PROOF OF THE CONTINUED FRACTION CONJECTURE FOR $(a,b)=(z^6+z^5+z^3,z+1)$

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 $(a,b)=(z^6+z^5+z^3,z+1)$.

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

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

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

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

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

* This paper was automatically generated from a computer program developed by the authors, with 1.9 hours CPU time used.

Theorem 1.1. *When $(a,b)=(z^6+z^5+z^3,z+1)$, 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 $\mathrm{CF}(a,b)$*,*

$$\begin{aligned}
p_0(z)&=z^{21}+z^{18}+z^{16}+z^{14}+z^{13}+z^{12}+z^{11}+z^{10}+z^9+z^8+z^3+1,\\
p_1(z)&=z^{27}+z^{26}+z^{23}+z^{21}+z^{19}+z^{18}+z^{17}+z^{16}+z^{14}+z^8+z^5+z^3,\\
p_2(z)&=z^{28}+z^{26}+z^{24}+z^{22}+z^{12}+z^6,\\
p_3(z)&=z^{27}+z^{26}+z^{23}+z^{21}+z^{19}+z^{18}+z^{17}+z^{16}+z^{14}+z^8+z^5+z^3,\\
p_4(z)&=z^{26}+z^{22}+z^{21}+z^{18}+z^{14}+z^{13}+z^{11}+z^{10}+z^9+z^8+z^6+z^4+z^3,
\end{aligned}$$

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

$$\begin{aligned}
p_0(z)&=z^{24}+z^{21}+z^{20}+z^{18}+z^{16}+z^{14}+z^{13}+z^{11}+z^{10}+z^9+z^8+z^4+z^3,\\
p_1(z)&=z^{27}+z^{26}+z^{23}+z^{21}+z^{19}+z^{18}+z^{17}+z^{16}+z^{14}+z^8+z^5+z^3,\\
p_2(z)&=z^{28}+z^{26}+z^{24}+z^{22}+z^{12}+z^6,\\
p_3(z)&=z^{27}+z^{26}+z^{23}+z^{21}+z^{19}+z^{18}+z^{17}+z^{16}+z^{14}+z^8+z^5+z^3,\\
p_4(z)&=z^{26}+z^{24}+z^{22}+z^{21}+z^{20}+z^{18}+z^{14}+z^{13}+z^{12}+z^{11}+z^{10}+z^9\\
&\quad+z^8+z^6+z^3+1.
\end{aligned}$$

2. Proof

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

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

By the basic properties of continued fractions, we have

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

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

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

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

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

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

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

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

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

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

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

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

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 $u = 2^{2k}$,

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

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

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

which can be rewritten as

$$0 = T[[1w]_2] + T[[10w]_2] + T[[100w]_2] + T[[111w]_2], \tag{2.7}$$

$$0 = T[[w]_2] + T[[10w]_2] + T[[11w]_2] + T[[101w]_2] + T[[1000w]_2], \tag{2.8}$$

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

$$0 = T[[1w]_2] + T[[101w]_2] + T[[1010w]_2], \tag{2.10}$$

$$0 = T[[10w]_2] + T[[110w]_2] + T[[1011w]_2], \tag{2.11}$$

$$\begin{aligned} 0 = {} & T[[w]_2] + T[[1w]_2] + T[[10w]_2] + T[[11w]_2] + T[[100w]_2] \\ & + T[[1100w]_2], \end{aligned} \tag{2.12}$$

$$\begin{aligned} 0 = {} & T[[1w]_2] + T[[10w]_2] + T[[11w]_2] + T[[100w]_2] + T[[101w]_2] \\ & + T[[1101w]_2], \end{aligned} \tag{2.13}$$

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

$$0 = T[[1w]_2] + T[[10w]_2] + T[[100w]_2] + T[[111w]_2], \tag{2.14}$$

$$0 = T[[w]_2] + T[[10w]_2] + T[[11w]_2] + T[[101w]_2] + T[[1000w]_2], \tag{2.15}$$

$$0 = T[[1w]_2] + T[[11w]_2] + T[[100w]_2] + T[[110w]_2] + T[[1001w]_2], \tag{2.16}$$

$$0 = T[[1w]_2] + T[[101w]_2] + T[[1010w]_2], \tag{2.17}$$

$$0 = T[[10w]_2] + T[[110w]_2] + T[[1011w]_2], \tag{2.18}$$

$$\begin{aligned} 0 = {} & T[[w]_2] + T[[1w]_2] + T[[10w]_2] + T[[11w]_2] + T[[100w]_2] \\ & + T[[1100w]_2], \end{aligned} \tag{2.19}$$

$$\begin{aligned} 0 = {} & T[[1w]_2] + T[[10w]_2] + T[[11w]_2] + T[[100w]_2] + T[[101w]_2] \\ & + T[[1101w]_2], \end{aligned} \tag{2.20}$$

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

First we calculate an 2-automaton that generates T from its minimal polynomial and its first terms. This automaton has 4132 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

$$0 = \tau(A(s,1)) + \tau(A(s,10)) + \tau(A(s,100)) + \tau(A(s,111)), \tag{2.21}$$

$$\begin{aligned} 0 = {} & \tau(A(s,\epsilon)) + \tau(A(s,10)) + \tau(A(s,11)) + \tau(A(s,101)) \\ & + \tau(A(s,1000)), \end{aligned} \tag{2.22}$$

$$\begin{aligned} 0 = {} & \tau(A(s,1)) + \tau(A(s,11)) + \tau(A(s,100)) + \tau(A(s,110)) \\ & + \tau(A(s,1001)), \end{aligned} \tag{2.23}$$

$$0 = \tau(A(s,1)) + \tau(A(s,101)) + \tau(A(s,1010)), \tag{2.24}$$

$$0 = \tau(A(s,10)) + \tau(A(s,110)) + \tau(A(s,1011)), \tag{2.25}$$

$$\begin{aligned} 0 = {} & \tau(A(s,\epsilon)) + \tau(A(s,1)) + \tau(A(s,10)) + \tau(A(s,11)) + \tau(A(s,100)) \\ & + \tau(A(s,1100)), \end{aligned} \tag{2.26}$$

$$0 = \tau(A(s,1)) + \tau(A(s,10)) + \tau(A(s,11)) + \tau(A(s,100))$$

$$+\tau(A(s,101))+\tau(A(s,1101)), \tag{2.27}$$

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

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

for $s=A(i,0^{2k})$. We find that $(A(i,0^{48}),E_{48})=(A(i,0^{20}),E_{20})$, so that we only have to verify that identities (2.21) through (2.34) hold for $2\le k\le 24$, 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 $u=2^{2k-1}$,*

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

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

$$M_{2k+1}=M^o[:7u]+x^{3u}M^o[:4u]+x^{5u}M^o[:2u]+x^{6u}M^o[:u]+x^{7u}R^o,$$
$$W_{2k+1}=W^o[:7u]+x^{3u}W^o[:4u]+x^{5u}W^o[:2u]+x^{6u}W^o[:u]+x^{7u}R^o.$$

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

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

We give the proof of

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Define

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

where

$$\begin{aligned} q_0(x) &= x^{28} + x^{25} + x^{20} + x^{19} + x^{18} + x^{17} + x^{16} + x^{15} + x^{14} + x^{12} + x^{10} + x^7, \\ q_1(x) &= x^{25} + x^{23} + x^{20} + x^{14} + x^{12} + x^{11} + x^{10} + x^9 + x^7 + x^5 + x^2 + x, \\ q_2(x) &= x^{22} + x^{16} + x^6 + x^4 + x^2 + 1, \\ q_3(x) &= x^{25} + x^{23} + x^{20} + x^{14} + x^{12} + x^{11} + x^{10} + x^9 + x^7 + x^5 + x^2 + x, \\ q_4(x) &= x^{25} + x^{24} + x^{22} + x^{20} + x^{19} + x^{18} + x^{17} + x^{15} + x^{14} + x^{10} + x^7 + x^6 \end{aligned}$$

$$+ x^2.$$

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

3. Annexe

All 16 polynomials are of the form

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

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

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

$$\begin{aligned}
p_0(x) &= x^{132} + x^{130} + x^{122} + x^{118} + x^{116} + x^{110} + x^{108} + x^{98} + x^{94} + x^{90} \\
&\quad + x^{88} + x^{86} + x^{76} + x^{70} + x^{66} + x^{62} + x^{58} + x^{56} + x^{54} + x^{48} + x^{46} \\
&\quad + x^{44} + x^{42} + x^{40} + x^{38} + x^{34} + x^{30} + x^{28} + x^{24} + x^{22} + x^{18} + x^{14} \\
&\quad + x^{12}, \\
p_3(x) &= x^{124} + x^{122} + x^{118} + x^{114} + x^{108} + x^{102} + x^{100} + x^{96} + x^{92} + x^{84} \\
&\quad + x^{82} + x^{80} + x^{78} + x^{70} + x^{68} + x^{62} + x^{58} + x^{48} + x^{46} + x^{34} + x^{28} \\
&\quad + x^{26} + x^{18} + x^{16} + x^{14} + x^{8}, \\
p_6(x) &= x^{124} + x^{122} + x^{120} + x^{116} + x^{112} + x^{100} + x^{96} + x^{94} + x^{90} + x^{88} \\
&\quad + x^{82} + x^{80} + x^{76} + x^{72} + x^{70} + x^{64} + x^{62} + x^{60} + x^{58} + x^{56} + x^{54} \\
&\quad + x^{50} + x^{44} + x^{42} + x^{28} + x^{24} + x^{22} + x^{18} + x^{16} + x^{12} + x^{4} + 1, \\
p_9(x) &= x^{126} + x^{122} + x^{118} + x^{114} + x^{108} + x^{104} + x^{98} + x^{96} + x^{94} + x^{92} \\
&\quad + x^{90} + x^{88} + x^{86} + x^{84} + x^{80} + x^{76} + x^{74} + x^{70} + x^{68} + x^{66} + x^{60} \\
&\quad + x^{56} + x^{54} + x^{50} + x^{48} + x^{42} + x^{38} + x^{30} + x^{28} + x^{26} + x^{24} + x^{18} \\
&\quad + x^{10} + x^{8} + x^{4} + x^{2}, \\
p_{12}(x) &= x^{126} + x^{122} + x^{120} + x^{118} + x^{114} + x^{112} + x^{110} + x^{106} + x^{104} + x^{102} \\
&\quad + x^{98} + x^{96} + x^{62} + x^{58} + x^{56} + x^{54} + x^{50} + x^{48} + x^{30} + x^{26} + x^{24} \\
&\quad + x^{22} + x^{18} + x^{16} + x^{14} + x^{10} + x^{8} + x^{6} + x^{2} + 1,
\end{aligned}$$

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

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

$$\begin{aligned}
p_0(x) &= x^{147} + x^{145} + x^{144} + x^{143} + x^{141} + x^{136} + x^{134} + x^{133} + x^{130} + x^{129} \\
&\quad + x^{128} + x^{125} + x^{124} + x^{123} + x^{120} + x^{119} + x^{118} + x^{114} + x^{113} \\
&\quad + x^{112} + x^{110} + x^{109} + x^{107} + x^{106} + x^{104} + x^{101} + x^{100} + x^{99} + x^{98}
\end{aligned}$$

$$
\begin{aligned}
&+x^{97}+x^{96}+x^{94}+x^{90}+x^{88}+x^{87}+x^{86}+x^{84}+x^{82}+x^{81}+x^{80}\\
&+x^{79}+x^{75}+x^{74}+x^{71}+x^{69}+x^{67}+x^{66}+x^{64}+x^{61}+x^{60}+x^{57}\\
&+x^{56}+x^{53}+x^{51}+x^{50}+x^{48}+x^{47}+x^{46}+x^{42}+x^{41}+x^{38}+x^{37}\\
&+x^{35}+x^{33}+x^{32}+x^{29}+x^{27},\\
p_3(x)=&\,x^{141}+x^{140}+x^{138}+x^{136}+x^{134}+x^{132}+x^{130}+x^{129}+x^{123}+x^{122}\\
&+x^{121}+x^{115}+x^{114}+x^{112}+x^{110}+x^{109}+x^{107}+x^{106}+x^{104}\\
&+x^{102}+x^{100}+x^{98}+x^{96}+x^{94}+x^{92}+x^{91}+x^{89}+x^{88}+x^{86}+x^{84}\\
&+x^{82}+x^{81}+x^{75}+x^{74}+x^{73}+x^{69}+x^{68}+x^{67}+x^{61}+x^{60}+x^{59}\\
&+x^{57}+x^{56}+x^{54}+x^{52}+x^{51}+x^{49}+x^{48}+x^{46}+x^{44}+x^{42}+x^{41}\\
&+x^{35}+x^{34}+x^{33}+x^{29}+x^{28}+x^{27}+x^{21}+x^{20}+x^{19}+x^{17}+x^{16}\\
&+x^{14}+x^{13}+x^{11}+x^{10}+x^{9},\\
p_6(x)=&\,x^{138}+x^{137}+x^{136}+x^{134}+x^{128}+x^{127}+x^{125}+x^{124}+x^{123}+x^{119}\\
&+x^{118}+x^{115}+x^{113}+x^{109}+x^{107}+x^{106}+x^{105}+x^{104}+x^{103}\\
&+x^{100}+x^{94}+x^{93}+x^{91}+x^{87}+x^{85}+x^{81}+x^{79}+x^{75}+x^{73}+x^{70}\\
&+x^{68}+x^{67}+x^{66}+x^{63}+x^{62}+x^{59}+x^{58}+x^{56}+x^{52}+x^{51}+x^{49}\\
&+x^{45}+x^{44}+x^{41}+x^{40}+x^{37}+x^{35}+x^{32}+x^{30}+x^{29}+x^{27}+x^{26}\\
&+x^{25}+x^{22}+x^{20}+x^{19}+x^{18}+x^{15}+x^{13}+x^{12}+x^{11}+x^{10}+x^{9}\\
&+x^{6},\\
p_9(x)=&\,x^{135}+x^{134}+x^{132}+x^{131}+x^{127}+x^{126}+x^{125}+x^{115}+x^{114}+x^{113}\\
&+x^{103}+x^{102}+x^{101}+x^{99}+x^{98}+x^{96}+x^{95}+x^{83}+x^{82}+x^{80}+x^{78}\\
&+x^{76}+x^{75}+x^{73}+x^{72}+x^{71}+x^{69}+x^{68}+x^{67}+x^{65}+x^{64}+x^{63}\\
&+x^{53}+x^{52}+x^{50}+x^{48}+x^{46}+x^{45}+x^{43}+x^{42}+x^{40}+x^{39}+x^{31}\\
&+x^{30}+x^{28}+x^{26}+x^{24}+x^{23}+x^{21}+x^{20}+x^{18}+x^{17}+x^{13}+x^{12}\\
&+x^{11}+x^{9}+x^{8}+x^{6}+x^{4}+x^{3},\\
p_{12}(x)=&\,x^{132}+x^{131}+x^{130}+x^{127}+x^{126}+x^{123}+x^{122}+x^{120}+x^{112}+x^{111}\\
&+x^{110}+x^{107}+x^{106}+x^{104}+x^{100}+x^{99}+x^{98}+x^{96}+x^{68}+x^{67}\\
&+x^{66}+x^{63}+x^{62}+x^{59}+x^{58}+x^{56}+x^{52}+x^{51}+x^{50}+x^{48}+x^{36}\\
&+x^{35}+x^{34}+x^{31}+x^{30}+x^{27}+x^{26}+x^{24}+x^{16}+x^{15}+x^{14}+x^{11}\\
&+x^{10}+x^{8}+x^{4}+x^{3}+x^{2}+1,
\end{aligned}
$$

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

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

$$
\begin{aligned}
p_0(x)=&\,x^{147}+x^{145}+x^{144}+x^{143}+x^{141}+x^{136}+x^{134}+x^{133}+x^{130}+x^{129}\\
&+x^{128}+x^{125}+x^{124}+x^{123}+x^{120}+x^{119}+x^{118}+x^{114}+x^{113}\\
&+x^{112}+x^{110}+x^{109}+x^{107}+x^{106}+x^{104}+x^{101}+x^{100}+x^{99}+x^{98}\\
&+x^{97}+x^{96}+x^{94}+x^{90}+x^{88}+x^{87}+x^{86}+x^{84}+x^{82}+x^{81}+x^{80}
\end{aligned}
$$

$$
\begin{aligned}
&+ x^{79} + x^{75} + x^{74} + x^{71} + x^{69} + x^{67} + x^{66} + x^{64} + x^{61} + x^{60} + x^{57}\\
&+ x^{56} + x^{53} + x^{51} + x^{50} + x^{48} + x^{47} + x^{46} + x^{42} + x^{41} + x^{38} + x^{37}\\
&+ x^{35} + x^{33} + x^{32} + x^{29} + x^{27},\\
p_3(x) &= x^{141} + x^{140} + x^{138} + x^{136} + x^{134} + x^{132} + x^{130} + x^{129} + x^{123} + x^{122}\\
&+ x^{121} + x^{115} + x^{114} + x^{112} + x^{110} + x^{109} + x^{107} + x^{106} + x^{104}\\
&+ x^{102} + x^{100} + x^{98} + x^{96} + x^{94} + x^{92} + x^{91} + x^{89} + x^{88} + x^{86} + x^{84}\\
&+ x^{82} + x^{81} + x^{75} + x^{74} + x^{73} + x^{69} + x^{68} + x^{67} + x^{61} + x^{60} + x^{59}\\
&+ x^{57} + x^{56} + x^{54} + x^{52} + x^{51} + x^{49} + x^{48} + x^{46} + x^{44} + x^{42} + x^{41}\\
&+ x^{35} + x^{34} + x^{33} + x^{29} + x^{28} + x^{27} + x^{21} + x^{20} + x^{19} + x^{17} + x^{16}\\
&+ x^{14} + x^{13} + x^{11} + x^{10} + x^{9},\\
p_6(x) &= x^{138} + x^{137} + x^{136} + x^{134} + x^{128} + x^{127} + x^{125} + x^{124} + x^{123} + x^{119}\\
&+ x^{118} + x^{115} + x^{113} + x^{109} + x^{107} + x^{106} + x^{105} + x^{104} + x^{103}\\
&+ x^{100} + x^{94} + x^{93} + x^{91} + x^{87} + x^{85} + x^{81} + x^{79} + x^{75} + x^{73} + x^{70}\\
&+ x^{68} + x^{67} + x^{66} + x^{63} + x^{62} + x^{59} + x^{58} + x^{56} + x^{52} + x^{51} + x^{49}\\
&+ x^{45} + x^{44} + x^{41} + x^{40} + x^{37} + x^{35} + x^{32} + x^{30} + x^{29} + x^{27} + x^{26}\\
&+ x^{25} + x^{22} + x^{20} + x^{19} + x^{18} + x^{15} + x^{13} + x^{12} + x^{11} + x^{10} + x^{9}\\
&+ x^{6},\\
p_9(x) &= x^{135} + x^{134} + x^{132} + x^{131} + x^{127} + x^{126} + x^{125} + x^{115} + x^{114} + x^{113}\\
&+ x^{103} + x^{102} + x^{101} + x^{99} + x^{98} + x^{96} + x^{95} + x^{83} + x^{82} + x^{80} + x^{78}\\
&+ x^{76} + x^{75} + x^{73} + x^{72} + x^{71} + x^{69} + x^{68} + x^{67} + x^{65} + x^{64} + x^{63}\\
&+ x^{53} + x^{52} + x^{50} + x^{48} + x^{46} + x^{45} + x^{43} + x^{42} + x^{40} + x^{39} + x^{31}\\
&+ x^{30} + x^{28} + x^{26} + x^{24} + x^{23} + x^{21} + x^{20} + x^{18} + x^{17} + x^{13} + x^{12}\\
&+ x^{11} + x^{9} + x^{8} + x^{6} + x^{4} + x^{3},\\
p_{12}(x) &= x^{132} + x^{131} + x^{130} + x^{127} + x^{126} + x^{123} + x^{122} + x^{120} + x^{112} + x^{111}\\
&+ x^{110} + x^{107} + x^{106} + x^{104} + x^{100} + x^{99} + x^{98} + x^{96} + x^{68} + x^{67}\\
&+ x^{66} + x^{63} + x^{62} + x^{59} + x^{58} + x^{56} + x^{52} + x^{51} + x^{50} + x^{48} + x^{36}\\
&+ x^{35} + x^{34} + x^{31} + x^{30} + x^{27} + x^{26} + x^{24} + x^{16} + x^{15} + x^{14} + x^{11}\\
&+ x^{10} + x^{8} + x^{4} + x^{3} + x^{2} + 1,
\end{aligned}
$$

