PROOF OF THE CONTINUED FRACTION CONJECTURE FOR $(a,b)=(z+1,z^6+z^4+z+1)$

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 $(a,b)=(z+1,z^6+z^4+z+1)$.

1. Introduction

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

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

as the limit of the finite continued fractions

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

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

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

admits a continued fraction expansion of form (1.1).

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

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

that we shall denote

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

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Theorem 1.1. *When* $(a,b)=(z+1, z^6+z^4+z+1)$*, the two power series* $\mathrm{CF}(a,b)$ *and* $\mathrm{CF}(b,a)$ *are algebraic over* $\mathbb{F}_2(z)$*, with minimal polynomials of the form*

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

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

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

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

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

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 $n\geq 0$

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

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

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

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

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

for some positive integer d_n. Hence,

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

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

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

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

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

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 $n \ge 0$. If for some $n \ge 0$ and $a_0, a_1, \ldots, a_{n-1} \in \mathbb{F}_2$ $P(x, \sum_{j=0}^{n-1} a_j x^j) = O(x^n)$ and $Q(x,y) := P(x, \sum_{j=0}^{n-1} a_j x^j + x^n y)$ can be written as $x^m \sum_{j=0}^{\infty} q_j(x) y^j$ where $q_j(x)$ are polynomials for $j \ge 0$, $q_1(0) = 1$, and $q_j(0) = 0$ for $j > 1$, then there exists a unique solution $f(x) \in \mathbb{F}_2[[x]]$ of $P(x, f(x)) = 0$ that satisfies the initial condition $f_n(x) = \sum_{j=0}^{n-1} a_j x^j$.

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

Lemma 2.1. *We have*

$$M^e = W^o \cdot M^o, \tag{2.3}$$
$$M^o = W^e \cdot M^e, \tag{2.4}$$
$$W^e = M^o \cdot W^o, \tag{2.5}$$
$$W^o = M^e \cdot W^e. \tag{2.6}$$

Proof. We give the proof of the identity

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

the proofs of the others being similar.

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

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

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

Define

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

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

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

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

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

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

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

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

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

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

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

which can be rewritten as

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

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

$$\begin{aligned}0 = T[[w]_2] + T[[1w]_2] + T[[11w]_2] + T[[100w]_2] + T[[101w]_2]\\ + T[[110w]_2] + T[[1001w]_2],\end{aligned} \tag{2.9}$$

$$\begin{aligned}0 = T[[w]_2] + T[[1w]_2] + T[[10w]_2] + T[[11w]_2] + T[[100w]_2]\\ + T[[101w]_2] + T[[1010w]_2],\end{aligned} \tag{2.10}$$

$$\begin{aligned}0 = T[[w]_2] + T[[1w]_2] + T[[10w]_2] + T[[11w]_2] + T[[100w]_2]\\ + T[[101w]_2] + T[[110w]_2] + T[[1011w]_2],\end{aligned} \tag{2.11}$$

$$0 = T[[1w]_2] + T[[10w]_2] + T[[100w]_2] + T[[101w]_2] + T[[1100w]_2], \tag{2.12}$$

$$0 = T[[10w]_2] + T[[11w]_2] + T[[101w]_2] + T[[110w]_2] + T[[1101w]_2], \tag{2.13}$$

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

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

$$1 = T[[w]_2] + T[[11w]_2] + T[[100w]_2] + T[[110w]_2] + T[[1000w]_2], \tag{2.15}$$

$$\begin{aligned}1 = T[[w]_2] + T[[1w]_2] + T[[11w]_2] + T[[100w]_2] + T[[101w]_2]\\ + T[[110w]_2] + T[[1001w]_2],\end{aligned} \tag{2.16}$$

$$\begin{aligned}1 = T[[w]_2] + T[[1w]_2] + T[[10w]_2] + T[[11w]_2] + T[[100w]_2]\\ + T[[101w]_2] + T[[1010w]_2],\end{aligned} \tag{2.17}$$

$$\begin{aligned}0 = T[[w]_2] + T[[1w]_2] + T[[10w]_2] + T[[11w]_2] + T[[100w]_2]\\ + T[[101w]_2] + T[[110w]_2] + T[[1011w]_2],\end{aligned} \tag{2.18}$$

$$1 = T[[1w]_2] + T[[10w]_2] + T[[100w]_2] + T[[101w]_2] + T[[1100w]_2], \tag{2.19}$$

$$0 = T[[10w]_2] + T[[11w]_2] + T[[101w]_2] + T[[110w]_2] + T[[1101w]_2], \tag{2.20}$$

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

First we calculate an 2-automaton that generates T from its minimal polynomial and its first terms. This automaton has 3291 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

$$0 = \tau(A(s, 11)) + \tau(A(s, 110)) + \tau(A(s, 111)), \tag{2.21}$$

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

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

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

for $s = A(i, 0^{2k})$. We find that $(A(i, 0^{40}), E_{40}) = (A(i, 0^{16}), E_{16})$, so that we only have to verify that identities (2.21) through (2.34) hold for $2 \le k \le 20$, which turns out to be true. □

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 $u = 2^{2k-1}$,*

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

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

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

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 $n \geq 2$, we claim that

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

We give the proof of

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Define

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

where

$$\begin{aligned}
q_0(x) &= x^{22} + x^{18} + x^{17} + x^{14} + x^{12} + x^8 + x^7 + x^6 + x^4,\\
q_1(x) &= x^{18} + x^{16} + x^{14} + x^{13} + x^{12} + x^{11} + x^8 + x^6 + x^4 + x^3 + x^2 + x,\\
q_2(x) &= x^{22} + x^{20} + x^{14} + x^{12} + x^4 + 1,\\
q_3(x) &= x^{18} + x^{16} + x^{14} + x^{13} + x^{12} + x^{11} + x^8 + x^6 + x^4 + x^3 + x^2 + x,\\
q_4(x) &= x^{22} + x^{18} + x^{17} + x^8 + x^7 + x^6 + x^2.
\end{aligned}$$

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

3. Annexe

All 16 polynomials are of the form

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

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

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

$$\begin{aligned}
p_0(x) &= x^{132} + x^{124} + x^{122} + x^{116} + x^{112} + x^{108} + x^{106} + x^{100} + x^{92} + x^{88}\\
&\quad + x^{86} + x^{82} + x^{80} + x^{66} + x^{64} + x^{62} + x^{60} + x^{58} + x^{52} + x^{48} + x^{46}\\
&\quad + x^{44} + x^{38} + x^{32} + x^{28} + x^{24} + x^{22} + x^{20} + x^{12},\\
p_3(x) &= x^{124} + x^{116} + x^{108} + x^{104} + x^{100} + x^{98} + x^{90} + x^{84} + x^{82} + x^{78} + x^{76}\\
&\quad + x^{74} + x^{70} + x^{60} + x^{58} + x^{56} + x^{52} + x^{50} + x^{48} + x^{42} + x^{38} + x^{34}\\
&\quad + x^{30} + x^{28} + x^{24} + x^{16} + x^{12} + x^8,\\
p_6(x) &= x^{128} + x^{124} + x^{122} + x^{110} + x^{108} + x^{106} + x^{104} + x^{96} + x^{94} + x^{92}\\
&\quad + x^{84} + x^{80} + x^{76} + x^{70} + x^{68} + x^{66} + x^{62} + x^{58} + x^{50} + x^{48} + x^{44}\\
&\quad + x^{36} + x^{24} + x^{22} + x^{18} + x^{16} + x^{14} + x^{12} + x^{10} + x^4 + x^2 + 1,\\
p_9(x) &= x^{124} + x^{120} + x^{116} + x^{114} + x^{112} + x^{110} + x^{106} + x^{104} + x^{102} + x^{100}\\
&\quad + x^{96} + x^{94} + x^{90} + x^{88} + x^{86} + x^{84} + x^{80} + x^{78} + x^{74} + x^{72} + x^{70}\\
&\quad + x^{68} + x^{64} + x^{62} + x^{60} + x^{58} + x^{54} + x^{52} + x^{50} + x^{48} + x^{42} + x^{38}
\end{aligned}$$

$$
\begin{aligned}
&\quad + x^{36} + x^{28} + x^{26} + x^{18} + x^{16} + x^{12} + x^{6} + x^{2},\\
p_{12}(x) &= x^{132} + x^{128} + x^{124} + x^{120} + x^{100} + x^{96} + x^{84} + x^{80} + x^{52} + x^{48} + x^{44}\\
&\quad + x^{40} + x^{20} + x^{16} + x^{4} + 1,
\end{aligned}
$$

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

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

$$
\begin{aligned}
p_0(x) &= x^{117} + x^{113} + x^{112} + x^{105} + x^{104} + x^{103} + x^{102} + x^{99} + x^{96} + x^{95}\\
&\quad + x^{94} + x^{88} + x^{86} + x^{84} + x^{83} + x^{82} + x^{81} + x^{80} + x^{77} + x^{76} + x^{72}\\
&\quad + x^{71} + x^{68} + x^{66} + x^{64} + x^{62} + x^{61} + x^{58} + x^{55} + x^{52} + x^{50} + x^{49}\\
&\quad + x^{48} + x^{44} + x^{43} + x^{41} + x^{40} + x^{39} + x^{38} + x^{37} + x^{35} + x^{34} + x^{33}\\
&\quad + x^{22} + x^{20} + x^{19} + x^{18},\\
p_3(x) &= x^{81} + x^{77} + x^{65} + x^{63} + x^{59} + x^{57} + x^{55} + x^{53} + x^{51} + x^{49} + x^{41}\\
&\quad + x^{37} + x^{25} + x^{23} + x^{19} + x^{17} + x^{15} + x^{13} + x^{11} + x^{9},\\
p_6(x) &= x^{93} + x^{88} + x^{85} + x^{84} + x^{83} + x^{78} + x^{77} + x^{74} + x^{73} + x^{72} + x^{70}\\
&\quad + x^{69} + x^{67} + x^{66} + x^{65} + x^{64} + x^{63} + x^{58} + x^{57} + x^{54} + x^{53} + x^{52}\\
&\quad + x^{50} + x^{49} + x^{47} + x^{46} + x^{45} + x^{44} + x^{43} + x^{38} + x^{37} + x^{34} + x^{33}\\
&\quad + x^{32} + x^{30} + x^{29} + x^{27} + x^{26} + x^{25} + x^{24} + x^{23} + x^{18} + x^{17} + x^{14}\\
&\quad + x^{12} + x^{10} + x^{9} + x^{8} + x^{7} + x^{6},\\
p_9(x) &= x^{105} + x^{101} + x^{97} + x^{95} + x^{93} + x^{91} + x^{89} + x^{87} + x^{85} + x^{83} + x^{81}\\
&\quad + x^{79} + x^{77} + x^{75} + x^{71} + x^{69} + x^{67} + x^{65} + x^{61} + x^{59} + x^{57} + x^{55}\\
&\quad + x^{51} + x^{49} + x^{47} + x^{45} + x^{41} + x^{39} + x^{37} + x^{35} + x^{31} + x^{29} + x^{27}\\
&\quad + x^{19} + x^{13} + x^{3},\\
p_{12}(x) &= x^{117} + x^{112} + x^{108} + x^{104} + x^{100} + x^{97} + x^{96} + x^{85} + x^{81} + x^{80} + x^{37}\\
&\quad + x^{32} + x^{28} + x^{24} + x^{20} + x^{17} + x^{16} + x^{5} + x + 1,
\end{aligned}
$$

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

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

$$
\begin{aligned}
p_0(x) &= x^{117} + x^{113} + x^{112} + x^{105} + x^{104} + x^{103} + x^{102} + x^{99} + x^{96} + x^{95}\\
&\quad + x^{94} + x^{88} + x^{86} + x^{84} + x^{83} + x^{82} + x^{81} + x^{80} + x^{77} + x^{76} + x^{72}\\
&\quad + x^{71} + x^{68} + x^{66} + x^{64} + x^{62} + x^{61} + x^{58} + x^{55} + x^{52} + x^{50} + x^{49}\\
&\quad + x^{48} + x^{44} + x^{43} + x^{41} + x^{40} + x^{39} + x^{38} + x^{37} + x^{35} + x^{34} + x^{33}\\
&\quad + x^{22} + x^{20} + x^{19} + x^{18},\\
p_3(x) &= x^{81} + x^{77} + x^{65} + x^{63} + x^{59} + x^{57} + x^{55} + x^{53} + x^{51} + x^{49} + x^{41}\\
&\quad + x^{37} + x^{25} + x^{23} + x^{19} + x^{17} + x^{15} + x^{13} + x^{11} + x^{9},\\
p_6(x) &= x^{93} + x^{88} + x^{85} + x^{84} + x^{83} + x^{78} + x^{77} + x^{74} + x^{73} + x^{72} + x^{70}\\
&\quad + x^{69} + x^{67} + x^{66} + x^{65} + x^{64} + x^{63} + x^{58} + x^{57} + x^{54} + x^{53} + x^{52}\\
&\quad + x^{50} + x^{49} + x^{47} + x^{46} + x^{45} + x^{44} + x^{43} + x^{38} + x^{37} + x^{34} + x^{33}
\end{aligned}
$$

$$
\begin{aligned}
&+ x^{32} + x^{30} + x^{29} + x^{27} + x^{26} + x^{25} + x^{24} + x^{23} + x^{18} + x^{17} + x^{14}\\
&+ x^{12} + x^{10} + x^{9} + x^{8} + x^{7} + x^{6},\\
p_9(x) &= x^{105} + x^{101} + x^{97} + x^{95} + x^{93} + x^{91} + x^{89} + x^{87} + x^{85} + x^{83} + x^{81}\\
&+ x^{79} + x^{77} + x^{75} + x^{71} + x^{69} + x^{67} + x^{65} + x^{61} + x^{59} + x^{57} + x^{55}\\
&+ x^{51} + x^{49} + x^{47} + x^{45} + x^{41} + x^{39} + x^{37} + x^{35} + x^{31} + x^{29} + x^{27}\\
&+ x^{19} + x^{13} + x^{3},\\
p_{12}(x) &= x^{117} + x^{112} + x^{108} + x^{104} + x^{100} + x^{97} + x^{96} + x^{85} + x^{81} + x^{80} + x^{37}\\
&+ x^{32} + x^{28} + x^{24} + x^{20} + x^{17} + x^{16} + x^{5} + x + 1,
\end{aligned}
$$

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

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

$$
\begin{aligned}
p_0(x) &= x^{102} + x^{86} + x^{82} + x^{78} + x^{76} + x^{70} + x^{62} + x^{44} + x^{42} + x^{36} + x^{28}\\
&+ x^{26} + x^{24},\\
p_3(x) &= x^{94} + x^{84} + x^{78} + x^{76} + x^{70} + x^{64} + x^{60} + x^{54} + x^{52} + x^{48} + x^{46}\\
&+ x^{44} + x^{38} + x^{36} + x^{30} + x^{24} + x^{20} + x^{12} + x^{8} + x^{6},\\
p_6(x) &= x^{98} + x^{94} + x^{92} + x^{90} + x^{88} + x^{80} + x^{68} + x^{66} + x^{64} + x^{62} + x^{60}\\
&+ x^{52} + x^{50} + x^{48} + x^{46} + x^{44} + x^{28} + x^{26} + x^{24} + x^{22} + x^{20} + x^{18}\\
&+ x^{14} + x^{6} + x^{4} + 1,\\
p_9(x) &= x^{94} + x^{90} + x^{78} + x^{76} + x^{74} + x^{72} + x^{68} + x^{66} + x^{64} + x^{62} + x^{58}\\
&+ x^{56} + x^{54} + x^{52} + x^{48} + x^{46} + x^{44} + x^{42} + x^{38} + x^{36} + x^{34} + x^{32}\\
&+ x^{28} + x^{26} + x^{24} + x^{22} + x^{18} + x^{16} + x^{12} + x^{10} + x^{8} + x^{6} + x^{4} + x^{2},\\
p_{12}(x) &= x^{102} + x^{98} + x^{92} + x^{88} + x^{86} + x^{84} + x^{82} + x^{80} + x^{22} + x^{18} + x^{12}\\
&+ x^{8} + x^{6} + x^{4} + x^{2} + 1,
\end{aligned}
$$

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

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

$$
\begin{aligned}
p_0(x) &= x^{102} + x^{74} + x^{72} + x^{46} + x^{42} + x^{18} + x^{16} + x^{14} + x^{12},\\
p_3(x) &= x^{94} + x^{84} + x^{76} + x^{74} + x^{66} + x^{64} + x^{62} + x^{60} + x^{54} + x^{52} + x^{48}\\
&+ x^{44} + x^{36} + x^{34} + x^{26} + x^{24} + x^{22} + x^{20} + x^{12} + x^{8},\\
p_6(x) &= x^{98} + x^{94} + x^{92} + x^{90} + x^{88} + x^{86} + x^{82} + x^{80} + x^{78} + x^{76} + x^{74}\\
&+ x^{72} + x^{70} + x^{66} + x^{62} + x^{54} + x^{52} + x^{50} + x^{48} + x^{42} + x^{38} + x^{36}\\
&+ x^{34} + x^{32} + x^{30} + x^{26} + x^{22} + x^{18} + x^{6} + 1,\\
p_9(x) &= x^{94} + x^{90} + x^{78} + x^{76} + x^{74} + x^{72} + x^{68} + x^{66} + x^{64} + x^{62} + x^{58}\\
&+ x^{56} + x^{54} + x^{52} + x^{48} + x^{46} + x^{44} + x^{42} + x^{38} + x^{36} + x^{34} + x^{32}\\
&+ x^{28} + x^{26} + x^{24} + x^{22} + x^{18} + x^{16} + x^{12} + x^{10} + x^{8} + x^{6} + x^{4} + x^{2},\\
p_{12}(x) &= x^{102} + x^{98} + x^{92} + x^{88} + x^{86} + x^{84} + x^{82} + x^{80} + x^{22} + x^{18} + x^{12}\\
&+ x^{8} + x^{6} + x^{4} + x^{2} + 1,
\end{aligned}
$$

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

$$\begin{aligned}
p_0(x) &= x^{117} + x^{113} + x^{112} + x^{105} + x^{104} + x^{103} + x^{102} + x^{99} + x^{96} + x^{95} \\
&\quad + x^{94} + x^{93} + x^{86} + x^{82} + x^{81} + x^{78} + x^{77} + x^{75} + x^{74} + x^{73} + x^{71} \\
&\quad + x^{68} + x^{66} + x^{64} + x^{62} + x^{58} + x^{57} + x^{54} + x^{51} + x^{50} + x^{47} + x^{45} \\
&\quad + x^{42} + x^{41} + x^{38} + x^{37} + x^{36} + x^{35} + x^{34} + x^{32} + x^{31} + x^{29} + x^{27}, \\
p_3(x) &= x^{81} + x^{77} + x^{65} + x^{63} + x^{59} + x^{57} + x^{55} + x^{53} + x^{51} + x^{49} + x^{41} \\
&\quad + x^{37} + x^{25} + x^{23} + x^{19} + x^{17} + x^{15} + x^{13} + x^{11} + x^{9}, \\
p_6(x) &= x^{93} + x^{88} + x^{85} + x^{84} + x^{83} + x^{78} + x^{77} + x^{74} + x^{73} + x^{72} + x^{70} \\
&\quad + x^{69} + x^{67} + x^{66} + x^{65} + x^{64} + x^{63} + x^{58} + x^{57} + x^{54} + x^{53} + x^{52} \\
&\quad + x^{50} + x^{49} + x^{47} + x^{46} + x^{45} + x^{44} + x^{43} + x^{38} + x^{37} + x^{34} + x^{33} \\
&\quad + x^{32} + x^{30} + x^{29} + x^{27} + x^{26} + x^{25} + x^{24} + x^{23} + x^{18} + x^{17} + x^{14} \\
&\quad + x^{12} + x^{10} + x^{9} + x^{8} + x^{7} + x^{6}, \\
p_9(x) &= x^{105} + x^{101} + x^{97} + x^{95} + x^{93} + x^{91} + x^{89} + x^{87} + x^{85} + x^{83} + x^{81} \\
&\quad + x^{79} + x^{77} + x^{75} + x^{71} + x^{69} + x^{67} + x^{65} + x^{61} + x^{59} + x^{57} + x^{55} \\
&\quad + x^{51} + x^{49} + x^{47} + x^{45} + x^{41} + x^{39} + x^{37} + x^{35} + x^{31} + x^{29} + x^{27} \\
&\quad + x^{19} + x^{13} + x^{3}, \\
p_{12}(x) &= x^{117} + x^{112} + x^{108} + x^{104} + x^{100} + x^{97} + x^{96} + x^{85} + x^{81} + x^{80} + x^{37} \\
&\quad + x^{32} + x^{28} + x^{24} + x^{20} + x^{17} + x^{16} + x^{5} + x + 1,
\end{aligned}$$

