0	1690	0	2235	1	2780	1
56	0	601	1	1146	1	1691	1	2236	0	2781	1
57	0	602	1	1147	0	1692	1	2237	1	2782	1
58	1	603	0	1148	1	1693	1	2238	1	2783	0
59	0	604	1	1149	0	1694	1	2239	0	2784	0
60	0	605	1	1150	1	1695	0	2240	0	2785	0
61	1	606	0	1151	1	1696	0	2241	1	2786	0
62	0	607	1	1152	0	1697	1	2242	0	2787	0
63	0	608	0	1153	1	1698	1	2243	1	2788	0
64	0	609	1	1154	0	1699	0	2244	0	2789	0
65	1	610	1	1155	0	1700	0	2245	1	2790	0
66	0	611	0	1156	0	1701	1	2246	0	2791	0
67	0	612	1	1157	1	1702	0	2247	1	2792	0
68	1	613	1	1158	1	1703	0	2248	0	2793	1
69	0	614	1	1159	1	1704	0	2249	1	2794	0
70	1	615	1	1160	0	1705	1	2250	1	2795	1
71	1	616	0	1161	1	1706	0	2251	0	2796	0
72	1	617	0	1162	0	1707	0	2252	1	2797	1
73	0	618	0	1163	0	1708	0	2253	1	2798	1
74	1	619	1	1164	0	1709	1	2254	1	2799	1
75	1	620	1	1165	1	1710	1	2255	1	2800	0
76	1	621	1	1166	0	1711	1	2256	1	2801	0
77	0	622	0	1167	1	1712	1	2257	0	2802	1
78	0	623	0	1168	1	1713	1	2258	1	2803	1
79	1	624	0	1169	1	1714	0	2259	1	2804	0
80	0	625	1	1170	1	1715	1	2260	1	2805	0
81	0	626	0	1171	0	1716	0	2261	0	2806	0
82	1	627	1	1172	0	1717	0	2262	0	2807	1
83	0	628	1	1173	0	1718	1	2263	1	2808	0
84	0	629	0	1174	1	1719	1	2264	1	2809	1
85	0	630	1	1175	0	1720	1	2265	0	2810	0
86	1	631	1	1176	1	1721	1	2266	0	2811	1
87	0	632	0	1177	0	1722	0	2267	0	2812	1
88	0	633	1	1178	1	1723	1	2268	1	2813	1
89	1	634	0	1179	1	1724	1	2269	1	2814	0
90	1	635	0	1180	0	1725	0	2270	0	2815	1

91	0	636	0	1181	1	1726	0	2271	0	2816	0
92	0	637	0	1182	1	1727	1	2272	0	2817	0
93	0	638	1	1183	0	1728	0	2273	1	2818	0
94	1	639	0	1184	1	1729	1	2274	1	2819	1
95	0	640	0	1185	1	1730	1	2275	1	2820	1
96	1	641	1	1186	0	1731	1	2276	0	2821	1
97	1	642	0	1187	0	1732	0	2277	1	2822	1
98	0	643	1	1188	0	1733	0	2278	0	2823	1
99	1	644	1	1189	1	1734	0	2279	1	2824	1
100	1	645	0	1190	0	1735	0	2280	1	2825	1
101	0	646	0	1191	1	1736	1	2281	0	2826	1
102	0	647	1	1192	0	1737	1	2282	0	2827	0
103	0	648	1	1193	0	1738	1	2283	1	2828	1
104	0	649	1	1194	1	1739	1	2284	0	2829	0
105	0	650	1	1195	1	1740	1	2285	1	2830	0
106	1	651	0	1196	0	1741	1	2286	0	2831	0
107	0	652	1	1197	1	1742	0	2287	0	2832	0
108	0	653	1	1198	0	1743	1	2288	0	2833	0
109	1	654	1	1199	0	1744	0	2289	1	2834	1
110	1	655	1	1200	1	1745	0	2290	1	2835	1
111	1	656	0	1201	1	1746	0	2291	0	2836	1
112	0	657	0	1202	1	1747	0	2292	0	2837	0
113	0	658	0	1203	1	1748	1	2293	0	2838	1
114	0	659	0	1204	1	1749	0	2294	1	2839	1
115	1	660	1	1205	0	1750	0	2295	1	2840	0
116	1	661	0	1206	1	1751	1	2296	0	2841	1
117	0	662	1	1207	0	1752	1	2297	1	2842	0
118	0	663	0	1208	0	1753	1	2298	0	2843	1