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

$$
\begin{aligned}
p_0(x) &= x^{162} + x^{160} + x^{156} + x^{152} + x^{150} + x^{146} + x^{138} + x^{134} + x^{132} + x^{130}\\
&+ x^{126} + x^{122} + x^{118} + x^{116} + x^{114} + x^{112} + x^{106} + x^{104} + x^{98} + x^{94}\\
&+ x^{88} + x^{84} + x^{82} + x^{80} + x^{74} + x^{72} + x^{70} + x^{68} + x^{66} + x^{64} + x^{60}\\
&+ x^{56} + x^{48} + x^{44} + x^{42},\\
p_3(x) &= x^{144} + x^{142} + x^{140} + x^{138} + x^{136} + x^{134} + x^{132} + x^{126} + x^{124} + x^{120}
\end{aligned}
$$

$$
\begin{aligned}
&+x^{116}+x^{102}+x^{96}+x^{94}+x^{92}+x^{86}+x^{82}+x^{80}+x^{78}+x^{74}+x^{68}\\
&+x^{66}+x^{60}+x^{56}+x^{54}+x^{52}+x^{48}+x^{38}+x^{36}+x^{30}+x^{26}+x^{24}\\
&+x^{22}+x^{20}+x^{16}+x^{14}+x^{8}+x^{6},\\
p_6(x) &= x^{144}+x^{142}+x^{140}+x^{134}+x^{128}+x^{126}+x^{122}+x^{120}+x^{118}+x^{116}\\
&+x^{112}+x^{110}+x^{108}+x^{106}+x^{104}+x^{100}+x^{98}+x^{96}+x^{90}+x^{84}\\
&+x^{76}+x^{64}+x^{60}+x^{56}+x^{52}+x^{50}+x^{48}+x^{42}+x^{40}+x^{34}+x^{28}\\
&+x^{26}+x^{24}+x^{22}+x^{20}+x^{18}+x^{12}+x^{8}+x^{6}+1,\\
p_9(x) &= x^{138}+x^{136}+x^{132}+x^{130}+x^{128}+x^{110}+x^{104}+x^{102}+x^{100}+x^{96}\\
&+x^{94}+x^{92}+x^{84}+x^{82}+x^{80}+x^{76}+x^{74}+x^{72}+x^{66}+x^{60}+x^{52}\\
&+x^{50}+x^{48}+x^{46}+x^{42}+x^{30}+x^{28}+x^{26}+x^{24}+x^{20}+x^{16}+x^{10}\\
&+x^{4}+x^{2},\\
p_{12}(x) &= x^{138}+x^{136}+x^{114}+x^{112}+x^{106}+x^{104}+x^{98}+x^{96}+x^{74}+x^{72}\\
&+x^{58}+x^{56}+x^{50}+x^{48}+x^{42}+x^{40}+x^{18}+x^{16}+x^{10}+x^{8}+x^{2}+1,
\end{aligned}
$$

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

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

$$
\begin{aligned}
p_0(x) &= x^{162}+x^{160}+x^{156}+x^{152}+x^{148}+x^{146}+x^{142}+x^{140}+x^{138}+x^{132}\\
&+x^{130}+x^{128}+x^{126}+x^{124}+x^{122}+x^{116}+x^{114}+x^{112}+x^{106}\\
&+x^{104}+x^{102}+x^{100}+x^{92}+x^{90}+x^{86}+x^{80}+x^{78}+x^{74}+x^{72}+x^{70}\\
&+x^{62}+x^{58}+x^{56}+x^{52}+x^{44}+x^{38}+x^{36}+x^{26}+x^{20}+x^{18}+x^{16}\\
&+x^{14}+x^{12},\\
p_3(x) &= x^{144}+x^{142}+x^{140}+x^{138}+x^{136}+x^{134}+x^{130}+x^{128}+x^{116}+x^{114}\\
&+x^{110}+x^{108}+x^{106}+x^{104}+x^{98}+x^{96}+x^{90}+x^{88}+x^{84}+x^{82}\\
&+x^{78}+x^{70}+x^{64}+x^{62}+x^{60}+x^{58}+x^{56}+x^{52}+x^{48}+x^{38}+x^{36}\\
&+x^{30}+x^{26}+x^{24}+x^{22}+x^{18}+x^{10}+x^{8},\\
p_6(x) &= x^{144}+x^{142}+x^{140}+x^{134}+x^{132}+x^{130}+x^{126}+x^{122}+x^{114}+x^{112}\\
&+x^{110}+x^{108}+x^{106}+x^{104}+x^{102}+x^{100}+x^{96}+x^{90}+x^{86}+x^{80}\\
&+x^{76}+x^{72}+x^{66}+x^{58}+x^{56}+x^{54}+x^{52}+x^{50}+x^{48}+x^{46}+x^{44}\\
&+x^{32}+x^{30}+x^{26}+x^{24}+x^{20}+x^{18}+x^{6}+x^{4}+1,\\
p_9(x) &= x^{138}+x^{136}+x^{132}+x^{130}+x^{128}+x^{110}+x^{104}+x^{102}+x^{100}+x^{96}\\
&+x^{94}+x^{92}+x^{84}+x^{82}+x^{80}+x^{76}+x^{74}+x^{72}+x^{66}+x^{60}+x^{52}\\
&+x^{50}+x^{48}+x^{46}+x^{42}+x^{30}+x^{28}+x^{26}+x^{24}+x^{20}+x^{16}+x^{10}\\
&+x^{4}+x^{2},\\
p_{12}(x) &= x^{138}+x^{136}+x^{114}+x^{112}+x^{106}+x^{104}+x^{98}+x^{96}+x^{74}+x^{72}\\
&+x^{58}+x^{56}+x^{50}+x^{48}+x^{42}+x^{40}+x^{18}+x^{16}+x^{10}+x^{8}+x^{2}+1,
\end{aligned}
$$

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

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

$$\begin{aligned}
p_0(x) &= x^{147} + x^{145} + x^{141} + x^{138} + x^{136} + x^{132} + x^{131} + x^{130} + x^{129} + x^{127} \\
&\quad + x^{124} + x^{123} + x^{120} + x^{119} + x^{116} + x^{114} + x^{106} + x^{102} + x^{101} \\
&\quad + x^{99} + x^{98} + x^{96} + x^{95} + x^{94} + x^{93} + x^{89} + x^{86} + x^{84} + x^{82} + x^{81} \\
&\quad + x^{80} + x^{79} + x^{78} + x^{75} + x^{73} + x^{72} + x^{71} + x^{70} + x^{68} + x^{66} + x^{65} \\
&\quad + x^{64} + x^{61} + x^{60} + x^{56} + x^{52} + x^{49} + x^{48} + x^{47} + x^{43} + x^{42} + x^{41} \\
&\quad + x^{39} + x^{38} + x^{37} + x^{36} + x^{35} + x^{34} + x^{33} + x^{32} + x^{31} + x^{29} + x^{26} \\
&\quad + x^{22} + x^{18}, \\
p_3(x) &= x^{141} + x^{140} + x^{138} + x^{136} + x^{134} + x^{132} + x^{130} + x^{129} + x^{123} + x^{122} \\
&\quad + x^{121} + x^{115} + x^{114} + x^{112} + x^{110} + x^{109} + x^{107} + x^{106} + x^{104} \\
&\quad + x^{102} + x^{100} + x^{98} + x^{96} + x^{94} + x^{92} + x^{91} + x^{89} + x^{88} + x^{86} + x^{84} \\
&\quad + x^{82} + x^{81} + x^{75} + x^{74} + x^{73} + x^{69} + x^{68} + x^{67} + x^{61} + x^{60} + x^{59} \\
&\quad + x^{57} + x^{56} + x^{54} + x^{52} + x^{51} + x^{49} + x^{48} + x^{46} + x^{44} + x^{42} + x^{41} \\
&\quad + x^{35} + x^{34} + x^{33} + x^{29} + x^{28} + x^{27} + x^{21} + x^{20} + x^{19} + x^{17} + x^{16} \\
&\quad + x^{14} + x^{13} + x^{11} + x^{10} + x^{9}, \\
p_6(x) &= x^{138} + x^{137} + x^{136} + x^{134} + x^{128} + x^{127} + x^{125} + x^{124} + x^{123} + x^{119} \\
&\quad + x^{118} + x^{115} + x^{113} + x^{109} + x^{107} + x^{106} + x^{105} + x^{104} + x^{103} \\
&\quad + x^{100} + x^{94} + x^{93} + x^{91} + x^{87} + x^{85} + x^{81} + x^{79} + x^{75} + x^{73} + x^{70} \\
&\quad + x^{68} + x^{67} + x^{66} + x^{63} + x^{62} + x^{59} + x^{58} + x^{56} + x^{52} + x^{51} + x^{49} \\
&\quad + x^{45} + x^{44} + x^{41} + x^{40} + x^{37} + x^{35} + x^{32} + x^{30} + x^{29} + x^{27} + x^{26} \\
&\quad + x^{25} + x^{22} + x^{20} + x^{19} + x^{18} + x^{15} + x^{13} + x^{12} + x^{11} + x^{10} + x^{9} \\
&\quad + x^{6}, \\
p_9(x) &= x^{135} + x^{134} + x^{132} + x^{131} + x^{127} + x^{126} + x^{125} + x^{115} + x^{114} + x^{113} \\
&\quad + x^{103} + x^{102} + x^{101} + x^{99} + x^{98} + x^{96} + x^{95} + x^{83} + x^{82} + x^{80} + x^{78} \\
&\quad + x^{76} + x^{75} + x^{73} + x^{72} + x^{71} + x^{69} + x^{68} + x^{67} + x^{65} + x^{64} + x^{63} \\
&\quad + x^{53} + x^{52} + x^{50} + x^{48} + x^{46} + x^{45} + x^{43} + x^{42} + x^{40} + x^{39} + x^{31} \\
&\quad + x^{30} + x^{28} + x^{26} + x^{24} + x^{23} + x^{21} + x^{20} + x^{18} + x^{17} + x^{13} + x^{12} \\
&\quad + x^{11} + x^{9} + x^{8} + x^{6} + x^{4} + x^{3}, \\
p_{12}(x) &= x^{132} + x^{131} + x^{130} + x^{127} + x^{126} + x^{123} + x^{122} + x^{120} + x^{112} + x^{111} \\
&\quad + x^{110} + x^{107} + x^{106} + x^{104} + x^{100} + x^{99} + x^{98} + x^{96} + x^{68} + x^{67} \\
&\quad + x^{66} + x^{63} + x^{62} + x^{59} + x^{58} + x^{56} + x^{52} + x^{51} + x^{50} + x^{48} + x^{36} \\
&\quad + x^{35} + x^{34} + x^{31} + x^{30} + x^{27} + x^{26} + x^{24} + x^{16} + x^{15} + x^{14} + x^{11} \\
&\quad + x^{10} + x^{8} + x^{4} + x^{3} + x^{2} + 1,
\end{aligned}$$

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

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

$$\begin{aligned}
p_0(x) &= x^{147}+x^{145}+x^{141}+x^{138}+x^{136}+x^{132}+x^{131}+x^{130}+x^{129}+x^{127}\\
&\quad +x^{124}+x^{123}+x^{120}+x^{119}+x^{116}+x^{114}+x^{106}+x^{102}+x^{101}\\
&\quad +x^{99}+x^{98}+x^{96}+x^{95}+x^{94}+x^{93}+x^{89}+x^{86}+x^{84}+x^{82}+x^{81}\\
&\quad +x^{80}+x^{79}+x^{78}+x^{75}+x^{73}+x^{72}+x^{71}+x^{70}+x^{68}+x^{66}+x^{65}\\
&\quad +x^{64}+x^{61}+x^{60}+x^{56}+x^{52}+x^{49}+x^{48}+x^{47}+x^{43}+x^{42}+x^{41}\\
&\quad +x^{39}+x^{38}+x^{37}+x^{36}+x^{35}+x^{34}+x^{33}+x^{32}+x^{31}+x^{29}+x^{26}\\
&\quad +x^{22}+x^{18},\\
p_3(x) &= x^{141}+x^{140}+x^{138}+x^{136}+x^{134}+x^{132}+x^{130}+x^{129}+x^{123}+x^{122}\\
&\quad +x^{121}+x^{115}+x^{114}+x^{112}+x^{110}+x^{109}+x^{107}+x^{106}+x^{104}\\
&\quad +x^{102}+x^{100}+x^{98}+x^{96}+x^{94}+x^{92}+x^{91}+x^{89}+x^{88}+x^{86}+x^{84}\\
&\quad +x^{82}+x^{81}+x^{75}+x^{74}+x^{73}+x^{69}+x^{68}+x^{67}+x^{61}+x^{60}+x^{59}\\
&\quad +x^{57}+x^{56}+x^{54}+x^{52}+x^{51}+x^{49}+x^{48}+x^{46}+x^{44}+x^{42}+x^{41}\\
&\quad +x^{35}+x^{34}+x^{33}+x^{29}+x^{28}+x^{27}+x^{21}+x^{20}+x^{19}+x^{17}+x^{16}\\
&\quad +x^{14}+x^{13}+x^{11}+x^{10}+x^{9},\\
p_6(x) &= x^{138}+x^{137}+x^{136}+x^{134}+x^{128}+x^{127}+x^{125}+x^{124}+x^{123}+x^{119}\\
&\quad +x^{118}+x^{115}+x^{113}+x^{109}+x^{107}+x^{106}+x^{105}+x^{104}+x^{103}\\
&\quad +x^{100}+x^{94}+x^{93}+x^{91}+x^{87}+x^{85}+x^{81}+x^{79}+x^{75}+x^{73}+x^{70}\\
&\quad +x^{68}+x^{67}+x^{66}+x^{63}+x^{62}+x^{59}+x^{58}+x^{56}+x^{52}+x^{51}+x^{49}\\
&\quad +x^{45}+x^{44}+x^{41}+x^{40}+x^{37}+x^{35}+x^{32}+x^{30}+x^{29}+x^{27}+x^{26}\\
&\quad +x^{25}+x^{22}+x^{20}+x^{19}+x^{18}+x^{15}+x^{13}+x^{12}+x^{11}+x^{10}+x^{9}\\
&\quad +x^{6},\\
p_9(x) &= x^{135}+x^{134}+x^{132}+x^{131}+x^{127}+x^{126}+x^{125}+x^{115}+x^{114}+x^{113}\\
&\quad +x^{103}+x^{102}+x^{101}+x^{99}+x^{98}+x^{96}+x^{95}+x^{83}+x^{82}+x^{80}+x^{78}\\
&\quad +x^{76}+x^{75}+x^{73}+x^{72}+x^{71}+x^{69}+x^{68}+x^{67}+x^{65}+x^{64}+x^{63}\\
&\quad +x^{53}+x^{52}+x^{50}+x^{48}+x^{46}+x^{45}+x^{43}+x^{42}+x^{40}+x^{39}+x^{31}\\
&\quad +x^{30}+x^{28}+x^{26}+x^{24}+x^{23}+x^{21}+x^{20}+x^{18}+x^{17}+x^{13}+x^{12}\\
&\quad +x^{11}+x^{9}+x^{8}+x^{6}+x^{4}+x^{3},\\
p_{12}(x) &= x^{132}+x^{131}+x^{130}+x^{127}+x^{126}+x^{123}+x^{122}+x^{120}+x^{112}+x^{111}\\
&\quad +x^{110}+x^{107}+x^{106}+x^{104}+x^{100}+x^{99}+x^{98}+x^{96}+x^{68}+x^{67}\\
&\quad +x^{66}+x^{63}+x^{62}+x^{59}+x^{58}+x^{56}+x^{52}+x^{51}+x^{50}+x^{48}+x^{36}\\
&\quad +x^{35}+x^{34}+x^{31}+x^{30}+x^{27}+x^{26}+x^{24}+x^{16}+x^{15}+x^{14}+x^{11}\\
&\quad +x^{10}+x^{8}+x^{4}+x^{3}+x^{2}+1,
\end{aligned}$$

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

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

$$\begin{aligned}
p_0(x) &= x^{132} + x^{130} + x^{126} + x^{122} + x^{118} + x^{116} + x^{114} + x^{112} + x^{108} + x^{104} \\
&\quad + x^{102} + x^{100} + x^{94} + x^{92} + x^{84} + x^{82} + x^{80} + x^{78} + x^{68} + x^{64} + x^{58} \\
&\quad + x^{56} + x^{54} + x^{46} + x^{42} + x^{40} + x^{38} + x^{36} + x^{32} + x^{26} + x^{24}, \\
p_3(x) &= x^{124} + x^{122} + x^{120} + x^{118} + x^{112} + x^{106} + x^{100} + x^{96} + x^{92} + x^{88} \\
&\quad + x^{84} + x^{80} + x^{78} + x^{76} + x^{60} + x^{58} + x^{54} + x^{52} + x^{48} + x^{44} + x^{40} \\
&\quad + x^{38} + x^{36} + x^{30} + x^{28} + x^{26} + x^{24} + x^{14} + x^{12} + x^{10} + x^{8} + x^{6}, \\
p_6(x) &= x^{124} + x^{122} + x^{116} + x^{110} + x^{106} + x^{102} + x^{100} + x^{98} + x^{96} + x^{94} \\
&\quad + x^{92} + x^{88} + x^{86} + x^{82} + x^{72} + x^{70} + x^{68} + x^{66} + x^{56} + x^{54} + x^{50} \\
&\quad + x^{38} + x^{36} + x^{34} + x^{30} + x^{28} + x^{26} + x^{22} + x^{20} + x^{16} + x^{12} + x^{10} \\
&\quad + x^{8} + 1, \\
p_9(x) &= x^{126} + x^{122} + x^{118} + x^{114} + x^{108} + x^{104} + x^{98} + x^{96} + x^{94} + x^{92} \\
&\quad + x^{90} + x^{88} + x^{86} + x^{84} + x^{80} + x^{76} + x^{74} + x^{70} + x^{68} + x^{66} + x^{60} \\
&\quad + x^{56} + x^{54} + x^{50} + x^{48} + x^{42} + x^{38} + x^{30} + x^{28} + x^{26} + x^{24} + x^{18} \\
&\quad + x^{10} + x^{8} + x^{4} + x^{2}, \\
p_{12}(x) &= x^{126} + x^{122} + x^{120} + x^{118} + x^{114} + x^{112} + x^{110} + x^{106} + x^{104} + x^{102} \\
&\quad + x^{98} + x^{96} + x^{62} + x^{58} + x^{56} + x^{54} + x^{50} + x^{48} + x^{30} + x^{26} + x^{24} \\
&\quad + x^{22} + x^{18} + x^{16} + x^{14} + x^{10} + x^{8} + x^{6} + x^{2} + 1,
\end{aligned}$$

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

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

$$\begin{aligned}
p_0(x) &= x^{147} + x^{145} + x^{144} + x^{143} + x^{139} + x^{137} + x^{132} + x^{131} + x^{128} + x^{127} \\
&\quad + x^{122} + x^{121} + x^{120} + x^{119} + x^{117} + x^{116} + x^{110} + x^{109} + x^{108} \\
&\quad + x^{106} + x^{101} + x^{100} + x^{99} + x^{98} + x^{97} + x^{96} + x^{95} + x^{94} + x^{92} + x^{87} \\
&\quad + x^{82} + x^{78} + x^{77} + x^{76} + x^{74} + x^{73} + x^{71} + x^{70} + x^{69} + x^{68} + x^{67} \\
&\quad + x^{66} + x^{65} + x^{63} + x^{61} + x^{59} + x^{57} + x^{52} + x^{45} + x^{44} + x^{40} + x^{39} \\
&\quad + x^{36} + x^{34} + x^{29} + x^{28} + x^{24} + x^{23} + x^{18} + x^{17} + x^{16} + x^{15} + x^{12}, \\
p_3(x) &= x^{144} + x^{143} + x^{142} + x^{141} + x^{139} + x^{137} + x^{135} + x^{134} + x^{128} + x^{127} \\
&\quad + x^{125} + x^{124} + x^{122} + x^{120} + x^{119} + x^{118} + x^{116} + x^{115} + x^{112} \\
&\quad + x^{111} + x^{110} + x^{105} + x^{102} + x^{101} + x^{100} + x^{99} + x^{97} + x^{96} + x^{89} \\
&\quad + x^{88} + x^{87} + x^{86} + x^{82} + x^{81} + x^{80} + x^{77} + x^{76} + x^{75} + x^{74} + x^{73} \\
&\quad + x^{72} + x^{71} + x^{69} + x^{65} + x^{63} + x^{62} + x^{59} + x^{54} + x^{52} + x^{51} + x^{48} \\
&\quad + x^{47} + x^{44} + x^{43} + x^{41} + x^{40} + x^{39} + x^{38} + x^{37} + x^{35} + x^{31} + x^{30} \\
&\quad + x^{29} + x^{26} + x^{22} + x^{18} + x^{15} + x^{13} + x^{11} + x^{8}, \\
p_6(x) &= x^{144} + x^{143} + x^{142} + x^{141} + x^{139} + x^{137} + x^{135} + x^{134} + x^{129} + x^{128} \\
&\quad + x^{127} + x^{126} + x^{123} + x^{121} + x^{118} + x^{117} + x^{116} + x^{107} + x^{106}
\end{aligned}$$

$$
\begin{aligned}
&+x^{105}+x^{104}+x^{102}+x^{101}+x^{100}+x^{99}+x^{98}+x^{95}+x^{93}+x^{90}\\
&+x^{86}+x^{85}+x^{82}+x^{81}+x^{78}+x^{75}+x^{73}+x^{68}+x^{66}+x^{65}+x^{63}\\
&+x^{62}+x^{61}+x^{59}+x^{58}+x^{56}+x^{54}+x^{53}+x^{47}+x^{46}+x^{45}+x^{41}\\
&+x^{40}+x^{37}+x^{36}+x^{35}+x^{34}+x^{30}+x^{29}+x^{28}+x^{27}+x^{25}+x^{22}\\
&+x^{18}+x^{16}+x^{15}+x^{10}+x^{9}+x^{8}+x^{7}+x^{3}+x^{2}+1,\\
p_9(x)=\ &x^{144}+x^{143}+x^{142}+x^{139}+x^{138}+x^{136}+x^{132}+x^{131}+x^{130}+x^{127}\\
&+x^{126}+x^{124}+x^{120}+x^{119}+x^{118}+x^{115}+x^{114}+x^{112}+x^{108}\\
&+x^{107}+x^{106}+x^{103}+x^{102}+x^{100}+x^{80}+x^{79}+x^{78}+x^{75}+x^{74}\\
&+x^{72}+x^{68}+x^{67}+x^{66}+x^{64}+x^{60}+x^{59}+x^{58}+x^{55}+x^{54}+x^{52}\\
&+x^{48}+x^{47}+x^{46}+x^{43}+x^{42}+x^{40}+x^{36}+x^{35}+x^{34}+x^{31}+x^{30}\\
&+x^{28}+x^{24}+x^{23}+x^{22}+x^{19}+x^{18}+x^{16}+x^{12}+x^{11}+x^{10}+x^{7}\\
&+x^{6}+x^{4},\\
p_{12}(x)=\ &x^{144}+x^{143}+x^{142}+x^{139}+x^{138}+x^{136}+x^{124}+x^{123}+x^{122}+x^{119}\\
&+x^{118}+x^{115}+x^{114}+x^{111}+x^{110}+x^{108}+x^{104}+x^{103}+x^{102}\\
&+x^{99}+x^{98}+x^{96}+x^{80}+x^{79}+x^{78}+x^{75}+x^{74}+x^{72}+x^{64}+x^{63}\\
&+x^{62}+x^{60}+x^{56}+x^{55}+x^{54}+x^{51}+x^{50}+x^{47}+x^{46}+x^{43}+x^{42}\\
&+x^{40}+x^{28}+x^{27}+x^{26}+x^{23}+x^{22}+x^{19}+x^{18}+x^{15}+x^{14}+x^{12}\\
&+x^{8}+x^{7}+x^{6}+x^{3}+x^{2}+1,
\end{aligned}
$$