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

$$\begin{aligned}
p_0(x) &= x^{117} + x^{113} + x^{112} + x^{105} + x^{104} + x^{103} + x^{102} + x^{99} + x^{96} + x^{95} \\
&\quad + x^{94} + x^{93} + x^{86} + x^{82} + x^{81} + x^{78} + x^{77} + x^{75} + x^{74} + x^{73} + x^{71} \\
&\quad + x^{68} + x^{66} + x^{64} + x^{62} + x^{58} + x^{57} + x^{54} + x^{51} + x^{50} + x^{47} + x^{45} \\
&\quad + x^{42} + x^{41} + x^{38} + x^{37} + x^{36} + x^{35} + x^{34} + x^{32} + x^{31} + x^{29} + x^{27}, \\
p_3(x) &= x^{81} + x^{77} + x^{65} + x^{63} + x^{59} + x^{57} + x^{55} + x^{53} + x^{51} + x^{49} + x^{41} \\
&\quad + x^{37} + x^{25} + x^{23} + x^{19} + x^{17} + x^{15} + x^{13} + x^{11} + x^{9}, \\
p_6(x) &= x^{93} + x^{88} + x^{85} + x^{84} + x^{83} + x^{78} + x^{77} + x^{74} + x^{73} + x^{72} + x^{70} \\
&\quad + x^{69} + x^{67} + x^{66} + x^{65} + x^{64} + x^{63} + x^{58} + x^{57} + x^{54} + x^{53} + x^{52} \\
&\quad + x^{50} + x^{49} + x^{47} + x^{46} + x^{45} + x^{44} + x^{43} + x^{38} + x^{37} + x^{34} + x^{33} \\
&\quad + x^{32} + x^{30} + x^{29} + x^{27} + x^{26} + x^{25} + x^{24} + x^{23} + x^{18} + x^{17} + x^{14} \\
&\quad + x^{12} + x^{10} + x^{9} + x^{8} + x^{7} + x^{6}, \\
p_9(x) &= x^{105} + x^{101} + x^{97} + x^{95} + x^{93} + x^{91} + x^{89} + x^{87} + x^{85} + x^{83} + x^{81} \\
&\quad + x^{79} + x^{77} + x^{75} + x^{71} + x^{69} + x^{67} + x^{65} + x^{61} + x^{59} + x^{57} + x^{55} \\
&\quad + x^{51} + x^{49} + x^{47} + x^{45} + x^{41} + x^{39} + x^{37} + x^{35} + x^{31} + x^{29} + x^{27}
\end{aligned}$$

$$
\begin{aligned}
&+ x^{19} + x^{13} + x^{3},\\
p_{12}(x) &= x^{117} + x^{112} + x^{108} + x^{104} + x^{100} + x^{97} + x^{96} + x^{85} + x^{81} + x^{80} + x^{37}\\
&+ x^{32} + x^{28} + x^{24} + x^{20} + x^{17} + x^{16} + x^{5} + x + 1,
\end{aligned}
$$

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

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

$$
\begin{aligned}
p_0(x) &= x^{132} + x^{124} + x^{122} + x^{108} + x^{106} + x^{92} + x^{90} + x^{88} + x^{86} + x^{84} + x^{80}\\
&+ x^{72} + x^{70} + x^{68} + x^{66} + x^{60} + x^{52} + x^{48} + x^{46} + x^{44} + x^{42},\\
p_3(x) &= x^{124} + x^{116} + x^{100} + x^{94} + x^{92} + x^{88} + x^{86} + x^{84} + x^{82} + x^{78} + x^{74}\\
&+ x^{72} + x^{70} + x^{66} + x^{62} + x^{54} + x^{52} + x^{50} + x^{48} + x^{42} + x^{38} + x^{36}\\
&+ x^{34} + x^{32} + x^{30} + x^{26} + x^{22} + x^{20} + x^{10} + x^{6},\\
p_6(x) &= x^{128} + x^{124} + x^{122} + x^{116} + x^{112} + x^{110} + x^{108} + x^{106} + x^{104} + x^{100}\\
&+ x^{98} + x^{96} + x^{90} + x^{88} + x^{86} + x^{84} + x^{76} + x^{70} + x^{60} + x^{56} + x^{54}\\
&+ x^{52} + x^{50} + x^{48} + x^{40} + x^{32} + x^{28} + x^{26} + x^{24} + x^{18} + x^{14} + x^{12}\\
&+ x^{8} + x^{6} + x^{2} + 1,\\
p_9(x) &= x^{124} + x^{120} + x^{116} + x^{114} + x^{112} + x^{110} + x^{106} + x^{104} + x^{102} + x^{100}\\
&+ x^{96} + x^{94} + x^{90} + x^{88} + x^{86} + x^{84} + x^{80} + x^{78} + x^{74} + x^{72} + x^{70}\\
&+ x^{68} + x^{64} + x^{62} + x^{60} + x^{58} + x^{54} + x^{52} + x^{50} + x^{48} + x^{42} + x^{38}\\
&+ x^{36} + x^{28} + x^{26} + x^{18} + x^{16} + x^{12} + x^{6} + x^{2},\\
p_{12}(x) &= x^{132} + x^{128} + x^{124} + x^{120} + x^{100} + x^{96} + x^{84} + x^{80} + x^{52} + x^{48} + x^{44}\\
&+ x^{40} + x^{20} + x^{16} + x^{4} + 1,
\end{aligned}
$$

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

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

$$
\begin{aligned}
p_0(x) &= x^{117} + x^{113} + x^{112} + x^{109} + x^{107} + x^{105} + x^{104} + x^{103} + x^{102} + x^{101}\\
&+ x^{99} + x^{93} + x^{86} + x^{85} + x^{83} + x^{82} + x^{81} + x^{80} + x^{79} + x^{78} + x^{77}\\
&+ x^{75} + x^{74} + x^{73} + x^{72} + x^{69} + x^{67} + x^{65} + x^{63} + x^{61} + x^{56} + x^{55}\\
&+ x^{54} + x^{53} + x^{50} + x^{49} + x^{46} + x^{44} + x^{42} + x^{39} + x^{37} + x^{30} + x^{29}\\
&+ x^{26} + x^{24} + x^{20} + x^{19} + x^{18} + x^{16} + x^{15} + x^{14} + x^{13} + x^{12},\\
p_3(x) &= x^{101} + x^{97} + x^{96} + x^{91} + x^{87} + x^{86} + x^{81} + x^{80} + x^{79} + x^{78} + x^{75}\\
&+ x^{70} + x^{67} + x^{66} + x^{65} + x^{64} + x^{63} + x^{61} + x^{57} + x^{56} + x^{55} + x^{54}\\
&+ x^{53} + x^{50} + x^{49} + x^{48} + x^{47} + x^{46} + x^{41} + x^{40} + x^{39} + x^{38} + x^{35}\\
&+ x^{30} + x^{27} + x^{26} + x^{25} + x^{24} + x^{23} + x^{15} + x^{14} + x^{13} + x^{11} + x^{10}\\
&+ x^{9} + x^{8},\\
p_6(x) &= x^{113} + x^{108} + x^{107} + x^{104} + x^{103} + x^{102} + x^{100} + x^{97} + x^{95} + x^{94}\\
&+ x^{93} + x^{92} + x^{91} + x^{87} + x^{86} + x^{85} + x^{79} + x^{76} + x^{75} + x^{74} + x^{73}\\
&+ x^{72} + x^{70} + x^{69} + x^{65} + x^{64} + x^{61} + x^{60} + x^{59} + x^{56} + x^{55} + x^{54}
\end{aligned}
$$

$$
\begin{aligned}
&+ x^{53} + x^{52} + x^{50} + x^{49} + x^{45} + x^{44} + x^{41} + x^{40} + x^{39} + x^{36} + x^{35}\\
&+ x^{34} + x^{32} + x^{30} + x^{29} + x^{28} + x^{27} + x^{25} + x^{23} + x^{22} + x^{21} + x^{19}\\
&+ x^{17} + x^{16} + x^{11} + x^{10} + x^{9} + x^{7} + x^{6} + x^{4} + x + 1,\\
p_9(x) &= x^{101} + x^{96} + x^{92} + x^{88} + x^{85} + x^{84} + x^{21} + x^{16} + x^{12} + x^{8} + x^{5} + x^{4},\\
p_{12}(x) &= x^{117} + x^{112} + x^{108} + x^{104} + x^{101} + x^{100} + x^{97} + x^{92} + x^{88} + x^{84}\\
&+ x^{81} + x^{80} + x^{37} + x^{32} + x^{28} + x^{24} + x^{21} + x^{20} + x^{17} + x^{12} + x^{8}\\
&+ x^{4} + x + 1,
\end{aligned}
$$

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

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

$$
\begin{aligned}
p_0(x) &= x^{112} + x^{100} + x^{99} + x^{98} + x^{97} + x^{92} + x^{91} + x^{90} + x^{89} + x^{88} + x^{84}\\
&+ x^{83} + x^{82} + x^{79} + x^{78} + x^{73} + x^{72} + x^{71} + x^{70} + x^{69} + x^{66} + x^{65}\\
&+ x^{64} + x^{59} + x^{56} + x^{54} + x^{49} + x^{45} + x^{43} + x^{42} + x^{41} + x^{36} + x^{33}\\
&+ x^{30} + x^{27} + x^{24} + x^{22} + x^{21} + x^{18},\\
p_3(x) &= x^{76} + x^{71} + x^{68} + x^{67} + x^{66} + x^{61} + x^{60} + x^{57} + x^{55} + x^{53} + x^{52}\\
&+ x^{51} + x^{50} + x^{49} + x^{36} + x^{31} + x^{28} + x^{27} + x^{26} + x^{21} + x^{20} + x^{17}\\
&+ x^{15} + x^{13} + x^{12} + x^{11} + x^{10} + x^{9},\\
p_6(x) &= x^{88} + x^{84} + x^{78} + x^{74} + x^{72} + x^{70} + x^{66} + x^{64} + x^{58} + x^{54} + x^{52}\\
&+ x^{50} + x^{46} + x^{44} + x^{38} + x^{34} + x^{32} + x^{30} + x^{26} + x^{24} + x^{18} + x^{14}\\
&+ x^{12} + x^{10} + x^{8} + x^{6},\\
p_9(x) &= x^{100} + x^{95} + x^{91} + x^{87} + x^{84} + x^{83} + x^{20} + x^{15} + x^{11} + x^{7} + x^{4} + x^{3},\\
p_{12}(x) &= x^{112} + x^{108} + x^{104} + x^{100} + x^{92} + x^{88} + x^{84} + x^{80} + x^{32} + x^{28} + x^{24}\\
&+ x^{20} + x^{12} + x^{8} + x^{4} + 1,
\end{aligned}
$$

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

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

$$
\begin{aligned}
p_0(x) &= x^{132} + x^{120} + x^{119} + x^{118} + x^{117} + x^{116} + x^{111} + x^{110} + x^{109} + x^{104}\\
&+ x^{101} + x^{100} + x^{98} + x^{97} + x^{96} + x^{95} + x^{92} + x^{87} + x^{85} + x^{82} + x^{78}\\
&+ x^{77} + x^{76} + x^{75} + x^{70} + x^{64} + x^{61} + x^{59} + x^{58} + x^{56} + x^{55} + x^{51}\\
&+ x^{50} + x^{45} + x^{44} + x^{43} + x^{41} + x^{40} + x^{38} + x^{37} + x^{35} + x^{34} + x^{33}\\
&+ x^{32} + x^{31} + x^{30} + x^{29} + x^{28} + x^{27},\\
p_3(x) &= x^{96} + x^{91} + x^{88} + x^{87} + x^{86} + x^{81} + x^{77} + x^{76} + x^{73} + x^{71} + x^{69}\\
&+ x^{68} + x^{67} + x^{66} + x^{65} + x^{64} + x^{60} + x^{59} + x^{54} + x^{52} + x^{50} + x^{49}\\
&+ x^{48} + x^{47} + x^{46} + x^{41} + x^{37} + x^{36} + x^{33} + x^{31} + x^{29} + x^{28} + x^{27}\\
&+ x^{26} + x^{25} + x^{24} + x^{20} + x^{19} + x^{16} + x^{14} + x^{12} + x^{11} + x^{10} + x^{9},\\
p_6(x) &= x^{108} + x^{104} + x^{98} + x^{94} + x^{90} + x^{86} + x^{82} + x^{78} + x^{76} + x^{74} + x^{70}\\
&+ x^{68} + x^{62} + x^{58} + x^{56} + x^{54} + x^{50} + x^{48} + x^{42} + x^{38} + x^{36} + x^{34}
\end{aligned}
$$

$$
\begin{aligned}
&+ x^{30} + x^{24} + x^{22} + x^{16} + x^{8} + x^{6},\\
p_9(x) &= x^{120} + x^{115} + x^{111} + x^{107} + x^{103} + x^{100} + x^{99} + x^{88} + x^{84} + x^{83}\\
&\quad + x^{40} + x^{35} + x^{31} + x^{27} + x^{23} + x^{20} + x^{19} + x^{8} + x^{4} + x^{3},\\
p_{12}(x) &= x^{132} + x^{128} + x^{124} + x^{120} + x^{116} + x^{112} + x^{108} + x^{104} + x^{96} + x^{80}\\
&\quad + x^{52} + x^{48} + x^{44} + x^{40} + x^{36} + x^{32} + x^{28} + x^{24} + x^{16} + 1,
\end{aligned}
$$

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

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

$$
\begin{aligned}
p_0(x) &= x^{117} + x^{113} + x^{112} + x^{109} + x^{107} + x^{105} + x^{104} + x^{103} + x^{102} + x^{99}\\
&\quad + x^{96} + x^{93} + x^{92} + x^{88} + x^{86} + x^{85} + x^{84} + x^{82} + x^{81} + x^{79} + x^{77}\\
&\quad + x^{76} + x^{75} + x^{71} + x^{70} + x^{69} + x^{67} + x^{64} + x^{62} + x^{57} + x^{55} + x^{54}\\
&\quad + x^{53} + x^{50} + x^{48} + x^{46} + x^{45} + x^{43} + x^{42} + x^{41} + x^{36} + x^{35} + x^{33},\\
p_3(x) &= x^{101} + x^{97} + x^{96} + x^{91} + x^{87} + x^{86} + x^{85} + x^{81} + x^{79} + x^{78} + x^{77}\\
&\quad + x^{76} + x^{75} + x^{70} + x^{69} + x^{66} + x^{63} + x^{62} + x^{58} + x^{57} + x^{55} + x^{53}\\
&\quad + x^{52} + x^{51} + x^{47} + x^{46} + x^{45} + x^{41} + x^{39} + x^{38} + x^{37} + x^{36} + x^{35}\\
&\quad + x^{30} + x^{29} + x^{26} + x^{23} + x^{22} + x^{21} + x^{18} + x^{16} + x^{15} + x^{13} + x^{12},\\
p_6(x) &= x^{113} + x^{108} + x^{107} + x^{104} + x^{103} + x^{102} + x^{101} + x^{100} + x^{97} + x^{96}\\
&\quad + x^{95} + x^{94} + x^{91} + x^{87} + x^{86} + x^{83} + x^{80} + x^{79} + x^{78} + x^{77} + x^{75}\\
&\quad + x^{72} + x^{69} + x^{68} + x^{67} + x^{66} + x^{65} + x^{63} + x^{61} + x^{59} + x^{58} + x^{57}\\
&\quad + x^{55} + x^{52} + x^{49} + x^{48} + x^{47} + x^{46} + x^{45} + x^{43} + x^{41} + x^{39} + x^{38}\\
&\quad + x^{37} + x^{35} + x^{33} + x^{32} + x^{29} + x^{26} + x^{25} + x^{24} + x^{22} + x^{20} + x^{19}\\
&\quad + x^{18} + x^{16} + x^{14} + x^{12} + x^{11} + x^{9} + x^{8} + x^{5} + x + 1,\\
p_9(x) &= x^{101} + x^{96} + x^{92} + x^{88} + x^{85} + x^{84} + x^{21} + x^{16} + x^{12} + x^{8} + x^{5} + x^{4},\\
p_{12}(x) &= x^{117} + x^{112} + x^{108} + x^{104} + x^{101} + x^{100} + x^{97} + x^{92} + x^{88} + x^{84}\\
&\quad + x^{81} + x^{80} + x^{37} + x^{32} + x^{28} + x^{24} + x^{21} + x^{20} + x^{17} + x^{12} + x^{8}\\
&\quad + x^{4} + x + 1,
\end{aligned}
$$

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

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

$$
\begin{aligned}
p_0(x) &= x^{117} + x^{113} + x^{112} + x^{109} + x^{107} + x^{105} + x^{104} + x^{103} + x^{102} + x^{101}\\
&\quad + x^{99} + x^{93} + x^{86} + x^{85} + x^{83} + x^{82} + x^{81} + x^{80} + x^{79} + x^{78} + x^{77}\\
&\quad + x^{75} + x^{74} + x^{73} + x^{72} + x^{69} + x^{67} + x^{65} + x^{63} + x^{61} + x^{56} + x^{55}\\
&\quad + x^{54} + x^{53} + x^{50} + x^{49} + x^{46} + x^{44} + x^{42} + x^{39} + x^{37} + x^{30} + x^{29}\\
&\quad + x^{26} + x^{24} + x^{20} + x^{19} + x^{18} + x^{16} + x^{15} + x^{14} + x^{13} + x^{12},\\
p_3(x) &= x^{101} + x^{97} + x^{96} + x^{91} + x^{87} + x^{86} + x^{81} + x^{80} + x^{79} + x^{78} + x^{75}\\
&\quad + x^{70} + x^{67} + x^{66} + x^{65} + x^{64} + x^{63} + x^{61} + x^{57} + x^{56} + x^{55} + x^{54}\\
&\quad + x^{53} + x^{50} + x^{49} + x^{48} + x^{47} + x^{46} + x^{41} + x^{40} + x^{39} + x^{38} + x^{35}
\end{aligned}
$$

$$\begin{aligned}
&+ x^{30} + x^{27} + x^{26} + x^{25} + x^{24} + x^{23} + x^{15} + x^{14} + x^{13} + x^{11} + x^{10}\\
&+ x^{9} + x^{8},\\
p_6(x) &= x^{113} + x^{108} + x^{107} + x^{104} + x^{103} + x^{102} + x^{100} + x^{97} + x^{95} + x^{94}\\
&+ x^{93} + x^{92} + x^{91} + x^{87} + x^{86} + x^{85} + x^{79} + x^{76} + x^{75} + x^{74} + x^{73}\\
&+ x^{72} + x^{70} + x^{69} + x^{65} + x^{64} + x^{61} + x^{60} + x^{59} + x^{56} + x^{55} + x^{54}\\
&+ x^{53} + x^{52} + x^{50} + x^{49} + x^{45} + x^{44} + x^{41} + x^{40} + x^{39} + x^{36} + x^{35}\\
&+ x^{34} + x^{32} + x^{30} + x^{29} + x^{28} + x^{27} + x^{25} + x^{23} + x^{22} + x^{21} + x^{19}\\
&+ x^{17} + x^{16} + x^{11} + x^{10} + x^{9} + x^{7} + x^{6} + x^{4} + x + 1,\\
p_9(x) &= x^{101} + x^{96} + x^{92} + x^{88} + x^{85} + x^{84} + x^{21} + x^{16} + x^{12} + x^{8} + x^{5} + x^{4},\\
p_{12}(x) &= x^{117} + x^{112} + x^{108} + x^{104} + x^{101} + x^{100} + x^{97} + x^{92} + x^{88} + x^{84}\\
&+ x^{81} + x^{80} + x^{37} + x^{32} + x^{28} + x^{24} + x^{21} + x^{20} + x^{17} + x^{12} + x^{8}\\
&+ x^{4} + x + 1,
\end{aligned}$$

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

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

$$\begin{aligned}
p_0(x) &= x^{132} + x^{120} + x^{119} + x^{118} + x^{117} + x^{116} + x^{111} + x^{110} + x^{109} + x^{104}\\
&+ x^{101} + x^{100} + x^{98} + x^{97} + x^{96} + x^{95} + x^{92} + x^{87} + x^{85} + x^{82} + x^{78}\\
&+ x^{77} + x^{76} + x^{75} + x^{70} + x^{64} + x^{61} + x^{59} + x^{58} + x^{56} + x^{55} + x^{51}\\
&+ x^{50} + x^{45} + x^{44} + x^{43} + x^{41} + x^{40} + x^{38} + x^{37} + x^{35} + x^{34} + x^{33}\\
&+ x^{32} + x^{31} + x^{30} + x^{29} + x^{28} + x^{27},\\
p_3(x) &= x^{96} + x^{91} + x^{88} + x^{87} + x^{86} + x^{81} + x^{77} + x^{76} + x^{73} + x^{71} + x^{69}\\
&+ x^{68} + x^{67} + x^{66} + x^{65} + x^{64} + x^{60} + x^{59} + x^{54} + x^{52} + x^{50} + x^{49}\\
&+ x^{48} + x^{47} + x^{46} + x^{41} + x^{37} + x^{36} + x^{33} + x^{31} + x^{29} + x^{28} + x^{27}\\
&+ x^{26} + x^{25} + x^{24} + x^{20} + x^{19} + x^{16} + x^{14} + x^{12} + x^{11} + x^{10} + x^{9},\\
p_6(x) &= x^{108} + x^{104} + x^{98} + x^{94} + x^{90} + x^{86} + x^{82} + x^{78} + x^{76} + x^{74} + x^{70}\\
&+ x^{68} + x^{62} + x^{58} + x^{56} + x^{54} + x^{50} + x^{48} + x^{42} + x^{38} + x^{36} + x^{34}\\
&+ x^{30} + x^{24} + x^{22} + x^{16} + x^{8} + x^{6},\\
p_9(x) &= x^{120} + x^{115} + x^{111} + x^{107} + x^{103} + x^{100} + x^{99} + x^{88} + x^{84} + x^{83}\\
&+ x^{40} + x^{35} + x^{31} + x^{27} + x^{23} + x^{20} + x^{19} + x^{8} + x^{4} + x^{3},\\
p_{12}(x) &= x^{132} + x^{128} + x^{124} + x^{120} + x^{116} + x^{112} + x^{108} + x^{104} + x^{96} + x^{80}\\
&+ x^{52} + x^{48} + x^{44} + x^{40} + x^{36} + x^{32} + x^{28} + x^{24} + x^{16} + 1,
\end{aligned}$$