119	0	664	1	1209	1	1754	1	2299	1	2844	1
120	0	665	1	1210	0	1755	0	2300	0	2845	1
121	0	666	0	1211	1	1756	0	2301	1	2846	1
122	1	667	0	1212	1	1757	1	2302	0	2847	0
123	0	668	1	1213	1	1758	0	2303	1	2848	0
124	0	669	0	1214	0	1759	1	2304	0	2849	1
125	0	670	0	1215	0	1760	1	2305	0	2850	0
126	0	671	1	1216	0	1761	1	2306	0	2851	0
127	0	672	0	1217	1	1762	0	2307	0	2852	0
128	1	673	0	1218	1	1763	1	2308	0	2853	0
129	1	674	1	1219	1	1764	1	2309	1	2854	1
130	1	675	0	1220	0	1765	0	2310	1	2855	1
131	0	676	1	1221	0	1766	1	2311	1	2856	1
132	1	677	1	1222	0	1767	0	2312	1	2857	0
133	0	678	0	1223	1	1768	0	2313	1	2858	1
134	1	679	0	1224	0	1769	1	2314	1	2859	1

135	1	680	0	1225	1	1770	0	2315	0	2860	0
136	1	681	0	1226	0	1771	1	2316	1	2861	1
137	0	682	0	1227	1	1772	0	2317	0	2862	1
138	0	683	1	1228	0	1773	0	2318	1	2863	1
139	1	684	0	1229	0	1774	0	2319	1	2864	0
140	1	685	1	1230	1	1775	0	2320	1	2865	1
141	1	686	0	1231	1	1776	1	2321	1	2866	0
142	0	687	1	1232	1	1777	0	2322	1	2867	0
143	1	688	0	1233	0	1778	0	2323	1	2868	0
144	1	689	1	1234	1	1779	0	2324	1	2869	1
145	0	690	0	1235	0	1780	0	2325	0	2870	1
146	0	691	0	1236	1	1781	1	2326	0	2871	0
147	1	692	0	1237	0	1782	0	2327	1	2872	0
148	0	693	1	1238	0	1783	0	2328	0	2873	0
149	1	694	1	1239	0	1784	1	2329	0	2874	0
150	0	695	1	1240	1	1785	0	2330	0	2875	0
151	0	696	1	1241	0	1786	1	2331	0	2876	1
152	0	697	1	1242	1	1787	1	2332	1	2877	1
153	0	698	0	1243	0	1788	1	2333	1	2878	0
154	0	699	1	1244	1	1789	0	2334	1	2879	1
155	1	700	1	1245	0	1790	0	2335	1	2880	1
156	1	701	1	1246	1	1791	1	2336	1	2881	0
157	0	702	0	1247	0	1792	0	2337	0	2882	1
158	0	703	0	1248	1	1793	0	2338	0	2883	0
159	0	704	1	1249	0	1794	1	2339	0	2884	1
160	1	705	0	1250	1	1795	0	2340	1	2885	0
161	1	706	1	1251	1	1796	1	2341	0	2886	0
162	0	707	0	1252	1	1797	0	2342	1	2887	0
163	1	708	0	1253	1	1798	1	2343	0	2888	0
164	0	709	0	1254	1	1799	1	2344	0	2889	1
165	0	710	0	1255	0	1800	1	2345	1	2890	1
166	0	711	1	1256	1	1801	0	2346	1	2891	1
167	0	712	0	1257	1	1802	0	2347	0	2892	0
168	1	713	1	1258	1	1803	0	2348	1	2893	0
169	1	714	0	1259	0	1804	0	2349	1	2894	1
170	0	715	1	1260	0	1805	0	2350	0	2895	1
171	0	716	1	1261	0	1806	0	2351	0	2896	1
172	0	717	1	1262	0	1807	0	2352	1	2897	0
173	1	718	1	1263	0	1808	1	2353	1	2898	1
174	1	719	0	1264	1	1809	1	2354	0	2899	1
175	0	720	1	1265	1	1810	0	2355	1	2900	0
176	1	721	1	1266	1	1811	0	2356	1	2901	1
177	1	722	1	1267	0	1812	1	2357	1	2902	0
178	1	723	1	1268	0	1813	1	2358	0	2903	0

179	0	724	0	1269	0	1814	1	2359	1	2904	1
180	0	725	0	1270	0	1815	1	2360	0	2905	1