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

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

$$
\begin{aligned}
p_0(x)=\ &x^{164}+x^{160}+x^{156}+x^{155}+x^{152}+x^{151}+x^{150}+x^{149}+x^{145}+x^{144}\\
&+x^{142}+x^{140}+x^{136}+x^{135}+x^{131}+x^{130}+x^{128}+x^{127}+x^{121}\\
&+x^{120}+x^{117}+x^{116}+x^{115}+x^{112}+x^{109}+x^{107}+x^{105}+x^{104}\\
&+x^{102}+x^{100}+x^{99}+x^{98}+x^{96}+x^{94}+x^{93}+x^{92}+x^{89}+x^{88}+x^{84}\\
&+x^{82}+x^{81}+x^{80}+x^{78}+x^{76}+x^{74}+x^{71}+x^{70}+x^{69}+x^{68}+x^{67}\\
&+x^{65}+x^{63}+x^{62}+x^{61}+x^{60}+x^{58}+x^{53}+x^{52}+x^{46}+x^{44}+x^{40}\\
&+x^{39}+x^{38}+x^{37}+x^{36}+x^{35}+x^{34}+x^{32}+x^{31}+x^{30}+x^{29}+x^{27},\\
p_3(x)=\ &x^{143}+x^{141}+x^{139}+x^{138}+x^{135}+x^{134}+x^{133}+x^{130}+x^{128}+x^{127}\\
&+x^{126}+x^{123}+x^{121}+x^{120}+x^{119}+x^{116}+x^{114}+x^{113}+x^{112}\\
&+x^{111}+x^{105}+x^{103}+x^{101}+x^{100}+x^{99}+x^{96}+x^{94}+x^{93}+x^{92}\\
&+x^{89}+x^{87}+x^{86}+x^{85}+x^{82}+x^{80}+x^{79}+x^{78}+x^{75}+x^{73}+x^{72}\\
&+x^{69}+x^{68}+x^{67}+x^{65}+x^{64}+x^{62}+x^{61}+x^{58}+x^{57}+x^{56}+x^{54}\\
&+x^{53}+x^{52}+x^{49}+x^{47}+x^{46}+x^{45}+x^{42}+x^{40}+x^{39}+x^{38}+x^{35}\\
&+x^{33}+x^{32}+x^{29}+x^{28}+x^{27}+x^{25}+x^{24}+x^{22}+x^{21}+x^{18}+x^{17}\\
&+x^{16}+x^{15}+x^{14}+x^{12}+x^{11}+x^{10}+x^{9},
\end{aligned}
$$

$$\begin{aligned}
p_6(x) &= x^{146} + x^{138} + x^{136} + x^{132} + x^{126} + x^{124} + x^{118} + x^{116} + x^{108} + x^{96} \\
&\quad + x^{92} + x^{88} + x^{86} + x^{82} + x^{80} + x^{78} + x^{76} + x^{74} + x^{70} + x^{60} + x^{58} \\
&\quad + x^{56} + x^{54} + x^{52} + x^{48} + x^{46} + x^{44} + x^{38} + x^{32} + x^{30} + x^{18} + x^{14} \\
&\quad + x^{8} + x^{6}, \\
p_9(x) &= x^{149} + x^{147} + x^{144} + x^{143} + x^{137} + x^{135} + x^{133} + x^{132} + x^{129} + x^{128} \\
&\quad + x^{125} + x^{124} + x^{120} + x^{119} + x^{113} + x^{111} + x^{109} + x^{108} + x^{105} \\
&\quad + x^{104} + x^{100} + x^{99} + x^{85} + x^{83} + x^{80} + x^{79} + x^{73} + x^{71} + x^{68} + x^{67} \\
&\quad + x^{65} + x^{63} + x^{61} + x^{60} + x^{57} + x^{56} + x^{53} + x^{52} + x^{48} + x^{47} + x^{41} \\
&\quad + x^{39} + x^{37} + x^{36} + x^{33} + x^{32} + x^{29} + x^{28} + x^{24} + x^{23} + x^{17} + x^{15} \\
&\quad + x^{13} + x^{12} + x^{9} + x^{8} + x^{4} + x^{3}, \\
p_{12}(x) &= x^{152} + x^{148} + x^{144} + x^{136} + x^{132} + x^{128} + x^{120} + x^{112} + x^{104} + x^{96} \\
&\quad + x^{88} + x^{84} + x^{80} + x^{52} + x^{40} + x^{36} + x^{32} + x^{24} + x^{16} + x^{8} + 1,
\end{aligned}$$

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

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

$$\begin{aligned}
p_0(x) &= x^{138} + x^{136} + x^{135} + x^{131} + x^{130} + x^{128} + x^{127} + x^{125} + x^{124} + x^{121} \\
&\quad + x^{118} + x^{116} + x^{115} + x^{114} + x^{109} + x^{106} + x^{104} + x^{103} + x^{102} \\
&\quad + x^{100} + x^{99} + x^{98} + x^{97} + x^{96} + x^{95} + x^{93} + x^{92} + x^{91} + x^{90} + x^{89} \\
&\quad + x^{88} + x^{86} + x^{85} + x^{84} + x^{80} + x^{78} + x^{75} + x^{74} + x^{71} + x^{70} + x^{69} \\
&\quad + x^{68} + x^{67} + x^{66} + x^{57} + x^{56} + x^{54} + x^{48} + x^{47} + x^{46} + x^{41} + x^{39} \\
&\quad + x^{38} + x^{37} + x^{34} + x^{33} + x^{32} + x^{30} + x^{28} + x^{27} + x^{26} + x^{23} + x^{22} \\
&\quad + x^{21} + x^{18}, \\
p_3(x) &= x^{135} + x^{133} + x^{130} + x^{129} + x^{127} + x^{122} + x^{121} + x^{120} + x^{118} + x^{117} \\
&\quad + x^{116} + x^{115} + x^{109} + x^{104} + x^{102} + x^{100} + x^{99} + x^{96} + x^{95} + x^{94} \\
&\quad + x^{92} + x^{91} + x^{90} + x^{89} + x^{87} + x^{85} + x^{82} + x^{81} + x^{79} + x^{74} + x^{73} \\
&\quad + x^{72} + x^{70} + x^{69} + x^{68} + x^{67} + x^{63} + x^{58} + x^{57} + x^{56} + x^{55} + x^{54} \\
&\quad + x^{52} + x^{51} + x^{50} + x^{49} + x^{47} + x^{45} + x^{42} + x^{41} + x^{39} + x^{34} + x^{33} \\
&\quad + x^{32} + x^{30} + x^{29} + x^{28} + x^{27} + x^{23} + x^{18} + x^{17} + x^{16} + x^{15} + x^{14} \\
&\quad + x^{12} + x^{11} + x^{10} + x^{9}, \\
p_6(x) &= x^{138} + x^{134} + x^{128} + x^{126} + x^{122} + x^{114} + x^{112} + x^{108} + x^{102} + x^{100} \\
&\quad + x^{94} + x^{92} + x^{90} + x^{86} + x^{84} + x^{80} + x^{78} + x^{74} + x^{72} + x^{70} + x^{68} \\
&\quad + x^{56} + x^{52} + x^{50} + x^{48} + x^{36} + x^{34} + x^{32} + x^{30} + x^{28} + x^{24} + x^{22} \\
&\quad + x^{20} + x^{14} + x^{8} + x^{6}, \\
p_9(x) &= x^{141} + x^{139} + x^{137} + x^{136} + x^{133} + x^{132} + x^{129} + x^{128} + x^{124} + x^{123} \\
&\quad + x^{117} + x^{115} + x^{113} + x^{112} + x^{109} + x^{108} + x^{105} + x^{104} + x^{100} \\
&\quad + x^{99} + x^{77} + x^{75} + x^{73} + x^{72} + x^{69} + x^{68} + x^{65} + x^{64} + x^{61} + x^{60}
\end{aligned}$$

$$\begin{aligned}
&+x^{57}+x^{56}+x^{52}+x^{51}+x^{45}+x^{43}+x^{41}+x^{40}+x^{37}+x^{36}+x^{33}\\
&+x^{32}+x^{28}+x^{27}+x^{21}+x^{19}+x^{17}+x^{16}+x^{13}+x^{12}+x^{9}+x^{8}+x^{4}\\
&+x^{3},\\
p_{12}(x)=\,&x^{144}+x^{136}+x^{124}+x^{108}+x^{104}+x^{96}+x^{80}+x^{72}+x^{64}+x^{60}+x^{56}\\
&+x^{40}+x^{28}+x^{12}+x^{8}+1,
\end{aligned}$$

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

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

$$\begin{aligned}
p_0(x)=\,&x^{147}+x^{145}+x^{139}+x^{132}+x^{130}+x^{129}+x^{128}+x^{125}+x^{124}+x^{123}\\
&+x^{122}+x^{121}+x^{119}+x^{118}+x^{116}+x^{113}+x^{112}+x^{111}+x^{110}\\
&+x^{107}+x^{106}+x^{104}+x^{102}+x^{101}+x^{100}+x^{99}+x^{98}+x^{97}+x^{96}\\
&+x^{94}+x^{90}+x^{87}+x^{86}+x^{81}+x^{80}+x^{73}+x^{71}+x^{70}+x^{68}+x^{62}\\
&+x^{61}+x^{57}+x^{56}+x^{54}+x^{51}+x^{49}+x^{43}+x^{41}+x^{39}+x^{38}+x^{36}\\
&+x^{35}+x^{33},\\
p_3(x)=\,&x^{144}+x^{143}+x^{142}+x^{141}+x^{139}+x^{138}+x^{136}+x^{135}+x^{132}+x^{131}\\
&+x^{130}+x^{127}+x^{125}+x^{124}+x^{122}+x^{118}+x^{117}+x^{116}+x^{115}\\
&+x^{113}+x^{111}+x^{108}+x^{107}+x^{104}+x^{103}+x^{98}+x^{95}+x^{94}+x^{93}\\
&+x^{92}+x^{91}+x^{90}+x^{88}+x^{87}+x^{84}+x^{83}+x^{81}+x^{77}+x^{76}+x^{75}\\
&+x^{74}+x^{73}+x^{66}+x^{65}+x^{63}+x^{62}+x^{59}+x^{58}+x^{57}+x^{55}+x^{53}\\
&+x^{50}+x^{49}+x^{48}+x^{47}+x^{46}+x^{42}+x^{41}+x^{39}+x^{38}+x^{37}+x^{35}\\
&+x^{32}+x^{30}+x^{22}+x^{17}+x^{14}+x^{12},\\
p_6(x)=\,&x^{144}+x^{143}+x^{142}+x^{141}+x^{139}+x^{138}+x^{136}+x^{135}+x^{132}+x^{131}\\
&+x^{130}+x^{129}+x^{127}+x^{125}+x^{124}+x^{123}+x^{122}+x^{121}+x^{118}\\
&+x^{117}+x^{116}+x^{114}+x^{113}+x^{111}+x^{110}+x^{109}+x^{107}+x^{106}\\
&+x^{101}+x^{96}+x^{95}+x^{94}+x^{91}+x^{90}+x^{87}+x^{86}+x^{82}+x^{80}+x^{76}\\
&+x^{72}+x^{71}+x^{68}+x^{67}+x^{65}+x^{64}+x^{63}+x^{62}+x^{61}+x^{59}+x^{58}\\
&+x^{55}+x^{53}+x^{51}+x^{49}+x^{48}+x^{44}+x^{43}+x^{42}+x^{40}+x^{36}+x^{34}\\
&+x^{32}+x^{27}+x^{24}+x^{18}+x^{16}+x^{15}+x^{14}+x^{13}+x^{11}+x^{4}+x^{3}+x^{2}\\
&+1,\\
p_9(x)=\,&x^{144}+x^{143}+x^{142}+x^{139}+x^{138}+x^{136}+x^{132}+x^{131}+x^{130}+x^{127}\\
&+x^{126}+x^{124}+x^{120}+x^{119}+x^{118}+x^{115}+x^{114}+x^{112}+x^{108}\\
&+x^{107}+x^{106}+x^{103}+x^{102}+x^{100}+x^{80}+x^{79}+x^{78}+x^{75}+x^{74}\\
&+x^{72}+x^{68}+x^{67}+x^{66}+x^{64}+x^{60}+x^{59}+x^{58}+x^{55}+x^{54}+x^{52}\\
&+x^{48}+x^{47}+x^{46}+x^{43}+x^{42}+x^{40}+x^{36}+x^{35}+x^{34}+x^{31}+x^{30}\\
&+x^{28}+x^{24}+x^{23}+x^{22}+x^{19}+x^{18}+x^{16}+x^{12}+x^{11}+x^{10}+x^{7}\\
&+x^{6}+x^{4},
\end{aligned}$$

$$\begin{aligned}p_{12}(x) = {} & x^{144} + x^{143} + x^{142} + x^{139} + x^{138} + x^{136} + x^{124} + x^{123} + x^{122} + x^{119} \\ & + x^{118} + x^{115} + x^{114} + x^{111} + x^{110} + x^{108} + x^{104} + x^{103} + x^{102} \\ & + x^{99} + x^{98} + x^{96} + x^{80} + x^{79} + x^{78} + x^{75} + x^{74} + x^{72} + x^{64} + x^{63} \\ & + x^{62} + x^{60} + x^{56} + x^{55} + x^{54} + x^{51} + x^{50} + x^{47} + x^{46} + x^{43} + x^{42} \\ & + x^{40} + x^{28} + x^{27} + x^{26} + x^{23} + x^{22} + x^{19} + x^{18} + x^{15} + x^{14} + x^{12} \\ & + x^{8} + x^{7} + x^{6} + x^{3} + x^{2} + 1,\end{aligned}$$

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

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

$$\begin{aligned}p_{0}(x) = {} & x^{147} + x^{145} + x^{144} + x^{143} + x^{139} + x^{137} + x^{132} + x^{131} + x^{128} + x^{127} \\ & + x^{122} + x^{121} + x^{120} + x^{119} + x^{117} + x^{116} + x^{110} + x^{109} + x^{108} \\ & + x^{106} + x^{101} + x^{100} + x^{99} + x^{98} + x^{97} + x^{96} + x^{95} + x^{94} + x^{92} + x^{87} \\ & + x^{82} + x^{78} + x^{77} + x^{76} + x^{74} + x^{73} + x^{71} + x^{70} + x^{69} + x^{68} + x^{67} \\ & + x^{66} + x^{65} + x^{63} + x^{61} + x^{59} + x^{57} + x^{52} + x^{45} + x^{44} + x^{40} + x^{39} \\ & + x^{36} + x^{34} + x^{29} + x^{28} + x^{24} + x^{23} + x^{18} + x^{17} + x^{16} + x^{15} + x^{12}, \\ p_{3}(x) = {} & x^{144} + x^{143} + x^{142} + x^{141} + x^{139} + x^{137} + x^{135} + x^{134} + x^{128} + x^{127} \\ & + x^{125} + x^{124} + x^{122} + x^{120} + x^{119} + x^{118} + x^{116} + x^{115} + x^{112} \\ & + x^{111} + x^{110} + x^{105} + x^{102} + x^{101} + x^{100} + x^{99} + x^{97} + x^{96} + x^{89} \\ & + x^{88} + x^{87} + x^{86} + x^{82} + x^{81} + x^{80} + x^{77} + x^{76} + x^{75} + x^{74} + x^{73} \\ & + x^{72} + x^{71} + x^{69} + x^{65} + x^{63} + x^{62} + x^{59} + x^{54} + x^{52} + x^{51} + x^{48} \\ & + x^{47} + x^{44} + x^{43} + x^{41} + x^{40} + x^{39} + x^{38} + x^{37} + x^{35} + x^{31} + x^{30} \\ & + x^{29} + x^{26} + x^{22} + x^{18} + x^{15} + x^{13} + x^{11} + x^{8}, \\ p_{6}(x) = {} & x^{144} + x^{143} + x^{142} + x^{141} + x^{139} + x^{137} + x^{135} + x^{134} + x^{129} + x^{128} \\ & + x^{127} + x^{126} + x^{123} + x^{121} + x^{118} + x^{117} + x^{116} + x^{107} + x^{106} \\ & + x^{105} + x^{104} + x^{102} + x^{101} + x^{100} + x^{99} + x^{98} + x^{95} + x^{93} + x^{90} \\ & + x^{86} + x^{85} + x^{82} + x^{81} + x^{78} + x^{75} + x^{73} + x^{68} + x^{66} + x^{65} + x^{63} \\ & + x^{62} + x^{61} + x^{59} + x^{58} + x^{56} + x^{54} + x^{53} + x^{47} + x^{46} + x^{45} + x^{41} \\ & + x^{40} + x^{37} + x^{36} + x^{35} + x^{34} + x^{30} + x^{29} + x^{28} + x^{27} + x^{25} + x^{22} \\ & + x^{18} + x^{16} + x^{15} + x^{10} + x^{9} + x^{8} + x^{7} + x^{3} + x^{2} + 1, \\ p_{9}(x) = {} & x^{144} + x^{143} + x^{142} + x^{139} + x^{138} + x^{136} + x^{132} + x^{131} + x^{130} + x^{127} \\ & + x^{126} + x^{124} + x^{120} + x^{119} + x^{118} + x^{115} + x^{114} + x^{112} + x^{108} \\ & + x^{107} + x^{106} + x^{103} + x^{102} + x^{100} + x^{80} + x^{79} + x^{78} + x^{75} + x^{74} \\ & + x^{72} + x^{68} + x^{67} + x^{66} + x^{64} + x^{60} + x^{59} + x^{58} + x^{55} + x^{54} + x^{52} \\ & + x^{48} + x^{47} + x^{46} + x^{43} + x^{42} + x^{40} + x^{36} + x^{35} + x^{34} + x^{31} + x^{30} \\ & + x^{28} + x^{24} + x^{23} + x^{22} + x^{19} + x^{18} + x^{16} + x^{12} + x^{11} + x^{10} + x^{7} \\ & + x^{6} + x^{4},\end{aligned}$$

$$\begin{aligned}
p_{12}(x) = {} & x^{144} + x^{143} + x^{142} + x^{139} + x^{138} + x^{136} + x^{124} + x^{123} + x^{122} + x^{119} \\
& + x^{118} + x^{115} + x^{114} + x^{111} + x^{110} + x^{108} + x^{104} + x^{103} + x^{102} \\
& + x^{99} + x^{98} + x^{96} + x^{80} + x^{79} + x^{78} + x^{75} + x^{74} + x^{72} + x^{64} + x^{63} \\
& + x^{62} + x^{60} + x^{56} + x^{55} + x^{54} + x^{51} + x^{50} + x^{47} + x^{46} + x^{43} + x^{42} \\
& + x^{40} + x^{28} + x^{27} + x^{26} + x^{23} + x^{22} + x^{19} + x^{18} + x^{15} + x^{14} + x^{12} \\
& + x^{8} + x^{7} + x^{6} + x^{3} + x^{2} + 1,
\end{aligned}$$