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

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

$$\begin{aligned}
p_0(x) &= x^{112} + x^{100} + x^{99} + x^{98} + x^{97} + x^{92} + x^{91} + x^{90} + x^{89} + x^{88} + x^{84}\\
&+ x^{83} + x^{82} + x^{79} + x^{78} + x^{73} + x^{72} + x^{71} + x^{70} + x^{69} + x^{66} + x^{65}\\
&+ x^{64} + x^{59} + x^{56} + x^{54} + x^{49} + x^{45} + x^{43} + x^{42} + x^{41} + x^{36} + x^{33}
\end{aligned}$$

$$
\begin{aligned}
&+ x^{30} + x^{27} + x^{24} + x^{22} + x^{21} + x^{18},\\
p_3(x) &= x^{76} + x^{71} + x^{68} + x^{67} + x^{66} + x^{61} + x^{60} + x^{57} + x^{55} + x^{53} + x^{52}\\
&+ x^{51} + x^{50} + x^{49} + x^{36} + x^{31} + x^{28} + x^{27} + x^{26} + x^{21} + x^{20} + x^{17}\\
&+ x^{15} + x^{13} + x^{12} + x^{11} + x^{10} + x^{9},\\
p_6(x) &= x^{88} + x^{84} + x^{78} + x^{74} + x^{72} + x^{70} + x^{66} + x^{64} + x^{58} + x^{54} + x^{52}\\
&+ x^{50} + x^{46} + x^{44} + x^{38} + x^{34} + x^{32} + x^{30} + x^{26} + x^{24} + x^{18} + x^{14}\\
&+ x^{12} + x^{10} + x^{8} + x^{6},\\
p_9(x) &= x^{100} + x^{95} + x^{91} + x^{87} + x^{84} + x^{83} + x^{20} + x^{15} + x^{11} + x^{7} + x^{4} + x^{3},\\
p_{12}(x) &= x^{112} + x^{108} + x^{104} + x^{100} + x^{92} + x^{88} + x^{84} + x^{80} + x^{32} + x^{28} + x^{24}\\
&+ x^{20} + x^{12} + x^{8} + x^{4} + 1,
\end{aligned}
$$

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

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

$$
\begin{aligned}
p_0(x) &= x^{117} + x^{113} + x^{112} + x^{109} + x^{107} + x^{105} + x^{104} + x^{103} + x^{102} + x^{99}\\
&+ x^{96} + x^{93} + x^{92} + x^{88} + x^{86} + x^{85} + x^{84} + x^{82} + x^{81} + x^{79} + x^{77}\\
&+ x^{76} + x^{75} + x^{71} + x^{70} + x^{69} + x^{67} + x^{64} + x^{62} + x^{57} + x^{55} + x^{54}\\
&+ x^{53} + x^{50} + x^{48} + x^{46} + x^{45} + x^{43} + x^{42} + x^{41} + x^{36} + x^{35} + x^{33},\\
p_3(x) &= x^{101} + x^{97} + x^{96} + x^{91} + x^{87} + x^{86} + x^{85} + x^{81} + x^{79} + x^{78} + x^{77}\\
&+ x^{76} + x^{75} + x^{70} + x^{69} + x^{66} + x^{63} + x^{62} + x^{58} + x^{57} + x^{55} + x^{53}\\
&+ x^{52} + x^{51} + x^{47} + x^{46} + x^{45} + x^{41} + x^{39} + x^{38} + x^{37} + x^{36} + x^{35}\\
&+ x^{30} + x^{29} + x^{26} + x^{23} + x^{22} + x^{21} + x^{18} + x^{16} + x^{15} + x^{13} + x^{12},\\
p_6(x) &= x^{113} + x^{108} + x^{107} + x^{104} + x^{103} + x^{102} + x^{101} + x^{100} + x^{97} + x^{96}\\
&+ x^{95} + x^{94} + x^{91} + x^{87} + x^{86} + x^{83} + x^{80} + x^{79} + x^{78} + x^{77} + x^{75}\\
&+ x^{72} + x^{69} + x^{68} + x^{67} + x^{66} + x^{65} + x^{63} + x^{61} + x^{59} + x^{58} + x^{57}\\
&+ x^{55} + x^{52} + x^{49} + x^{48} + x^{47} + x^{46} + x^{45} + x^{43} + x^{41} + x^{39} + x^{38}\\
&+ x^{37} + x^{35} + x^{33} + x^{32} + x^{29} + x^{26} + x^{25} + x^{24} + x^{22} + x^{20} + x^{19}\\
&+ x^{18} + x^{16} + x^{14} + x^{12} + x^{11} + x^{9} + x^{8} + x^{5} + x + 1,\\
p_9(x) &= x^{101} + x^{96} + x^{92} + x^{88} + x^{85} + x^{84} + x^{21} + x^{16} + x^{12} + x^{8} + x^{5} + x^{4},\\
p_{12}(x) &= x^{117} + x^{112} + x^{108} + x^{104} + x^{101} + x^{100} + x^{97} + x^{92} + x^{88} + x^{84}\\
&+ x^{81} + x^{80} + x^{37} + x^{32} + x^{28} + x^{24} + x^{21} + x^{20} + x^{17} + x^{12} + x^{8}\\
&+ x^{4} + x + 1,
\end{aligned}
$$

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

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

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

n	$\Lambda(n)$	n	$\Lambda(n)$	n	$\Lambda(n)$	n	$\Lambda(n)$

0	[1, 2]	823	[1389, 1390]	1646	[2399, 2400]	2469	[2989, 2990]
1	[3, 4]	824	[1391, 1392]	1647	[2227, 2401]	2470	[2819, 2991]
2	[5, 6]	825	[1393, 1394]	1648	[2391, 2402]	2471	[2992, 2122]
3	[7, 8]	826	[315, 1395]	1649	[2403, 1389]	2472	[2993, 2139]
4	[9, 10]	827	[101, 393]	1650	[2225, 2388]	2473	[2994, 1882]
5	[11, 12]	828	[417, 1396]	1651	[2404, 1156]	2474	[2995, 2996]
6	[13, 14]	829	[1282, 1389]	1652	[1148, 2405]	2475	[2837, 1659]
7	[15, 16]	830	[1397, 386]	1653	[2406, 1010]	2476	[2895, 2065]
8	[17, 18]	831	[1398, 334]	1654	[2407, 2310]	2477	[2997, 1501]
9	[19, 20]	832	[1399, 1330]	1655	[994, 1133]	2478	[2998, 1877]
10	[21, 22]	833	[1400, 1401]	1656	[2270, 21]	2479	[704, 1627]
11	[23, 24]	834	[1402, 1403]	1657	[2260, 1248]	2480	[610, 2999]
12	[25, 26]	835	[1270, 1060]	1658	[946, 2408]	2481	[1511, 1888]
13	[27, 28]	836	[971, 1404]	1659	[307, 2409]	2482	[3000, 1539]
14	[29, 30]	837	[1405, 1406]	1660	[2354, 1175]	2483	[3001, 3002]
15	[31, 32]	838	[1407, 296]	1661	[1201, 1333]	2484	[2865, 3003]
16	[33, 34]	839	[1051, 1408]	1662	[876, 297]	2485	[3004, 2756]
17	[35, 36]	840	[1409, 1410]	1663	[2410, 959]	2486	[62, 3005]
18	[37, 38]	841	[1411, 101]	1664	[1381, 100]	2487	[488, 3006]
19	[39, 40]	842	[1412, 1413]	1665	[2411, 2412]	2488	[3007, 3008]
20	[41, 42]	843	[1414, 1247]	1666	[2413, 1173]	2489	[3009, 3010]
21	[43, 44]	844	[1361, 1415]	1667	[2414, 376]	2490	[1693, 3011]
22	[45, 46]	845	[1416, 1417]	1668	[372, 1275]	2491	[3012, 3013]
23	[47, 48]	846	[1418, 398]	1669	[948, 2415]	2492	[2906, 2835]
24	[49, 50]	847	[1419, 1420]	1670	[1123, 1336]	2493	[3014, 1833]
25	[51, 52]	848	[979, 1421]	1671	[2416, 2371]	2494	[1628, 851]
26	[53, 54]	849	[397, 115]	1672	[965, 1026]	2495	[2105, 2863]
27	[55, 56]	850	[1422, 929]	1673	[2417, 2418]	2496	[592, 2098]
28	[57, 58]	851	[1423, 1082]	1674	[2419, 2420]	2497	[2045, 732]
29	[59, 60]	852	[1424, 1425]	1675	[2373, 2267]	2498	[530, 3015]
30	[61, 62]	853	[1426, 1219]	1676	[992, 2421]	2499	[3016, 3017]
31	[63, 64]	854	[1427, 1428]	1677	[2317, 917]	2500	[2027, 3018]
32	[65, 66]	855	[1429, 1430]	1678	[2422, 2344]	2501	[829, 3019]
33	[67, 68]	856	[1431, 1432]	1679	[1022, 2423]	2502	[1536, 1802]
34	[69, 70]	857	[471, 468]	1680	[1057, 2424]	2503	[751, 3020]
35	[71, 72]	858	[376, 1303]	1681	[2425, 2290]	2504	[614, 3021]
36	[73, 74]	859	[1433, 1434]	1682	[2426, 2427]	2505	[2991, 3022]
37	[75, 76]	860	[1318, 1056]	1683	[2428, 1220]	2506	[2927, 3007]
38	[77, 78]	861	[1435, 1436]	1684	[391, 943]	2507	[3023, 3024]
39	[79, 80]	862	[360, 1437]	1685	[76, 403]	2508	[3025, 1770]
40	[81, 82]	863	[1438, 1439]	1686	[2429, 405]	2509	[1979, 714]
41	[83, 84]	864	[1440, 1441]	1687	[2430, 907]	2510	[2077, 3026]
42	[85, 86]	865	[1442, 890]	1688	[64, 2233]	2511	[519, 2840]

43	[87, 88]	866	[1443, 1444]	1689	[2431, 2432]	2512	[3027, 3028]
44	[89, 90]	867	[1445, 1446]	1690	[2433, 2219]	2513	[3029, 1751]
45	[91, 92]	868	[1447, 1448]	1691	[2223, 2434]	2514	[3030, 3031]
46	[93, 94]	869	[1449, 1450]	1692	[2435, 1372]	2515	[2165, 3032]
47	[95, 96]	870	[1451, 680]	1693	[1267, 2436]	2516	[1529, 1655]
48	[97, 98]	871	[1452, 1453]	1694	[274, 2437]	2517	[1862, 3033]
49	[99, 100]	872	[587, 1454]	1695	[2334, 2438]	2518	[3034, 1607]
50	[101, 102]	873	[1455, 1456]	1696	[1230, 1228]	2519	[2754, 3035]
51	[103, 104]	874	[1457, 1458]	1697	[2246, 1184]	2520	[3036, 3037]
52	[105, 106]	875	[1459, 1460]	1698	[1142, 86]	2521	[1582, 3038]
53	[107, 108]	876	[1461, 1462]	1699	[2291, 2328]	2522	[3011, 3039]
54	[109, 110]	877	[625, 1463]	1700	[2439, 1072]	2523	[1972, 2040]
55	[111, 112]	878	[1464, 1465]	1701	[1417, 1414]	2524	[3040, 3041]
56	[113, 114]	879	[1466, 1467]	1702	[1248, 2440]	2525	[1534, 3042]
57	[115, 116]	880	[1468, 1469]	1703	[1004, 1022]	2526	[2809, 2007]
58	[117, 118]	881	[1470, 1471]	1704	[1238, 1363]	2527	[2956, 2937]
59	[119, 120]	882	[1472, 1473]	1705	[2213, 342]	2528	[598, 3043]
60	[121, 122]	883	[1474, 1475]	1706	[377, 1079]	2529	[633, 1624]
61	[123, 124]	884	[1476, 199]	1707	[1317, 2441]	2530	[3044, 3045]
62	[125, 126]	885	[1477, 1478]	1708	[1264, 1236]	2531	[477, 3046]
63	[127, 128]	886	[612, 32]	1709	[1032, 2442]	2532	[1473, 1813]
64	[129, 130]	887	[36, 588]	1710	[1193, 449]	2533	[3047, 670]
65	[131, 132]	888	[1479, 1480]	1711	[1288, 1395]	2534	[2068, 3048]
66	[133, 134]	889	[1481, 1482]	1712	[21, 2443]	2535	[3049, 3050]
67	[135, 136]	890	[1483, 196]	1713	[1281, 347]	2536	[3013, 3051]
68	[137, 138]	891	[1484, 1485]	1714	[1204, 1155]	2537	[3037, 2859]
69	[139, 140]	892	[1486, 1487]	1715	[2444, 2445]	2538	[2878, 3052]
70	[141, 142]	893	[14, 1488]	1716	[878, 2446]	2539	[3053, 3054]
71	[143, 144]	894	[1489, 1459]	1717	[2447, 931]	2540	[3055, 2776]
72	[145, 146]	895	[1490, 836]	1718	[315, 2448]	2541	[1790, 1829]
73	[147, 148]	896	[715, 1491]	1719	[1303, 1079]	2542	[2853, 1489]
74	[149, 150]	897	[1492, 783]	1720	[2449, 914]	2543	[2025, 3056]
75	[151, 152]	898	[32, 1493]	1721	[2233, 1396]	2544	[3057, 3058]
76	[153, 154]	899	[1494, 1495]	1722	[2279, 2450]	2545	[716, 1894]
77	[155, 156]	900	[1480, 1496]	1723	[259, 2239]	2546	[663, 139]
78	[157, 158]	901	[1497, 1498]	1724	[1160, 468]	2547	[3059, 2984]
79	[159, 160]	902	[731, 1499]	1725	[932, 2451]	2548	[3060, 3061]
80	[161, 162]	903	[565, 1500]	1726	[2452, 1223]	2549	[1930, 3062]
81	[163, 164]	904	[1501, 1502]	1727	[2453, 305]	2550	[2829, 2787]
82	[165, 166]	905	[483, 1503]	1728	[2423, 2454]	2551	[773, 541]
83	[167, 168]	906	[1504, 1505]	1729	[1355, 2455]	2552	[3063, 2823]
84	[169, 170]	907	[1506, 1507]	1730	[2307, 1051]	2553	[2156, 2978]
85	[171, 172]	908	[1508, 1509]	1731	[2456, 431]	2554	[661, 1638]
86	[173, 174]	909	[1510, 1511]	1732	[1337, 2457]	2555	[144, 3064]

87	[175, 137]	910	[1512, 1513]	1733	[939, 925]	2556	[1462, 844]
88	[176, 177]	911	[1514, 1515]	1734	[2310, 1392]	2557	[3065, 1518]
89	[178, 179]	912	[1516, 1517]	1735	[974, 2458]	2558	[249, 3066]
90	[180, 181]	913	[1518, 1519]	1736	[984, 2459]	2559	[739, 3067]
91	[182, 183]	914	[168, 1520]	1737	[405, 102]	2560	[3046, 2844]
92	[184, 185]	915	[1521, 1522]	1738	[2460, 323]	2561	[2133, 522]
93	[186, 129]	916	[1523, 1524]	1739	[2461, 2462]	2562	[2008, 1619]
94	[187, 188]	917	[1525, 1526]	1740	[2463, 897]	2563	[3068, 2137]
95	[189, 190]	918	[1527, 1528]	1741	[2464, 1097]	2564	[42, 2841]
96	[191, 192]	919	[583, 1529]	1742	[2465, 308]	2565	[1814, 3069]
97	[193, 194]	920	[1530, 1531]	1743	[66, 2211]	2566	[1672, 3070]
98	[195, 49]	921	[1520, 167]	1744	[1333, 2466]	2567	[177, 2101]
99	[196, 175]	922	[1532, 838]	1745	[292, 2467]	2568	[681, 151]
100	[197, 198]	923	[1533, 1534]	1746	[2468, 291]	2569	[2075, 1847]
101	[199, 200]	924	[1535, 1536]	1747	[936, 2469]	2570	[3071, 1747]
102	[201, 202]	925	[1537, 1538]	1748	[954, 1271]	2571	[34, 2948]
103	[203, 204]	926	[1539, 1540]	1749	[2470, 2450]	2572	[866, 1586]
104	[205, 206]	927	[1541, 1542]	1750	[1125, 252]	2573	[1800, 3072]
105	[207, 208]	928	[1543, 1544]	1751	[2471, 985]	2574	[2145, 570]
106	[209, 210]	929	[1545, 1546]	1752	[2472, 2340]	2575	[2887, 1919]
107	[211, 212]	930	[1547, 603]	1753	[2473, 2474]	2576	[3073, 2163]
108	[213, 214]	931	[1548, 1549]	1754	[2475, 2476]	2577	[2043, 1939]
109	[215, 216]	932	[212, 1550]	1755	[1211, 2217]	2578	[216, 3074]
110	[217, 218]	933	[1551, 1552]	1756	[2477, 2478]	2579	[2053, 3075]
111	[219, 220]	934	[475, 1553]	1757	[2479, 2372]	2580	[2752, 1992]
112	[221, 222]	935	[1554, 1555]	1758	[2236, 2480]	2581	[3033, 1994]
113	[223, 224]	936	[1556, 1464]	1759	[280, 1118]	2582	[3076, 176]
114	[225, 226]	937	[1557, 1558]	1760	[1389, 1109]	2583	[1553, 3014]
115	[227, 228]	938	[1559, 1560]	1761	[2481, 16]	2584	[1577, 1917]
116	[229, 230]	939	[1561, 1492]	1762	[2482, 2483]	2585	[3077, 2885]
117	[231, 227]	940	[793, 1562]	1763	[1363, 400]	2586	[2862, 3078]
118	[232, 233]	941	[1563, 696]	1764	[117, 1426]	2587	[2898, 3079]
119	[234, 235]	942	[1446, 1564]	1765	[2484, 1309]	2588	[3080, 2042]
120	[236, 237]	943	[764, 1565]	1766	[2485, 75]	2589	[3081, 2911]
121	[238, 239]	944	[1566, 1567]	1767	[1384, 2486]	2590	[1700, 2037]
122	[240, 241]	945	[1568, 863]	1768	[872, 2252]	2591	[1879, 2989]
123	[242, 243]	946	[1569, 1570]	1769	[1105, 965]	2592	[616, 543]
124	[244, 245]	947	[1540, 1571]	1770	[446, 2487]	2593	[3082, 3083]
125	[246, 247]	948	[1572, 1573]	1771	[2361, 2488]	2594	[3084, 2922]
126	[248, 249]	949	[795, 1574]	1772	[2489, 2490]	2595	[3085, 1737]
127	[250, 251]	950	[1575, 628]	1773	[2491, 288]	2596	[1505, 3068]
128	[252, 253]	951	[1576, 1577]	1774	[2348, 346]	2597	[2890, 3086]
129	[254, 255]	952	[1578, 1579]	1775	[1351, 1188]	2598	[3087, 2804]
130	[256, 257]	953	[1580, 656]	1776	[2492, 2493]	2599	[1744, 3088]