181	0	726	0	1271	1	1816	1	2361	1	2906	0
182	1	727	1	1272	0	1817	1	2362	0	2907	0
183	1	728	0	1273	0	1818	1	2363	1	2908	1
184	1	729	0	1274	1	1819	1	2364	0	2909	1
185	0	730	0	1275	0	1820	0	2365	0	2910	1
186	1	731	1	1276	0	1821	1	2366	1	2911	1
187	1	732	1	1277	1	1822	0	2367	0	2912	0
188	1	733	0	1278	1	1823	0	2368	0	2913	0
189	1	734	1	1279	1	1824	0	2369	0	2914	0
190	0	735	0	1280	1	1825	0	2370	1	2915	0
191	1	736	1	1281	1	1826	1	2371	1	2916	0
192	1	737	1	1282	1	1827	0	2372	1	2917	0
193	1	738	0	1283	1	1828	1	2373	1	2918	0
194	1	739	1	1284	1	1829	1	2374	1	2919	1
195	1	740	0	1285	0	1830	0	2375	0	2920	1
196	0	741	0	1286	0	1831	1	2376	1	2921	1
197	1	742	0	1287	0	1832	1	2377	0	2922	0
198	0	743	0	1288	1	1833	0	2378	1	2923	1
199	0	744	0	1289	1	1834	0	2379	0	2924	0
200	0	745	0	1290	1	1835	0	2380	0	2925	1
201	0	746	1	1291	1	1836	0	2381	0	2926	0
202	0	747	0	1292	0	1837	0	2382	1	2927	1
203	0	748	0	1293	1	1838	1	2383	0	2928	1
204	0	749	1	1294	0	1839	0	2384	0	2929	1
205	1	750	0	1295	1	1840	1	2385	0	2930	1
206	0	751	1	1296	1	1841	0	2386	1	2931	1
207	0	752	0	1297	0	1842	0	2387	0	2932	0
208	1	753	1	1298	1	1843	1	2388	0	2933	1
209	0	754	1	1299	1	1844	1	2389	0	2934	0
210	0	755	0	1300	1	1845	0	2390	1	2935	0
211	1	756	1	1301	0	1846	1	2391	1	2936	0
212	1	757	1	1302	0	1847	0	2392	0	2937	0
213	1	758	0	1303	1	1848	0	2393	1	2938	0
214	1	759	1	1304	0	1849	0	2394	1	2939	1
215	0	760	0	1305	0	1850	0	2395	1	2940	1
216	0	761	0	1306	0	1851	0	2396	0	2941	0
217	0	762	1	1307	1	1852	0	2397	0	2942	1
218	0	763	1	1308	0	1853	1	2398	0	2943	1
219	0	764	0	1309	0	1854	1	2399	0	2944	1
220	0	765	0	1310	1	1855	0	2400	0	2945	0
221	1	766	1	1311	0	1856	1	2401	1	2946	0
222	1	767	1	1312	1	1857	0	2402	1	2947	0

223	1	768	1	1313	0	1858	0	2403	1	2948	1
224	1	769	0	1314	1	1859	0	2404	1	2949	1
225	0	770	0	1315	1	1860	0	2405	0	2950	1
226	1	771	0	1316	0	1861	1	2406	1	2951	0
227	0	772	0	1317	1	1862	0	2407	0	2952	0
228	1	773	1	1318	1	1863	0	2408	0	2953	0
229	0	774	0	1319	0	1864	1	2409	0	2954	1
230	0	775	1	1320	0	1865	1	2410	0	2955	1
231	0	776	1	1321	0	1866	0	2411	0	2956	1
232	1	777	1	1322	0	1867	1	2412	1	2957	1
233	0	778	1	1323	1	1868	1	2413	0	2958	1
234	0	779	0	1324	0	1869	0	2414	0	2959	1
235	0	780	0	1325	1	1870	0	2415	1	2960	0
236	0	781	1	1326	1	1871	0	2416	1	2961	0
237	1	782	0	1327	0	1872	0	2417	0	2962	1
238	0	783	1	1328	1	1873	1	2418	0	2963	1
239	0	784	1	1329	1	1874	1	2419	0	2964	0
240	0	785	1	1330	1	1875	0	2420	0	2965	0
241	0	786	0	1331	1	1876	0	2421	0	2966	1
242	1	787	1	1332	1	1877	1	2422	0	2967	1