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

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

$$\begin{aligned}
p_0(x) = {} & x^{138} + x^{136} + x^{135} + x^{131} + x^{130} + x^{128} + x^{127} + x^{125} + x^{124} + x^{121} \\
& + x^{118} + x^{116} + x^{115} + x^{114} + x^{109} + x^{106} + x^{104} + x^{103} + x^{102} \\
& + x^{100} + x^{99} + x^{98} + x^{97} + x^{96} + x^{95} + x^{93} + x^{92} + x^{91} + x^{90} + x^{89} \\
& + x^{88} + x^{86} + x^{85} + x^{84} + x^{80} + x^{78} + x^{75} + x^{74} + x^{71} + x^{70} + x^{69} \\
& + x^{68} + x^{67} + x^{66} + x^{57} + x^{56} + x^{54} + x^{48} + x^{47} + x^{46} + x^{41} + x^{39} \\
& + x^{38} + x^{37} + x^{34} + x^{33} + x^{32} + x^{30} + x^{28} + x^{27} + x^{26} + x^{23} + x^{22} \\
& + x^{21} + x^{18}, \\
p_3(x) = {} & x^{135} + x^{133} + x^{130} + x^{129} + x^{127} + x^{122} + x^{121} + x^{120} + x^{118} + x^{117} \\
& + x^{116} + x^{115} + x^{109} + x^{104} + x^{102} + x^{100} + x^{99} + x^{96} + x^{95} + x^{94} \\
& + x^{92} + x^{91} + x^{90} + x^{89} + x^{87} + x^{85} + x^{82} + x^{81} + x^{79} + x^{74} + x^{73} \\
& + x^{72} + x^{70} + x^{69} + x^{68} + x^{67} + x^{63} + x^{58} + x^{57} + x^{56} + x^{55} + x^{54} \\
& + x^{52} + x^{51} + x^{50} + x^{49} + x^{47} + x^{45} + x^{42} + x^{41} + x^{39} + x^{34} + x^{33} \\
& + x^{32} + x^{30} + x^{29} + x^{28} + x^{27} + x^{23} + x^{18} + x^{17} + x^{16} + x^{15} + x^{14} \\
& + x^{12} + x^{11} + x^{10} + x^{9}, \\
p_6(x) = {} & x^{138} + x^{134} + x^{128} + x^{126} + x^{122} + x^{114} + x^{112} + x^{108} + x^{102} + x^{100} \\
& + x^{94} + x^{92} + x^{90} + x^{86} + x^{84} + x^{80} + x^{78} + x^{74} + x^{72} + x^{70} + x^{68} \\
& + x^{56} + x^{52} + x^{50} + x^{48} + x^{36} + x^{34} + x^{32} + x^{30} + x^{28} + x^{24} + x^{22} \\
& + x^{20} + x^{14} + x^{8} + x^{6}, \\
p_9(x) = {} & x^{141} + x^{139} + x^{137} + x^{136} + x^{133} + x^{132} + x^{129} + x^{128} + x^{124} + x^{123} \\
& + x^{117} + x^{115} + x^{113} + x^{112} + x^{109} + x^{108} + x^{105} + x^{104} + x^{100} \\
& + x^{99} + x^{77} + x^{75} + x^{73} + x^{72} + x^{69} + x^{68} + x^{65} + x^{64} + x^{61} + x^{60} \\
& + x^{57} + x^{56} + x^{52} + x^{51} + x^{45} + x^{43} + x^{41} + x^{40} + x^{37} + x^{36} + x^{33} \\
& + x^{32} + x^{28} + x^{27} + x^{21} + x^{19} + x^{17} + x^{16} + x^{13} + x^{12} + x^{9} + x^{8} + x^{4} \\
& + x^{3}, \\
p_{12}(x) = {} & x^{144} + x^{136} + x^{124} + x^{108} + x^{104} + x^{96} + x^{80} + x^{72} + x^{64} + x^{60} + x^{56} \\
& + x^{40} + x^{28} + x^{12} + x^{8} + 1,
\end{aligned}$$

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

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

$$\begin{aligned}
p_0(x) = {} & x^{164} + x^{160} + x^{156} + x^{155} + x^{152} + x^{151} + x^{150} + x^{149} + x^{145} + x^{144} \\
& + x^{142} + x^{140} + x^{136} + x^{135} + x^{131} + x^{130} + x^{128} + x^{127} + x^{121} \\
& + x^{120} + x^{117} + x^{116} + x^{115} + x^{112} + x^{109} + x^{107} + x^{105} + x^{104} \\
& + x^{102} + x^{100} + x^{99} + x^{98} + x^{96} + x^{94} + x^{93} + x^{92} + x^{89} + x^{88} + x^{84} \\
& + x^{82} + x^{81} + x^{80} + x^{78} + x^{76} + x^{74} + x^{71} + x^{70} + x^{69} + x^{68} + x^{67} \\
& + x^{65} + x^{63} + x^{62} + x^{61} + x^{60} + x^{58} + x^{53} + x^{52} + x^{46} + x^{44} + x^{40} \\
& + x^{39} + x^{38} + x^{37} + x^{36} + x^{35} + x^{34} + x^{32} + x^{31} + x^{30} + x^{29} + x^{27}, \\
p_3(x) = {} & x^{143} + x^{141} + x^{139} + x^{138} + x^{135} + x^{134} + x^{133} + x^{130} + x^{128} + x^{127} \\
& + x^{126} + x^{123} + x^{121} + x^{120} + x^{119} + x^{116} + x^{114} + x^{113} + x^{112} \\
& + x^{111} + x^{105} + x^{103} + x^{101} + x^{100} + x^{99} + x^{96} + x^{94} + x^{93} + x^{92} \\
& + x^{89} + x^{87} + x^{86} + x^{85} + x^{82} + x^{80} + x^{79} + x^{78} + x^{75} + x^{73} + x^{72} \\
& + x^{69} + x^{68} + x^{67} + x^{65} + x^{64} + x^{62} + x^{61} + x^{58} + x^{57} + x^{56} + x^{54} \\
& + x^{53} + x^{52} + x^{49} + x^{47} + x^{46} + x^{45} + x^{42} + x^{40} + x^{39} + x^{38} + x^{35} \\
& + x^{33} + x^{32} + x^{29} + x^{28} + x^{27} + x^{25} + x^{24} + x^{22} + x^{21} + x^{18} + x^{17} \\
& + x^{16} + x^{15} + x^{14} + x^{12} + x^{11} + x^{10} + x^{9}, \\
p_6(x) = {} & x^{146} + x^{138} + x^{136} + x^{132} + x^{126} + x^{124} + x^{118} + x^{116} + x^{108} + x^{96} \\
& + x^{92} + x^{88} + x^{86} + x^{82} + x^{80} + x^{78} + x^{76} + x^{74} + x^{70} + x^{60} + x^{58} \\
& + x^{56} + x^{54} + x^{52} + x^{48} + x^{46} + x^{44} + x^{38} + x^{32} + x^{30} + x^{18} + x^{14} \\
& + x^{8} + x^{6}, \\
p_9(x) = {} & x^{149} + x^{147} + x^{144} + x^{143} + x^{137} + x^{135} + x^{133} + x^{132} + x^{129} + x^{128} \\
& + x^{125} + x^{124} + x^{120} + x^{119} + x^{113} + x^{111} + x^{109} + x^{108} + x^{105} \\
& + x^{104} + x^{100} + x^{99} + x^{85} + x^{83} + x^{80} + x^{79} + x^{73} + x^{71} + x^{68} + x^{67} \\
& + x^{65} + x^{63} + x^{61} + x^{60} + x^{57} + x^{56} + x^{53} + x^{52} + x^{48} + x^{47} + x^{41} \\
& + x^{39} + x^{37} + x^{36} + x^{33} + x^{32} + x^{29} + x^{28} + x^{24} + x^{23} + x^{17} + x^{15} \\
& + x^{13} + x^{12} + x^{9} + x^{8} + x^{4} + x^{3}, \\
p_{12}(x) = {} & x^{152} + x^{148} + x^{144} + x^{136} + x^{132} + x^{128} + x^{120} + x^{112} + x^{104} + x^{96} \\
& + x^{88} + x^{84} + x^{80} + x^{52} + x^{40} + x^{36} + x^{32} + x^{24} + x^{16} + x^{8} + 1,
\end{aligned}$$

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

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

$$\begin{aligned}
p_0(x) = {} & x^{147} + x^{145} + x^{139} + x^{132} + x^{130} + x^{129} + x^{128} + x^{125} + x^{124} + x^{123} \\
& + x^{122} + x^{121} + x^{119} + x^{118} + x^{116} + x^{113} + x^{112} + x^{111} + x^{110} \\
& + x^{107} + x^{106} + x^{104} + x^{102} + x^{101} + x^{100} + x^{99} + x^{98} + x^{97} + x^{96} \\
& + x^{94} + x^{90} + x^{87} + x^{86} + x^{81} + x^{80} + x^{73} + x^{71} + x^{70} + x^{68} + x^{62} \\
& + x^{61} + x^{57} + x^{56} + x^{54} + x^{51} + x^{49} + x^{43} + x^{41} + x^{39} + x^{38} + x^{36}
\end{aligned}$$

$$
\begin{aligned}
&+ x^{35} + x^{33},\\
p_3(x) &= x^{144} + x^{143} + x^{142} + x^{141} + x^{139} + x^{138} + x^{136} + x^{135} + x^{132} + x^{131}\\
&+ x^{130} + x^{127} + x^{125} + x^{124} + x^{122} + x^{118} + x^{117} + x^{116} + x^{115}\\
&+ x^{113} + x^{111} + x^{108} + x^{107} + x^{104} + x^{103} + x^{98} + x^{95} + x^{94} + x^{93}\\
&+ x^{92} + x^{91} + x^{90} + x^{88} + x^{87} + x^{84} + x^{83} + x^{81} + x^{77} + x^{76} + x^{75}\\
&+ x^{74} + x^{73} + x^{66} + x^{65} + x^{63} + x^{62} + x^{59} + x^{58} + x^{57} + x^{55} + x^{53}\\
&+ x^{50} + x^{49} + x^{48} + x^{47} + x^{46} + x^{42} + x^{41} + x^{39} + x^{38} + x^{37} + x^{35}\\
&+ x^{32} + x^{30} + x^{22} + x^{17} + x^{14} + x^{12},\\
p_6(x) &= x^{144} + x^{143} + x^{142} + x^{141} + x^{139} + x^{138} + x^{136} + x^{135} + x^{132} + x^{131}\\
&+ x^{130} + x^{129} + x^{127} + x^{125} + x^{124} + x^{123} + x^{122} + x^{121} + x^{118}\\
&+ x^{117} + x^{116} + x^{114} + x^{113} + x^{111} + x^{110} + x^{109} + x^{107} + x^{106}\\
&+ x^{101} + x^{96} + x^{95} + x^{94} + x^{91} + x^{90} + x^{87} + x^{86} + x^{82} + x^{80} + x^{76}\\
&+ x^{72} + x^{71} + x^{68} + x^{67} + x^{65} + x^{64} + x^{63} + x^{62} + x^{61} + x^{59} + x^{58}\\
&+ x^{55} + x^{53} + x^{51} + x^{49} + x^{48} + x^{44} + x^{43} + x^{42} + x^{40} + x^{36} + x^{34}\\
&+ x^{32} + x^{27} + x^{24} + x^{18} + x^{16} + x^{15} + x^{14} + x^{13} + x^{11} + x^{4} + x^{3} + x^{2}\\
&+ 1,\\
p_9(x) &= x^{144} + x^{143} + x^{142} + x^{139} + x^{138} + x^{136} + x^{132} + x^{131} + x^{130} + x^{127}\\
&+ x^{126} + x^{124} + x^{120} + x^{119} + x^{118} + x^{115} + x^{114} + x^{112} + x^{108}\\
&+ x^{107} + x^{106} + x^{103} + x^{102} + x^{100} + x^{80} + x^{79} + x^{78} + x^{75} + x^{74}\\
&+ x^{72} + x^{68} + x^{67} + x^{66} + x^{64} + x^{60} + x^{59} + x^{58} + x^{55} + x^{54} + x^{52}\\
&+ x^{48} + x^{47} + x^{46} + x^{43} + x^{42} + x^{40} + x^{36} + x^{35} + x^{34} + x^{31} + x^{30}\\
&+ x^{28} + x^{24} + x^{23} + x^{22} + x^{19} + x^{18} + x^{16} + x^{12} + x^{11} + x^{10} + x^{7}\\
&+ x^{6} + x^{4},\\
p_{12}(x) &= x^{144} + x^{143} + x^{142} + x^{139} + x^{138} + x^{136} + x^{124} + x^{123} + x^{122} + x^{119}\\
&+ x^{118} + x^{115} + x^{114} + x^{111} + x^{110} + x^{108} + x^{104} + x^{103} + x^{102}\\
&+ x^{99} + x^{98} + x^{96} + x^{80} + x^{79} + x^{78} + x^{75} + x^{74} + x^{72} + x^{64} + x^{63}\\
&+ x^{62} + x^{60} + x^{56} + x^{55} + x^{54} + x^{51} + x^{50} + x^{47} + x^{46} + x^{43} + x^{42}\\
&+ x^{40} + x^{28} + x^{27} + x^{26} + x^{23} + x^{22} + x^{19} + x^{18} + x^{15} + x^{14} + x^{12}\\
&+ x^{8} + x^{7} + x^{6} + x^{3} + x^{2} + 1,
\end{aligned}
$$

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

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

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

n	$\Lambda(n)$	n	$\Lambda(n)$	n	$\Lambda(n)$	n	$\Lambda(n)$
0	[1, 2]	1034	[1677, 1698]	2068	[2924, 984]	3102	[3574, 426]
1	[3, 4]	1035	[1699, 1700]	2069	[979, 2925]	3103	[3575, 1187]

2	[5, 6]	1036	[1701, 1429]	2070	[2926, 2915]	3104	[2779, 2762]
3	[7, 8]	1037	[1702, 1628]	2071	[1590, 684]	3105	[3576, 2882]
4	[9, 10]	1038	[1703, 37]	2072	[2927, 1405]	3106	[3577, 3578]
5	[11, 12]	1039	[1434, 1704]	2073	[2928, 2929]	3107	[2798, 3579]
6	[13, 14]	1040	[778, 1705]	2074	[1618, 671]	3108	[3580, 244]
7	[15, 16]	1041	[1706, 1707]	2075	[1765, 2930]	3109	[3581, 408]
8	[17, 18]	1042	[805, 52]	2076	[2931, 1637]	3110	[2377, 1210]
9	[19, 20]	1043	[1708, 1709]	2077	[1743, 2932]	3111	[3582, 275]
10	[21, 22]	1044	[1710, 1711]	2078	[2933, 1600]	3112	[3583, 2868]
11	[23, 24]	1045	[808, 1712]	2079	[2934, 156]	3113	[277, 3584]
12	[25, 26]	1046	[1713, 1714]	2080	[1683, 2935]	3114	[3585, 2144]
13	[27, 28]	1047	[1715, 607]	2081	[545, 2936]	3115	[3586, 279]
14	[29, 30]	1048	[1716, 1717]	2082	[61, 2937]	3116	[2283, 3587]
15	[31, 32]	1049	[661, 1588]	2083	[2938, 2939]	3117	[2906, 3588]
16	[33, 34]	1050	[642, 155]	2084	[2940, 1526]	3118	[3589, 3590]
17	[35, 36]	1051	[1718, 744]	2085	[535, 1406]	3119	[3591, 1141]
18	[37, 38]	1052	[1719, 159]	2086	[1817, 44]	3120	[901, 2797]
19	[39, 40]	1053	[1688, 1720]	2087	[1880, 708]	3121	[3592, 3593]
20	[41, 42]	1054	[1721, 638]	2088	[1571, 1639]	3122	[368, 2210]
21	[43, 44]	1055	[1722, 1723]	2089	[2010, 2941]	3123	[2278, 2647]
22	[45, 46]	1056	[1724, 1725]	2090	[2942, 1730]	3124	[3594, 1126]
23	[47, 48]	1057	[588, 1726]	2091	[2943, 2944]	3125	[15, 937]
24	[49, 50]	1058	[215, 57]	2092	[1844, 2060]	3126	[1315, 3595]
25	[51, 52]	1059	[1457, 1727]	2093	[1963, 1504]	3127	[3596, 3597]
26	[53, 54]	1060	[1728, 1729]	2094	[1671, 716]	3128	[3598, 452]
27	[55, 56]	1061	[218, 171]	2095	[2945, 142]	3129	[1193, 3599]
28	[57, 58]	1062	[477, 639]	2096	[2946, 1459]	3130	[453, 3600]
29	[59, 60]	1063	[1650, 1730]	2097	[2947, 209]	3131	[836, 2723]
30	[61, 62]	1064	[180, 1731]	2098	[2948, 1792]	3132	[3601, 3602]
31	[63, 64]	1065	[144, 1732]	2099	[2949, 795]	3133	[3603, 3604]
32	[65, 66]	1066	[1733, 579]	2100	[2950, 220]	3134	[3605, 958]
33	[67, 68]	1067	[1734, 477]	2101	[1627, 2951]	3135	[3606, 918]
34	[64, 69]	1068	[1735, 174]	2102	[2938, 1739]	3136	[3607, 2859]
35	[70, 71]	1069	[1736, 1693]	2103	[2952, 1709]	3137	[3608, 259]
36	[72, 73]	1070	[1737, 1738]	2104	[2953, 1772]	3138	[2867, 2838]
37	[74, 75]	1071	[802, 1739]	2105	[2954, 601]	3139	[849, 3609]
38	[76, 77]	1072	[1740, 1425]	2106	[1734, 638]	3140	[3610, 3450]
39	[78, 79]	1073	[1741, 1742]	2107	[1512, 1923]	3141	[2366, 2382]
40	[80, 81]	1074	[1743, 1744]	2108	[2955, 1889]	3142	[963, 3611]
41	[82, 83]	1075	[1745, 35]	2109	[777, 759]	3143	[3612, 878]
42	[84, 85]	1076	[1746, 1747]	2110	[1975, 674]	3144	[3613, 3614]
43	[86, 87]	1077	[1494, 1748]	2111	[2956, 1491]	3145	[2872, 3615]
44	[88, 89]	1078	[1749, 1750]	2112	[2957, 2958]	3146	[2544, 3616]
45	[90, 91]	1079	[1751, 1752]	2113	[2948, 2959]	3147	[3617, 432]

46	[92, 93]	1080	[1753, 141]	2114	[2960, 2006]	3148	[1322, 961]
47	[94, 95]	1081	[1754, 1539]	2115	[53, 1643]	3149	[3618, 3619]
48	[96, 97]	1082	[1535, 1755]	2116	[1892, 673]	3150	[85, 80]
49	[98, 99]	1083	[1756, 462]	2117	[1541, 1928]	3151	[2166, 1106]
50	[100, 101]	1084	[806, 1427]	2118	[141, 554]	3152	[3620, 3621]
51	[69, 102]	1085	[1757, 542]	2119	[2961, 224]	3153	[3622, 2571]
52	[103, 104]	1086	[1758, 1759]	2120	[8, 2962]	3154	[3623, 3624]
53	[105, 106]	1087	[1760, 1761]	2121	[1832, 575]	3155	[975, 1200]
54	[107, 108]	1088	[1579, 1762]	2122	[2934, 2936]	3156	[3480, 2377]
55	[109, 110]	1089	[214, 187]	2123	[2963, 1717]	3157	[3625, 2519]
56	[111, 112]	1090	[1763, 1764]	2124	[1576, 2941]	3158	[2437, 2314]
57	[113, 114]	1091	[1606, 1765]	2125	[186, 215]	3159	[2644, 3626]
58	[115, 116]	1092	[32, 221]	2126	[2964, 2965]	3160	[2627, 3627]
59	[117, 118]	1093	[1696, 1766]	2127	[2966, 158]	3161	[3628, 1010]
60	[119, 120]	1094	[582, 781]	2128	[35, 750]	3162	[276, 1328]
61	[121, 122]	1095	[530, 1767]	2129	[1849, 2967]	3163	[3490, 3629]
62	[123, 124]	1096	[217, 1768]	2130	[696, 1489]	3164	[2176, 2668]
63	[125, 126]	1097	[1769, 1770]	2131	[2968, 1882]	3165	[3630, 2895]
64	[127, 128]	1098	[195, 1771]	2132	[2969, 2970]	3166	[421, 3631]
65	[129, 130]	1099	[1772, 1773]	2133	[678, 2971]	3167	[848, 1059]
66	[131, 132]	1100	[1455, 1597]	2134	[1710, 542]	3168	[3632, 3633]
67	[133, 134]	1101	[1774, 1775]	2135	[1910, 1676]	3169	[2158, 3634]
68	[135, 136]	1102	[1776, 1482]	2136	[1965, 2972]	3170	[2831, 2688]
69	[126, 137]	1103	[1716, 1663]	2137	[2973, 2974]	3171	[3635, 3498]
70	[138, 139]	1104	[684, 652]	2138	[2975, 722]	3172	[3636, 3637]
71	[140, 141]	1105	[1777, 686]	2139	[2976, 679]	3173	[1264, 3638]
72	[142, 143]	1106	[1559, 1778]	2140	[598, 1428]	3174	[3639, 2456]
73	[144, 145]	1107	[1779, 1560]	2141	[1731, 2977]	3175	[3640, 2280]
74	[146, 147]	1108	[626, 1780]	2142	[2978, 1762]	3176	[3641, 3642]
75	[148, 149]	1109	[1561, 1561]	2143	[573, 1410]	3177	[2650, 3643]
76	[150, 151]	1110	[1781, 644]	2144	[575, 801]	3178	[3644, 3645]
77	[152, 153]	1111	[786, 788]	2145	[2979, 2980]	3179	[3646, 3647]
78	[154, 155]	1112	[787, 787]	2146	[524, 2981]	3180	[3648, 2744]
79	[156, 157]	1113	[1782, 1783]	2147	[1695, 1832]	3181	[2119, 115]
80	[158, 159]	1114	[1784, 128]	2148	[633, 681]	3182	[3649, 979]
81	[160, 161]	1115	[1785, 1786]	2149	[2982, 1449]	3183	[2739, 2514]
82	[162, 163]	1116	[1787, 179]	2150	[1913, 1503]	3184	[3650, 3651]
83	[164, 165]	1117	[1788, 190]	2151	[1826, 170]	3185	[70, 3652]
84	[166, 167]	1118	[1789, 1608]	2152	[1778, 517]	3186	[264, 2631]
85	[168, 160]	1119	[1790, 1791]	2153	[232, 1517]	3187	[3653, 1051]
86	[169, 170]	1120	[1792, 764]	2154	[517, 788]	3188	[2265, 3654]
87	[171, 172]	1121	[1454, 1596]	2155	[671, 2983]	3189	[449, 909]
88	[173, 174]	1122	[143, 710]	2156	[2984, 2985]	3190	[3655, 3656]
89	[175, 175]	1123	[1793, 687]	2157	[2986, 2987]	3191	[3657, 431]