131	[258, 259]	954	[1581, 1582]	1777	[1101, 2296]	2600	[1941, 3089]
132	[260, 261]	955	[1583, 1584]	1778	[2494, 2495]	2601	[3061, 3090]
133	[262, 263]	956	[729, 1585]	1779	[2496, 1117]	2602	[1517, 3091]
134	[264, 265]	957	[1586, 1587]	1780	[1121, 1286]	2603	[3092, 529]
135	[266, 267]	958	[1588, 1589]	1781	[2497, 2498]	2604	[3093, 2052]
136	[268, 79]	959	[698, 1590]	1782	[930, 1356]	2605	[3094, 1731]
137	[269, 270]	960	[1591, 1592]	1783	[2499, 2479]	2606	[2909, 2987]
138	[271, 272]	961	[1593, 1594]	1784	[2500, 2498]	2607	[1666, 2886]
139	[273, 274]	962	[1595, 785]	1785	[881, 2304]	2608	[2750, 2855]
140	[275, 276]	963	[573, 1596]	1786	[2501, 2502]	2609	[3095, 1563]
141	[277, 278]	964	[637, 662]	1787	[2503, 978]	2610	[2763, 3096]
142	[279, 280]	965	[1597, 45]	1788	[986, 2504]	2611	[3017, 143]
143	[281, 282]	966	[1598, 1599]	1789	[2505, 2436]	2612	[1885, 3097]
144	[283, 284]	967	[596, 1600]	1790	[2470, 2270]	2613	[675, 3098]
145	[285, 286]	968	[1601, 1602]	1791	[2506, 2507]	2614	[1558, 3099]
146	[287, 288]	969	[1603, 147]	1792	[2508, 2228]	2615	[693, 2034]
147	[289, 290]	970	[1604, 1605]	1793	[1264, 398]	2616	[3100, 3101]
148	[291, 292]	971	[1606, 516]	1794	[1307, 27]	2617	[2741, 3102]
149	[293, 294]	972	[1607, 1608]	1795	[1022, 2509]	2618	[3019, 1694]
150	[295, 296]	973	[1609, 1610]	1796	[70, 942]	2619	[3103, 819]
151	[297, 113]	974	[479, 1611]	1797	[2510, 2209]	2620	[8, 3104]
152	[298, 299]	975	[1611, 1612]	1798	[1133, 2511]	2621	[3105, 61]
153	[300, 301]	976	[1613, 1533]	1799	[2512, 972]	2622	[1985, 163]
154	[302, 303]	977	[1614, 1615]	1800	[2513, 2514]	2623	[2824, 3106]
155	[304, 305]	978	[1616, 777]	1801	[1428, 2515]	2624	[3107, 2768]
156	[306, 307]	979	[1617, 1618]	1802	[2516, 2517]	2625	[3108, 3109]
157	[308, 309]	980	[1619, 1620]	1803	[2518, 2519]	2626	[606, 476]
158	[310, 311]	981	[1621, 1622]	1804	[1126, 2520]	2627	[2134, 3110]
159	[312, 313]	982	[1589, 1623]	1805	[273, 2510]	2628	[2769, 493]
160	[314, 315]	983	[1624, 1625]	1806	[2497, 2521]	2629	[643, 2000]
161	[316, 317]	984	[1478, 1626]	1807	[2183, 333]	2630	[1574, 835]
162	[318, 319]	985	[1627, 1628]	1808	[1036, 1256]	2631	[3111, 2049]
163	[320, 321]	986	[1629, 1630]	1809	[2399, 1401]	2632	[1748, 3044]
164	[322, 323]	987	[1631, 1632]	1810	[1293, 1254]	2633	[2913, 3112]
165	[324, 325]	988	[1633, 790]	1811	[2522, 335]	2634	[2963, 3080]
166	[326, 327]	989	[1634, 1635]	1812	[965, 350]	2635	[1550, 3113]
167	[328, 329]	990	[1636, 1637]	1813	[2215, 422]	2636	[1718, 2988]
168	[330, 331]	991	[1638, 1639]	1814	[2523, 2524]	2637	[3114, 2917]
169	[332, 308]	992	[1640, 1641]	1815	[1339, 2525]	2638	[2782, 3055]
170	[333, 334]	993	[1642, 1643]	1816	[1006, 2402]	2639	[673, 2789]
171	[335, 336]	994	[1644, 1645]	1817	[2526, 2349]	2640	[3115, 3116]
172	[337, 338]	995	[528, 1646]	1818	[2527, 2528]	2641	[1661, 3117]
173	[339, 340]	996	[1647, 1648]	1819	[2529, 2530]	2642	[2117, 749]
174	[265, 341]	997	[1649, 822]	1820	[1191, 2531]	2643	[3118, 2935]

175	[342, 343]	998	[1650, 1651]	1821	[1106, 1026]	2644	[1993, 1604]
176	[344, 345]	999	[220, 1652]	1822	[883, 2532]	2645	[1812, 2822]
177	[346, 347]	1000	[156, 1653]	1823	[2533, 2534]	2646	[247, 3119]
178	[348, 349]	1001	[667, 1654]	1824	[2535, 938]	2647	[1874, 3120]
179	[350, 351]	1002	[1655, 1656]	1825	[980, 2536]	2648	[3121, 2175]
180	[352, 353]	1003	[712, 191]	1826	[2417, 2272]	2649	[517, 3122]
181	[354, 355]	1004	[1657, 1658]	1827	[2537, 2538]	2650	[3123, 1804]
182	[356, 357]	1005	[1659, 865]	1828	[2461, 2330]	2651	[3124, 3125]
183	[358, 359]	1006	[1660, 1661]	1829	[2539, 19]	2652	[2816, 2998]
184	[360, 361]	1007	[1630, 1556]	1830	[2465, 2192]	2653	[3126, 527]
185	[362, 363]	1008	[1662, 1663]	1831	[2540, 2541]	2654	[3127, 3128]
186	[364, 365]	1009	[1664, 1665]	1832	[2542, 2543]	2655	[3058, 2879]
187	[366, 333]	1010	[1573, 1666]	1833	[1332, 450]	2656	[639, 3129]
188	[367, 89]	1011	[1667, 857]	1834	[1371, 2544]	2657	[1526, 3130]
189	[368, 369]	1012	[1668, 1537]	1835	[1325, 327]	2658	[1714, 509]
190	[370, 371]	1013	[1669, 1670]	1836	[2545, 2418]	2659	[1989, 1547]
191	[372, 373]	1014	[1671, 1672]	1837	[2529, 2333]	2660	[3109, 1593]
192	[374, 375]	1015	[1465, 601]	1838	[374, 932]	2661	[2852, 2941]
193	[376, 377]	1016	[1673, 1674]	1839	[2343, 2546]	2662	[3131, 824]
194	[378, 379]	1017	[1675, 1676]	1840	[2187, 2547]	2663	[2925, 3132]
195	[380, 381]	1018	[1677, 1678]	1841	[2548, 2549]	2664	[3101, 3133]
196	[382, 383]	1019	[1679, 1680]	1842	[1156, 345]	2665	[3134, 2082]
197	[384, 385]	1020	[1681, 1682]	1843	[2550, 2551]	2666	[3135, 845]
198	[386, 25]	1021	[1683, 1684]	1844	[2552, 2553]	2667	[52, 1946]
199	[387, 341]	1022	[1685, 1686]	1845	[2554, 2555]	2668	[569, 699]
200	[388, 389]	1023	[1687, 1688]	1846	[297, 2556]	2669	[2093, 3136]
201	[390, 391]	1024	[1689, 615]	1847	[2557, 2558]	2670	[2060, 3137]
202	[371, 392]	1025	[1690, 1691]	1848	[2410, 2559]	2671	[620, 3138]
203	[393, 394]	1026	[1692, 1693]	1849	[2560, 2561]	2672	[3139, 3001]
204	[395, 360]	1027	[1694, 1695]	1850	[2548, 2527]	2673	[3140, 2010]
205	[396, 397]	1028	[798, 1696]	1851	[2562, 2202]	2674	[1928, 3141]
206	[398, 399]	1029	[1697, 1698]	1852	[2563, 1402]	2675	[608, 3142]
207	[400, 401]	1030	[600, 1699]	1853	[2564, 2565]	2676	[2996, 2953]
208	[402, 384]	1031	[864, 1614]	1854	[2418, 2273]	2677	[563, 3012]
209	[403, 404]	1032	[1618, 1700]	1855	[936, 2566]	2678	[481, 1821]
210	[405, 393]	1033	[1701, 1702]	1856	[85, 1143]	2679	[1453, 3143]
211	[406, 302]	1034	[1703, 217]	1857	[1196, 2358]	2680	[1695, 3059]
212	[407, 408]	1035	[1704, 1703]	1858	[1130, 2216]	2681	[3039, 2940]
213	[409, 410]	1036	[1705, 856]	1859	[2567, 72]	2682	[2834, 1904]
214	[411, 412]	1037	[1706, 593]	1860	[2327, 2292]	2683	[3010, 3144]
215	[413, 414]	1038	[1626, 742]	1861	[2285, 1394]	2684	[3145, 3146]
216	[415, 416]	1039	[852, 1707]	1862	[2568, 2569]	2685	[1982, 3147]
217	[26, 5]	1040	[1708, 1709]	1863	[2570, 1107]	2686	[3026, 3148]
218	[391, 97]	1041	[1565, 513]	1864	[2571, 1267]	2687	[754, 2084]

219	[417, 418]	1042	[725, 1710]	1865	[1031, 2572]	2688	[1643, 1483]
220	[419, 420]	1043	[818, 1711]	1866	[461, 1360]	2689	[2907, 1446]
221	[421, 422]	1044	[1712, 622]	1867	[911, 1239]	2690	[3128, 2128]
222	[423, 424]	1045	[1713, 1714]	1868	[1026, 2573]	2691	[3143, 3149]
223	[425, 426]	1046	[500, 746]	1869	[2237, 2574]	2692	[521, 2992]
224	[427, 109]	1047	[1715, 1716]	1870	[944, 443]	2693	[1454, 2993]
225	[428, 429]	1048	[1717, 1718]	1871	[1384, 1379]	2694	[1691, 3150]
226	[430, 431]	1049	[820, 1719]	1872	[2575, 1201]	2695	[1585, 3108]
227	[432, 433]	1050	[552, 246]	1873	[2576, 2577]	2696	[1991, 555]
228	[434, 435]	1051	[1720, 497]	1874	[98, 1319]	2697	[1977, 2903]
229	[436, 437]	1052	[1721, 1722]	1875	[947, 2324]	2698	[618, 3151]
230	[406, 438]	1053	[1723, 1650]	1876	[2578, 1348]	2699	[160, 1717]
231	[439, 440]	1054	[1724, 1701]	1877	[283, 2579]	2700	[3152, 2035]
232	[441, 442]	1055	[1725, 1726]	1878	[2580, 2581]	2701	[1911, 3153]
233	[443, 444]	1056	[1570, 1727]	1879	[2360, 276]	2702	[3154, 2870]
234	[445, 344]	1057	[1680, 1728]	1880	[2387, 2226]	2703	[1519, 3155]
235	[258, 446]	1058	[1729, 1730]	1881	[287, 980]	2704	[2744, 2995]
236	[447, 448]	1059	[1731, 1732]	1882	[1075, 1201]	2705	[1502, 1466]
237	[449, 99]	1060	[782, 591]	1883	[2582, 2250]	2706	[1463, 1858]
238	[450, 451]	1061	[1733, 1734]	1884	[2583, 2584]	2707	[812, 648]
239	[452, 332]	1062	[1735, 1736]	1885	[2585, 2586]	2708	[2915, 3040]
240	[453, 454]	1063	[1737, 1738]	1886	[2210, 2587]	2709	[3050, 3156]
241	[455, 456]	1064	[1739, 1740]	1887	[2588, 1374]	2710	[235, 3025]
242	[457, 458]	1065	[1741, 1742]	1888	[2589, 2334]	2711	[1531, 3157]
243	[459, 406]	1066	[1743, 1744]	1889	[2450, 2271]	2712	[1513, 3158]
244	[460, 461]	1067	[1745, 1746]	1890	[442, 2590]	2713	[3020, 1980]
245	[462, 463]	1068	[1747, 1748]	1891	[1416, 1438]	2714	[2966, 2877]
246	[464, 465]	1069	[1749, 1750]	1892	[2591, 2592]	2715	[1803, 3159]
247	[466, 467]	1070	[1751, 1752]	1893	[2593, 2594]	2716	[3032, 1970]
248	[468, 469]	1071	[1753, 1754]	1894	[2595, 2596]	2717	[2062, 3160]
249	[470, 471]	1072	[1755, 1756]	1895	[2346, 2597]	2718	[3161, 2807]
250	[472, 473]	1073	[1757, 157]	1896	[381, 1034]	2719	[3162, 3127]
251	[474, 475]	1074	[1758, 1759]	1897	[2598, 2599]	2720	[3163, 3164]
252	[476, 477]	1075	[1760, 128]	1898	[2322, 2438]	2721	[3106, 1791]
253	[478, 479]	1076	[1761, 1762]	1899	[2557, 2600]	2722	[3165, 1575]
254	[480, 481]	1077	[1763, 1764]	1900	[2351, 2188]	2723	[3166, 599]
255	[482, 483]	1078	[1765, 1766]	1901	[2527, 2601]	2724	[3167, 2821]
256	[484, 33]	1079	[737, 1767]	1902	[337, 1406]	2725	[3018, 2765]
257	[485, 486]	1080	[1768, 1769]	1903	[1164, 2490]	2726	[3168, 809]
258	[487, 488]	1081	[1770, 1771]	1904	[421, 2602]	2727	[1767, 553]
259	[489, 490]	1082	[1772, 1685]	1905	[2235, 2562]	2728	[3083, 3169]
260	[491, 492]	1083	[502, 1697]	1906	[2603, 2212]	2729	[1542, 1886]
261	[493, 494]	1084	[821, 551]	1907	[1085, 1355]	2730	[3170, 3124]
262	[495, 496]	1085	[1773, 1774]	1908	[2604, 2600]	2731	[3171, 2766]

263	[497, 498]	1086	[1775, 1776]	1909	[2219, 1245]	2732	[1923, 3063]
264	[499, 500]	1087	[1719, 1777]	1910	[1435, 110]	2733	[3172, 2971]
265	[501, 502]	1088	[1778, 1779]	1911	[1241, 314]	2734	[3173, 1667]
266	[503, 504]	1089	[1750, 1470]	1912	[1269, 420]	2735	[2857, 2784]
267	[190, 505]	1090	[1509, 1780]	1913	[1407, 1177]	2736	[3174, 2209]
268	[506, 161]	1091	[1781, 1782]	1914	[2605, 87]	2737	[1008, 1142]
269	[507, 508]	1092	[723, 1720]	1915	[428, 923]	2738	[2629, 2614]
270	[509, 510]	1093	[721, 1783]	1916	[2264, 2606]	2739	[2419, 1365]
271	[511, 512]	1094	[1784, 501]	1917	[2607, 2608]	2740	[1288, 2448]
272	[513, 514]	1095	[1785, 1671]	1918	[2609, 2610]	2741	[433, 2199]
273	[515, 178]	1096	[1786, 8]	1919	[2371, 2611]	2742	[2312, 363]
274	[516, 517]	1097	[575, 1787]	1920	[2382, 2612]	2743	[3175, 281]
275	[518, 519]	1098	[1788, 1479]	1921	[958, 2559]	2744	[1024, 3176]
276	[520, 521]	1099	[1789, 1790]	1922	[291, 1315]	2745	[1076, 1202]
277	[522, 213]	1100	[1791, 1792]	1923	[2549, 2601]	2746	[883, 88]
278	[523, 524]	1101	[1793, 193]	1924	[1189, 2613]	2747	[1350, 3177]
279	[525, 526]	1102	[1794, 53]	1925	[277, 359]	2748	[2492, 3178]
280	[527, 528]	1103	[202, 1795]	1926	[938, 2614]	2749	[2679, 2613]
281	[529, 530]	1104	[473, 1796]	1927	[2615, 2356]	2750	[3179, 3180]
282	[531, 532]	1105	[1797, 1798]	1928	[420, 1060]	2751	[1341, 2644]
283	[533, 534]	1106	[1799, 1800]	1929	[951, 2480]	2752	[2581, 2505]
284	[535, 536]	1107	[1801, 1603]	1930	[1402, 94]	2753	[1412, 435]
285	[537, 538]	1108	[1802, 1803]	1931	[1223, 307]	2754	[931, 375]
286	[539, 540]	1109	[1804, 828]	1932	[2616, 1234]	2755	[2271, 2443]
287	[541, 542]	1110	[733, 1773]	1933	[1062, 2617]	2756	[3181, 1386]
288	[543, 544]	1111	[1805, 613]	1934	[2608, 2618]	2757	[3182, 3183]
289	[545, 546]	1112	[1806, 560]	1935	[2619, 1417]	2758	[1408, 3184]
290	[547, 548]	1113	[239, 1807]	1936	[4, 2620]	2759	[1182, 877]
291	[549, 550]	1114	[1808, 776]	1937	[2301, 385]	2760	[1226, 251]
292	[551, 552]	1115	[1809, 1633]	1938	[891, 2453]	2761	[1133, 349]
293	[553, 554]	1116	[810, 1810]	1939	[2621, 306]	2762	[1443, 2635]
294	[555, 556]	1117	[183, 1811]	1940	[5, 2622]	2763	[1310, 1256]
295	[557, 489]	1118	[526, 1812]	1941	[1263, 1418]	2764	[2468, 1374]
296	[558, 559]	1119	[1813, 1814]	1942	[2273, 2623]	2765	[2716, 2703]
297	[560, 561]	1120	[1815, 1816]	1943	[1218, 104]	2766	[2302, 1149]
298	[562, 563]	1121	[1817, 1818]	1944	[2624, 2625]	2767	[3185, 66]
299	[564, 565]	1122	[1819, 1820]	1945	[2340, 2618]	2768	[3186, 905]
300	[566, 567]	1123	[1821, 1822]	1946	[104, 2301]	2769	[2589, 2322]
301	[568, 569]	1124	[1811, 1823]	1947	[1422, 396]	2770	[2405, 908]
302	[570, 571]	1125	[1824, 1825]	1948	[321, 2626]	2771	[259, 2487]
303	[572, 573]	1126	[743, 1826]	1949	[2411, 427]	2772	[2414, 1300]
304	[574, 575]	1127	[226, 564]	1950	[2406, 2627]	2773	[2517, 3187]
305	[576, 577]	1128	[1827, 1828]	1951	[2628, 1356]	2774	[19, 3188]
306	[578, 579]	1129	[1829, 1830]	1952	[2535, 2629]	2775	[3189, 2693]

307	[580, 581]	1130	[1831, 1832]	1953	[91, 2483]	2776	[3190, 2526]
308	[582, 583]	1131	[1833, 1834]	1954	[1070, 2630]	2777	[3191, 1142]
309	[584, 585]	1132	[1835, 660]	1955	[2631, 1102]	2778	[352, 2519]
310	[586, 587]	1133	[807, 1836]	1956	[2545, 2272]	2779	[3192, 430]
311	[588, 473]	1134	[158, 636]	1957	[93, 1403]	2780	[2533, 2586]
312	[589, 590]	1135	[1736, 1761]	1958	[2632, 2633]	2781	[3193, 2574]
313	[591, 592]	1136	[1837, 141]	1959	[1220, 2634]	2782	[2445, 1203]
314	[593, 594]	1137	[1838, 1839]	1960	[1322, 1363]	2783	[3194, 3195]
315	[595, 596]	1138	[1840, 817]	1961	[2451, 2635]	2784	[921, 2190]
316	[597, 598]	1139	[1841, 1842]	1962	[385, 2636]	2785	[884, 2561]
317	[599, 600]	1140	[1651, 225]	1963	[2428, 1291]	2786	[2570, 967]
318	[601, 602]	1141	[1843, 1844]	1964	[1258, 442]	2787	[3196, 1141]
319	[603, 604]	1142	[1776, 1845]	1965	[402, 2301]	2788	[1056, 1440]
320	[605, 606]	1143	[1663, 1846]	1966	[2637, 2638]	2789	[1200, 1098]
321	[607, 608]	1144	[1847, 707]	1967	[2574, 406]	2790	[1202, 1334]
322	[609, 610]	1145	[1787, 1848]	1968	[308, 2193]	2791	[2639, 2304]
323	[611, 612]	1146	[1487, 1541]	1969	[2639, 64]	2792	[3197, 2656]
324	[613, 614]	1147	[1849, 1786]	1970	[317, 2640]	2793	[944, 1319]
325	[615, 616]	1148	[1850, 1851]	1971	[1206, 2390]	2794	[3198, 2224]
326	[617, 618]	1149	[1852, 833]	1972	[83, 2641]	2795	[961, 2253]
327	[619, 620]	1150	[504, 1853]	1973	[2200, 2277]	2796	[358, 278]
328	[621, 234]	1151	[1674, 1854]	1974	[2642, 1264]	2797	[2355, 2692]
329	[622, 623]	1152	[1855, 1856]	1975	[2643, 2644]	2798	[1149, 450]
330	[624, 625]	1153	[1845, 1857]	1976	[1390, 1224]	2799	[937, 2629]
331	[626, 627]	1154	[1858, 240]	1977	[2645, 2571]	2800	[1024, 2335]
332	[628, 629]	1155	[1859, 1860]	1978	[1079, 1304]	2801	[275, 870]
333	[630, 631]	1156	[1620, 1831]	1979	[386, 1260]	2802	[1106, 350]
334	[632, 633]	1157	[1861, 1862]	1980	[2278, 2426]	2803	[990, 1359]
335	[634, 635]	1158	[1863, 1864]	1981	[1255, 2646]	2804	[916, 2484]
336	[636, 637]	1159	[567, 1865]	1982	[2442, 125]	2805	[2598, 3199]
337	[638, 639]	1160	[245, 1866]	1983	[2442, 1043]	2806	[2687, 1085]
338	[640, 641]	1161	[1867, 184]	1984	[929, 1249]	2807	[2246, 3200]
339	[642, 643]	1162	[1868, 1749]	1985	[1167, 2647]	2808	[971, 3201]
340	[644, 645]	1163	[1869, 1870]	1986	[265, 1046]	2809	[3202, 3203]
341	[646, 647]	1164	[1871, 1449]	1987	[2648, 2411]	2810	[2338, 3204]
342	[648, 649]	1165	[832, 1872]	1988	[2209, 2649]	2811	[2294, 1366]
343	[510, 650]	1166	[1873, 1874]	1989	[2650, 1226]	2812	[2590, 392]
344	[651, 652]	1167	[579, 133]	1990	[2629, 2651]	2813	[350, 2573]
345	[653, 654]	1168	[1875, 1876]	1991	[2652, 2524]	2814	[327, 2720]
346	[655, 539]	1169	[1877, 506]	1992	[333, 2383]	2815	[2523, 3205]
347	[656, 657]	1170	[1878, 1879]	1993	[2505, 1268]	2816	[325, 2504]
348	[658, 659]	1171	[1880, 1881]	1994	[2653, 2617]	2817	[2609, 2514]
349	[660, 661]	1172	[1882, 1883]	1995	[1088, 2284]	2818	[2539, 1175]
350	[662, 663]	1173	[1884, 1885]	1996	[905, 872]	2819	[1336, 1329]