243	0	788	1	1333	0	1878	0	2423	0	2968	0
244	1	789	1	1334	0	1879	0	2424	0	2969	1
245	1	790	0	1335	1	1880	0	2425	0	2970	1
246	1	791	1	1336	1	1881	0	2426	1	2971	0
247	1	792	1	1337	1	1882	0	2427	0	2972	0
248	1	793	1	1338	0	1883	1	2428	1	2973	0
249	1	794	1	1339	1	1884	0	2429	0	2974	1
250	1	795	1	1340	1	1885	0	2430	1	2975	1
251	0	796	1	1341	0	1886	0	2431	1	2976	0
252	0	797	0	1342	0	1887	1	2432	1	2977	0
253	1	798	1	1343	0	1888	1	2433	0	2978	1
254	1	799	0	1344	0	1889	0	2434	0	2979	1
255	0	800	0	1345	0	1890	0	2435	0	2980	1
256	1	801	1	1346	0	1891	1	2436	1	2981	1
257	1	802	0	1347	0	1892	1	2437	0	2982	1
258	0	803	0	1348	0	1893	1	2438	1	2983	0
259	1	804	1	1349	1	1894	1	2439	0	2984	1
260	0	805	1	1350	0	1895	1	2440	0	2985	1
261	1	806	0	1351	1	1896	1	2441	1	2986	1
262	1	807	1	1352	0	1897	1	2442	0	2987	1
263	0	808	0	1353	0	1898	1	2443	0	2988	1
264	1	809	0	1354	0	1899	0	2444	1	2989	0
265	0	810	0	1355	1	1900	0	2445	0	2990	0
266	0	811	0	1356	0	1901	0	2446	1	2991	1

267	1	812	1	1357	0	1902	0	2447	0	2992	1
268	0	813	0	1358	0	1903	0	2448	0	2993	1
269	1	814	1	1359	1	1904	0	2449	0	2994	0
270	1	815	1	1360	0	1905	0	2450	1	2995	0
271	1	816	0	1361	1	1906	1	2451	0	2996	0
272	1	817	1	1362	1	1907	1	2452	0	2997	1
273	0	818	0	1363	0	1908	1	2453	0	2998	0
274	1	819	1	1364	0	1909	0	2454	1	2999	1
275	1	820	1	1365	0	1910	0	2455	0	3000	1
276	0	821	1	1366	0	1911	1	2456	0	3001	1
277	1	822	0	1367	1	1912	1	2457	1	3002	1
278	1	823	0	1368	0	1913	1	2458	1	3003	0
279	0	824	1	1369	1	1914	1	2459	1	3004	0
280	1	825	1	1370	0	1915	0	2460	1	3005	0
281	0	826	1	1371	0	1916	0	2461	1	3006	0
282	1	827	1	1372	1	1917	1	2462	1	3007	1
283	1	828	1	1373	0	1918	0	2463	0	3008	0
284	1	829	1	1374	0	1919	1	2464	1	3009	0
285	0	830	0	1375	0	1920	1	2465	1	3010	1
286	1	831	0	1376	1	1921	1	2466	0	3011	1
287	1	832	0	1377	1	1922	1	2467	1	3012	1
288	0	833	0	1378	0	1923	0	2468	0	3013	1
289	0	834	0	1379	0	1924	0	2469	0	3014	1
290	0	835	0	1380	0	1925	1	2470	1	3015	1
291	0	836	1	1381	1	1926	0	2471	0	3016	0
292	0	837	1	1382	1	1927	1	2472	0	3017	0
293	0	838	1	1383	1	1928	1	2473	1	3018	0
294	0	839	0	1384	0	1929	0	2474	1	3019	1
295	1	840	0	1385	1	1930	0	2475	1	3020	1
296	0	841	0	1386	1	1931	0	2476	0	3021	0
297	1	842	0	1387	0	1932	0	2477	1	3022	1
298	1	843	1	1388	0	1933	1	2478	0	3023	1
299	1	844	1	1389	0	1934	0	2479	1	3024	1
300	1	845	0	1390	0	1935	1	2480	0	3025	0
301	0	846	1	1391	1	1936	0	2481	1	3026	0
302	0	847	0	1392	1	1937	0	2482	1	3027	1
303	0	848	1	1393	0	1938	0	2483	1	3028	0
304	0	849	1	1394	1	1939	0	2484	0	3029	1