90	[176, 177]	1124	[673, 1794]	2158	[2988, 2989]	3192	[379, 3658]
91	[178, 179]	1125	[1795, 1796]	2159	[2990, 650]	3193	[2263, 23]
92	[180, 181]	1126	[772, 1797]	2160	[756, 2991]	3194	[3659, 2518]
93	[182, 183]	1127	[1653, 1780]	2161	[220, 2992]	3195	[3660, 2398]
94	[184, 185]	1128	[1798, 499]	2162	[204, 136]	3196	[1394, 1275]
95	[186, 187]	1129	[1680, 227]	2163	[2993, 1907]	3197	[2669, 1295]
96	[188, 189]	1130	[1686, 1799]	2164	[2994, 493]	3198	[3661, 3662]
97	[190, 191]	1131	[1481, 1800]	2165	[2995, 1559]	3199	[3663, 1000]
98	[52, 192]	1132	[1801, 1604]	2166	[2996, 499]	3200	[3664, 2916]
99	[193, 194]	1133	[218, 563]	2167	[2997, 2998]	3201	[923, 3665]
100	[195, 150]	1134	[1802, 1803]	2168	[2984, 2049]	3202	[2709, 3666]
101	[196, 197]	1135	[1745, 749]	2169	[2999, 3000]	3203	[3667, 1004]
102	[198, 199]	1136	[1472, 175]	2170	[137, 3001]	3204	[3668, 3669]
103	[200, 201]	1137	[1654, 1804]	2171	[3000, 525]	3205	[393, 3429]
104	[202, 203]	1138	[625, 789]	2172	[3002, 3003]	3206	[1176, 3583]
105	[204, 205]	1139	[1805, 1806]	2173	[3004, 1639]	3207	[924, 3670]
106	[206, 207]	1140	[1807, 1808]	2174	[3005, 3006]	3208	[3671, 3672]
107	[208, 209]	1141	[1809, 1810]	2175	[1572, 779]	3209	[3673, 3674]
108	[210, 211]	1142	[1811, 1812]	2176	[3007, 625]	3210	[2435, 3675]
109	[212, 213]	1143	[1813, 1476]	2177	[3008, 1726]	3211	[3676, 3677]
110	[214, 215]	1144	[1814, 1815]	2178	[1825, 1686]	3212	[2704, 3647]
111	[216, 217]	1145	[1777, 1816]	2179	[1956, 1976]	3213	[3678, 314]
112	[190, 218]	1146	[1817, 1818]	2180	[1860, 3009]	3214	[3679, 264]
113	[219, 220]	1147	[1819, 1820]	2181	[3010, 3011]	3215	[2488, 3680]
114	[33, 221]	1148	[1587, 1821]	2182	[3012, 2036]	3216	[3681, 2438]
115	[222, 223]	1149	[220, 1822]	2183	[3013, 3014]	3217	[3436, 3682]
116	[224, 225]	1150	[1823, 1824]	2184	[1410, 3015]	3218	[3683, 2088]
117	[226, 227]	1151	[470, 1825]	2185	[3016, 3017]	3219	[3677, 1325]
118	[228, 229]	1152	[1826, 1827]	2186	[3018, 1764]	3220	[27, 3684]
119	[230, 2]	1153	[641, 1586]	2187	[135, 205]	3221	[3685, 2654]
120	[231, 232]	1154	[672, 1408]	2188	[55, 1714]	3222	[2530, 92]
121	[233, 234]	1155	[522, 670]	2189	[1812, 2030]	3223	[2717, 453]
122	[235, 236]	1156	[573, 1828]	2190	[1912, 3019]	3224	[3686, 3687]
123	[237, 238]	1157	[1795, 1462]	2191	[1749, 1433]	3225	[3688, 2321]
124	[239, 240]	1158	[1644, 1829]	2192	[2026, 42]	3226	[3689, 3690]
125	[241, 242]	1159	[1415, 1830]	2193	[711, 1669]	3227	[2698, 3691]
126	[243, 244]	1160	[1831, 1750]	2194	[3012, 1786]	3228	[2583, 877]
127	[245, 246]	1161	[1832, 526]	2195	[1731, 3020]	3229	[3692, 2261]
128	[247, 248]	1162	[1420, 1597]	2196	[3021, 1667]	3230	[3693, 3694]
129	[249, 250]	1163	[799, 1833]	2197	[1505, 579]	3231	[3655, 3695]
130	[251, 252]	1164	[1834, 1835]	2198	[3022, 1773]	3232	[3696, 315]
131	[253, 254]	1165	[505, 1581]	2199	[3023, 3024]	3233	[3697, 3629]
132	[255, 256]	1166	[1836, 549]	2200	[3025, 1923]	3234	[3698, 2460]
133	[257, 258]	1167	[1837, 677]	2201	[1964, 603]	3235	[1306, 351]

134	[259, 260]	1168	[1838, 1839]	2202	[3026, 1792]	3236	[2336, 1177]
135	[261, 262]	1169	[1435, 537]	2203	[3027, 748]	3237	[3699, 2115]
136	[263, 264]	1170	[1840, 1841]	2204	[1679, 746]	3238	[1086, 3700]
137	[242, 265]	1171	[1842, 1843]	2205	[3028, 3029]	3239	[1204, 2702]
138	[266, 267]	1172	[597, 1427]	2206	[2060, 1545]	3240	[3701, 3542]
139	[268, 269]	1173	[1844, 1497]	2207	[1646, 1814]	3241	[3702, 294]
140	[270, 271]	1174	[1513, 1845]	2208	[1605, 678]	3242	[3703, 355]
141	[272, 273]	1175	[1846, 1821]	2209	[3030, 1725]	3243	[3704, 2505]
142	[274, 275]	1176	[1703, 1847]	2210	[3031, 3032]	3244	[3705, 3706]
143	[276, 252]	1177	[45, 1848]	2211	[3033, 3034]	3245	[3707, 927]
144	[277, 278]	1178	[1849, 1850]	2212	[3035, 519]	3246	[3708, 3709]
145	[279, 280]	1179	[1851, 1852]	2213	[1516, 1953]	3247	[3710, 2820]
146	[281, 282]	1180	[1853, 544]	2214	[1780, 3034]	3248	[3711, 2689]
147	[283, 284]	1181	[571, 701]	2215	[175, 787]	3249	[2473, 3712]
148	[285, 286]	1182	[1854, 1855]	2216	[3036, 3037]	3250	[1218, 3713]
149	[287, 288]	1183	[650, 1856]	2217	[3038, 3039]	3251	[3714, 3486]
150	[289, 290]	1184	[1857, 1858]	2218	[3040, 731]	3252	[1194, 1199]
151	[291, 292]	1185	[1859, 548]	2219	[3041, 1984]	3253	[3596, 2446]
152	[293, 294]	1186	[1860, 1861]	2220	[3042, 1796]	3254	[2725, 3715]
153	[295, 296]	1187	[1754, 1606]	2221	[1443, 9]	3255	[910, 3716]
154	[86, 297]	1188	[1862, 748]	2222	[3043, 3044]	3256	[297, 3717]
155	[298, 299]	1189	[1863, 1820]	2223	[1774, 1948]	3257	[2395, 3718]
156	[300, 301]	1190	[1864, 1865]	2224	[677, 610]	3258	[2925, 3719]
157	[302, 303]	1191	[1866, 1659]	2225	[1839, 1574]	3259	[949, 3720]
158	[78, 304]	1192	[1867, 1868]	2226	[3045, 1416]	3260	[3533, 1288]
159	[305, 306]	1193	[1869, 1870]	2227	[3046, 2051]	3261	[2603, 1161]
160	[307, 308]	1194	[1871, 1599]	2228	[1735, 3047]	3262	[2432, 3571]
161	[309, 310]	1195	[1872, 1873]	2229	[3035, 1510]	3263	[1155, 1201]
162	[311, 312]	1196	[1874, 1742]	2230	[3048, 1638]	3264	[297, 3721]
163	[313, 314]	1197	[686, 1875]	2231	[723, 3049]	3265	[2147, 2120]
164	[315, 316]	1198	[1837, 1605]	2232	[3050, 1614]	3266	[3713, 3509]
165	[317, 318]	1199	[1876, 656]	2233	[1458, 211]	3267	[3722, 1094]
166	[319, 320]	1200	[1599, 659]	2234	[240, 3051]	3268	[2724, 1003]
167	[321, 322]	1201	[1408, 615]	2235	[3052, 3053]	3269	[3723, 1170]
168	[323, 309]	1202	[1877, 1675]	2236	[622, 236]	3270	[3724, 821]
169	[324, 325]	1203	[1878, 1879]	2237	[1840, 1633]	3271	[3614, 1198]
170	[326, 327]	1204	[1880, 1667]	2238	[3054, 3031]	3272	[3725, 1303]
171	[328, 329]	1205	[533, 1881]	2239	[1993, 3006]	3273	[1153, 935]
172	[330, 331]	1206	[1819, 1882]	2240	[3043, 1594]	3274	[359, 2511]
173	[332, 333]	1207	[37, 1883]	2241	[3055, 3056]	3275	[2350, 366]
174	[334, 335]	1208	[1719, 167]	2242	[1983, 3057]	3276	[2197, 3726]
175	[336, 337]	1209	[1884, 732]	2243	[1447, 760]	3277	[3727, 1084]
176	[338, 339]	1210	[1885, 1886]	2244	[3033, 1804]	3278	[2378, 3728]
177	[340, 341]	1211	[1887, 595]	2245	[3058, 644]	3279	[2857, 3729]

178	[342, 343]	1212	[1888, 1889]	2246	[3059, 3060]	3280	[3730, 3498]
179	[344, 345]	1213	[1404, 35]	2247	[562, 804]	3281	[2169, 6]
180	[346, 347]	1214	[1890, 1891]	2248	[3061, 2935]	3282	[3731, 2315]
181	[348, 349]	1215	[1892, 1893]	2249	[3062, 1475]	3283	[3732, 2789]
182	[350, 280]	1216	[1894, 535]	2250	[3063, 1887]	3284	[3733, 3448]
183	[351, 352]	1217	[602, 568]	2251	[1994, 1855]	3285	[3734, 1281]
184	[353, 354]	1218	[777, 774]	2252	[570, 58]	3286	[3735, 3736]
185	[355, 356]	1219	[594, 1895]	2253	[3064, 2011]	3287	[2361, 2648]
186	[357, 113]	1220	[1767, 1647]	2254	[3065, 1861]	3288	[930, 404]
187	[358, 359]	1221	[1896, 573]	2255	[674, 3066]	3289	[2865, 2715]
188	[360, 361]	1222	[1897, 1898]	2256	[502, 3003]	3290	[997, 3737]
189	[362, 363]	1223	[1899, 1900]	2257	[3067, 3068]	3291	[114, 1149]
190	[364, 328]	1224	[1901, 1902]	2258	[3069, 1487]	3292	[3738, 2772]
191	[365, 366]	1225	[1903, 683]	2259	[611, 509]	3293	[3739, 3740]
192	[367, 368]	1226	[1904, 757]	2260	[3070, 3071]	3294	[2716, 1348]
193	[369, 370]	1227	[1905, 54]	2261	[187, 57]	3295	[3741, 96]
194	[371, 372]	1228	[1906, 1907]	2262	[3072, 47]	3296	[3742, 3607]
195	[63, 373]	1229	[1908, 1909]	2263	[187, 570]	3297	[2801, 108]
196	[374, 375]	1230	[1910, 1911]	2264	[3073, 238]	3298	[3743, 3516]
197	[376, 377]	1231	[1551, 759]	2265	[1434, 3032]	3299	[3644, 3744]
198	[378, 379]	1232	[1823, 1912]	2266	[3074, 505]	3300	[3745, 3746]
199	[380, 381]	1233	[1588, 1913]	2267	[184, 3075]	3301	[324, 3747]
200	[382, 383]	1234	[1718, 740]	2268	[3076, 2937]	3302	[360, 3748]
201	[384, 385]	1235	[746, 1914]	2269	[3077, 3078]	3303	[3664, 2412]
202	[91, 386]	1236	[1451, 1915]	2270	[3079, 2992]	3304	[1031, 2804]
203	[387, 388]	1237	[1916, 1917]	2271	[3080, 3081]	3305	[3749, 3750]
204	[389, 390]	1238	[1918, 137]	2272	[1508, 1685]	3306	[3751, 850]
205	[391, 392]	1239	[1919, 1521]	2273	[226, 1681]	3307	[3460, 1205]
206	[393, 394]	1240	[1920, 567]	2274	[140, 553]	3308	[3686, 3752]
207	[395, 392]	1241	[1595, 1805]	2275	[1992, 752]	3309	[3753, 3552]
208	[396, 397]	1242	[1921, 1922]	2276	[1407, 614]	3310	[3754, 278]
209	[398, 277]	1243	[1923, 1924]	2277	[605, 1491]	3311	[3755, 818]
210	[399, 400]	1244	[1925, 1926]	2278	[1831, 1433]	3312	[3756, 2586]
211	[401, 402]	1245	[552, 1927]	2279	[3082, 187]	3313	[3451, 3757]
212	[403, 404]	1246	[1928, 1929]	2280	[1632, 1841]	3314	[829, 3758]
213	[405, 406]	1247	[1930, 1931]	2281	[1465, 3083]	3315	[1051, 3759]
214	[407, 408]	1248	[1932, 691]	2282	[722, 1799]	3316	[3760, 385]
215	[409, 410]	1249	[1933, 742]	2283	[3084, 3085]	3317	[2865, 2874]
216	[411, 412]	1250	[1934, 1600]	2284	[1990, 150]	3318	[3761, 110]
217	[413, 414]	1251	[1935, 593]	2285	[3086, 46]	3319	[3762, 3763]
218	[415, 416]	1252	[1690, 1936]	2286	[2975, 1686]	3320	[3764, 3765]
219	[417, 418]	1253	[484, 1937]	2287	[207, 3087]	3321	[3619, 932]
220	[419, 26]	1254	[1938, 171]	2288	[138, 3088]	3322	[3766, 1104]
221	[420, 292]	1255	[1939, 1940]	2289	[3089, 515]	3323	[2534, 3767]

222	[421, 422]	1256	[629, 1446]	2290	[1694, 487]	3324	[1353, 3768]
223	[423, 424]	1257	[1941, 1566]	2291	[1641, 3090]	3325	[3769, 2442]
224	[425, 426]	1258	[1942, 1886]	2292	[3091, 2018]	3326	[2130, 3770]
225	[427, 428]	1259	[1943, 1797]	2293	[3092, 3093]	3327	[3567, 3771]
226	[24, 429]	1260	[1944, 1945]	2294	[708, 3094]	3328	[3772, 3461]
227	[430, 431]	1261	[781, 7]	2295	[1401, 1469]	3329	[2719, 2359]
228	[301, 432]	1262	[1946, 1947]	2296	[3095, 758]	3330	[2304, 3773]
229	[433, 434]	1263	[1945, 1948]	2297	[3096, 3028]	3331	[2656, 428]
230	[435, 436]	1264	[1949, 1950]	2298	[3097, 1606]	3332	[66, 1360]
231	[437, 438]	1265	[1951, 186]	2299	[3098, 1542]	3333	[3774, 71]
232	[439, 440]	1266	[1952, 626]	2300	[463, 2070]	3334	[2499, 2782]
233	[441, 442]	1267	[1727, 1953]	2301	[1740, 190]	3335	[1217, 284]
234	[443, 444]	1268	[1954, 1955]	2302	[560, 3099]	3336	[316, 3775]
235	[445, 446]	1269	[1883, 510]	2303	[2070, 693]	3337	[941, 3504]
236	[447, 448]	1270	[1956, 763]	2304	[2979, 3100]	3338	[1050, 1233]
237	[449, 450]	1271	[1957, 1533]	2305	[1408, 1659]	3339	[3776, 2574]
238	[451, 452]	1272	[1958, 185]	2306	[516, 786]	3340	[3777, 3778]
239	[453, 454]	1273	[143, 1959]	2307	[3101, 3102]	3341	[2494, 2316]
240	[455, 456]	1274	[1960, 1583]	2308	[3103, 2045]	3342	[1319, 1050]
241	[457, 458]	1275	[1961, 1833]	2309	[636, 3104]	3343	[372, 3779]
242	[459, 460]	1276	[544, 1962]	2310	[1648, 562]	3344	[3445, 2392]
243	[461, 462]	1277	[1589, 1963]	2311	[232, 1953]	3345	[3780, 3566]
244	[463, 464]	1278	[1964, 568]	2312	[788, 626]	3346	[3781, 2791]
245	[465, 466]	1279	[1965, 811]	2313	[1953, 1781]	3347	[1201, 2763]
246	[467, 468]	1280	[39, 1865]	2314	[231, 1727]	3348	[3782, 2778]
247	[469, 470]	1281	[1897, 1752]	2315	[1457, 232]	3349	[3783, 3784]
248	[471, 472]	1282	[1966, 1967]	2316	[1953, 3058]	3350	[904, 2348]
249	[473, 474]	1283	[1968, 1969]	2317	[1558, 1457]	3351	[2184, 3785]
250	[475, 476]	1284	[1970, 532]	2318	[2937, 3105]	3352	[2487, 3786]
251	[477, 478]	1285	[1971, 593]	2319	[3106, 1638]	3353	[1377, 1363]
252	[194, 479]	1286	[1796, 1972]	2320	[2034, 1838]	3354	[1182, 332]
253	[480, 481]	1287	[1973, 1710]	2321	[3107, 3108]	3355	[3787, 2437]
254	[482, 483]	1288	[194, 1974]	2322	[1859, 213]	3356	[3788, 3789]
255	[484, 485]	1289	[1975, 1794]	2323	[1957, 3109]	3357	[3790, 3791]
256	[486, 487]	1290	[1943, 773]	2324	[3013, 1761]	3358	[3792, 354]
257	[488, 489]	1291	[1976, 524]	2325	[653, 2063]	3359	[2325, 934]
258	[490, 458]	1292	[1977, 681]	2326	[3110, 2004]	3360	[2422, 3793]
259	[491, 492]	1293	[1978, 750]	2327	[131, 3111]	3361	[3794, 3578]
260	[493, 145]	1294	[1979, 1407]	2328	[1573, 3112]	3362	[3681, 1309]
261	[494, 495]	1295	[1980, 1981]	2329	[507, 1705]	3363	[872, 3795]
262	[496, 497]	1296	[1670, 1982]	2330	[3113, 3114]	3364	[3796, 3797]
263	[498, 499]	1297	[1983, 1984]	2331	[3115, 144]	3365	[1230, 3651]
264	[500, 501]	1298	[1985, 1986]	2332	[3116, 1893]	3366	[273, 3798]
265	[458, 130]	1299	[1987, 1988]	2333	[3117, 2944]	3367	[1307, 3799]

266	[502, 503]	1300	[1989, 632]	2334	[3118, 3119]	3368	[3800, 3801]
267	[504, 505]	1301	[1990, 1771]	2335	[1543, 45]	3369	[3802, 347]
268	[506, 507]	1302	[154, 1630]	2336	[1966, 1879]	3370	[3803, 3622]
269	[508, 509]	1303	[1991, 1830]	2337	[3120, 809]	3371	[2557, 1292]
270	[38, 510]	1304	[1992, 1993]	2338	[1405, 536]	3372	[2470, 3804]
271	[511, 143]	1305	[1771, 1994]	2339	[3121, 1700]	3373	[3805, 3806]
272	[512, 513]	1306	[1995, 651]	2340	[3119, 2975]	3374	[3807, 1159]
273	[514, 515]	1307	[148, 1411]	2341	[656, 1609]	3375	[3808, 3809]
274	[516, 517]	1308	[176, 1657]	2342	[3081, 3122]	3376	[3810, 3811]
275	[518, 519]	1309	[1684, 1996]	2343	[754, 649]	3377	[396, 3812]
276	[520, 521]	1310	[770, 1997]	2344	[1791, 1494]	3378	[2295, 2894]
277	[522, 523]	1311	[1998, 1608]	2345	[740, 3123]	3379	[3813, 3814]
278	[524, 525]	1312	[1602, 654]	2346	[2070, 2007]	3380	[1032, 305]
279	[526, 527]	1313	[1999, 1775]	2347	[794, 3124]	3381	[2686, 3678]
280	[147, 528]	1314	[1715, 1549]	2348	[1544, 1848]	3382	[3815, 3816]
281	[529, 530]	1315	[2000, 525]	2349	[3125, 575]	3383	[3817, 2869]
282	[531, 532]	1316	[610, 467]	2350	[3126, 735]	3384	[3818, 422]
283	[533, 534]	1317	[541, 1711]	2351	[3127, 3100]	3385	[1356, 3819]
284	[535, 536]	1318	[1699, 699]	2352	[3057, 234]	3386	[1292, 2146]
285	[537, 538]	1319	[478, 807]	2353	[3128, 537]	3387	[1265, 2124]
286	[539, 540]	1320	[2001, 1881]	2354	[3129, 569]	3388	[3820, 922]
287	[541, 542]	1321	[2002, 197]	2355	[1842, 1471]	3389	[886, 2840]
288	[543, 544]	1322	[2003, 654]	2356	[1652, 1586]	3390	[3821, 2459]
289	[545, 156]	1323	[1741, 2004]	2357	[3130, 1899]	3391	[2457, 2263]
290	[546, 547]	1324	[551, 2005]	2358	[1419, 1976]	3392	[2376, 956]
291	[212, 548]	1325	[1683, 2006]	2359	[568, 1664]	3393	[3822, 2615]
292	[549, 550]	1326	[1934, 557]	2360	[590, 2020]	3394	[3823, 3824]
293	[551, 552]	1327	[464, 2007]	2361	[3131, 37]	3395	[3825, 2644]
294	[553, 554]	1328	[1708, 663]	2362	[3132, 2031]	3396	[2248, 3826]
295	[555, 556]	1329	[2008, 2009]	2363	[3133, 32]	3397	[3592, 3827]
296	[557, 558]	1330	[2010, 2011]	2364	[3006, 3134]	3398	[2118, 3823]
297	[559, 560]	1331	[1872, 1870]	2365	[2964, 3135]	3399	[3828, 1359]
298	[561, 562]	1332	[2012, 189]	2366	[3136, 3061]	3400	[3829, 3830]
299	[563, 564]	1333	[1691, 2013]	2367	[2013, 1707]	3401	[924, 3831]
300	[565, 47]	1334	[1638, 1997]	2368	[1402, 1502]	3402	[3832, 3544]
301	[566, 567]	1335	[1550, 777]	2369	[3137, 1792]	3403	[1335, 3833]
302	[568, 569]	1336	[2014, 2015]	2370	[1973, 1757]	3404	[3834, 3835]
303	[215, 570]	1337	[2016, 2017]	2371	[1645, 1621]	3405	[3836, 1340]
304	[571, 481]	1338	[1552, 1575]	2372	[3138, 1755]	3406	[834, 3837]
305	[572, 573]	1339	[508, 612]	2373	[1642, 54]	3407	[3838, 3839]
306	[574, 575]	1340	[2018, 1638]	2374	[3139, 223]	3408	[2754, 1027]
307	[576, 577]	1341	[722, 1687]	2375	[592, 3140]	3409	[3840, 2831]
308	[578, 579]	1342	[1946, 201]	2376	[3141, 1604]	3410	[2637, 1131]
309	[580, 581]	1343	[782, 48]	2377	[1418, 1795]	3411	[3841, 3842]