351	[664, 665]	1174	[1886, 688]	1997	[2281, 2654]	2820	[2243, 325]
352	[666, 667]	1175	[1707, 1887]	1998	[2603, 963]	2821	[3206, 947]
353	[668, 669]	1176	[1888, 1889]	1999	[2222, 2475]	2822	[967, 3207]
354	[670, 671]	1177	[1890, 1891]	2000	[2655, 2656]	2823	[3208, 2456]
355	[672, 673]	1178	[1892, 1893]	2001	[2238, 2421]	2824	[3209, 2506]
356	[674, 675]	1179	[1894, 231]	2002	[104, 384]	2825	[2422, 2546]
357	[676, 677]	1180	[1592, 244]	2003	[1055, 2642]	2826	[3210, 1412]
358	[678, 679]	1181	[1594, 1895]	2004	[1221, 2657]	2827	[2437, 2717]
359	[680, 681]	1182	[1896, 1897]	2005	[1322, 457]	2828	[346, 2386]
360	[682, 683]	1183	[1844, 651]	2006	[2571, 2505]	2829	[2721, 2240]
361	[684, 685]	1184	[1688, 1898]	2007	[2658, 2659]	2830	[1003, 95]
362	[686, 687]	1185	[1899, 1900]	2008	[2660, 2661]	2831	[1102, 1238]
363	[688, 689]	1186	[1851, 1901]	2009	[1229, 82]	2832	[2668, 105]
364	[690, 691]	1187	[1902, 186]	2010	[2662, 2352]	2833	[3175, 982]
365	[692, 693]	1188	[1665, 1903]	2011	[119, 1082]	2834	[1007, 2663]
366	[694, 695]	1189	[1904, 1781]	2012	[2402, 2663]	2835	[3211, 926]
367	[696, 180]	1190	[1495, 1905]	2013	[1234, 2664]	2836	[1017, 2701]
368	[697, 698]	1191	[1906, 1907]	2014	[2665, 2458]	2837	[3212, 3213]
369	[699, 499]	1192	[1507, 1908]	2015	[2357, 1197]	2838	[1132, 348]
370	[700, 47]	1193	[1909, 574]	2016	[1159, 471]	2839	[3192, 2456]
371	[701, 702]	1194	[1910, 1911]	2017	[1021, 1005]	2840	[2445, 989]
372	[703, 704]	1195	[179, 1912]	2018	[2308, 1408]	2841	[3214, 2671]
373	[705, 706]	1196	[524, 1548]	2019	[2408, 1321]	2842	[2404, 344]
374	[707, 708]	1197	[134, 1913]	2020	[1020, 1057]	2843	[339, 2385]
375	[709, 710]	1198	[1912, 1914]	2021	[1311, 1071]	2844	[877, 2556]
376	[711, 712]	1199	[1915, 1788]	2022	[2666, 2342]	2845	[2645, 2581]
377	[713, 189]	1200	[1754, 1916]	2023	[2667, 6]	2846	[3185, 2210]
378	[714, 715]	1201	[1917, 1918]	2024	[1174, 2612]	2847	[3215, 3195]
379	[228, 716]	1202	[1919, 1920]	2025	[1225, 2295]	2848	[3216, 1064]
380	[717, 718]	1203	[1921, 1922]	2026	[2397, 2215]	2849	[2509, 2454]
381	[148, 719]	1204	[1842, 1923]	2027	[2562, 261]	2850	[3217, 946]
382	[720, 721]	1205	[1924, 1925]	2028	[371, 23]	2851	[1202, 2466]
383	[722, 723]	1206	[650, 1926]	2029	[1414, 2260]	2852	[310, 1173]
384	[724, 725]	1207	[490, 1927]	2030	[1078, 2642]	2853	[3218, 1153]
385	[206, 726]	1208	[1652, 1928]	2031	[2509, 2668]	2854	[3191, 85]
386	[649, 727]	1209	[1929, 1930]	2032	[124, 1159]	2855	[3219, 941]
387	[728, 729]	1210	[1931, 236]	2033	[1302, 910]	2856	[366, 1398]
388	[730, 731]	1211	[1648, 1932]	2034	[2351, 2475]	2857	[3220, 2527]
389	[732, 733]	1212	[1933, 1934]	2035	[2619, 1438]	2858	[2232, 441]
390	[734, 735]	1213	[208, 1935]	2036	[1276, 368]	2859	[2652, 3205]
391	[736, 737]	1214	[508, 1725]	2037	[2626, 2669]	2860	[3208, 430]
392	[738, 739]	1215	[1936, 1878]	2038	[89, 2670]	2861	[440, 2712]
393	[740, 741]	1216	[534, 1647]	2039	[2575, 1076]	2862	[1290, 460]
394	[742, 743]	1217	[1937, 232]	2040	[954, 1151]	2863	[3198, 2434]

395	[744, 745]	1218	[1938, 813]	2041	[285, 2671]	2864	[2726, 1321]
396	[746, 747]	1219	[1939, 861]	2042	[2672, 78]	2865	[3193, 459]
397	[748, 11]	1220	[1940, 1941]	2043	[2412, 1435]	2866	[459, 1306]
398	[749, 750]	1221	[1524, 1942]	2044	[2673, 1283]	2867	[1033, 125]
399	[54, 751]	1222	[581, 1943]	2045	[2256, 2674]	2868	[2537, 2565]
400	[752, 558]	1223	[1641, 1944]	2046	[1426, 2428]	2869	[3221, 1178]
401	[753, 754]	1224	[1503, 1945]	2047	[2317, 2484]	2870	[1356, 319]
402	[755, 756]	1225	[1742, 1757]	2048	[1415, 2675]	2871	[926, 2266]
403	[757, 758]	1226	[142, 1758]	2049	[1254, 1019]	2872	[316, 2594]
404	[154, 759]	1227	[1946, 1947]	2050	[2676, 2677]	2873	[2230, 2446]
405	[760, 595]	1228	[164, 1948]	2051	[2221, 2351]	2874	[3222, 3223]
406	[761, 762]	1229	[1949, 1950]	2052	[950, 2678]	2875	[1115, 3224]
407	[763, 764]	1230	[1951, 1952]	2053	[2679, 1190]	2876	[2265, 1087]
408	[237, 195]	1231	[1953, 1954]	2054	[1309, 2657]	2877	[2594, 2640]
409	[765, 766]	1232	[860, 1955]	2055	[2680, 2670]	2878	[2500, 2521]
410	[767, 203]	1233	[1956, 1468]	2056	[1331, 1149]	2879	[3218, 3225]
411	[768, 769]	1234	[1957, 1958]	2057	[335, 2681]	2880	[2245, 1183]
412	[770, 771]	1235	[1872, 672]	2058	[1096, 2680]	2881	[2479, 2611]
413	[772, 773]	1236	[1959, 1960]	2059	[1107, 2682]	2882	[1415, 467]
414	[774, 775]	1237	[1961, 1931]	2060	[2364, 2683]	2883	[1367, 900]
415	[776, 568]	1238	[735, 1962]	2061	[2608, 2341]	2884	[2197, 3213]
416	[777, 778]	1239	[1963, 1964]	2062	[1157, 2684]	2885	[3226, 2531]
417	[128, 611]	1240	[1965, 153]	2063	[2392, 2685]	2886	[2499, 2371]
418	[779, 780]	1241	[136, 1966]	2064	[1211, 1317]	2887	[1173, 2382]
419	[781, 782]	1242	[1870, 1967]	2065	[2230, 879]	2888	[2409, 2647]
420	[783, 784]	1243	[1968, 1969]	2066	[2471, 2459]	2889	[3206, 2282]
421	[785, 786]	1244	[1970, 1971]	2067	[1039, 2319]	2890	[2510, 2437]
422	[787, 788]	1245	[1488, 1569]	2068	[465, 1437]	2891	[3227, 1126]
423	[789, 770]	1246	[556, 1972]	2069	[1329, 2686]	2892	[269, 409]
424	[790, 791]	1247	[1766, 1973]	2070	[2687, 1140]	2893	[289, 1213]
425	[792, 793]	1248	[1865, 1974]	2071	[348, 2511]	2894	[2281, 1068]
426	[794, 795]	1249	[1544, 697]	2072	[2564, 2538]	2895	[3228, 1337]
427	[745, 796]	1250	[1975, 1794]	2073	[2688, 1410]	2896	[407, 391]
428	[797, 798]	1251	[1976, 1977]	2074	[2582, 1058]	2897	[3220, 2549]
429	[799, 800]	1252	[538, 1880]	2075	[2433, 894]	2898	[1015, 2674]
430	[801, 491]	1253	[1978, 1979]	2076	[2650, 2295]	2899	[1364, 2420]
431	[542, 802]	1254	[1980, 1681]	2077	[2689, 2492]	2900	[2673, 2191]
432	[803, 804]	1255	[1981, 1982]	2078	[2690, 2691]	2901	[288, 2536]
433	[805, 757]	1256	[718, 705]	2079	[2615, 2692]	2902	[1144, 2495]
434	[806, 807]	1257	[1983, 709]	2080	[2336, 2693]	2903	[3229, 2435]
435	[796, 808]	1258	[647, 701]	2081	[1283, 2694]	2904	[1270, 1066]
436	[809, 810]	1259	[1727, 1808]	2082	[2695, 2579]	2905	[1119, 1354]
437	[811, 812]	1260	[1984, 229]	2083	[920, 1130]	2906	[3194, 3230]
438	[813, 814]	1261	[727, 1985]	2084	[2460, 892]	2907	[2729, 905]

439	[815, 57]	1262	[1986, 703]	2085	[2696, 2697]	2908	[2605, 883]
440	[719, 816]	1263	[1764, 207]	2086	[1124, 1329]	2909	[2374, 2562]
441	[817, 818]	1264	[1987, 13]	2087	[870, 2214]	2910	[410, 3231]
442	[819, 820]	1265	[1988, 1989]	2088	[982, 2698]	2911	[2402, 1168]
443	[194, 547]	1266	[1990, 1991]	2089	[2241, 424]	2912	[2506, 2709]
444	[702, 821]	1267	[1992, 1993]	2090	[1129, 921]	2913	[3232, 1340]
445	[822, 823]	1268	[1994, 1995]	2091	[1417, 1439]	2914	[2518, 353]
446	[824, 825]	1269	[1996, 1997]	2092	[945, 2699]	2915	[2584, 3178]
447	[826, 827]	1270	[1654, 1733]	2093	[1261, 2667]	2916	[2576, 117]
448	[828, 829]	1271	[1998, 1999]	2094	[2502, 1404]	2917	[3233, 2282]
449	[830, 197]	1272	[1460, 1713]	2095	[2700, 1310]	2918	[2578, 3234]
450	[831, 832]	1273	[2000, 2001]	2096	[1345, 2701]	2919	[123, 301]
451	[833, 834]	1274	[2002, 830]	2097	[1299, 376]	2920	[409, 1214]
452	[835, 582]	1275	[685, 2003]	2098	[2702, 2322]	2921	[2494, 1145]
453	[836, 837]	1276	[747, 2004]	2099	[2282, 2324]	2922	[3197, 3235]
454	[838, 839]	1277	[2005, 607]	2100	[1127, 2703]	2923	[364, 68]
455	[778, 221]	1278	[1783, 2006]	2101	[2704, 2488]	2924	[2719, 1067]
456	[800, 840]	1279	[2007, 2008]	2102	[2449, 1141]	2925	[2450, 21]
457	[841, 842]	1280	[2009, 1998]	2103	[2705, 2230]	2926	[1187, 1352]
458	[233, 843]	1281	[546, 535]	2104	[2556, 2706]	2927	[1147, 2681]
459	[844, 724]	1282	[1610, 474]	2105	[2707, 2213]	2928	[3217, 2699]
460	[845, 846]	1283	[1934, 1827]	2106	[2549, 2528]	2929	[2482, 92]
461	[847, 848]	1284	[2010, 2011]	2107	[2668, 378]	2930	[1382, 1032]
462	[849, 850]	1285	[2012, 2013]	2108	[1208, 2256]	2931	[2353, 265]
463	[851, 852]	1286	[2014, 2015]	2109	[2680, 90]	2932	[271, 2396]
464	[853, 684]	1287	[804, 576]	2110	[964, 1106]	2933	[87, 2532]
465	[854, 855]	1288	[1966, 39]	2111	[2708, 2709]	2934	[1353, 1120]
466	[856, 630]	1289	[2016, 2017]	2112	[1038, 314]	2935	[108, 1163]
467	[857, 858]	1290	[2018, 215]	2113	[1294, 1019]	2936	[2643, 1342]
468	[859, 860]	1291	[1962, 2019]	2114	[118, 2428]	2937	[2690, 2288]
469	[861, 862]	1292	[1866, 507]	2115	[120, 2710]	2938	[2329, 2462]
470	[863, 864]	1293	[2020, 1679]	2116	[438, 303]	2939	[3236, 3237]
471	[865, 866]	1294	[2021, 2022]	2117	[2574, 1306]	2940	[1108, 1390]
472	[867, 70]	1295	[2023, 644]	2118	[1141, 2711]	2941	[2326, 2578]
473	[868, 869]	1296	[2024, 2025]	2119	[1303, 1003]	2942	[1332, 4]
474	[870, 871]	1297	[1856, 621]	2120	[911, 2712]	2943	[2331, 1427]
475	[872, 873]	1298	[2026, 2027]	2121	[1241, 1287]	2944	[2426, 2669]
476	[874, 875]	1299	[2028, 1984]	2122	[2418, 2713]	2945	[2585, 2534]
477	[876, 877]	1300	[1948, 1566]	2123	[1097, 2714]	2946	[2606, 2253]
478	[878, 879]	1301	[2029, 1512]	2124	[1390, 2715]	2947	[384, 1041]
479	[429, 880]	1302	[691, 1514]	2125	[2244, 2578]	2948	[2722, 3238]
480	[881, 64]	1303	[2030, 572]	2126	[2304, 2233]	2949	[1070, 2678]
481	[882, 883]	1304	[762, 2031]	2127	[2508, 2401]	2950	[912, 1337]
482	[884, 885]	1305	[1711, 1949]	2128	[2716, 1128]	2951	[2592, 2566]

483	[886, 887]	1306	[2032, 2023]	2129	[2628, 318]	2952	[2290, 3210]
484	[888, 889]	1307	[850, 1963]	2130	[929, 397]	2953	[2229, 878]
485	[890, 891]	1308	[2004, 2033]	2131	[1117, 2384]	2954	[3239, 982]
486	[322, 892]	1309	[152, 1506]	2132	[2454, 105]	2955	[1136, 3238]
487	[893, 894]	1310	[2034, 1753]	2133	[1114, 2308]	2956	[2502, 3201]
488	[895, 896]	1311	[2035, 2036]	2134	[2209, 2717]	2957	[1217, 103]
489	[897, 898]	1312	[2037, 1461]	2135	[1358, 991]	2958	[461, 28]
490	[899, 900]	1313	[2038, 2039]	2136	[2672, 909]	2959	[381, 3210]
491	[901, 902]	1314	[2040, 2041]	2137	[2718, 2250]	2960	[470, 1160]
492	[903, 904]	1315	[2042, 2043]	2138	[995, 906]	2961	[2631, 2296]
493	[905, 906]	1316	[2044, 2045]	2139	[2719, 2281]	2962	[1005, 2423]
494	[907, 908]	1317	[554, 1938]	2140	[1326, 2720]	2963	[2409, 3240]
495	[77, 909]	1318	[1658, 248]	2141	[423, 2242]	2964	[1306, 438]
496	[910, 911]	1319	[756, 2046]	2142	[2721, 1030]	2965	[2730, 2506]
497	[912, 913]	1320	[1567, 2047]	2143	[2345, 2526]	2966	[1324, 2641]
498	[914, 915]	1321	[2022, 2048]	2144	[2722, 1137]	2967	[2464, 1200]
499	[916, 917]	1322	[2049, 752]	2145	[1437, 1039]	2968	[390, 408]
500	[918, 919]	1323	[1807, 169]	2146	[2723, 2685]	2969	[1147, 336]
501	[920, 921]	1324	[2050, 1689]	2147	[943, 98]	2970	[25, 1261]
502	[922, 923]	1325	[2051, 1899]	2148	[2724, 2725]	2971	[1050, 2442]
503	[924, 925]	1326	[2052, 2053]	2149	[1160, 1031]	2972	[924, 940]
504	[926, 927]	1327	[2054, 485]	2150	[2296, 1322]	2973	[897, 1158]
505	[928, 929]	1328	[2055, 2056]	2151	[2699, 2726]	2974	[2588, 291]
506	[930, 318]	1329	[1822, 1868]	2152	[126, 2727]	2975	[2250, 1059]
507	[931, 932]	1330	[1823, 2057]	2153	[1247, 1433]	2976	[2408, 1048]
508	[933, 934]	1331	[2058, 2059]	2154	[1005, 2509]	2977	[1078, 1263]
509	[935, 936]	1332	[671, 2060]	2155	[1109, 2715]	2978	[2718, 1058]
510	[937, 938]	1333	[1471, 794]	2156	[2258, 2465]	2979	[1019, 1056]
511	[939, 940]	1334	[1918, 2061]	2157	[2594, 2728]	2980	[1374, 292]
512	[941, 942]	1335	[1864, 9]	2158	[2592, 2469]	2981	[2591, 936]
513	[943, 944]	1336	[1779, 2062]	2159	[115, 368]	2982	[976, 2309]
514	[945, 946]	1337	[512, 2014]	2160	[1399, 2686]	2983	[2626, 2427]
515	[947, 948]	1338	[2063, 2064]	2161	[2729, 995]	2984	[2580, 2571]
516	[949, 950]	1339	[2065, 774]	2162	[1326, 1185]	2985	[2204, 446]
517	[951, 952]	1340	[1560, 2066]	2163	[1055, 1263]	2986	[1001, 3187]
518	[953, 954]	1341	[2067, 2068]	2164	[2363, 1183]	2987	[953, 1150]
519	[430, 955]	1342	[2069, 525]	2165	[2730, 2708]	2988	[463, 2278]
520	[341, 956]	1343	[2070, 787]	2166	[2271, 22]	2989	[2581, 1267]
521	[957, 268]	1344	[1555, 2071]	2167	[2413, 311]	2990	[276, 871]
522	[958, 959]	1345	[2072, 2073]	2168	[1060, 1362]	2991	[1175, 3188]
523	[960, 961]	1346	[2074, 781]	2169	[2695, 284]	2992	[2662, 896]
524	[962, 963]	1347	[758, 2075]	2170	[2726, 1048]	2993	[1335, 1124]
525	[964, 965]	1348	[695, 1494]	2171	[75, 2199]	2994	[906, 873]
526	[966, 967]	1349	[2076, 187]	2172	[2731, 2732]	2995	[2215, 2602]

527	[968, 969]	1350	[1448, 2077]	2173	[2454, 378]	2996	[2389, 1207]
528	[970, 971]	1351	[2078, 2079]	2174	[946, 2726]	2997	[2382, 2257]
529	[972, 973]	1352	[1528, 2080]	2175	[2733, 1032]	2998	[913, 2457]
530	[974, 975]	1353	[2081, 145]	2176	[2734, 1388]	2999	[1012, 2547]
531	[976, 977]	1354	[2082, 2083]	2177	[433, 76]	3000	[2554, 2633]
532	[978, 979]	1355	[2084, 2021]	2178	[97, 944]	3001	[2342, 1307]
533	[980, 981]	1356	[602, 2085]	2179	[2713, 2735]	3002	[1161, 1328]
534	[982, 282]	1357	[2086, 2087]	2180	[2590, 23]	3003	[1321, 436]
535	[71, 983]	1358	[2088, 1815]	2181	[2699, 2408]	3004	[370, 2590]
536	[984, 985]	1359	[2089, 2090]	2182	[2736, 2059]	3005	[1300, 377]
537	[986, 987]	1360	[846, 2091]	2183	[2737, 632]	3006	[894, 1245]
538	[988, 989]	1361	[2092, 2093]	2184	[2738, 676]	3007	[2287, 2691]
539	[990, 991]	1362	[1762, 2094]	2185	[150, 760]	3008	[3215, 3230]
540	[992, 993]	1363	[2095, 753]	2186	[1916, 2739]	3009	[466, 2675]
541	[994, 348]	1364	[2096, 1559]	2187	[2740, 2741]	3010	[1038, 1287]
542	[995, 872]	1365	[48, 2097]	2188	[2742, 736]	3011	[2403, 1108]
543	[996, 997]	1366	[2098, 2099]	2189	[2743, 2744]	3012	[3227, 252]
544	[998, 999]	1367	[1901, 2100]	2190	[2745, 2746]	3013	[367, 2680]
545	[256, 1000]	1368	[2101, 2102]	2191	[2747, 1819]	3014	[3229, 1371]
546	[1001, 1002]	1369	[775, 2103]	2192	[1997, 1510]	3015	[73, 2186]
547	[377, 1003]	1370	[1969, 1687]	2193	[130, 2748]	3016	[3239, 281]
548	[1004, 1005]	1371	[2104, 2105]	2194	[2749, 2750]	3017	[2526, 2597]
549	[1006, 1007]	1372	[1825, 2106]	2195	[827, 2751]	3018	[281, 2698]
550	[1008, 85]	1373	[2107, 205]	2196	[1914, 2752]	3019	[2430, 2405]
551	[1009, 1010]	1374	[2108, 2044]	2197	[2753, 2754]	3020	[3241, 3199]
552	[1011, 466]	1375	[2109, 2110]	2198	[2755, 480]	3021	[1107, 3207]
553	[108, 891]	1376	[2111, 624]	2199	[2756, 2180]	3022	[450, 2620]
554	[1012, 1013]	1377	[1952, 1817]	2200	[2757, 2758]	3023	[2604, 2558]
555	[1014, 1015]	1378	[571, 2112]	2201	[2759, 1634]	3024	[268, 342]
556	[1016, 954]	1379	[741, 2113]	2202	[2760, 2761]	3025	[344, 2398]
557	[1017, 1018]	1380	[2114, 815]	2203	[2762, 2763]	3026	[3242, 2339]
558	[1019, 1020]	1381	[60, 2115]	2204	[2764, 173]	3027	[2247, 2510]
559	[1021, 1022]	1382	[2116, 2117]	2205	[2765, 728]	3028	[2303, 2435]
560	[1023, 1024]	1383	[561, 2118]	2206	[2766, 2767]	3029	[2632, 2555]
561	[1025, 988]	1384	[200, 520]	2207	[222, 1951]	3030	[1388, 910]
562	[1026, 351]	1385	[2119, 1873]	2208	[2768, 2769]	3031	[2489, 1165]
563	[1027, 367]	1386	[1458, 2095]	2209	[2770, 2755]	3032	[1183, 3200]
564	[429, 1028]	1387	[2120, 2121]	2210	[816, 1477]	3033	[3243, 1088]
565	[1029, 1030]	1388	[2122, 806]	2211	[132, 2771]	3034	[2567, 983]
566	[471, 1031]	1389	[1608, 1455]	2212	[2170, 2772]	3035	[3241, 2599]
567	[1032, 1033]	1390	[2123, 2124]	2213	[1498, 2026]	3036	[914, 2711]
568	[1034, 434]	1391	[2073, 1852]	2214	[1645, 2088]	3037	[317, 2728]
569	[1035, 1036]	1392	[2125, 2126]	2215	[2773, 1924]	3038	[3179, 2569]
570	[1037, 1038]	1393	[2106, 2127]	2216	[1830, 2774]	3039	[2416, 2479]