305	1	850	1	1395	0	1940	1	2485	1	3030	0
306	0	851	1	1396	0	1941	1	2486	0	3031	0
307	1	852	0	1397	1	1942	1	2487	0	3032	1
308	1	853	1	1398	1	1943	0	2488	1	3033	0
309	1	854	0	1399	1	1944	0	2489	1	3034	1
310	0	855	1	1400	1	1945	1	2490	1	3035	1

311	0	856	0	1401	1	1946	1	2491	1	3036	0
312	1	857	0	1402	1	1947	1	2492	0	3037	0
313	1	858	0	1403	0	1948	0	2493	0	3038	0
314	1	859	1	1404	1	1949	0	2494	1	3039	1
315	0	860	0	1405	0	1950	0	2495	1	3040	1
316	1	861	0	1406	1	1951	1	2496	1	3041	1
317	0	862	0	1407	0	1952	1	2497	0	3042	1
318	1	863	1	1408	0	1953	1	2498	0	3043	1
319	0	864	1	1409	0	1954	0	2499	1	3044	0
320	1	865	0	1410	1	1955	1	2500	0	3045	1
321	0	866	1	1411	0	1956	0	2501	0	3046	1
322	1	867	0	1412	1	1957	1	2502	1	3047	1
323	1	868	0	1413	0	1958	1	2503	0	3048	1
324	0	869	0	1414	0	1959	1	2504	0	3049	1
325	0	870	1	1415	1	1960	1	2505	0	3050	0
326	0	871	0	1416	0	1961	1	2506	1	3051	0
327	0	872	0	1417	0	1962	1	2507	1	3052	0
328	0	873	0	1418	0	1963	1	2508	0	3053	0
329	0	874	0	1419	1	1964	0	2509	0	3054	0
330	0	875	1	1420	1	1965	1	2510	1	3055	1
331	1	876	1	1421	1	1966	0	2511	1	3056	1
332	1	877	0	1422	0	1967	0	2512	1	3057	0
333	1	878	0	1423	0	1968	0	2513	0	3058	1
334	0	879	1	1424	1	1969	0	2514	0	3059	0
335	0	880	1	1425	1	1970	1	2515	0	3060	0
336	0	881	0	1426	0	1971	1	2516	0	3061	0
337	1	882	1	1427	0	1972	1	2517	1	3062	0
338	1	883	1	1428	1	1973	0	2518	0	3063	1
339	1	884	1	1429	0	1974	1	2519	1	3064	1
340	1	885	1	1430	0	1975	0	2520	1	3065	0
341	0	886	1	1431	1	1976	0	2521	1	3066	1
342	1	887	0	1432	1	1977	1	2522	1	3067	0
343	0	888	0	1433	1	1978	1	2523	0	3068	0
344	0	889	1	1434	0	1979	1	2524	1	3069	0
345	0	890	0	1435	1	1980	0	2525	1	3070	1
346	1	891	1	1436	1	1981	0	2526	0	3071	1
347	1	892	0	1437	0	1982	1	2527	0	3072	1
348	0	893	0	1438	0	1983	1	2528	0	3073	0
349	1	894	1	1439	0	1984	1	2529	0	3074	1
350	1	895	1	1440	1	1985	0	2530	0	3075	0
351	0	896	1	1441	1	1986	0	2531	1	3076	0
352	0	897	1	1442	1	1987	0	2532	1	3077	0
353	1	898	1	1443	1	1988	0	2533	1	3078	1
354	0	899	1	1444	1	1989	0	2534	1	3079	0

355	1	900	1	1445	0	1990	1	2535	1	3080	0
356	1	901	0	1446	1	1991	1	2536	1	3081	1
357	1	902	1	1447	0	1992	1	2537	1	3082	0
358	0	903	1	1448	1	1993	1	2538	1	3083	0
359	1	904	1	1449	1	1994	0	2539	1	3084	0
360	0	905	0	1450	0	1995	0	2540	1	3085	0
361	0	906	1	1451	0	1996	1	2541	1	3086	1
362	0	907	0	1452	0	1997	1	2542	0	3087	1
363	1	908	1	1453	1	1998	1	2543	1	3088	1
364	0	909	1	1454	1	1999	0	2544	0	3089	0
365	1	910	0	1455	0	2000	0	2545	1	3090	0
366	0	911	0	1456	0	2001	0	2546	1	3091	0