310	[582, 583]	1344	[2019, 2020]	2378	[3142, 3029]	3412	[2453, 3576]
311	[584, 585]	1345	[616, 686]	2379	[530, 225]	3413	[3843, 359]
312	[586, 587]	1346	[1878, 1967]	2380	[461, 3143]	3414	[2427, 1273]
313	[588, 589]	1347	[1424, 190]	2381	[3144, 556]	3415	[382, 3844]
314	[590, 591]	1348	[2021, 1744]	2382	[1660, 1791]	3416	[2803, 3845]
315	[592, 593]	1349	[1608, 657]	2383	[3061, 2006]	3417	[3846, 3847]
316	[594, 595]	1350	[2022, 1596]	2384	[3145, 1814]	3418	[3848, 2233]
317	[596, 562]	1351	[2023, 464]	2385	[3146, 3099]	3419	[1787, 2052]
318	[597, 598]	1352	[1600, 558]	2386	[3139, 599]	3420	[3250, 1870]
319	[222, 599]	1353	[2024, 2025]	2387	[1979, 758]	3421	[2959, 134]
320	[600, 601]	1354	[2026, 2027]	2388	[466, 1977]	3422	[2021, 2932]
321	[602, 603]	1355	[1661, 2028]	2389	[2955, 3013]	3423	[724, 1727]
322	[604, 152]	1356	[2029, 1698]	2390	[1503, 3147]	3424	[210, 1459]
323	[605, 582]	1357	[1709, 1829]	2391	[3148, 1877]	3425	[3146, 737]
324	[606, 607]	1358	[2030, 2015]	2392	[1977, 153]	3426	[3264, 1984]
325	[608, 126]	1359	[1604, 677]	2393	[1756, 3143]	3427	[2039, 581]
326	[609, 610]	1360	[2031, 1931]	2394	[3149, 2932]	3428	[1835, 1774]
327	[611, 612]	1361	[2032, 2033]	2395	[1999, 1948]	3429	[1691, 3153]
328	[13, 613]	1362	[2034, 2035]	2396	[3150, 1864]	3430	[3385, 3261]
329	[614, 615]	1363	[1785, 2036]	2397	[59, 3151]	3431	[3190, 1841]
330	[550, 616]	1364	[628, 1614]	2398	[546, 52]	3432	[3211, 1476]
331	[617, 618]	1365	[1614, 1457]	2399	[3152, 3028]	3433	[224, 1767]
332	[619, 620]	1366	[1781, 627]	2400	[3153, 1707]	3434	[1431, 3230]
333	[203, 621]	1367	[2037, 2038]	2401	[3154, 658]	3435	[1628, 3399]
334	[622, 623]	1368	[2039, 1590]	2402	[2961, 530]	3436	[3849, 3283]
335	[624, 567]	1369	[1987, 2040]	2403	[467, 3155]	3437	[3850, 1670]
336	[625, 626]	1370	[1991, 1416]	2404	[3156, 3112]	3438	[3229, 1923]
337	[627, 628]	1371	[2041, 466]	2405	[775, 3157]	3439	[2953, 3851]
338	[629, 630]	1372	[2042, 150]	2406	[803, 3158]	3440	[2957, 1515]
339	[631, 632]	1373	[1978, 36]	2407	[2042, 1771]	3441	[587, 3852]
340	[633, 153]	1374	[578, 1506]	2408	[3159, 1551]	3442	[1444, 3853]
341	[634, 635]	1375	[581, 684]	2409	[3160, 3161]	3443	[1765, 1529]
342	[636, 637]	1376	[2043, 680]	2410	[3162, 1610]	3444	[3214, 769]
343	[638, 639]	1377	[2044, 1739]	2411	[3163, 1436]	3445	[758, 1408]
344	[640, 521]	1378	[2045, 2046]	2412	[3164, 3165]	3446	[3854, 1838]
345	[641, 642]	1379	[2047, 1646]	2413	[1963, 3147]	3447	[2960, 2935]
346	[643, 644]	1380	[2048, 2049]	2414	[1462, 1972]	3448	[225, 3203]
347	[645, 646]	1381	[480, 701]	2415	[3166, 3167]	3449	[638, 478]
348	[520, 647]	1382	[2050, 2051]	2416	[3121, 699]	3450	[1736, 3102]
349	[171, 564]	1383	[1509, 519]	2417	[730, 1969]	3451	[3417, 3855]
350	[648, 649]	1384	[160, 1914]	2418	[3168, 574]	3452	[3856, 3857]
351	[234, 650]	1385	[2052, 2053]	2419	[1492, 801]	3453	[3858, 1709]
352	[651, 652]	1386	[662, 1589]	2420	[1913, 1963]	3454	[3287, 616]
353	[653, 130]	1387	[1770, 2054]	2421	[493, 1732]	3455	[1452, 1461]

354	[654, 655]	1388	[2055, 2056]	2422	[1809, 1625]	3456	[3859, 3028]
355	[656, 657]	1389	[233, 2057]	2423	[3169, 791]	3457	[1619, 2046]
356	[658, 659]	1390	[2058, 2059]	2424	[1537, 744]	3458	[3293, 1808]
357	[660, 33]	1391	[157, 228]	2425	[2008, 1899]	3459	[3104, 3860]
358	[661, 662]	1392	[1496, 2060]	2426	[3170, 548]	3460	[2041, 604]
359	[663, 664]	1393	[2061, 2062]	2427	[457, 653]	3461	[470, 2975]
360	[665, 666]	1394	[129, 2063]	2428	[494, 3171]	3462	[3861, 589]
361	[667, 668]	1395	[795, 636]	2429	[3172, 142]	3463	[3862, 1430]
362	[669, 670]	1396	[1429, 2064]	2430	[3173, 3174]	3464	[2933, 557]
363	[634, 671]	1397	[2065, 2066]	2431	[2996, 3175]	3465	[3863, 727]
364	[672, 614]	1398	[2067, 2068]	2432	[1501, 1403]	3466	[3134, 185]
365	[673, 674]	1399	[2069, 1626]	2433	[3176, 1544]	3467	[3864, 485]
366	[575, 527]	1400	[1601, 2070]	2434	[1972, 1766]	3468	[3388, 2032]
367	[675, 676]	1401	[2071, 850]	2435	[3177, 3091]	3469	[570, 3274]
368	[677, 678]	1402	[919, 2072]	2436	[1456, 231]	3470	[1857, 3865]
369	[679, 680]	1403	[2073, 2074]	2437	[2947, 720]	3471	[3083, 3151]
370	[152, 681]	1404	[2075, 2076]	2438	[3178, 139]	3472	[3408, 1858]
371	[682, 683]	1405	[2077, 2078]	2439	[3036, 3179]	3473	[3296, 1950]
372	[684, 685]	1406	[2079, 2080]	2440	[3180, 1899]	3474	[1960, 2031]
373	[686, 687]	1407	[2081, 2082]	2441	[3181, 570]	3475	[2976, 3866]
374	[688, 689]	1408	[2083, 1167]	2442	[157, 1770]	3476	[3867, 222]
375	[690, 691]	1409	[443, 2084]	2443	[483, 1772]	3477	[3868, 2936]
376	[692, 693]	1410	[1018, 2085]	2444	[1517, 1781]	3478	[1789, 656]
377	[694, 462]	1411	[2086, 2087]	2445	[1558, 231]	3479	[3379, 2040]
378	[695, 618]	1412	[2088, 2089]	2446	[2016, 1570]	3480	[3869, 1697]
379	[696, 697]	1413	[2090, 2091]	2447	[612, 3182]	3481	[3870, 2033]
380	[698, 699]	1414	[2092, 2093]	2448	[3183, 3184]	3482	[3871, 1611]
381	[700, 701]	1415	[2094, 2095]	2449	[2956, 582]	3483	[3872, 3039]
382	[702, 703]	1416	[2096, 2097]	2450	[2990, 3150]	3484	[713, 3108]
383	[704, 8]	1417	[2098, 2099]	2451	[1493, 1444]	3485	[3408, 3865]
384	[705, 706]	1418	[2100, 2101]	2452	[3185, 3186]	3486	[126, 1982]
385	[707, 708]	1419	[325, 2102]	2453	[3187, 2019]	3487	[3266, 493]
386	[709, 710]	1420	[855, 2103]	2454	[1531, 1945]	3488	[3873, 3316]
387	[711, 712]	1421	[2104, 875]	2455	[3145, 1622]	3489	[3362, 35]
388	[713, 714]	1422	[2105, 2106]	2456	[3188, 1810]	3490	[3302, 3281]
389	[715, 716]	1423	[2107, 2108]	2457	[3189, 1525]	3491	[2944, 737]
390	[717, 491]	1424	[2109, 415]	2458	[3190, 1633]	3492	[3874, 503]
391	[718, 2]	1425	[2110, 402]	2459	[202, 1805]	3493	[3875, 1914]
392	[719, 720]	1426	[2111, 993]	2460	[1576, 2011]	3494	[460, 193]
393	[721, 722]	1427	[2112, 2113]	2461	[505, 550]	3495	[1928, 3876]
394	[723, 513]	1428	[1062, 349]	2462	[1763, 3191]	3496	[3360, 3877]
395	[724, 232]	1429	[2114, 2115]	2463	[1791, 2028]	3497	[3878, 2068]
396	[725, 726]	1430	[2116, 1013]	2464	[3192, 1922]	3498	[518, 1510]
397	[727, 728]	1431	[1400, 2117]	2465	[2930, 3193]	3499	[3227, 1782]

398	[11, 729]	1432	[1005, 2118]	2466	[1724, 3194]	3500	[1526, 2066]
399	[730, 731]	1433	[2119, 2087]	2467	[3195, 782]	3501	[3106, 770]
400	[732, 733]	1434	[2120, 2121]	2468	[3196, 1822]	3502	[3392, 3128]
401	[734, 735]	1435	[2122, 2123]	2469	[3197, 1599]	3503	[3879, 3071]
402	[736, 149]	1436	[2124, 2125]	2470	[3198, 3199]	3504	[3880, 3053]
403	[560, 737]	1437	[2126, 248]	2471	[3200, 1844]	3505	[3881, 1486]
404	[738, 739]	1438	[2127, 2127]	2472	[3201, 1473]	3506	[3245, 3882]
405	[740, 741]	1439	[281, 2128]	2473	[3202, 3203]	3507	[3883, 1941]
406	[658, 742]	1440	[2129, 2130]	2474	[3204, 1827]	3508	[3308, 3237]
407	[743, 744]	1441	[2131, 308]	2475	[3205, 1683]	3509	[774, 760]
408	[745, 746]	1442	[2132, 2133]	2476	[464, 693]	3510	[1646, 1622]
409	[747, 748]	1443	[1153, 2134]	2477	[603, 569]	3511	[3884, 510]
410	[749, 750]	1444	[2135, 2136]	2478	[3206, 1839]	3512	[3857, 1731]
411	[751, 752]	1445	[2137, 2138]	2479	[3207, 3072]	3513	[766, 3390]
412	[753, 12]	1446	[2139, 1186]	2480	[3208, 3037]	3514	[514, 222]
413	[754, 755]	1447	[1195, 2140]	2481	[3209, 214]	3515	[142, 709]
414	[756, 757]	1448	[846, 2141]	2482	[3210, 591]	3516	[182, 3386]
415	[758, 614]	1449	[2142, 1271]	2483	[3211, 3212]	3517	[1812, 2014]
416	[759, 760]	1450	[2143, 2144]	2484	[3213, 3081]	3518	[3120, 1712]
417	[761, 214]	1451	[2145, 2146]	2485	[3214, 3087]	3519	[789, 1654]
418	[762, 763]	1452	[1179, 2147]	2486	[512, 3049]	3520	[9, 3853]
419	[133, 764]	1453	[2148, 2149]	2487	[768, 141]	3521	[1700, 3885]
420	[765, 679]	1454	[2150, 2104]	2488	[3215, 1560]	3522	[655, 182]
421	[766, 767]	1455	[2151, 1084]	2489	[1798, 3175]	3523	[3873, 1981]
422	[768, 553]	1456	[346, 2152]	2490	[1945, 1775]	3524	[1758, 3291]
423	[207, 769]	1457	[2153, 2154]	2491	[3216, 561]	3525	[3262, 3304]
424	[770, 771]	1458	[338, 2155]	2492	[3217, 1511]	3526	[3344, 637]
425	[146, 617]	1459	[2156, 328]	2493	[3218, 3088]	3527	[3858, 663]
426	[772, 773]	1460	[2157, 2158]	2494	[3050, 1558]	3528	[1796, 1696]
427	[679, 55]	1461	[2159, 2160]	2495	[3212, 3219]	3529	[1666, 3886]
428	[774, 775]	1462	[2101, 2161]	2496	[3220, 3221]	3530	[3887, 495]
429	[776, 777]	1463	[2162, 2163]	2497	[509, 3182]	3531	[3888, 3280]
430	[506, 778]	1464	[2164, 257]	2498	[3222, 45]	3532	[1468, 194]
431	[239, 779]	1465	[2165, 2166]	2499	[3223, 1988]	3533	[169, 1827]
432	[47, 780]	1466	[2157, 2167]	2500	[158, 167]	3534	[1485, 3374]
433	[781, 704]	1467	[2168, 1155]	2501	[3129, 1664]	3535	[3206, 1573]
434	[782, 780]	1468	[2169, 2170]	2502	[1438, 1795]	3536	[3889, 7]
435	[783, 784]	1469	[6, 2171]	2503	[3126, 668]	3537	[3087, 3186]
436	[635, 785]	1470	[2172, 2173]	2504	[3224, 14]	3538	[2968, 1820]
437	[786, 625]	1471	[2174, 2175]	2505	[1448, 3225]	3539	[3890, 3891]
438	[787, 175]	1472	[2176, 1366]	2506	[3226, 2035]	3540	[3892, 3072]
439	[644, 628]	1473	[2177, 835]	2507	[761, 186]	3541	[3401, 2951]
440	[788, 789]	1474	[1397, 2178]	2508	[1834, 1531]	3542	[517, 625]
441	[790, 791]	1475	[2179, 2180]	2509	[466, 152]	3543	[3893, 1523]

442	[792, 793]	1476	[2181, 2182]	2510	[3227, 1868]	3544	[3323, 623]
443	[794, 795]	1477	[2183, 949]	2511	[662, 1913]	3545	[1557, 1596]
444	[749, 36]	1478	[2184, 2185]	2512	[738, 655]	3546	[1882, 3361]
445	[796, 48]	1479	[2186, 2187]	2513	[1647, 3228]	3547	[748, 1450]
446	[619, 797]	1480	[2188, 2189]	2514	[3229, 1513]	3548	[3367, 3894]
447	[798, 189]	1481	[2190, 1391]	2515	[1802, 474]	3549	[3895, 3395]
448	[799, 800]	1482	[2191, 2192]	2516	[500, 1909]	3550	[3896, 3897]
449	[796, 780]	1483	[2193, 2194]	2517	[632, 1620]	3551	[669, 523]
450	[801, 802]	1484	[2195, 265]	2518	[3076, 62]	3552	[2982, 3225]
451	[803, 804]	1485	[1007, 435]	2519	[1661, 1494]	3553	[527, 2938]
452	[805, 547]	1486	[2196, 2197]	2520	[217, 3024]	3554	[3412, 62]
453	[806, 598]	1487	[2198, 1332]	2521	[1589, 1503]	3555	[507, 3120]
454	[639, 807]	1488	[2199, 2200]	2522	[2989, 3230]	3556	[1628, 3898]
455	[808, 809]	1489	[2201, 1321]	2523	[3231, 3232]	3557	[3415, 1521]
456	[810, 811]	1490	[2202, 2203]	2524	[237, 3233]	3558	[3899, 1497]
457	[812, 251]	1491	[2204, 1234]	2525	[1989, 2045]	3559	[3900, 3901]
458	[813, 814]	1492	[1188, 2205]	2526	[3234, 568]	3560	[1406, 778]
459	[815, 816]	1493	[250, 2206]	2527	[576, 3029]	3561	[3389, 767]
460	[817, 818]	1494	[2207, 2208]	2528	[1971, 3140]	3562	[3902, 3379]
461	[339, 819]	1495	[2209, 2210]	2529	[1722, 1917]	3563	[3903, 654]
462	[820, 821]	1496	[2211, 2212]	2530	[3235, 182]	3564	[3403, 556]
463	[822, 823]	1497	[2090, 299]	2531	[779, 3236]	3565	[3210, 2020]
464	[824, 825]	1498	[2213, 2214]	2532	[3220, 3237]	3566	[2018, 770]
465	[826, 827]	1499	[1137, 2215]	2533	[1568, 613]	3567	[3904, 1689]
466	[828, 295]	1500	[2216, 2217]	2534	[3238, 3239]	3568	[3905, 3262]
467	[829, 830]	1501	[2218, 2219]	2535	[760, 533]	3569	[3128, 1436]
468	[831, 296]	1502	[2220, 2221]	2536	[3022, 3240]	3570	[3906, 1621]
469	[832, 833]	1503	[2222, 2223]	2537	[798, 1578]	3571	[1923, 1845]
470	[834, 835]	1504	[2224, 2225]	2538	[1422, 3111]	3572	[1577, 1959]
471	[836, 837]	1505	[2226, 2227]	2539	[644, 1499]	3573	[3365, 733]
472	[838, 839]	1506	[2228, 2229]	2540	[783, 1475]	3574	[3347, 1441]
473	[840, 245]	1507	[2230, 2231]	2541	[1565, 3241]	3575	[3205, 3061]
474	[841, 842]	1508	[2232, 2233]	2542	[734, 668]	3576	[3070, 3907]
475	[843, 844]	1509	[2218, 2234]	2543	[3005, 3242]	3577	[3161, 1631]
476	[845, 846]	1510	[2235, 1307]	2544	[1921, 3243]	3578	[1605, 610]
477	[847, 848]	1511	[2236, 2237]	2545	[1620, 1877]	3579	[3908, 3384]
478	[849, 93]	1512	[2238, 2239]	2546	[3244, 1648]	3580	[3909, 741]
479	[850, 372]	1513	[2240, 23]	2547	[3080, 3245]	3581	[3910, 3876]
480	[851, 852]	1514	[2241, 2242]	2548	[3246, 513]	3582	[3201, 646]
481	[853, 848]	1515	[2243, 970]	2549	[3247, 3248]	3583	[3911, 1887]
482	[854, 855]	1516	[2244, 2245]	2550	[1563, 726]	3584	[3912, 3913]
483	[856, 857]	1517	[438, 1138]	2551	[635, 2983]	3585	[1885, 3897]
484	[858, 859]	1518	[2246, 1061]	2552	[3249, 3223]	3586	[1981, 147]
485	[860, 861]	1519	[2247, 2248]	2553	[3250, 1873]	3587	[1705, 1712]