571	[1039, 1040]	1394	[2128, 2129]	2217	[2775, 1765]	3040	[3244, 357]
572	[1041, 1042]	1395	[1485, 2130]	2218	[1932, 2012]	3041	[2568, 3180]
573	[1033, 1043]	1396	[629, 2131]	2219	[2776, 2777]	3042	[2313, 969]
574	[1044, 1045]	1397	[2132, 51]	2220	[2778, 171]	3043	[2219, 874]
575	[1046, 1047]	1398	[2115, 2133]	2221	[2121, 2742]	3044	[1285, 1122]
576	[1048, 1049]	1399	[2059, 2134]	2222	[2779, 1841]	3045	[935, 2592]
577	[1050, 1033]	1400	[2135, 1849]	2223	[2780, 655]	3046	[3245, 1116]
578	[1051, 262]	1401	[687, 2136]	2224	[1728, 2781]	3047	[1090, 2311]
579	[1052, 1053]	1402	[1676, 1597]	2225	[1716, 2782]	3048	[3212, 2198]
580	[1054, 1055]	1403	[2137, 2138]	2226	[1853, 2783]	3049	[2350, 2222]
581	[1056, 1057]	1404	[2139, 1996]	2227	[2784, 1990]	3050	[3222, 2377]
582	[1058, 1059]	1405	[2140, 2141]	2228	[172, 2785]	3051	[252, 2520]
583	[1060, 1061]	1406	[2142, 2143]	2229	[2786, 653]	3052	[324, 986]
584	[1062, 1063]	1407	[2144, 1957]	2230	[492, 2050]	3053	[3209, 2708]
585	[1064, 1065]	1408	[1950, 2145]	2231	[2787, 2743]	3054	[325, 987]
586	[420, 1066]	1409	[2146, 2018]	2232	[2788, 2151]	3055	[2704, 2362]
587	[1067, 1068]	1410	[1600, 1601]	2233	[2789, 2790]	3056	[2702, 2334]
588	[1069, 1070]	1411	[2147, 1525]	2234	[2790, 2791]	3057	[1279, 3176]
589	[1071, 373]	1412	[2148, 2104]	2235	[627, 2760]	3058	[453, 2664]
590	[1072, 1011]	1413	[2149, 2150]	2236	[2792, 482]	3059	[2437, 2649]
591	[1073, 1074]	1414	[2151, 2152]	2237	[2793, 761]	3060	[960, 2606]
592	[1075, 1076]	1415	[1756, 1474]	2238	[138, 682]	3061	[266, 1232]
593	[1077, 1078]	1416	[2153, 2154]	2239	[2794, 2795]	3062	[356, 3246]
594	[1079, 95]	1417	[224, 1987]	2240	[825, 2796]	3063	[3232, 2525]
595	[1080, 1081]	1418	[1726, 1961]	2241	[2158, 2157]	3064	[1023, 1279]
596	[1082, 1083]	1419	[2155, 2156]	2242	[786, 2797]	3065	[17, 2195]
597	[1084, 1085]	1420	[2157, 1497]	2243	[2767, 2798]	3066	[1373, 2577]
598	[1086, 1087]	1421	[1893, 2158]	2244	[2799, 2800]	3067	[300, 124]
599	[1088, 1089]	1422	[2159, 2032]	2245	[2801, 2802]	3068	[3186, 995]
600	[1090, 1091]	1423	[1881, 1715]	2246	[652, 801]	3069	[2705, 878]
601	[1092, 1093]	1424	[2160, 2161]	2247	[1889, 2770]	3070	[1200, 2714]
602	[1094, 1095]	1425	[2162, 1806]	2248	[2803, 1778]	3071	[1025, 2445]
603	[1096, 89]	1426	[2163, 1940]	2249	[2804, 2805]	3072	[972, 3177]
604	[1097, 1098]	1427	[2164, 2165]	2250	[2758, 2806]	3073	[1261, 5]
605	[894, 874]	1428	[1587, 1545]	2251	[2807, 638]	3074	[2283, 409]
606	[1099, 1100]	1429	[2166, 2167]	2252	[1646, 2808]	3075	[968, 2314]
607	[1101, 1102]	1430	[1926, 1784]	2253	[1897, 711]	3076	[2201, 1283]
608	[457, 400]	1431	[2168, 626]	2254	[550, 1855]	3077	[1393, 2286]
609	[99, 1103]	1432	[1818, 2169]	2255	[210, 2775]	3078	[933, 919]
610	[463, 321]	1433	[2152, 2170]	2256	[1832, 2809]	3079	[938, 2651]
611	[251, 1104]	1434	[1973, 2171]	2257	[2810, 2811]	3080	[2298, 2412]
612	[1105, 1106]	1435	[2172, 1729]	2258	[1493, 1743]	3081	[1280, 346]
613	[966, 1107]	1436	[2173, 2174]	2259	[2812, 755]	3082	[264, 387]
614	[1108, 1109]	1437	[2175, 1708]	2260	[2176, 2120]	3083	[2723, 2393]

615	[1110, 1111]	1438	[496, 2176]	2261	[2813, 1649]	3084	[2294, 1065]
616	[1112, 1113]	1439	[2154, 859]	2262	[2814, 2815]	3085	[1167, 3240]
617	[1114, 1051]	1440	[1702, 1890]	2263	[166, 2816]	3086	[1347, 3234]
618	[1115, 1116]	1441	[814, 2177]	2264	[862, 223]	3087	[109, 1436]
619	[1117, 1118]	1442	[2178, 1869]	2265	[2817, 799]	3088	[3233, 947]
620	[1119, 1120]	1443	[1944, 2179]	2266	[2818, 2819]	3089	[3181, 386]
621	[1121, 1122]	1444	[2180, 2181]	2267	[2100, 2820]	3090	[2606, 1180]
622	[1123, 1124]	1445	[2182, 1124]	2268	[2169, 165]	3091	[1423, 120]
623	[1125, 1126]	1446	[2183, 1398]	2269	[2821, 1660]	3092	[2653, 1063]
624	[1127, 1128]	1447	[2184, 1091]	2270	[1752, 664]	3093	[1400, 2400]
625	[1129, 1130]	1448	[2185, 2186]	2271	[2822, 1669]	3094	[326, 1326]
626	[1131, 1096]	1449	[1036, 1311]	2272	[2823, 2824]	3095	[3244, 3246]
627	[1132, 1133]	1450	[2187, 1013]	2273	[2825, 2826]	3096	[3189, 2337]
628	[1134, 1135]	1451	[2188, 2189]	2274	[2827, 1805]	3097	[2584, 2493]
629	[1136, 1137]	1452	[1130, 2190]	2275	[2828, 2829]	3098	[2491, 980]
630	[1138, 1139]	1453	[2191, 1284]	2276	[2830, 700]	3099	[2308, 262]
631	[1084, 1140]	1454	[2192, 2193]	2277	[710, 2831]	3100	[2394, 1427]
632	[1141, 915]	1455	[2194, 2195]	2278	[2017, 2832]	3101	[1212, 290]
633	[1142, 1143]	1456	[1391, 2196]	2279	[188, 43]	3102	[1009, 2627]
634	[1144, 1145]	1457	[2197, 2198]	2280	[2833, 2834]	3103	[1219, 1291]
635	[1146, 1147]	1458	[2199, 2200]	2281	[1515, 692]	3104	[16, 898]
636	[1148, 907]	1459	[2201, 2191]	2282	[2835, 2836]	3105	[442, 371]
637	[1149, 4]	1460	[260, 2202]	2283	[1710, 2837]	3106	[2456, 955]
638	[1150, 1151]	1461	[1072, 1361]	2284	[2838, 515]	3107	[1073, 1104]
639	[1152, 1153]	1462	[2203, 1195]	2285	[2771, 640]	3108	[2191, 2694]
640	[1154, 1155]	1463	[2204, 259]	2286	[2127, 2839]	3109	[1152, 3225]
641	[445, 1156]	1464	[2205, 2206]	2287	[2840, 2142]	3110	[452, 2465]
642	[1157, 869]	1465	[2207, 2208]	2288	[2841, 2842]	3111	[1276, 116]
643	[16, 1158]	1466	[274, 2209]	2289	[1730, 2843]	3112	[1014, 2256]
644	[1159, 1160]	1467	[2210, 2211]	2290	[2844, 2148]	3113	[408, 943]
645	[1054, 1078]	1468	[962, 2212]	2291	[1848, 854]	3114	[2192, 309]
646	[1161, 1162]	1469	[2213, 79]	2292	[1746, 1476]	3115	[2395, 272]
647	[1163, 304]	1470	[332, 2192]	2293	[2845, 2846]	3116	[877, 113]
648	[1164, 1165]	1471	[276, 2214]	2294	[2847, 2848]	3117	[967, 2682]
649	[1166, 1167]	1472	[1343, 2215]	2295	[635, 2810]	3118	[2453, 1242]
650	[1007, 1168]	1473	[921, 2216]	2296	[2826, 841]	3119	[465, 361]
651	[1169, 1170]	1474	[2217, 2218]	2297	[2849, 2850]	3120	[2577, 1426]
652	[1171, 1172]	1475	[893, 2219]	2298	[1907, 2172]	3121	[1439, 1247]
653	[1173, 1174]	1476	[2220, 977]	2299	[2851, 2852]	3122	[950, 2630]
654	[1175, 20]	1477	[2221, 2222]	2300	[1698, 2853]	3123	[1076, 1333]
655	[354, 1176]	1478	[2223, 2224]	2301	[204, 811]	3124	[3245, 3224]
656	[295, 1177]	1479	[923, 1028]	2302	[1564, 831]	3125	[2231, 1428]
657	[1178, 1179]	1480	[2225, 2226]	2303	[2854, 478]	3126	[2332, 2530]
658	[1180, 1181]	1481	[2227, 2228]	2304	[2855, 779]	3127	[318, 1357]

659	[1182, 297]	1482	[2229, 2230]	2305	[241, 2164]	3128	[913, 1338]
660	[1183, 1184]	1483	[2231, 1138]	2306	[2039, 2856]	3129	[3196, 914]
661	[327, 1185]	1484	[2232, 1258]	2307	[2033, 495]	3130	[441, 370]
662	[907, 1186]	1485	[1020, 1440]	2308	[1500, 2857]	3131	[868, 2684]
663	[4, 451]	1486	[2233, 418]	2309	[2031, 2858]	3132	[1067, 2654]
664	[1187, 1188]	1487	[1131, 367]	2310	[2079, 1884]	3133	[1427, 1138]
665	[887, 1176]	1488	[362, 2234]	2311	[2859, 2860]	3134	[2708, 2507]
666	[1189, 1190]	1489	[2235, 260]	2312	[2861, 2862]	3135	[2642, 1418]
667	[1191, 1192]	1490	[2236, 952]	2313	[2863, 1705]	3136	[1386, 1260]
668	[1193, 30]	1491	[2237, 459]	2314	[2806, 1906]	3137	[1350, 973]
669	[1194, 1195]	1492	[2238, 993]	2315	[2048, 1591]	3138	[2688, 2289]
670	[1196, 1197]	1493	[64, 417]	2316	[2864, 2865]	3139	[2318, 1040]
671	[1198, 1001]	1494	[446, 2239]	2317	[1602, 2757]	3140	[2375, 119]
672	[1199, 1200]	1495	[1029, 2240]	2318	[855, 1801]	3141	[2405, 1186]
673	[1201, 1202]	1496	[1323, 83]	2319	[2036, 2866]	3142	[1254, 1318]
674	[988, 1203]	1497	[2241, 2242]	2320	[2867, 201]	3143	[1272, 456]
675	[1204, 1205]	1498	[2243, 986]	2321	[2868, 1606]	3144	[2203, 2366]
676	[1206, 1207]	1499	[2244, 1347]	2322	[56, 2869]	3145	[1302, 439]
677	[1208, 1015]	1500	[2245, 2246]	2323	[2870, 674]	3146	[312, 448]
678	[1209, 340]	1501	[2247, 274]	2324	[1798, 2055]	3147	[2733, 1050]
679	[1178, 979]	1502	[65, 2210]	2325	[2836, 2871]	3148	[255, 1089]
680	[1210, 1211]	1503	[2248, 2249]	2326	[2872, 2873]	3149	[3190, 2346]
681	[1212, 1213]	1504	[2250, 2251]	2327	[2843, 578]	3150	[1085, 1250]
682	[270, 1214]	1505	[906, 2252]	2328	[1475, 2874]	3151	[270, 410]
683	[1215, 1216]	1506	[2253, 2254]	2329	[2875, 805]	3152	[1249, 1276]
684	[1217, 1218]	1507	[2255, 119]	2330	[1826, 2876]	3153	[2595, 426]
685	[1219, 1220]	1508	[2256, 1344]	2331	[2171, 159]	3154	[2444, 988]
686	[1221, 1222]	1509	[1234, 454]	2332	[2877, 2878]	3155	[2560, 885]
687	[1223, 1166]	1510	[1174, 2257]	2333	[2879, 2880]	3156	[82, 415]
688	[1109, 1224]	1511	[2258, 332]	2334	[1942, 523]	3157	[66, 2587]
689	[1225, 1226]	1512	[2259, 103]	2335	[2006, 2881]	3158	[103, 402]
690	[1086, 1227]	1513	[2260, 1433]	2336	[2882, 1677]	3159	[2517, 1002]
691	[82, 1228]	1514	[2261, 2262]	2337	[1920, 2845]	3160	[1135, 927]
692	[1229, 1230]	1515	[1228, 2263]	2338	[2883, 2847]	3161	[1016, 1150]
693	[1231, 1232]	1516	[2264, 961]	2339	[590, 2884]	3162	[3228, 913]
694	[1233, 1234]	1517	[2265, 1227]	2340	[2885, 1799]	3163	[2376, 3223]
695	[288, 981]	1518	[1135, 2266]	2341	[2886, 2887]	3164	[2272, 2713]
696	[1235, 354]	1519	[888, 2267]	2342	[679, 847]	3165	[2665, 975]
697	[1236, 1237]	1520	[2268, 2269]	2343	[2888, 37]	3166	[2513, 2610]
698	[1238, 457]	1521	[2270, 2271]	2344	[10, 2889]	3167	[948, 2325]
699	[440, 1239]	1522	[1058, 2251]	2345	[1499, 2890]	3168	[2577, 118]
700	[408, 97]	1523	[2272, 2273]	2346	[2085, 1843]	3169	[387, 1046]
701	[1240, 1241]	1524	[2274, 2275]	2347	[2889, 2891]	3170	[2503, 1178]
702	[304, 1242]	1525	[2276, 441]	2348	[2892, 2893]	3171	[251, 1074]

703	[1243, 1244]	1526	[1003, 1304]	2349	[2798, 2894]	3172	[125, 1255]
704	[1245, 1246]	1527	[403, 2277]	2350	[2047, 767]	3173	[2423, 2668]
705	[1247, 1248]	1528	[320, 2278]	2351	[2103, 2895]	3174	[3247, 2062]
706	[396, 1249]	1529	[2279, 2270]	2352	[2046, 2896]	3175	[3248, 3163]
707	[1140, 1250]	1530	[2280, 2281]	2353	[2112, 1457]	3176	[2802, 3249]
708	[1251, 1252]	1531	[2282, 948]	2354	[2897, 2898]	3177	[3028, 1797]
709	[1253, 1254]	1532	[2283, 270]	2355	[2876, 1523]	3178	[140, 1760]
710	[1043, 1255]	1533	[255, 2284]	2356	[2869, 678]	3179	[1913, 1986]
711	[1256, 372]	1534	[2285, 2286]	2357	[2899, 605]	3180	[1887, 2875]
712	[1257, 374]	1535	[2287, 2288]	2358	[631, 2899]	3181	[3250, 713]
713	[1258, 370]	1536	[1409, 2289]	2359	[2056, 1609]	3182	[3251, 1785]
714	[303, 1259]	1537	[2290, 1034]	2360	[2900, 1452]	3183	[2013, 3252]
715	[1260, 1261]	1538	[1327, 1162]	2361	[2901, 2828]	3184	[2954, 533]
716	[1262, 1011]	1539	[2291, 2292]	2362	[837, 2902]	3185	[3253, 41]
717	[1263, 1264]	1540	[2293, 2294]	2363	[2903, 2904]	3186	[2138, 1504]
718	[928, 396]	1541	[2280, 1067]	2364	[2905, 2906]	3187	[2891, 3123]
719	[1265, 1266]	1542	[2295, 251]	2365	[1883, 1875]	3188	[3054, 3134]
720	[1267, 1268]	1543	[1418, 1236]	2366	[44, 2907]	3189	[3254, 3030]
721	[1269, 1270]	1544	[2296, 1238]	2367	[771, 1616]	3190	[2908, 1631]
722	[1150, 1271]	1545	[375, 1443]	2368	[2167, 2908]	3191	[3255, 2794]
723	[1272, 1273]	1546	[2297, 2298]	2369	[1771, 2909]	3192	[2967, 1621]
724	[1274, 1193]	1547	[1199, 1097]	2370	[2110, 2801]	3193	[3256, 748]
725	[1071, 1275]	1548	[961, 1180]	2371	[2910, 1642]	3194	[1908, 2946]
726	[397, 1276]	1549	[2299, 2300]	2372	[2911, 2081]	3195	[3074, 2146]
727	[1277, 320]	1550	[2301, 1041]	2373	[2912, 2913]	3196	[2856, 2745]
728	[1278, 1279]	1551	[434, 1413]	2374	[623, 2086]	3197	[3079, 2089]
729	[1280, 1281]	1552	[29, 449]	2375	[2177, 1772]	3198	[3257, 2747]
730	[1066, 1061]	1553	[2302, 1332]	2376	[2914, 2915]	3199	[2124, 3027]
731	[1282, 1108]	1554	[2303, 1371]	2377	[1960, 2916]	3200	[2904, 3258]
732	[1283, 1284]	1555	[2304, 417]	2378	[1971, 2779]	3201	[1605, 2058]
733	[1285, 1286]	1556	[2305, 2306]	2379	[769, 2786]	3202	[2041, 1892]
734	[98, 443]	1557	[2307, 2308]	2380	[2815, 549]	3203	[1769, 1554]
735	[301, 470]	1558	[2220, 2309]	2381	[2917, 1530]	3204	[2959, 3259]
736	[1287, 1288]	1559	[2310, 2196]	2382	[2918, 1486]	3205	[1958, 3260]
737	[1289, 1290]	1560	[2184, 2311]	2383	[2873, 2912]	3206	[1656, 1692]
738	[1291, 1292]	1561	[1405, 338]	2384	[2846, 586]	3207	[1599, 1636]
739	[1249, 115]	1562	[2312, 2234]	2385	[1974, 2919]	3208	[3056, 1583]
740	[1293, 1294]	1563	[2313, 2314]	2386	[2893, 2920]	3209	[3261, 3023]
741	[438, 1295]	1564	[1124, 1399]	2387	[498, 2814]	3210	[2961, 2149]
742	[1296, 1297]	1565	[1049, 2315]	2388	[1623, 2921]	3211	[1670, 2818]
743	[1214, 1298]	1566	[2316, 2317]	2389	[1895, 1723]	3212	[3262, 1578]
744	[1260, 26]	1567	[2318, 2319]	2390	[2922, 2923]	3213	[3022, 2076]
745	[1299, 1300]	1568	[1043, 126]	2391	[2924, 2925]	3214	[3263, 2162]
746	[917, 1221]	1569	[30, 1381]	2392	[2926, 2927]	3215	[2874, 1909]