367	1	912	0	1457	0	2002	1	2547	0	3092	0
368	0	913	1	1458	1	2003	0	2548	0	3093	0
369	1	914	0	1459	0	2004	0	2549	1	3094	1
370	0	915	1	1460	0	2005	1	2550	1	3095	1
371	0	916	0	1461	0	2006	0	2551	0	3096	0
372	1	917	0	1462	0	2007	0	2552	1	3097	1
373	1	918	1	1463	0	2008	1	2553	1	3098	1
374	0	919	0	1464	0	2009	1	2554	1	3099	1
375	0	920	1	1465	0	2010	0	2555	1	3100	0
376	1	921	1	1466	1	2011	1	2556	1	3101	0
377	0	922	0	1467	0	2012	1	2557	0	3102	1
378	1	923	1	1468	1	2013	0	2558	0	3103	0
379	0	924	0	1469	0	2014	0	2559	0	3104	0
380	1	925	0	1470	1	2015	0	2560	1	3105	1
381	0	926	0	1471	0	2016	0	2561	1	3106	1
382	1	927	0	1472	0	2017	0	2562	0	3107	1
383	0	928	1	1473	0	2018	0	2563	1	3108	0
384	1	929	0	1474	0	2019	0	2564	0	3109	1
385	0	930	1	1475	0	2020	0	2565	1	3110	0
386	0	931	1	1476	1	2021	1	2566	0	3111	0
387	0	932	1	1477	0	2022	0	2567	0	3112	0
388	0	933	0	1478	0	2023	0	2568	1	3113	0
389	1	934	1	1479	0	2024	1	2569	0	3114	0
390	0	935	1	1480	1	2025	1	2570	1	3115	1
391	0	936	0	1481	1	2026	1	2571	0	3116	1
392	0	937	0	1482	0	2027	1	2572	1	3117	0
393	0	938	0	1483	1	2028	0	2573	1	3118	0
394	0	939	1	1484	1	2029	0	2574	1	3119	0
395	1	940	0	1485	0	2030	1	2575	1	3120	0
396	1	941	0	1486	1	2031	0	2576	1	3121	0
397	1	942	0	1487	1	2032	1	2577	1	3122	0
398	0	943	0	1488	0	2033	0	2578	1	3123	1

399	1	944	0	1489	0	2034	1	2579	0	3124	1
400	1	945	0	1490	0	2035	1	2580	0	3125	1
401	1	946	1	1491	1	2036	0	2581	1	3126	1
402	0	947	1	1492	0	2037	0	2582	1	3127	0
403	1	948	1	1493	1	2038	0	2583	1	3128	0
404	1	949	0	1494	1	2039	1	2584	0	3129	0
405	1	950	1	1495	1	2040	1	2585	0	3130	1
406	0	951	1	1496	1	2041	0	2586	1	3131	0
407	0	952	0	1497	1	2042	1	2587	0	3132	1
408	1	953	0	1498	0	2043	1	2588	1	3133	0
409	0	954	0	1499	0	2044	0	2589	1	3134	0
410	1	955	0	1500	0	2045	1	2590	1	3135	0
411	0	956	1	1501	0	2046	0	2591	0	3136	1
412	1	957	1	1502	1	2047	0	2592	0	3137	1
413	0	958	1	1503	1	2048	0	2593	0	3138	0
414	1	959	0	1504	0	2049	0	2594	1	3139	1
415	0	960	0	1505	0	2050	0	2595	1	3140	1
416	0	961	1	1506	1	2051	0	2596	0	3141	1
417	0	962	1	1507	1	2052	1	2597	0	3142	1
418	0	963	0	1508	1	2053	0	2598	0	3143	1
419	1	964	1	1509	1	2054	1	2599	1	3144	0
420	1	965	0	1510	1	2055	0	2600	0	3145	0
421	1	966	1	1511	1	2056	1	2601	1	3146	0
422	1	967	1	1512	0	2057	0	2602	1	3147	1
423	1	968	0	1513	0	2058	0	2603	1	3148	1
424	0	969	1	1514	0	2059	0	2604	1	3149	0
425	1	970	0	1515	0	2060	1	2605	1	3150	0
426	1	971	0	1516	1	2061	1	2606	0	3151	1
427	0	972	1	1517	1	2062	1	2607	0	3152	1
428	0	973	0	1518	0	2063	1	2608	1	3153	1