486	[862, 863]	1520	[2146, 2249]	2554	[2023, 2070]	3588	[497, 1966]
487	[864, 865]	1521	[2250, 878]	2555	[1744, 3251]	3589	[2045, 1620]
488	[866, 867]	1522	[2251, 2252]	2556	[3252, 1977]	3590	[128, 3261]
489	[868, 869]	1523	[2253, 2254]	2557	[3253, 729]	3591	[3054, 1434]
490	[870, 871]	1524	[2255, 2256]	2558	[3254, 1411]	3592	[1615, 536]
491	[872, 873]	1525	[2257, 825]	2559	[3255, 3128]	3593	[3914, 1479]
492	[874, 875]	1526	[2258, 2259]	2560	[3256, 3247]	3594	[1995, 684]
493	[876, 877]	1527	[2260, 2261]	2561	[3257, 1479]	3595	[3915, 1446]
494	[878, 879]	1528	[2262, 2263]	2562	[566, 1437]	3596	[3916, 3917]
495	[880, 881]	1529	[2264, 2265]	2563	[1856, 1865]	3597	[3001, 3170]
496	[882, 883]	1530	[2266, 2267]	2564	[3177, 1585]	3598	[1538, 1606]
497	[884, 885]	1531	[900, 2268]	2565	[162, 192]	3599	[3918, 217]
498	[886, 887]	1532	[2246, 2269]	2566	[3258, 3078]	3600	[3919, 1588]
499	[888, 889]	1533	[2270, 113]	2567	[3259, 34]	3601	[751, 1993]
500	[24, 890]	1534	[2271, 2272]	2568	[2051, 3260]	3602	[3914, 1567]
501	[891, 301]	1535	[2273, 2274]	2569	[3161, 3261]	3603	[3130, 2009]
502	[892, 893]	1536	[2275, 2276]	2570	[2051, 3262]	3604	[1640, 1835]
503	[894, 895]	1537	[2277, 2278]	2571	[3263, 183]	3605	[1792, 134]
504	[896, 897]	1538	[2279, 2262]	2572	[3264, 3057]	3606	[2061, 3920]
505	[898, 899]	1539	[1260, 2280]	2573	[3265, 1433]	3607	[739, 3263]
506	[900, 901]	1540	[2281, 2282]	2574	[1460, 1453]	3608	[3115, 493]
507	[902, 356]	1541	[2283, 2284]	2575	[1873, 3266]	3609	[3902, 3223]
508	[903, 904]	1542	[2285, 315]	2576	[3143, 3267]	3610	[3217, 487]
509	[905, 906]	1543	[2286, 2287]	2577	[1554, 3268]	3611	[1636, 2052]
510	[75, 907]	1544	[2288, 2289]	2578	[1925, 3269]	3612	[3086, 1848]
511	[908, 256]	1545	[2290, 2215]	2579	[1919, 3270]	3613	[3141, 1837]
512	[909, 910]	1546	[2291, 2292]	2580	[200, 1947]	3614	[127, 3161]
513	[911, 124]	1547	[2293, 295]	2581	[3230, 1575]	3615	[3921, 594]
514	[912, 913]	1548	[2294, 2295]	2582	[1607, 3271]	3616	[3922, 1535]
515	[914, 915]	1549	[2296, 906]	2583	[526, 801]	3617	[666, 3289]
516	[847, 916]	1550	[2297, 2298]	2584	[1440, 3272]	3618	[3074, 549]
517	[917, 918]	1551	[2299, 2300]	2585	[1838, 1573]	3619	[762, 1976]
518	[919, 920]	1552	[2301, 2302]	2586	[1432, 1575]	3620	[3213, 3245]
519	[921, 922]	1553	[2117, 2303]	2587	[3030, 3194]	3621	[2931, 3083]
520	[923, 924]	1554	[2304, 2305]	2588	[2003, 738]	3622	[488, 1611]
521	[925, 926]	1555	[2306, 2307]	2589	[1469, 1974]	3623	[3366, 1738]
522	[927, 928]	1556	[435, 2308]	2590	[2030, 3011]	3624	[3160, 128]
523	[929, 930]	1557	[2309, 2310]	2591	[216, 3068]	3625	[476, 1755]
524	[931, 932]	1558	[2311, 2312]	2592	[52, 163]	3626	[3923, 3281]
525	[933, 934]	1559	[2313, 2314]	2593	[1767, 3203]	3627	[1972, 1697]
526	[935, 936]	1560	[2315, 120]	2594	[2966, 1719]	3628	[3397, 3124]
527	[937, 938]	1561	[2316, 2317]	2595	[3034, 1779]	3629	[2012, 1578]
528	[939, 940]	1562	[1562, 1562]	2596	[1562, 1561]	3630	[2942, 1651]
529	[941, 942]	1563	[2318, 2319]	2597	[3034, 1559]	3631	[1748, 3924]

530	[943, 944]	1564	[2320, 2321]	2598	[1778, 786]	3632	[3925, 598]
531	[945, 946]	1565	[2322, 2323]	2599	[1903, 1658]	3633	[3118, 470]
532	[947, 948]	1566	[2324, 2325]	2600	[3253, 12]	3634	[3926, 3195]
533	[949, 112]	1567	[2326, 2327]	2601	[759, 775]	3635	[3301, 3269]
534	[950, 951]	1568	[2328, 2329]	2602	[3273, 1832]	3636	[3202, 1647]
535	[952, 953]	1569	[2330, 2331]	2603	[3274, 1759]	3637	[3927, 1471]
536	[954, 955]	1570	[2332, 388]	2604	[1930, 3275]	3638	[2991, 3928]
537	[956, 957]	1571	[2333, 2334]	2605	[3276, 3277]	3639	[1520, 3270]
538	[452, 958]	1572	[2335, 2336]	2606	[3278, 1609]	3640	[3410, 3907]
539	[959, 960]	1573	[2337, 2338]	2607	[3144, 1607]	3641	[1450, 2033]
540	[961, 962]	1574	[2339, 2340]	2608	[3279, 1770]	3642	[1555, 43]
541	[963, 964]	1575	[1400, 2341]	2609	[3280, 3013]	3643	[1750, 3031]
542	[965, 966]	1576	[2118, 1355]	2610	[581, 651]	3644	[3929, 797]
543	[967, 968]	1577	[2112, 2342]	2611	[1623, 1605]	3645	[3930, 1738]
544	[969, 970]	1578	[2343, 869]	2612	[1944, 1774]	3646	[1530, 1835]
545	[971, 972]	1579	[1120, 2344]	2613	[3089, 222]	3647	[3065, 3009]
546	[973, 367]	1580	[2345, 2346]	2614	[3281, 1401]	3648	[3303, 1586]
547	[974, 269]	1581	[2347, 2348]	2615	[1675, 1911]	3649	[1685, 2965]
548	[951, 975]	1582	[2349, 2350]	2616	[604, 1977]	3650	[3892, 3195]
549	[976, 977]	1583	[2351, 341]	2617	[1584, 3091]	3651	[2002, 1547]
550	[978, 979]	1584	[2352, 2353]	2618	[1709, 664]	3652	[1495, 3931]
551	[69, 980]	1585	[2354, 335]	2619	[3185, 3282]	3653	[3380, 1719]
552	[981, 982]	1586	[2355, 2356]	2620	[49, 3283]	3654	[1553, 1576]
553	[983, 984]	1587	[2357, 2358]	2621	[203, 1806]	3655	[3932, 3358]
554	[985, 986]	1588	[2238, 311]	2622	[1432, 1553]	3656	[3242, 184]
555	[987, 988]	1589	[2359, 2360]	2623	[3095, 1407]	3657	[1624, 1810]
556	[989, 990]	1590	[2361, 1206]	2624	[810, 2972]	3658	[3933, 3187]
557	[991, 992]	1591	[242, 2362]	2625	[2022, 1455]	3659	[1706, 3934]
558	[993, 994]	1592	[1148, 2363]	2626	[3284, 3285]	3660	[1668, 2005]
559	[995, 996]	1593	[1191, 2364]	2627	[3286, 2038]	3661	[3935, 3936]
560	[997, 998]	1594	[2365, 2339]	2628	[3287, 1777]	3662	[206, 3214]
561	[999, 1000]	1595	[2366, 2367]	2629	[1904, 2991]	3663	[1908, 501]
562	[1001, 73]	1596	[2368, 2369]	2630	[626, 1654]	3664	[3937, 1963]
563	[1002, 1003]	1597	[2370, 87]	2631	[1779, 1778]	3665	[3938, 3939]
564	[416, 1004]	1598	[2371, 2121]	2632	[3064, 2941]	3666	[1581, 1777]
565	[1005, 1006]	1599	[2372, 2373]	2633	[1532, 3109]	3667	[3351, 1617]
566	[1007, 1008]	1600	[2374, 2375]	2634	[1631, 1850]	3668	[3002, 503]
567	[1009, 1010]	1601	[2376, 1215]	2635	[3284, 3184]	3669	[3209, 186]
568	[1011, 30]	1602	[2377, 1156]	2636	[3021, 708]	3670	[3170, 213]
569	[1012, 1013]	1603	[2378, 2379]	2637	[1994, 3288]	3671	[3940, 3941]
570	[441, 1014]	1604	[2380, 2381]	2638	[3289, 2030]	3672	[1927, 3245]
571	[1015, 1016]	1605	[2382, 2383]	2639	[3290, 3020]	3673	[3117, 560]
572	[1017, 1018]	1606	[2384, 889]	2640	[1874, 2004]	3674	[3942, 1698]
573	[1019, 1020]	1607	[2385, 448]	2641	[469, 3119]	3675	[179, 2053]

574	[1021, 1022]	1608	[2386, 2197]	2642	[2052, 1414]	3676	[3136, 1683]
575	[1023, 22]	1609	[2387, 2388]	2643	[790, 793]	3677	[1637, 3151]
576	[1024, 1025]	1610	[2389, 2390]	2644	[178, 2052]	3678	[3163, 537]
577	[1026, 1027]	1611	[2391, 363]	2645	[181, 2977]	3679	[2995, 1779]
578	[1028, 1029]	1612	[2392, 2305]	2646	[3274, 3291]	3680	[1804, 1559]
579	[1030, 1031]	1613	[1179, 4]	2647	[1491, 583]	3681	[3048, 770]
580	[1032, 1033]	1614	[1111, 439]	2648	[3142, 577]	3682	[3913, 3943]
581	[1034, 1035]	1615	[2393, 2394]	2649	[1529, 3292]	3683	[1949, 3017]
582	[1036, 1037]	1616	[2395, 2396]	2650	[1918, 1982]	3684	[3944, 3283]
583	[1038, 17]	1617	[2397, 2398]	2651	[3293, 676]	3685	[3110, 1742]
584	[1039, 1040]	1618	[2399, 2400]	2652	[3069, 585]	3686	[3404, 3032]
585	[1041, 1042]	1619	[902, 2401]	2653	[3162, 1428]	3687	[2929, 212]
586	[1043, 1044]	1620	[1187, 2248]	2654	[1961, 800]	3688	[2044, 2939]
587	[1045, 101]	1621	[2402, 1147]	2655	[3294, 774]	3689	[631, 2045]
588	[1046, 1047]	1622	[2403, 815]	2656	[3257, 1567]	3690	[540, 1676]
589	[1048, 851]	1623	[1250, 1194]	2657	[1616, 3295]	3691	[3320, 3272]
590	[1049, 1050]	1624	[2404, 2405]	2658	[3296, 3017]	3692	[1531, 1774]
591	[1051, 1052]	1625	[2406, 2268]	2659	[1811, 3289]	3693	[1869, 1873]
592	[1053, 1054]	1626	[2407, 2338]	2660	[1864, 40]	3694	[458, 2063]
593	[1055, 857]	1627	[2408, 2409]	2661	[3297, 3298]	3695	[3945, 726]
594	[1056, 926]	1628	[2410, 2327]	2662	[3299, 2062]	3696	[3063, 594]
595	[1057, 1058]	1629	[2125, 2411]	2663	[1655, 1909]	3697	[3290, 2977]
596	[1059, 1060]	1630	[2412, 2413]	2664	[540, 1911]	3698	[1836, 505]
597	[1061, 1062]	1631	[246, 2388]	2665	[1701, 1821]	3699	[3018, 3191]
598	[1063, 318]	1632	[372, 2414]	2666	[3300, 220]	3700	[1639, 1439]
599	[1064, 1065]	1633	[2415, 2416]	2667	[3301, 1926]	3701	[3864, 1937]
600	[1066, 1067]	1634	[2417, 2418]	2668	[3101, 1693]	3702	[1637, 60]
601	[1068, 1069]	1635	[2419, 414]	2669	[608, 1670]	3703	[1871, 658]
602	[1070, 1071]	1636	[2420, 2092]	2670	[3302, 460]	3704	[2928, 3001]
603	[1072, 1073]	1637	[257, 2421]	2671	[3303, 642]	3705	[3884, 1554]
604	[1074, 377]	1638	[2422, 2328]	2672	[3197, 658]	3706	[3871, 489]
605	[1075, 1038]	1639	[2423, 2424]	2673	[8, 2025]	3707	[3073, 3233]
606	[1076, 1077]	1640	[2425, 2426]	2674	[1664, 2970]	3708	[3929, 620]
607	[1078, 1079]	1641	[1001, 2427]	2675	[1877, 540]	3709	[3850, 126]
608	[1080, 1081]	1642	[2428, 2429]	2676	[705, 3304]	3710	[3869, 1766]
609	[1011, 1082]	1643	[2430, 2431]	2677	[3305, 1837]	3711	[1685, 3135]
610	[1083, 406]	1644	[2432, 2433]	2678	[3181, 57]	3712	[3340, 1710]
611	[1084, 1085]	1645	[1297, 2434]	2679	[1813, 3212]	3713	[150, 1994]
612	[1086, 1079]	1646	[2435, 1318]	2680	[125, 1670]	3714	[3854, 2035]
613	[1087, 1073]	1647	[426, 331]	2681	[1591, 1994]	3715	[2020, 1603]
614	[1088, 1089]	1648	[2436, 2437]	2682	[531, 1526]	3716	[802, 2939]
615	[1090, 1091]	1649	[2438, 1310]	2683	[189, 3306]	3717	[1757, 1711]
616	[977, 1092]	1650	[2439, 2440]	2684	[3307, 581]	3718	[3946, 797]
617	[1093, 1094]	1651	[2441, 948]	2685	[3308, 3221]	3719	[1824, 3331]

618	[282, 1095]	1652	[2442, 2443]	2686	[3187, 590]	3720	[3947, 495]
619	[1096, 1097]	1653	[395, 2444]	2687	[1662, 1717]	3721	[3948, 3091]
620	[1098, 456]	1654	[1059, 2445]	2688	[1539, 1765]	3722	[572, 1986]
621	[1099, 1100]	1655	[2446, 2447]	2689	[663, 1829]	3723	[3008, 589]
622	[1101, 1102]	1656	[2448, 2449]	2690	[3119, 1825]	3724	[698, 1700]
623	[1103, 990]	1657	[2450, 2451]	2691	[1634, 3309]	3725	[3337, 1824]
624	[1104, 1105]	1658	[2452, 1020]	2692	[3203, 3310]	3726	[1667, 3094]
625	[1106, 1107]	1659	[1323, 962]	2693	[230, 3311]	3727	[3949, 1757]
626	[1108, 1109]	1660	[2453, 2454]	2694	[1678, 3025]	3728	[3950, 1720]
627	[1110, 1111]	1661	[2455, 2456]	2695	[3059, 3312]	3729	[752, 3242]
628	[1112, 437]	1662	[2279, 2457]	2696	[3313, 165]	3730	[3007, 788]
629	[1113, 843]	1663	[2458, 2459]	2697	[3314, 3251]	3731	[1613, 1729]
630	[1114, 1115]	1664	[2460, 2461]	2698	[3315, 583]	3732	[2047, 1621]
631	[1116, 1117]	1665	[2462, 2463]	2699	[3316, 147]	3733	[3191, 3312]
632	[1118, 959]	1666	[2464, 2465]	2700	[3317, 2019]	3734	[3307, 1590]
633	[1119, 1120]	1667	[2466, 327]	2701	[3189, 2059]	3735	[3925, 1427]
634	[1121, 1122]	1668	[1389, 2467]	2702	[1847, 1883]	3736	[3942, 1678]
635	[1123, 1115]	1669	[2468, 16]	2703	[1607, 3318]	3737	[510, 3951]
636	[1124, 1125]	1670	[2469, 1250]	2704	[1958, 3075]	3738	[1993, 3242]
637	[1126, 1104]	1671	[2470, 2471]	2705	[3057, 2057]	3739	[702, 1815]
638	[1127, 1128]	1672	[2472, 2307]	2706	[3319, 3237]	3740	[3325, 1489]
639	[1129, 1130]	1673	[2473, 2474]	2707	[3224, 613]	3741	[1760, 3014]
640	[1131, 1132]	1674	[2475, 2079]	2708	[1986, 1410]	3742	[2004, 3371]
641	[1133, 298]	1675	[2248, 1091]	2709	[1409, 1828]	3743	[1656, 177]
642	[1134, 1135]	1676	[2476, 1349]	2710	[763, 3000]	3744	[3225, 3952]
643	[1136, 1137]	1677	[945, 2477]	2711	[2999, 524]	3745	[3159, 777]
644	[1138, 89]	1678	[2478, 865]	2712	[665, 1900]	3746	[3393, 1893]
645	[1131, 1139]	1679	[1017, 2479]	2713	[3320, 1441]	3747	[3353, 3953]
646	[1140, 1141]	1680	[2480, 2481]	2714	[1744, 3321]	3748	[1893, 1794]
647	[1142, 1143]	1681	[2482, 2483]	2715	[3196, 2992]	3749	[3096, 3142]
648	[1144, 1145]	1682	[2484, 2485]	2716	[1876, 1608]	3750	[3868, 156]
649	[1146, 1147]	1683	[2486, 2487]	2717	[640, 647]	3751	[3880, 1902]
650	[1148, 1149]	1684	[2488, 2489]	2718	[2033, 3322]	3752	[3411, 2017]
651	[1033, 306]	1685	[2231, 1334]	2719	[3317, 590]	3753	[3148, 539]
652	[1150, 1151]	1686	[1141, 1039]	2720	[3323, 236]	3754	[1620, 539]
653	[1152, 1153]	1687	[1261, 2490]	2721	[557, 1626]	3755	[1942, 3897]
654	[1154, 1155]	1688	[2375, 2491]	2722	[1593, 3044]	3756	[3881, 3374]
655	[1156, 1157]	1689	[2492, 2212]	2723	[1981, 617]	3757	[472, 1962]
656	[1158, 1159]	1690	[2271, 2493]	2724	[1439, 1796]	3758	[3887, 3171]
657	[1160, 1161]	1691	[2494, 2097]	2725	[3324, 652]	3759	[3954, 1719]
658	[1162, 1163]	1692	[840, 2495]	2726	[3325, 697]	3760	[1862, 3388]
659	[1164, 1165]	1693	[2496, 944]	2727	[1970, 1526]	3761	[765, 3866]
660	[1166, 420]	1694	[2439, 2497]	2728	[1920, 1437]	3762	[1854, 3288]
661	[1167, 1168]	1695	[2498, 1023]	2729	[3326, 1917]	3763	[1548, 607]

662	[1169, 1170]	1696	[2499, 940]	2730	[1470, 1843]	3764	[2000, 2981]
663	[1171, 1172]	1697	[2500, 2500]	2731	[563, 172]	3765	[3945, 1564]
664	[1173, 1174]	1698	[2501, 2237]	2732	[3327, 132]	3766	[550, 1777]
665	[977, 1175]	1699	[2502, 2503]	2733	[1673, 3164]	3767	[3405, 3179]
666	[1176, 1177]	1700	[2504, 2505]	2734	[3173, 2056]	3768	[2009, 666]
667	[1178, 1179]	1701	[1070, 2506]	2735	[3286, 3187]	3769	[189, 1747]
668	[1180, 1181]	1702	[2507, 2508]	2736	[3328, 2962]	3770	[1444, 10]
669	[1182, 1183]	1703	[2509, 76]	2737	[3329, 662]	3771	[3955, 1684]
670	[1184, 290]	1704	[2510, 2511]	2738	[675, 1808]	3772	[3223, 2040]
671	[1185, 1186]	1705	[955, 2512]	2739	[3330, 3331]	3773	[3956, 1565]
672	[1187, 1090]	1706	[845, 2513]	2740	[3332, 3333]	3774	[3957, 1996]
673	[1188, 1189]	1707	[2097, 2317]	2741	[3334, 3335]	3775	[193, 1469]
674	[1190, 941]	1708	[2514, 1173]	2742	[3169, 793]	3776	[2994, 144]
675	[1191, 919]	1709	[2515, 2098]	2743	[745, 160]	3777	[3363, 1781]
676	[1192, 992]	1710	[1024, 424]	2744	[2029, 1678]	3778	[719, 209]
677	[1193, 1100]	1711	[2516, 1109]	2745	[1586, 1630]	3779	[3958, 3285]
678	[1194, 975]	1712	[1352, 2476]	2746	[3324, 685]	3780	[1882, 3877]
679	[1195, 1196]	1713	[2193, 2517]	2747	[3336, 3056]	3781	[1784, 3161]
680	[1197, 1198]	1714	[2518, 2519]	2748	[3337, 1912]	3782	[3273, 574]
681	[1199, 1200]	1715	[2520, 2521]	2749	[591, 3338]	3783	[3867, 515]
682	[1201, 1202]	1716	[2522, 2523]	2750	[475, 1535]	3784	[3097, 1539]
683	[1203, 1204]	1717	[2524, 1339]	2751	[3165, 1879]	3785	[1553, 2010]
684	[1205, 322]	1718	[2525, 2526]	2752	[3339, 3340]	3786	[2013, 3934]
685	[1206, 1207]	1719	[2527, 2528]	2753	[721, 1686]	3787	[1466, 1729]
686	[979, 1151]	1720	[2529, 2290]	2754	[3178, 3088]	3788	[3959, 3104]
687	[81, 1208]	1721	[2530, 849]	2755	[3341, 1562]	3789	[3927, 1843]
688	[426, 1209]	1722	[2241, 2531]	2756	[757, 3342]	3790	[2031, 3275]
689	[1210, 1157]	1723	[2532, 2533]	2757	[3343, 3232]	3791	[655, 3263]
690	[878, 1211]	1724	[2534, 2535]	2758	[3188, 1625]	3792	[1582, 2031]
691	[1212, 1213]	1725	[2536, 1196]	2759	[3124, 3344]	3793	[3960, 3038]
692	[1120, 1214]	1726	[2537, 2538]	2760	[791, 3093]	3794	[3231, 199]
693	[1215, 957]	1727	[2152, 2539]	2761	[1442, 1797]	3795	[1560, 786]
694	[1216, 1217]	1728	[2540, 2541]	2762	[3000, 2981]	3796	[559, 2944]
695	[1045, 1218]	1729	[2542, 1290]	2763	[3345, 3346]	3797	[639, 3167]
696	[1219, 1220]	1730	[2543, 2259]	2764	[1941, 3241]	3798	[3961, 1661]
697	[1221, 1222]	1731	[2544, 2390]	2765	[3347, 3272]	3799	[3962, 3938]
698	[1223, 1224]	1732	[2545, 1201]	2766	[3348, 1542]	3800	[3963, 1891]
699	[1225, 1226]	1733	[320, 2546]	2767	[1866, 615]	3801	[62, 3941]
700	[1227, 1228]	1734	[2547, 2548]	2768	[695, 528]	3802	[1692, 3102]
701	[1229, 1128]	1735	[2172, 2549]	2769	[7, 3328]	3803	[3235, 3263]
702	[1230, 1231]	1736	[2550, 2551]	2770	[3349, 604]	3804	[1912, 3331]
703	[1232, 1233]	1737	[2552, 2553]	2771	[3042, 1462]	3805	[3932, 538]
704	[1234, 1235]	1738	[2554, 2393]	2772	[1839, 3112]	3806	[3915, 630]
705	[1171, 1236]	1739	[2555, 114]	2773	[3031, 1704]	3807	[1867, 1782]