747	[1301, 1302]	1570	[2320, 916]	2393	[2019, 2928]	3216	[3110, 1741]
748	[1300, 1303]	1571	[2321, 1000]	2394	[50, 1840]	3217	[3264, 3168]
749	[1304, 1305]	1572	[2322, 2323]	2395	[2929, 619]	3218	[162, 2111]
750	[1306, 302]	1573	[2324, 2325]	2396	[750, 2930]	3219	[689, 2074]
751	[1290, 1307]	1574	[2326, 1347]	2397	[2931, 2932]	3220	[3265, 3115]
752	[116, 1308]	1575	[2327, 2328]	2398	[823, 2933]	3221	[3119, 1617]
753	[1309, 1222]	1576	[899, 1368]	2399	[2934, 1739]	3222	[3266, 3084]
754	[1310, 1311]	1577	[2329, 2330]	2400	[2935, 2936]	3223	[726, 3267]
755	[1218, 402]	1578	[2298, 427]	2401	[2937, 2938]	3224	[12, 3268]
756	[392, 1312]	1579	[447, 313]	2402	[2939, 2939]	3225	[3062, 3269]
757	[1313, 1314]	1580	[2331, 2231]	2403	[2940, 2123]	3226	[2739, 59]
758	[1315, 1316]	1581	[70, 1346]	2404	[2941, 2942]	3227	[3270, 3036]
759	[301, 1159]	1582	[2332, 2333]	2405	[848, 2943]	3228	[3271, 2063]
760	[294, 1317]	1583	[2295, 1073]	2406	[2944, 1838]	3229	[3272, 3057]
761	[1294, 1318]	1584	[2334, 2323]	2407	[2791, 2125]	3230	[40, 690]
762	[1319, 1320]	1585	[1279, 2335]	2408	[243, 738]	3231	[766, 3263]
763	[1321, 1049]	1586	[890, 1163]	2409	[708, 1745]	3232	[2118, 722]
764	[1102, 1322]	1587	[2336, 2337]	2410	[2945, 2773]	3233	[2099, 1572]
765	[1323, 1324]	1588	[2338, 2339]	2411	[2946, 55]	3234	[2800, 2738]
766	[1325, 1326]	1589	[2340, 2341]	2412	[2850, 2173]	3235	[1780, 3273]
767	[1327, 1328]	1590	[1077, 1055]	2413	[2126, 2918]	3236	[3252, 765]
768	[1329, 1330]	1591	[2342, 460]	2414	[2947, 2030]	3237	[1722, 2924]
769	[1331, 1332]	1592	[2343, 2344]	2415	[2948, 2949]	3238	[1552, 3274]
770	[923, 880]	1593	[2345, 2346]	2416	[2950, 2951]	3239	[3275, 531]
771	[1154, 1205]	1594	[1233, 453]	2417	[2952, 2825]	3240	[3003, 3276]
772	[1333, 1334]	1595	[2321, 257]	2418	[2953, 2954]	3241	[3277, 3145]
773	[1335, 1336]	1596	[2259, 1218]	2419	[2955, 2956]	3242	[3278, 634]
774	[1337, 1338]	1597	[2347, 1391]	2420	[230, 2957]	3243	[3088, 2838]
775	[1339, 1340]	1598	[2348, 1281]	2421	[1836, 135]	3244	[1732, 1481]
776	[1341, 1342]	1599	[2346, 2349]	2422	[2958, 2959]	3245	[3279, 1581]
777	[1343, 421]	1600	[2350, 2351]	2423	[1684, 1959]	3246	[2141, 3280]
778	[1015, 1344]	1601	[895, 2352]	2424	[1682, 2952]	3247	[3281, 1135]
779	[1345, 1018]	1602	[1230, 415]	2425	[2960, 2961]	3248	[957, 2213]
780	[941, 1346]	1603	[2353, 387]	2426	[683, 1451]	3249	[1126, 253]
781	[1226, 1073]	1604	[1027, 1096]	2427	[2832, 2962]	3250	[26, 2667]
782	[1347, 1348]	1605	[2354, 19]	2428	[1546, 2963]	3251	[2324, 2415]
783	[1349, 1350]	1606	[2355, 2356]	2429	[2964, 740]	3252	[3214, 286]
784	[1351, 1352]	1607	[2357, 2358]	2430	[2965, 2966]	3253	[922, 429]
785	[887, 355]	1608	[2359, 93]	2431	[1792, 2108]	3254	[394, 2486]
786	[1353, 1354]	1609	[2360, 870]	2432	[2161, 2967]	3255	[2255, 1423]
787	[1231, 267]	1610	[311, 1174]	2433	[192, 646]	3256	[1048, 436]
788	[1140, 1355]	1611	[2361, 2362]	2434	[843, 2968]	3257	[3242, 3204]
789	[1356, 1357]	1612	[2363, 2246]	2435	[2179, 149]	3258	[2435, 2544]
790	[1358, 1359]	1613	[2364, 2249]	2436	[1571, 2969]	3259	[918, 934]

791	[67, 365]	1614	[1439, 2260]	2437	[1834, 2069]	3260	[2185, 74]
792	[27, 1360]	1615	[1253, 1294]	2438	[2951, 2140]	3261	[2707, 268]
793	[1262, 1361]	1616	[2365, 83]	2439	[2970, 2092]	3262	[2200, 404]
794	[1066, 1362]	1617	[1194, 2366]	2440	[842, 1896]	3263	[1324, 84]
795	[419, 1270]	1618	[361, 2318]	2441	[2777, 789]	3264	[302, 1295]
796	[1363, 458]	1619	[2367, 2368]	2442	[2971, 1981]	3265	[1210, 294]
797	[81, 1230]	1620	[2369, 2370]	2443	[2972, 2973]	3266	[2248, 2683]
798	[1364, 1365]	1621	[1336, 1399]	2444	[2974, 1921]	3267	[1397, 1386]
799	[1064, 1366]	1622	[2371, 2372]	2445	[1954, 1859]	3268	[2276, 1258]
800	[1367, 1368]	1623	[2373, 889]	2446	[2942, 2975]	3269	[3226, 1192]
801	[1369, 1370]	1624	[455, 1273]	2447	[2976, 1484]	3270	[2593, 317]
802	[1371, 1372]	1625	[2374, 260]	2448	[594, 2977]	3271	[293, 1211]
803	[1318, 1020]	1626	[2222, 2188]	2449	[2978, 1521]	3272	[2616, 453]
804	[1373, 117]	1627	[2375, 1423]	2450	[1740, 2972]	3273	[2365, 1324]
805	[1374, 1315]	1628	[2376, 2377]	2451	[1549, 658]	3274	[425, 2596]
806	[1375, 1376]	1629	[2378, 2379]	2452	[2979, 580]	3275	[3221, 978]
807	[1179, 1377]	1630	[2380, 2381]	2453	[214, 2910]	3276	[1438, 1414]
808	[124, 470]	1631	[311, 2382]	2454	[1686, 209]	3277	[2451, 1444]
809	[1295, 1378]	1632	[1398, 2383]	2455	[1774, 2901]	3278	[2655, 3235]
810	[118, 1219]	1633	[280, 2384]	2456	[544, 1629]	3279	[2194, 18]
811	[394, 1379]	1634	[1209, 2385]	2457	[2932, 2980]	3280	[1278, 1024]
812	[306, 1166]	1635	[294, 2217]	2458	[1637, 2981]	3281	[3282, 1541]
813	[1380, 1262]	1636	[1281, 2386]	2459	[659, 2982]	3282	[3283, 2295]
814	[1381, 1103]	1637	[2387, 2388]	2460	[2983, 668]	3283	[3284, 474]
815	[1382, 1050]	1638	[2389, 2390]	2461	[2982, 1755]	3284	[3285, 872]
816	[1250, 1383]	1639	[2391, 1007]	2462	[2943, 1640]	3285	[3286, 1455]
817	[102, 1384]	1640	[2392, 2393]	2463	[2984, 1863]	3286	[3287, 1391]
818	[1385, 29]	1641	[978, 1179]	2464	[2985, 1508]	3287	[3288, 1914]
819	[1386, 25]	1642	[2394, 2231]	2465	[2848, 584]	3288	[3289, 2581]
820	[458, 1387]	1643	[2395, 2396]	2466	[784, 2986]	3289	[3290, 2991]
821	[1388, 439]	1644	[2397, 421]	2467	[2987, 537]	3290	[3, 450]
822	[882, 87]	1645	[1156, 2398]	2468	[2988, 1975]		

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

n	$\tau(n)$	n	$\tau(n)$	n	$\tau(n)$	n	$\tau(n)$	n	$\tau(n)$	n	$\tau(n)$
0	0	549	1	1098	1	1647	1	2196	1	2745	1
1	0	550	0	1099	1	1648	0	2197	0	2746	0
2	0	551	1	1100	1	1649	0	2198	0	2747	1
3	0	552	0	1101	1	1650	1	2199	1	2748	1
4	0	553	0	1102	1	1651	1	2200	1	2749	1
5	0	554	1	1103	1	1652	0	2201	1	2750	0
6	0	555	1	1104	0	1653	0	2202	0	2751	1
7	0	556	0	1105	1	1654	0	2203	1	2752	0
8	0	557	1	1106	0	1655	1	2204	1	2753	0

9	0	558	0	1107	1	1656	1	2205	1	2754	0
10	1	559	0	1108	0	1657	1	2206	0	2755	0
11	0	560	1	1109	1	1658	1	2207	0	2756	1
12	0	561	1	1110	0	1659	1	2208	0	2757	1
13	0	562	0	1111	1	1660	1	2209	0	2758	0
14	0	563	0	1112	1	1661	0	2210	0	2759	1
15	0	564	1	1113	0	1662	0	2211	1	2760	0
16	0	565	0	1114	1	1663	0	2212	0	2761	1
17	0	566	0	1115	0	1664	1	2213	1	2762	1
18	1	567	1	1116	1	1665	1	2214	1	2763	0
19	0	568	1	1117	0	1666	0	2215	1	2764	1
20	1	569	1	1118	0	1667	0	2216	0	2765	1
21	1	570	0	1119	1	1668	1	2217	0	2766	0
22	1	571	1	1120	0	1669	0	2218	0	2767	1
23	0	572	0	1121	1	1670	0	2219	1	2768	0
24	0	573	1	1122	1	1671	1	2220	0	2769	1
25	0	574	1	1123	0	1672	1	2221	0	2770	0
26	1	575	0	1124	0	1673	0	2222	1	2771	1
27	0	576	1	1125	1	1674	1	2223	1	2772	0
28	1	577	0	1126	1	1675	1	2224	1	2773	1
29	0	578	0	1127	0	1676	0	2225	1	2774	0
30	1	579	1	1128	1	1677	1	2226	0	2775	0
31	0	580	1	1129	0	1678	1	2227	1	2776	1
32	0	581	1	1130	0	1679	0	2228	0	2777	1
33	0	582	1	1131	1	1680	1	2229	1	2778	0
34	1	583	0	1132	0	1681	0	2230	0	2779	1
35	0	584	1	1133	1	1682	0	2231	1	2780	1
36	0	585	1	1134	1	1683	0	2232	1	2781	1
37	1	586	1	1135	1	1684	1	2233	1	2782	0
38	1	587	1	1136	1	1685	0	2234	0	2783	1
39	0	588	1	1137	1	1686	0	2235	0	2784	1
40	0	589	0	1138	0	1687	1	2236	1	2785	0
41	1	590	0	1139	0	1688	1	2237	0	2786	1
42	0	591	1	1140	1	1689	0	2238	1	2787	1
43	1	592	1	1141	1	1690	1	2239	0	2788	1
44	0	593	0	1142	1	1691	1	2240	0	2789	1
45	1	594	1	1143	0	1692	0	2241	1	2790	0
46	1	595	1	1144	0	1693	0	2242	0	2791	0
47	0	596	0	1145	1	1694	0	2243	1	2792	1
48	0	597	1	1146	1	1695	1	2244	0	2793	0
49	0	598	1	1147	1	1696	1	2245	1	2794	0
50	0	599	1	1148	0	1697	0	2246	0	2795	0
51	0	600	1	1149	0	1698	1	2247	0	2796	0
52	1	601	1	1150	0	1699	0	2248	0	2797	0

53	1	602	0	1151	1	1700	0	2249	0	2798	0
54	1	603	1	1152	0	1701	1	2250	0	2799	0
55	0	604	0	1153	0	1702	0	2251	0	2800	0
56	0	605	0	1154	0	1703	1	2252	0	2801	1
57	1	606	1	1155	1	1704	1	2253	1	2802	0
58	1	607	1	1156	1	1705	1	2254	0	2803	0
59	0	608	1	1157	1	1706	0	2255	1	2804	0
60	1	609	0	1158	1	1707	1	2256	1	2805	1
61	1	610	1	1159	1	1708	1	2257	1	2806	0
62	0	611	0	1160	1	1709	1	2258	1	2807	0
63	0	612	1	1161	1	1710	1	2259	0	2808	0
64	1	613	0	1162	0	1711	0	2260	1	2809	1
65	0	614	0	1163	0	1712	1	2261	1	2810	1
66	1	615	0	1164	1	1713	0	2262	0	2811	0
67	0	616	1	1165	1	1714	1	2263	1	2812	0
68	0	617	1	1166	0	1715	0	2264	1	2813	1
69	1	618	0	1167	1	1716	1	2265	0	2814	0
70	1	619	0	1168	1	1717	1	2266	0	2815	1
71	0	620	1	1169	0	1718	1	2267	0	2816	0
72	1	621	1	1170	0	1719	1	2268	1	2817	0
73	0	622	0	1171	0	1720	0	2269	1	2818	0
74	0	623	1	1172	1	1721	1	2270	1	2819	1
75	1	624	0	1173	0	1722	0	2271	0	2820	1
76	0	625	0	1174	0	1723	1	2272	0	2821	1
77	1	626	1	1175	1	1724	1	2273	1	2822	0
78	1	627	0	1176	1	1725	0	2274	1	2823	0
79	0	628	1	1177	1	1726	0	2275	1	2824	0
80	1	629	1	1178	0	1727	0	2276	0	2825	1
81	0	630	0	1179	1	1728	1	2277	1	2826	0
82	0	631	1	1180	0	1729	1	2278	0	2827	1
83	1	632	1	1181	1	1730	0	2279	0	2828	1
84	1	633	1	1182	1	1731	1	2280	1	2829	1
85	0	634	0	1183	1	1732	0	2281	0	2830	0
86	1	635	1	1184	1	1733	1	2282	0	2831	1
87	1	636	0	1185	0	1734	1	2283	1	2832	1
88	0	637	0	1186	0	1735	1	2284	0	2833	1
89	0	638	0	1187	0	1736	1	2285	1	2834	1
90	0	639	0	1188	1	1737	1	2286	0	2835	0
91	1	640	0	1189	0	1738	1	2287	0	2836	1
92	1	641	0	1190	0	1739	1	2288	0	2837	1
93	1	642	1	1191	0	1740	0	2289	0	2838	0
94	1	643	0	1192	1	1741	1	2290	0	2839	1
95	0	644	1	1193	1	1742	0	2291	0	2840	0
96	1	645	1	1194	0	1743	1	2292	1	2841	0

97	0	646	1	1195	1	1744	1	2293	1	2842	1
98	1	647	0	1196	1	1745	1	2294	0	2843	1
99	0	648	1	1197	0	1746	1	2295	1	2844	0
100	0	649	0	1198	1	1747	0	2296	0	2845	1
101	0	650	1	1199	0	1748	1	2297	0	2846	1
102	1	651	0	1200	1	1749	1	2298	0	2847	0
103	0	652	0	1201	0	1750	1	2299	0	2848	0
104	0	653	0	1202	0	1751	0	2300	1	2849	0
105	1	654	1	1203	1	1752	1	2301	1	2850	0
106	0	655	1	1204	1	1753	0	2302	0	2851	0
107	1	656	1	1205	0	1754	1	2303	1	2852	1
108	0	657	0	1206	1	1755	0	2304	0	2853	1
109	1	658	0	1207	0	1756	1	2305	0	2854	1
110	1	659	1	1208	0	1757	1	2306	0	2855	0
111	0	660	1	1209	0	1758	1	2307	0	2856	1
112	0	661	0	1210	1	1759	1	2308	1	2857	1
113	0	662	1	1211	0	1760	1	2309	0	2858	1
114	0	663	0	1212	1	1761	1	2310	1	2859	0
115	1	664	0	1213	1	1762	0	2311	0	2860	0
116	1	665	0	1214	1	1763	0	2312	0	2861	0
117	1	666	0	1215	0	1764	1	2313	0	2862	1
118	1	667	0	1216	1	1765	1	2314	0	2863	0
119	0	668	1	1217	1	1766	0	2315	1	2864	0
120	1	669	0	1218	1	1767	1	2316	0	2865	1
121	1	670	1	1219	1	1768	1	2317	1	2866	1
122	0	671	1	1220	0	1769	1	2318	0	2867	1
123	1	672	0	1221	1	1770	0	2319	0	2868	1
124	0	673	0	1222	1	1771	1	2320	1	2869	0
125	0	674	1	1223	1	1772	0	2321	1	2870	0
126	1	675	1	1224	0	1773	0	2322	0	2871	0
127	0	676	1	1225	0	1774	0	2323	0	2872	1
128	0	677	0	1226	0	1775	1	2324	1	2873	0
129	1	678	0	1227	0	1776	1	2325	1	2874	0
130	0	679	0	1228	0	1777	1	2326	1	2875	0
131	0	680	1	1229	1	1778	1	2327	1	2876	0
132	1	681	1	1230	1	1779	1	2328	0	2877	0
133	1	682	1	1231	1	1780	1	2329	0	2878	0
134	0	683	0	1232	1	1781	1	2330	0	2879	1
135	0	684	1	1233	1	1782	0	2331	1	2880	1
136	0	685	1	1234	1	1783	0	2332	0	2881	1
137	0	686	1	1235	0	1784	0	2333	1	2882	1
138	1	687	1	1236	0	1785	1	2334	1	2883	1
139	1	688	1	1237	0	1786	1	2335	1	2884	0
140	1	689	0	1238	1	1787	1	2336	1	2885	1

141	1	690	1	1239	0	1788	1	2337	1	2886	0
142	0	691	0	1240	1	1789	1	2338	1	2887	0
143	0	692	1	1241	0	1790	1	2339	0	2888	0
144	0	693	1	1242	0	1791	1	2340	1	2889	1
145	1	694	1	1243	1	1792	0	2341	0	2890	1
146	1	695	1	1244	1	1793	1	2342	0	2891	0
147	0	696	0	1245	1	1794	1	2343	0	2892	0
148	1	697	0	1246	0	1795	0	2344	1	2893	0
149	0	698	1	1247	0	1796	1	2345	0	2894	0
150	1	699	0	1248	0	1797	1	2346	0	2895	0
151	1	700	0	1249	0	1798	1	2347	1	2896	0
152	0	701	1	1250	0	1799	0	2348	0	2897	1
153	0	702	1	1251	0	1800	1	2349	0	2898	0
154	0	703	1	1252	1	1801	1	2350	1	2899	0
155	1	704	1	1253	1	1802	0	2351	0	2900	0
156	0	705	0	1254	0	1803	1	2352	0	2901	1
157	1	706	0	1255	0	1804	1	2353	1	2902	0
158	1	707	1	1256	0	1805	1	2354	1	2903	0
159	0	708	0	1257	0	1806	1	2355	0	2904	0
160	0	709	1	1258	0	1807	0	2356	0	2905	1
161	1	710	1	1259	0	1808	1	2357	0	2906	1
162	1	711	0	1260	1	1809	0	2358	1	2907	1
163	0	712	0	1261	0	1810	0	2359	1	2908	1
164	0	713	0	1262	1	1811	0	2360	0	2909	1
165	0	714	0	1263	1	1812	1	2361	1	2910	0
166	1	715	1	1264	1	1813	1	2362	1	2911	0
167	1	716	1	1265	0	1814	1	2363	0	2912	1
168	0	717	1	1266	0	1815	0	2364	1	2913	1
169	1	718	0	1267	0	1816	1	2365	1	2914	1
170	0	719	0	1268	0	1817	1	2366	0	2915	0
171	0	720	0	1269	1	1818	1	2367	0	2916	0
172	0	721	1	1270	0	1819	1	2368	0	2917	0
173	1	722	0	1271	0	1820	0	2369	1	2918	1
174	1	723	1	1272	1	1821	0	2370	0	2919	1
175	1	724	0	1273	0	1822	0	2371	0	2920	0
176	0	725	0	1274	0	1823	1	2372	0	2921	1
177	1	726	1	1275	1	1824	1	2373	1	2922	1
178	0	727	0	1276	0	1825	0	2374	1	2923	1
179	1	728	0	1277	0	1826	0	2375	0	2924	0
180	0	729	1	1278	0	1827	1	2376	1	2925	0
181	1	730	1	1279	1	1828	1	2377	0	2926	0
182	1	731	1	1280	1	1829	0	2378	1	2927	1
183	0	732	0	1281	0	1830	0	2379	1	2928	0
184	1	733	0	1282	1	1831	0	2380	1	2929	0