429	1	974	1	1519	1	2064	0	2609	1	3154	0
430	1	975	0	1520	0	2065	1	2610	0	3155	0
431	0	976	1	1521	0	2066	1	2611	1	3156	1
432	0	977	1	1522	1	2067	1	2612	0	3157	0
433	1	978	0	1523	1	2068	1	2613	1	3158	1
434	0	979	0	1524	1	2069	0	2614	1	3159	0
435	0	980	1	1525	1	2070	1	2615	1	3160	1
436	1	981	0	1526	1	2071	0	2616	1	3161	0
437	0	982	1	1527	0	2072	1	2617	1	3162	1
438	1	983	1	1528	0	2073	1	2618	1	3163	0
439	0	984	0	1529	1	2074	1	2619	0	3164	1
440	1	985	0	1530	1	2075	0	2620	1	3165	0
441	1	986	0	1531	1	2076	0	2621	1	3166	1
442	0	987	1	1532	1	2077	0	2622	0	3167	1

443	0	988	1	1533	1	2078	1	2623	0	3168	1
444	0	989	1	1534	1	2079	1	2624	0	3169	1
445	0	990	0	1535	0	2080	0	2625	1	3170	1
446	0	991	0	1536	1	2081	1	2626	0	3171	1
447	0	992	1	1537	1	2082	1	2627	0	3172	1
448	0	993	1	1538	1	2083	1	2628	1	3173	0
449	1	994	1	1539	0	2084	0	2629	1	3174	0
450	1	995	1	1540	1	2085	0	2630	0	3175	0
451	1	996	1	1541	0	2086	1	2631	1	3176	0
452	0	997	0	1542	0	2087	0	2632	1	3177	0
453	1	998	0	1543	0	2088	0	2633	1	3178	0
454	1	999	1	1544	1	2089	1	2634	0	3179	1
455	0	1000	0	1545	1	2090	1	2635	1	3180	0
456	1	1001	0	1546	1	2091	1	2636	1	3181	0
457	0	1002	0	1547	0	2092	0	2637	1	3182	0
458	1	1003	1	1548	0	2093	1	2638	0	3183	1
459	0	1004	0	1549	0	2094	1	2639	1	3184	1
460	0	1005	1	1550	0	2095	1	2640	1	3185	0
461	1	1006	0	1551	1	2096	0	2641	0	3186	0
462	1	1007	0	1552	0	2097	0	2642	0	3187	1
463	1	1008	0	1553	1	2098	1	2643	1	3188	1
464	0	1009	0	1554	1	2099	1	2644	0	3189	0
465	1	1010	0	1555	1	2100	1	2645	1	3190	0
466	1	1011	0	1556	0	2101	0	2646	0	3191	0
467	1	1012	1	1557	1	2102	0	2647	1	3192	1
468	1	1013	0	1558	1	2103	0	2648	0	3193	0
469	1	1014	1	1559	1	2104	1	2649	0	3194	0
470	1	1015	0	1560	1	2105	0	2650	0	3195	0
471	1	1016	0	1561	1	2106	0	2651	1	3196	0
472	1	1017	1	1562	0	2107	0	2652	0	3197	0
473	0	1018	1	1563	1	2108	1	2653	0	3198	0
474	0	1019	0	1564	0	2109	0	2654	1	3199	1
475	0	1020	1	1565	0	2110	1	2655	1	3200	1
476	0	1021	1	1566	1	2111	1	2656	1	3201	1
477	1	1022	1	1567	0	2112	0	2657	0	3202	0
478	0	1023	0	1568	0	2113	1	2658	0	3203	0
479	1	1024	1	1569	1	2114	0	2659	0	3204	1
480	0	1025	1	1570	0	2115	1	2660	0	3205	0
481	0	1026	0	1571	0	2116	0	2661	1	3206	1
482	1	1027	0	1572	0	2117	1	2662	0	3207	0
483	1	1028	0	1573	0	2118	1	2663	0	3208	1
484	0	1029	1	1574	1	2119	0	2664	1	3209	0
485	1	1030	1	1575	0	2120	1	2665	0	3210	1
486	1	1031	1	1576	1	2121	1	2666	1	3211	1

487	1	1032	1	1577	1	2122	1	2667	0	3212	1
488	0	1033	1	1578	0	2123	1	2668	1	3213	0
489	1	1034	1	1579	1	2124	0	2669	0	3214	1