185	1	734	1	1283	0	1832	1	2381	0	2930	1
186	1	735	1	1284	0	1833	1	2382	1	2931	1
187	1	736	1	1285	0	1834	1	2383	0	2932	1
188	0	737	1	1286	0	1835	0	2384	1	2933	1
189	0	738	1	1287	1	1836	1	2385	0	2934	0
190	0	739	0	1288	0	1837	1	2386	0	2935	0
191	1	740	0	1289	1	1838	1	2387	0	2936	0
192	1	741	1	1290	1	1839	0	2388	1	2937	1
193	0	742	0	1291	1	1840	0	2389	0	2938	0
194	0	743	1	1292	1	1841	0	2390	1	2939	0
195	1	744	1	1293	0	1842	1	2391	0	2940	0
196	0	745	1	1294	1	1843	1	2392	0	2941	1
197	0	746	0	1295	1	1844	1	2393	1	2942	1
198	0	747	0	1296	0	1845	0	2394	0	2943	1
199	0	748	1	1297	0	1846	1	2395	0	2944	0
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201	1	750	0	1299	1	1848	0	2397	1	2946	1
202	1	751	1	1300	1	1849	1	2398	1	2947	0
203	0	752	1	1301	0	1850	0	2399	0	2948	0
204	1	753	0	1302	0	1851	0	2400	0	2949	0
205	0	754	0	1303	1	1852	0	2401	1	2950	1
206	1	755	1	1304	1	1853	0	2402	0	2951	1
207	1	756	1	1305	0	1854	1	2403	0	2952	0
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209	0	758	0	1307	1	1856	0	2405	0	2954	0
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211	1	760	1	1309	0	1858	0	2407	0	2956	1
212	0	761	1	1310	0	1859	1	2408	1	2957	1
213	0	762	1	1311	1	1860	1	2409	0	2958	1
214	0	763	0	1312	1	1861	1	2410	0	2959	1
215	1	764	1	1313	0	1862	1	2411	1	2960	0
216	1	765	0	1314	1	1863	1	2412	0	2961	0
217	1	766	0	1315	0	1864	1	2413	0	2962	1
218	1	767	0	1316	0	1865	0	2414	0	2963	0
219	0	768	0	1317	1	1866	1	2415	0	2964	0
220	0	769	1	1318	1	1867	1	2416	1	2965	1
221	0	770	0	1319	1	1868	0	2417	0	2966	0
222	0	771	0	1320	0	1869	0	2418	1	2967	1
223	0	772	1	1321	0	1870	0	2419	1	2968	1
224	1	773	1	1322	0	1871	1	2420	1	2969	1
225	0	774	0	1323	0	1872	0	2421	1	2970	0
226	0	775	0	1324	0	1873	0	2422	1	2971	0
227	1	776	1	1325	0	1874	1	2423	1	2972	0
228	1	777	0	1326	1	1875	1	2424	0	2973	1

229	1	778	0	1327	0	1876	1	2425	0	2974	0
230	1	779	0	1328	1	1877	0	2426	0	2975	0
231	1	780	0	1329	0	1878	0	2427	1	2976	1
232	1	781	0	1330	1	1879	0	2428	0	2977	1
233	0	782	0	1331	1	1880	0	2429	0	2978	0
234	0	783	1	1332	1	1881	1	2430	1	2979	0
235	0	784	1	1333	1	1882	1	2431	0	2980	0
236	1	785	0	1334	0	1883	1	2432	1	2981	0
237	0	786	0	1335	1	1884	0	2433	1	2982	1
238	1	787	1	1336	1	1885	0	2434	0	2983	1
239	0	788	1	1337	0	1886	0	2435	0	2984	0
240	0	789	0	1338	0	1887	0	2436	1	2985	1
241	0	790	1	1339	0	1888	1	2437	1	2986	0
242	1	791	0	1340	0	1889	0	2438	1	2987	1
243	1	792	0	1341	1	1890	1	2439	0	2988	1
244	0	793	1	1342	0	1891	0	2440	0	2989	0
245	1	794	1	1343	0	1892	0	2441	1	2990	1
246	0	795	0	1344	0	1893	0	2442	0	2991	1
247	0	796	0	1345	0	1894	1	2443	0	2992	0
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249	0	798	0	1347	0	1896	1	2445	0	2994	0
250	0	799	1	1348	1	1897	1	2446	1	2995	1
251	0	800	1	1349	1	1898	0	2447	1	2996	0
252	0	801	0	1350	1	1899	0	2448	1	2997	1
253	1	802	1	1351	1	1900	0	2449	0	2998	1
254	1	803	1	1352	0	1901	1	2450	0	2999	1
255	0	804	1	1353	0	1902	0	2451	0	3000	0
256	0	805	0	1354	1	1903	1	2452	0	3001	0
257	1	806	1	1355	1	1904	0	2453	0	3002	1
258	0	807	1	1356	0	1905	0	2454	0	3003	0
259	1	808	0	1357	0	1906	0	2455	0	3004	0
260	1	809	1	1358	1	1907	0	2456	1	3005	1
261	1	810	1	1359	1	1908	1	2457	1	3006	0
262	1	811	0	1360	0	1909	1	2458	0	3007	0
263	1	812	0	1361	1	1910	0	2459	1	3008	0
264	0	813	1	1362	0	1911	0	2460	1	3009	0
265	1	814	1	1363	0	1912	1	2461	1	3010	1
266	0	815	1	1364	0	1913	0	2462	1	3011	0
267	0	816	0	1365	0	1914	1	2463	0	3012	0
268	0	817	1	1366	0	1915	0	2464	1	3013	0
269	0	818	1	1367	1	1916	1	2465	0	3014	0
270	1	819	1	1368	0	1917	0	2466	1	3015	0
271	1	820	0	1369	0	1918	0	2467	1	3016	0
272	1	821	1	1370	0	1919	0	2468	1	3017	1

273	1	822	0	1371	1	1920	1	2469	0	3018	0
274	0	823	1	1372	0	1921	1	2470	1	3019	1
275	1	824	0	1373	1	1922	1	2471	0	3020	0
276	1	825	0	1374	0	1923	0	2472	1	3021	1
277	1	826	1	1375	1	1924	0	2473	0	3022	1
278	0	827	0	1376	0	1925	1	2474	1	3023	1
279	0	828	0	1377	1	1926	1	2475	1	3024	0
280	1	829	1	1378	1	1927	1	2476	0	3025	0
281	0	830	0	1379	1	1928	1	2477	1	3026	0
282	1	831	1	1380	1	1929	0	2478	1	3027	0
283	0	832	1	1381	1	1930	0	2479	1	3028	1
284	0	833	1	1382	1	1931	1	2480	1	3029	1
285	1	834	0	1383	1	1932	0	2481	1	3030	1
286	0	835	0	1384	1	1933	1	2482	0	3031	0
287	1	836	0	1385	1	1934	0	2483	0	3032	1
288	1	837	1	1386	1	1935	1	2484	1	3033	0
289	0	838	0	1387	1	1936	0	2485	0	3034	1
290	0	839	0	1388	1	1937	1	2486	0	3035	0
291	1	840	1	1389	1	1938	1	2487	1	3036	0
292	1	841	1	1390	0	1939	1	2488	0	3037	1
293	0	842	0	1391	0	1940	0	2489	0	3038	0
294	1	843	0	1392	0	1941	1	2490	0	3039	1
295	1	844	1	1393	0	1942	1	2491	0	3040	0
296	0	845	0	1394	1	1943	1	2492	1	3041	1
297	1	846	0	1395	0	1944	1	2493	0	3042	0
298	0	847	1	1396	1	1945	1	2494	1	3043	1
299	1	848	0	1397	0	1946	0	2495	0	3044	0
300	0	849	1	1398	1	1947	1	2496	1	3045	1
301	1	850	1	1399	1	1948	1	2497	1	3046	1
302	0	851	1	1400	1	1949	1	2498	1	3047	1
303	0	852	1	1401	1	1950	0	2499	0	3048	1
304	1	853	0	1402	0	1951	1	2500	0	3049	1
305	1	854	0	1403	0	1952	1	2501	1	3050	0
306	0	855	0	1404	0	1953	1	2502	1	3051	0
307	1	856	0	1405	1	1954	0	2503	1	3052	0
308	1	857	0	1406	1	1955	0	2504	0	3053	0
309	1	858	0	1407	0	1956	1	2505	1	3054	0
310	1	859	1	1408	0	1957	1	2506	1	3055	0
311	1	860	1	1409	1	1958	1	2507	1	3056	0
312	0	861	0	1410	1	1959	0	2508	0	3057	1
313	1	862	1	1411	1	1960	0	2509	0	3058	0
314	0	863	0	1412	0	1961	0	2510	1	3059	1
315	1	864	0	1413	1	1962	1	2511	0	3060	0
316	1	865	0	1414	0	1963	0	2512	0	3061	0

317	1	866	1	1415	1	1964	0	2513	1	3062	1
318	1	867	0	1416	0	1965	1	2514	1	3063	1
319	1	868	0	1417	1	1966	0	2515	1	3064	1
320	0	869	1	1418	0	1967	0	2516	0	3065	0
321	1	870	0	1419	1	1968	1	2517	1	3066	1
322	0	871	0	1420	0	1969	0	2518	1	3067	0
323	0	872	1	1421	0	1970	1	2519	0	3068	0
324	0	873	1	1422	1	1971	1	2520	0	3069	0
325	0	874	0	1423	1	1972	1	2521	0	3070	1
326	1	875	1	1424	1	1973	1	2522	0	3071	1
327	0	876	0	1425	1	1974	0	2523	1	3072	0
328	1	877	0	1426	0	1975	0	2524	0	3073	0
329	0	878	1	1427	0	1976	0	2525	1	3074	1
330	0	879	0	1428	1	1977	1	2526	1	3075	1
331	1	880	1	1429	0	1978	1	2527	1	3076	1
332	1	881	1	1430	1	1979	0	2528	1	3077	0
333	0	882	0	1431	0	1980	0	2529	1	3078	1
334	1	883	0	1432	1	1981	0	2530	0	3079	1
335	0	884	0	1433	1	1982	0	2531	0	3080	0
336	0	885	0	1434	1	1983	0	2532	1	3081	1
337	0	886	1	1435	0	1984	1	2533	1	3082	0
338	0	887	0	1436	0	1985	1	2534	0	3083	1
339	1	888	0	1437	0	1986	1	2535	1	3084	0
340	1	889	1	1438	0	1987	1	2536	0	3085	1
341	1	890	1	1439	1	1988	0	2537	1	3086	0
342	1	891	1	1440	0	1989	1	2538	0	3087	1
343	0	892	1	1441	1	1990	0	2539	0	3088	0
344	0	893	0	1442	0	1991	0	2540	0	3089	1
345	0	894	0	1443	1	1992	0	2541	1	3090	1
346	1	895	1	1444	0	1993	1	2542	1	3091	1
347	1	896	1	1445	0	1994	0	2543	0	3092	0
348	0	897	1	1446	0	1995	1	2544	1	3093	1
349	1	898	0	1447	0	1996	1	2545	1	3094	1
350	1	899	0	1448	1	1997	0	2546	0	3095	0
351	0	900	1	1449	1	1998	0	2547	1	3096	0
352	0	901	1	1450	0	1999	1	2548	0	3097	0
353	1	902	1	1451	0	2000	0	2549	0	3098	0
354	1	903	0	1452	0	2001	1	2550	1	3099	1
355	0	904	0	1453	1	2002	0	2551	1	3100	0
356	1	905	1	1454	0	2003	0	2552	1	3101	1
357	1	906	0	1455	1	2004	1	2553	1	3102	1
358	0	907	1	1456	0	2005	0	2554	0	3103	1
359	1	908	1	1457	0	2006	1	2555	0	3104	0
360	1	909	0	1458	1	2007	1	2556	1	3105	1

361	1	910	0	1459	1	2008	0	2557	0	3106	1
362	1	911	1	1460	1	2009	1	2558	0	3107	1
363	1	912	1	1461	0	2010	0	2559	0	3108	1
364	1	913	1	1462	1	2011	0	2560	1	3109	0
365	1	914	0	1463	1	2012	0	2561	1	3110	0
366	1	915	1	1464	1	2013	1	2562	0	3111	0
367	0	916	0	1465	0	2014	0	2563	0	3112	1
368	0	917	0	1466	0	2015	0	2564	0	3113	0
369	0	918	0	1467	0	2016	1	2565	1	3114	0
370	0	919	0	1468	1	2017	0	2566	1	3115	0
371	1	920	1	1469	1	2018	1	2567	1	3116	0
372	1	921	1	1470	1	2019	1	2568	1	3117	0
373	0	922	1	1471	1	2020	0	2569	1	3118	0
374	1	923	0	1472	0	2021	1	2570	1	3119	0
375	1	924	0	1473	1	2022	0	2571	1	3120	0
376	0	925	0	1474	0	2023	1	2572	1	3121	1
377	0	926	0	1475	0	2024	0	2573	1	3122	1
378	0	927	1	1476	0	2025	0	2574	0	3123	1
379	1	928	0	1477	0	2026	1	2575	0	3124	1
380	1	929	1	1478	1	2027	0	2576	0	3125	1
381	1	930	0	1479	0	2028	1	2577	0	3126	0
382	0	931	0	1480	1	2029	0	2578	1	3127	1
383	0	932	0	1481	1	2030	1	2579	1	3128	1
384	0	933	1	1482	1	2031	0	2580	0	3129	1
385	1	934	1	1483	1	2032	0	2581	0	3130	1
386	0	935	1	1484	1	2033	0	2582	1	3131	0
387	0	936	0	1485	0	2034	0	2583	0	3132	1
388	1	937	0	1486	1	2035	1	2584	0	3133	0
389	0	938	1	1487	1	2036	0	2585	0	3134	0
390	1	939	1	1488	1	2037	1	2586	1	3135	0
391	1	940	1	1489	0	2038	0	2587	0	3136	1
392	1	941	0	1490	1	2039	0	2588	0	3137	1
393	0	942	0	1491	0	2040	1	2589	1	3138	0
394	0	943	1	1492	1	2041	1	2590	0	3139	0
395	1	944	0	1493	1	2042	0	2591	0	3140	0
396	0	945	1	1494	0	2043	0	2592	1	3141	0
397	1	946	1	1495	0	2044	0	2593	0	3142	0
398	1	947	1	1496	0	2045	1	2594	0	3143	1
399	1	948	0	1497	1	2046	0	2595	1	3144	1
400	1	949	0	1498	1	2047	1	2596	0	3145	0
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402	1	951	0	1500	1	2049	0	2598	1	3147	0
403	0	952	0	1501	0	2050	0	2599	1	3148	0
404	0	953	1	1502	0	2051	0	2600	1	3149	1

405	1	954	1	1503	0	2052	1	2601	0	3150	0
406	1	955	1	1504	0	2053	1	2602	0	3151	1
407	0	956	1	1505	0	2054	0	2603	0	3152	0
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409	0	958	1	1507	1	2056	1	2605	1	3154	0
410	0	959	1	1508	1	2057	0	2606	1	3155	1
411	0	960	0	1509	1	2058	1	2607	0	3156	0
412	0	961	0	1510	0	2059	1	2608	0	3157	1
413	1	962	1	1511	1	2060	1	2609	0	3158	0
414	0	963	1	1512	0	2061	0	2610	0	3159	1
415	1	964	0	1513	1	2062	1	2611	1	3160	1
416	0	965	1	1514	1	2063	0	2612	0	3161	0
417	0	966	0	1515	0	2064	0	2613	1	3162	0
418	0	967	0	1516	1	2065	0	2614	0	3163	1
419	0	968	1	1517	0	2066	0	2615	1	3164	0
420	1	969	1	1518	1	2067	1	2616	0	3165	0
421	0	970	0	1519	0	2068	0	2617	0	3166	1
422	1	971	0	1520	1	2069	0	2618	1	3167	0
423	0	972	0	1521	1	2070	0	2619	1	3168	0
424	1	973	0	1522	1	2071	0	2620	0	3169	0
425	0	974	1	1523	0	2072	0	2621	1	3170	1
426	1	975	1	1524	1	2073	0	2622	1	3171	0
427	1	976	1	1525	0	2074	1	2623	0	3172	0
428	0	977	1	1526	0	2075	1	2624	1	3173	1
429	1	978	1	1527	0	2076	1	2625	1	3174	0
430	0	979	0	1528	0	2077	1	2626	1	3175	1
431	0	980	0	1529	0	2078	1	2627	0	3176	0
432	1	981	1	1530	1	2079	1	2628	1	3177	1
433	0	982	1	1531	0	2080	1	2629	0	3178	1
434	1	983	0	1532	1	2081	0	2630	1	3179	0
435	0	984	1	1533	0	2082	1	2631	0	3180	0
436	1	985	0	1534	1	2083	1	2632	1	3181	1
437	0	986	1	1535	0	2084	1	2633	1	3182	1
438	1	987	1	1536	1	2085	0	2634	0	3183	1
439	1	988	1	1537	0	2086	0	2635	1	3184	0
440	0	989	0	1538	0	2087	0	2636	1	3185	1
441	1	990	0	1539	0	2088	1	2637	0	3186	0
442	1	991	0	1540	1	2089	1	2638	0	3187	0
443	0	992	0	1541	1	2090	0	2639	0	3188	0
444	1	993	0	1542	1	2091	1	2640	0	3189	0
445	0	994	1	1543	0	2092	1	2641	0	3190	1
446	0	995	0	1544	0	2093	0	2642	0	3191	1
447	1	996	1	1545	1	2094	1	2643	0	3192	1
448	0	997	0	1546	0	2095	0	2644	1	3193	1

449	0	998	1	1547	0	2096	0	2645	1	3194	1
450	1	999	0	1548	0	2097	1	2646	0	3195	1
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452	0	1001	0	1550	1	2099	0	2648	1	3197	1
453	0	1002	1	1551	1	2100	0	2649	0	3198	0
454	0	1003	0	1552	0	2101	0	2650	1	3199	0
455	0	1004	1	1553	0	2102	0	2651	1	3200	0
456	1	1005	1	1554	1	2103	0	2652	0	3201	1
457	1	1006	1	1555	0	2104	1	2653	0	3202	1
458	0	1007	1	1556	0	2105	0	2654	1	3203	1
459	1	1008	0	1557	0	2106	0	2655	0	3204	1
460	0	1009	1	1558	0	2107	1	2656	0	3205	1
461	1	1010	1	1559	1	2108	0	2657	0	3206	1
462	1	1011	0	1560	0	2109	1	2658	1	3207	0
463	1	1012	1	1561	1	2110	0	2659	1	3208	0
464	0	1013	0	1562	0	2111	0	2660	0	3209	0
465	0	1014	1	1563	0	2112	1	2661	1	3210	0
466	0	1015	0	1564	0	2113	1	2662	0	3211	0
467	0	1016	0	1565	0	2114	1	2663	0	3212	1
468	1	1017	1	1566	0	2115	1	2664	1	3213	1
469	0	1018	1	1567	0	2116	1	2665	0	3214	0
470	0	1019	0	1568	1	2117	0	2666	0	3215	0
471	0	1020	0	1569	1	2118	1	2667	1	3216	0
472	0	1021	0	1570	1	2119	1	2668	1	3217	0
473	0	1022	0	1571	1	2120	1	2669	0	3218	1
474	0	1023	1	1572	0	2121	0	2670	1	3219	0
475	1	1024	0	1573	1	2122	1	2671	1	3220	1
476	0	1025	1	1574	1	2123	0	2672	0	3221	0
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479	1	1028	0	1577	0	2126	0	2675	1	3224	0
480	1	1029	0	1578	0	2127	0	2676	0	3225	1
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488	1	1037	0	1586	1	2135	1	2684	0	3233	0
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496	0	1045	0	1594	1	2143	0	2692	1	3241	0
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509	1	1058	1	1607	0	2156	1	2705	0	3254	0
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512	0	1061	1	1610	1	2159	1	2708	0	3257	0
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518	1	1067	1	1616	1	2165	1	2714	0	3263	0
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521	1	1070	0	1619	0	2168	0	2717	1	3266	0
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524	1	1073	1	1622	0	2171	1	2720	1	3269	1
525	0	1074	1	1623	1	2172	0	2721	1	3270	0
526	0	1075	1	1624	0	2173	0	2722	0	3271	0
527	1	1076	1	1625	1	2174	1	2723	1	3272	0
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533	0	1082	0	1631	1	2180	0	2729	1	3278	0
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535	0	1084	1	1633	1	2182	0	2731	0	3280	0
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540	0	1089	1	1638	0	2187	0	2736	0	3285	0
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542	0	1091	1	1640	0	2189	1	2738	0	3287	0
543	1	1092	1	1641	1	2190	1	2739	1	3288	0
544	1	1093	1	1642	0	2191	1	2740	0	3289	0
545	0	1094	0	1643	0	2192	0	2741	0	3290	0
546	0	1095	1	1644	1	2193	0	2742	0		
547	0	1096	1	1645	1	2194	1	2743	1		
548	1	1097	0	1646	0	2195	0	2744	0		

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`