490	1	1035	1	1580	1	2125	0	2670	1	3215	0
491	1	1036	1	1581	0	2126	1	2671	0	3216	1
492	0	1037	0	1582	1	2127	0	2672	0	3217	0
493	0	1038	0	1583	1	2128	1	2673	0	3218	1
494	0	1039	1	1584	0	2129	0	2674	0	3219	0
495	1	1040	0	1585	0	2130	1	2675	1	3220	0
496	1	1041	0	1586	0	2131	1	2676	1	3221	0
497	0	1042	1	1587	0	2132	1	2677	1	3222	0
498	0	1043	1	1588	1	2133	0	2678	1	3223	1
499	1	1044	1	1589	1	2134	0	2679	1	3224	0
500	0	1045	1	1590	0	2135	1	2680	1	3225	0
501	0	1046	1	1591	1	2136	0	2681	0	3226	0
502	1	1047	0	1592	1	2137	1	2682	1	3227	0
503	1	1048	0	1593	0	2138	1	2683	0	3228	1
504	1	1049	0	1594	0	2139	1	2684	0	3229	0
505	1	1050	0	1595	0	2140	0	2685	0	3230	1
506	0	1051	0	1596	1	2141	0	2686	0	3231	1
507	1	1052	0	1597	1	2142	0	2687	0	3232	1
508	0	1053	0	1598	0	2143	1	2688	0	3233	0
509	1	1054	1	1599	1	2144	1	2689	1	3234	1
510	0	1055	0	1600	0	2145	0	2690	1	3235	0
511	0	1056	0	1601	1	2146	0	2691	1	3236	0
512	0	1057	1	1602	1	2147	0	2692	0	3237	1
513	1	1058	1	1603	0	2148	0	2693	1	3238	1
514	0	1059	1	1604	0	2149	0	2694	1	3239	0
515	0	1060	1	1605	1	2150	0	2695	0	3240	1
516	1	1061	1	1606	0	2151	1	2696	0	3241	1
517	0	1062	0	1607	0	2152	0	2697	0	3242	0
518	0	1063	1	1608	1	2153	0	2698	0	3243	0
519	1	1064	1	1609	1	2154	1	2699	1	3244	1
520	0	1065	1	1610	0	2155	1	2700	0	3245	1
521	0	1066	0	1611	1	2156	1	2701	0	3246	1
522	1	1067	0	1612	0	2157	1	2702	0	3247	1
523	1	1068	1	1613	0	2158	0	2703	0	3248	0
524	1	1069	0	1614	0	2159	1	2704	1	3249	0
525	0	1070	0	1615	0	2160	0	2705	1	3250	0
526	1	1071	1	1616	1	2161	1	2706	0	3251	0
527	1	1072	0	1617	0	2162	1	2707	0	3252	0
528	0	1073	1	1618	1	2163	0	2708	1	3253	1
529	1	1074	0	1619	0	2164	1	2709	1	3254	0
530	1	1075	1	1620	0	2165	0	2710	0	3255	0

531	1	1076	0	1621	0	2166	0	2711	0	3256	1
532	0	1077	0	1622	1	2167	1	2712	0	3257	1
533	1	1078	0	1623	0	2168	0	2713	1	3258	0
534	0	1079	0	1624	0	2169	1	2714	1	3259	1
535	0	1080	1	1625	1	2170	1	2715	0	3260	0
536	0	1081	1	1626	0	2171	1	2716	0	3261	0
537	0	1082	0	1627	1	2172	0	2717	1	3262	0
538	0	1083	1	1628	1	2173	1	2718	1	3263	1
539	0	1084	1	1629	0	2174	1	2719	0	3264	1
540	0	1085	0	1630	1	2175	0	2720	1	3265	1
541	1	1086	1	1631	0	2176	1	2721	1	3266	0
542	0	1087	1	1632	1	2177	0	2722	1		
543	0	1088	0	1633	0	2178	0	2723	0		
544	1	1089	0	1634	1	2179	1	2724	1		

Université de Strasbourg, CNRS, IRMA UMR 7501, F-67000 Strasbourg, France
Email address: guoniu.han@unistra.fr

School of Mathematics and Statistics, Huazhong University of Science and Technology, Wuhan, PR China
Email address: huyining@hust.edu.cn