706	[1237, 1138]	1740	[2349, 365]	2774	[612, 3350]	3808	[3406, 1748]
707	[1238, 1239]	1741	[2556, 2557]	2775	[1807, 676]	3809	[3964, 1922]
708	[1240, 1241]	1742	[2558, 2160]	2776	[1433, 3031]	3810	[3315, 781]
709	[1242, 1243]	1743	[1329, 2559]	2777	[1413, 2053]	3811	[667, 735]
710	[1244, 438]	1744	[2291, 851]	2778	[580, 1590]	3812	[3965, 3085]
711	[1158, 1245]	1745	[2331, 72]	2779	[3351, 3295]	3813	[3192, 3243]
712	[1246, 1235]	1746	[371, 2560]	2780	[3352, 3353]	3814	[3137, 2959]
713	[1247, 1248]	1747	[2561, 370]	2781	[3354, 2985]	3815	[3870, 1451]
714	[1249, 1250]	1748	[2562, 1101]	2782	[3198, 3355]	3816	[3966, 1461]
715	[1251, 1252]	1749	[1367, 2563]	2783	[715, 1672]	3817	[3900, 3936]
716	[1253, 873]	1750	[2564, 288]	2784	[1894, 1405]	3818	[3967, 1637]
717	[1254, 86]	1751	[2565, 2566]	2785	[3356, 180]	3819	[3968, 1782]
718	[866, 1255]	1752	[2567, 1037]	2786	[3215, 1778]	3820	[2043, 55]
719	[1256, 1257]	1753	[2164, 2568]	2787	[3052, 1902]	3821	[3889, 704]
720	[1258, 1259]	1754	[2522, 2569]	2788	[2024, 2962]	3822	[465, 604]
721	[1260, 1261]	1755	[2570, 2571]	2789	[1751, 1898]	3823	[3963, 3969]
722	[1262, 1263]	1756	[2572, 2573]	2790	[1793, 1875]	3824	[1663, 3391]
723	[1264, 1265]	1757	[2574, 1065]	2791	[3107, 714]	3825	[3970, 181]
724	[1266, 1267]	1758	[307, 2575]	2792	[3357, 2987]	3826	[3971, 3936]
725	[1268, 1269]	1759	[2576, 80]	2793	[537, 3358]	3827	[3866, 680]
726	[1270, 1271]	1760	[1152, 2577]	2794	[681, 1579]	3828	[1980, 3316]
727	[1272, 895]	1761	[2578, 439]	2795	[681, 3359]	3829	[1899, 666]
728	[1273, 353]	1762	[1200, 355]	2796	[3166, 807]	3830	[1986, 1828]
729	[1274, 1275]	1763	[971, 2579]	2797	[1539, 1528]	3831	[3972, 3866]
730	[1276, 1277]	1764	[2580, 2483]	2798	[3360, 3361]	3832	[3082, 215]
731	[1278, 1279]	1765	[2569, 2581]	2799	[3116, 673]	3833	[3973, 3316]
732	[1280, 1281]	1766	[2582, 2161]	2800	[3362, 749]	3834	[2001, 534]
733	[1282, 17]	1767	[942, 2583]	2801	[3363, 3058]	3835	[1738, 1993]
734	[1144, 1283]	1768	[2584, 279]	2802	[1499, 1614]	3836	[1717, 2974]
735	[1284, 1285]	1769	[2585, 2586]	2803	[1654, 3034]	3837	[1900, 1812]
736	[1003, 1286]	1770	[2587, 2225]	2804	[627, 1499]	3838	[1474, 784]
737	[1287, 1288]	1771	[2588, 930]	2805	[3364, 3365]	3839	[3965, 2989]
738	[1289, 1290]	1772	[855, 2589]	2806	[3366, 1992]	3840	[562, 3158]
739	[1291, 1292]	1773	[857, 1112]	2807	[3338, 1669]	3841	[1700, 1955]
740	[1293, 1285]	1774	[2590, 1296]	2808	[3367, 1962]	3842	[2032, 1451]
741	[1294, 815]	1775	[2591, 2512]	2809	[3368, 3333]	3843	[478, 3167]
742	[1295, 1296]	1776	[2592, 2593]	2810	[1698, 3229]	3844	[3336, 1852]
743	[1297, 1298]	1777	[2594, 81]	2811	[2954, 3369]	3845	[3974, 1937]
744	[1299, 1181]	1778	[2595, 1106]	2812	[3370, 1691]	3846	[3975, 1833]
745	[1300, 1301]	1779	[2596, 917]	2813	[3359, 1580]	3847	[496, 3164]
746	[1302, 1303]	1780	[2597, 2596]	2814	[688, 3371]	3848	[2946, 211]
747	[1304, 1305]	1781	[2598, 1112]	2815	[3372, 3277]	3849	[3548, 3976]
748	[1306, 1307]	1782	[2599, 2221]	2816	[1513, 1924]	3850	[3977, 3978]
749	[1308, 1121]	1783	[2600, 2601]	2817	[173, 3047]	3851	[3979, 1174]

750	[1309, 1310]	1784	[2602, 2603]	2818	[3191, 3060]	3852	[3980, 2128]
751	[295, 1311]	1785	[2604, 2605]	2819	[1896, 1986]	3853	[2134, 936]
752	[1312, 353]	1786	[2606, 2607]	2820	[41, 2027]	3854	[2111, 2673]
753	[1313, 1314]	1787	[2608, 2609]	2821	[3373, 3374]	3855	[3981, 2489]
754	[1315, 1316]	1788	[310, 2610]	2822	[3045, 1830]	3856	[3982, 2544]
755	[1317, 1318]	1789	[245, 2387]	2823	[3375, 483]	3857	[3983, 1069]
756	[345, 1319]	1790	[2611, 2207]	2824	[3341, 1561]	3858	[854, 2661]
757	[1320, 1321]	1791	[2612, 2562]	2825	[3376, 1912]	3859	[3984, 3515]
758	[1322, 1323]	1792	[117, 2613]	2826	[3377, 1635]	3860	[3985, 907]
759	[1324, 1325]	1793	[2374, 2614]	2827	[3378, 3379]	3861	[3986, 1337]
760	[1326, 1327]	1794	[2615, 2616]	2828	[1801, 1837]	3862	[403, 3987]
761	[1328, 358]	1795	[2617, 2618]	2829	[2971, 3155]	3863	[273, 3988]
762	[1329, 1330]	1796	[2127, 2500]	2830	[3329, 1588]	3864	[379, 3989]
763	[1331, 1332]	1797	[2619, 1035]	2831	[141, 3090]	3865	[2431, 2596]
764	[1333, 1334]	1798	[2620, 2621]	2832	[3026, 2959]	3866	[3990, 2518]
765	[1335, 1336]	1799	[2622, 2265]	2833	[1536, 530]	3867	[3991, 3992]
766	[1337, 1166]	1800	[2623, 2624]	2834	[3380, 158]	3868	[3993, 2585]
767	[1338, 1339]	1801	[2625, 1193]	2835	[3328, 2025]	3869	[3612, 3994]
768	[1340, 985]	1802	[2626, 2627]	2836	[3131, 1847]	3870	[1376, 3995]
769	[394, 1341]	1803	[2628, 2629]	2837	[3164, 1966]	3871	[3996, 3822]
770	[1342, 1343]	1804	[2630, 2631]	2838	[3152, 3142]	3872	[3997, 2624]
771	[1344, 1343]	1805	[2632, 2633]	2839	[3381, 2005]	3873	[2572, 3998]
772	[331, 1345]	1806	[2367, 2383]	2840	[1737, 1992]	3874	[3999, 3641]
773	[1346, 1206]	1807	[2634, 2635]	2841	[2014, 3011]	3875	[359, 4000]
774	[1347, 949]	1808	[2636, 2375]	2842	[1905, 1643]	3876	[4001, 2616]
775	[1348, 1349]	1809	[2637, 2638]	2843	[3382, 207]	3877	[2701, 1344]
776	[1350, 1347]	1810	[2639, 2640]	2844	[3098, 1928]	3878	[3559, 4002]
777	[1351, 1326]	1811	[2641, 2642]	2845	[553, 3090]	3879	[4003, 4004]
778	[953, 1352]	1812	[2643, 1208]	2846	[3377, 3309]	3880	[2132, 338]
779	[1353, 1354]	1813	[2644, 2645]	2847	[536, 507]	3881	[2768, 4005]
780	[1006, 1355]	1814	[2646, 2647]	2848	[3084, 2989]	3882	[4006, 1101]
781	[1356, 1357]	1815	[1147, 2379]	2849	[3234, 603]	3883	[3609, 4007]
782	[1358, 1359]	1816	[2648, 1207]	2850	[2038, 2019]	3884	[2110, 4008]
783	[1360, 1361]	1817	[1134, 2649]	2851	[3010, 2015]	3885	[4009, 2392]
784	[1362, 1363]	1818	[2307, 1111]	2852	[3085, 1432]	3886	[4010, 437]
785	[1122, 955]	1819	[2650, 2651]	2853	[1585, 3106]	3887	[4011, 4012]
786	[1364, 1365]	1820	[2652, 2175]	2854	[2065, 1527]	3888	[4013, 2730]
787	[1366, 336]	1821	[2653, 2654]	2855	[3383, 3384]	3889	[3628, 4014]
788	[916, 1059]	1822	[418, 1089]	2856	[3127, 2980]	3890	[2264, 4015]
789	[1365, 966]	1823	[2655, 2656]	2857	[3385, 1631]	3891	[2720, 2360]
790	[1367, 1368]	1824	[2657, 842]	2858	[1522, 1487]	3892	[2408, 4016]
791	[1369, 1370]	1825	[2411, 1058]	2859	[491, 43]	3893	[241, 2195]
792	[1371, 1372]	1826	[2658, 1329]	2860	[3263, 3386]	3894	[2685, 77]
793	[1373, 1374]	1827	[2659, 1241]	2861	[3387, 3163]	3895	[2327, 3999]

794	[1223, 1375]	1828	[2660, 310]	2862	[1534, 476]	3896	[4017, 2550]
795	[1376, 861]	1829	[2661, 2589]	2863	[3027, 3388]	3897	[4018, 1370]
796	[1377, 1378]	1830	[2662, 2663]	2864	[2950, 3196]	3898	[2508, 95]
797	[1379, 1354]	1831	[2158, 2664]	2865	[219, 3196]	3899	[2598, 4010]
798	[815, 1380]	1832	[2665, 2666]	2866	[3252, 152]	3900	[4019, 4020]
799	[1381, 1382]	1833	[2667, 2668]	2867	[3389, 3390]	3901	[4021, 3424]
800	[1383, 885]	1834	[2669, 2590]	2868	[1847, 38]	3902	[1077, 4022]
801	[1022, 1384]	1835	[2670, 2640]	2869	[1717, 3391]	3903	[2338, 4023]
802	[1385, 1386]	1836	[2671, 978]	2870	[3392, 3163]	3904	[4024, 4025]
803	[272, 1387]	1837	[2672, 1083]	2871	[3072, 782]	3905	[4026, 1031]
804	[1388, 917]	1838	[2641, 2339]	2872	[747, 3388]	3906	[4027, 2403]
805	[1389, 1390]	1839	[2673, 994]	2873	[1544, 46]	3907	[4028, 1163]
806	[1391, 1392]	1840	[2674, 2675]	2874	[31, 33]	3908	[2654, 4029]
807	[1393, 1107]	1841	[2676, 1189]	2875	[3393, 673]	3909	[2642, 4030]
808	[1394, 1395]	1842	[332, 2677]	2876	[2936, 1769]	3910	[17, 4031]
809	[1396, 960]	1843	[2678, 2679]	2877	[3143, 3335]	3911	[832, 2738]
810	[1397, 1398]	1844	[1136, 2290]	2878	[3330, 3019]	3912	[3562, 4032]
811	[1399, 1400]	1845	[2261, 2223]	2879	[3394, 3395]	3913	[4033, 2180]
812	[1401, 194]	1846	[2680, 2116]	2880	[3396, 3271]	3914	[4034, 2439]
813	[1402, 1403]	1847	[2681, 2533]	2881	[3300, 3196]	3915	[4002, 4035]
814	[1404, 749]	1848	[2287, 1130]	2882	[2019, 591]	3916	[3997, 2275]
815	[1405, 1406]	1849	[19, 1223]	2883	[2035, 1573]	3917	[4036, 3433]
816	[1407, 1408]	1850	[2682, 18]	2884	[3254, 149]	3918	[4037, 2584]
817	[1409, 1410]	1851	[2683, 2150]	2885	[1976, 3000]	3919	[2705, 4038]
818	[736, 1411]	1852	[2684, 20]	2886	[3397, 795]	3920	[4039, 982]
819	[1412, 1407]	1853	[2509, 2685]	2887	[1863, 1882]	3921	[4040, 4041]
820	[1413, 1414]	1854	[2632, 2686]	2888	[3398, 3399]	3922	[2138, 2281]
821	[1415, 1416]	1855	[2687, 2688]	2889	[3400, 1847]	3923	[4042, 2071]
822	[1417, 1418]	1856	[2689, 2690]	2890	[3401, 1628]	3924	[4043, 1039]
823	[1419, 763]	1857	[2691, 2692]	2891	[1702, 2951]	3925	[3788, 4044]
824	[1420, 1421]	1858	[2693, 2445]	2892	[2988, 3085]	3926	[1132, 1358]
825	[1422, 132]	1859	[2114, 2694]	2893	[2971, 468]	3927	[4045, 1070]
826	[1423, 653]	1860	[2695, 2696]	2894	[561, 1649]	3928	[4046, 2873]
827	[1424, 1425]	1861	[2697, 2101]	2895	[1469, 479]	3929	[4047, 4048]
828	[1426, 557]	1862	[2698, 2699]	2896	[3402, 3191]	3930	[4049, 2122]
829	[1427, 1428]	1863	[2700, 2701]	2897	[2005, 3213]	3931	[2882, 1263]
830	[1425, 191]	1864	[319, 2702]	2898	[3403, 1607]	3932	[1185, 4050]
831	[1429, 1430]	1865	[2703, 1092]	2899	[694, 3143]	3933	[4051, 2872]
832	[1431, 1432]	1866	[2704, 2705]	2900	[459, 3281]	3934	[4052, 1562]
833	[1433, 1434]	1867	[1304, 2706]	2901	[1455, 1421]	3935	[3559, 4053]
834	[1435, 1436]	1868	[2707, 2074]	2902	[3157, 534]	3936	[4054, 2166]
835	[624, 1437]	1869	[1094, 2708]	2903	[3404, 1704]	3937	[300, 3617]
836	[1438, 1439]	1870	[2709, 1259]	2904	[3405, 3037]	3938	[3834, 1279]
837	[1440, 1441]	1871	[2266, 1164]	2905	[51, 547]	3939	[4055, 444]

838	[1442, 773]	1872	[411, 2710]	2906	[3406, 1495]	3940	[2587, 4056]
839	[1443, 1444]	1873	[2711, 277]	2907	[3407, 1515]	3941	[3557, 2208]
840	[1445, 1446]	1874	[2712, 2713]	2908	[3297, 3408]	3942	[95, 3692]
841	[1447, 775]	1875	[2714, 2715]	2909	[1483, 3409]	3943	[4057, 3694]
842	[1448, 1449]	1876	[2602, 1160]	2910	[3410, 3071]	3944	[3804, 2420]
843	[1450, 1451]	1877	[2716, 2476]	2911	[1629, 3119]	3945	[4058, 3984]
844	[511, 709]	1878	[2717, 2718]	2912	[3238, 3015]	3946	[4059, 995]
845	[1452, 1453]	1879	[2668, 336]	2913	[3411, 1570]	3947	[4060, 4061]
846	[1454, 1455]	1880	[2719, 2720]	2914	[3412, 2937]	3948	[1198, 3577]
847	[1456, 1457]	1881	[1327, 2721]	2915	[1463, 136]	3949	[1364, 965]
848	[1458, 1459]	1882	[2722, 2679]	2916	[1514, 2958]	3950	[4062, 4063]
849	[1460, 1461]	1883	[2723, 2724]	2917	[3038, 3413]	3951	[4064, 329]
850	[1439, 1462]	1884	[1075, 1282]	2918	[3343, 199]	3952	[2141, 2901]
851	[1463, 205]	1885	[2725, 2726]	2919	[3387, 3128]	3953	[3786, 2118]
852	[1464, 1465]	1886	[2727, 1374]	2920	[3414, 2997]	3954	[4065, 4066]
853	[1466, 1467]	1887	[2728, 1143]	2921	[3415, 3270]	3955	[3511, 4067]
854	[1468, 1469]	1888	[1138, 2729]	2922	[3230, 1553]	3956	[422, 3702]
855	[1470, 1471]	1889	[2730, 2731]	2923	[1583, 1931]	3957	[2313, 4068]
856	[1472, 787]	1890	[2732, 2733]	2924	[3416, 43]	3958	[4069, 4070]
857	[645, 1473]	1891	[2734, 2516]	2925	[3417, 3418]	3959	[2681, 4071]
858	[1474, 1475]	1892	[2735, 2736]	2926	[3138, 1540]	3960	[1328, 3843]
859	[1476, 1477]	1893	[2737, 2416]	2927	[3419, 3420]	3961	[3486, 4072]
860	[1478, 1479]	1894	[1121, 954]	2928	[289, 3421]	3962	[1135, 4055]
861	[1480, 523]	1895	[2738, 2622]	2929	[3422, 2721]	3963	[4073, 4074]
862	[1481, 1482]	1896	[323, 2660]	2930	[2280, 2490]	3964	[4075, 2111]
863	[1483, 1484]	1897	[2739, 2740]	2931	[3423, 3424]	3965	[4076, 3693]
864	[1485, 1486]	1898	[2741, 1234]	2932	[3425, 2538]	3966	[4077, 4078]
865	[584, 1487]	1899	[2742, 2743]	2933	[3426, 3427]	3967	[966, 119]
866	[1488, 1489]	1900	[2744, 2745]	2934	[1165, 3428]	3968	[4079, 2600]
867	[1490, 1491]	1901	[2746, 2747]	2935	[3429, 1341]	3969	[4080, 3778]
868	[1492, 527]	1902	[2748, 304]	2936	[3430, 2758]	3970	[1111, 3467]
869	[1493, 9]	1903	[2129, 2749]	2937	[3431, 3432]	3971	[4081, 4082]
870	[1494, 1495]	1904	[2750, 2751]	2938	[22, 3433]	3972	[4083, 109]
871	[1496, 1497]	1905	[2373, 2752]	2939	[1384, 1014]	3973	[2449, 1093]
872	[1498, 1499]	1906	[2753, 2754]	2940	[3434, 2921]	3974	[4084, 4085]
873	[1500, 1473]	1907	[2755, 2431]	2941	[3435, 2341]	3975	[1303, 4086]
874	[1501, 1502]	1908	[2480, 2756]	2942	[3436, 3437]	3976	[2028, 1495]
875	[1503, 1504]	1909	[2757, 2758]	2943	[3438, 3439]	3977	[3249, 3379]
876	[648, 755]	1910	[2385, 2759]	2944	[3440, 1075]	3978	[1788, 1425]
877	[651, 685]	1911	[2760, 1327]	2945	[2107, 1242]	3979	[473, 1803]
878	[1505, 1506]	1912	[2761, 2629]	2946	[2448, 3441]	3980	[43, 1818]
879	[1507, 1508]	1913	[1168, 2224]	2947	[2417, 3442]	3981	[3299, 3920]
880	[1509, 1510]	1914	[2479, 2085]	2948	[3443, 3444]	3982	[3937, 1503]
881	[486, 1511]	1915	[2601, 2762]	2949	[2388, 3445]	3983	[1952, 789]

882	[1512, 1513]	1916	[2763, 2764]	2950	[2828, 3446]	3984	[739, 182]
883	[1514, 1515]	1917	[2765, 75]	2951	[3447, 2187]	3985	[234, 3150]
884	[1516, 1517]	1918	[1348, 2766]	2952	[3448, 3449]	3986	[3156, 1574]
885	[1500, 646]	1919	[2767, 1256]	2953	[2244, 3450]	3987	[4087, 716]
886	[1518, 1482]	1920	[2768, 2769]	2954	[3451, 3452]	3988	[3153, 3934]
887	[1449, 1519]	1921	[858, 2770]	2955	[2213, 881]	3989	[732, 4088]
888	[1520, 1521]	1922	[2771, 1226]	2956	[3453, 1356]	3990	[1790, 1661]
889	[1522, 585]	1923	[865, 2772]	2957	[2763, 1017]	3991	[4089, 2930]
890	[1523, 1484]	1924	[2239, 2773]	2958	[3454, 839]	3992	[1936, 2013]
891	[1524, 1525]	1925	[2658, 2774]	2959	[3455, 2644]	3993	[2989, 1432]
892	[1526, 1527]	1926	[2775, 311]	2960	[2754, 3456]	3994	[1870, 3115]
893	[1528, 1529]	1927	[2776, 368]	2961	[2655, 427]	3995	[2046, 539]
894	[1530, 1531]	1928	[2777, 381]	2962	[16, 938]	3996	[2986, 3346]
895	[1532, 1533]	1929	[2778, 941]	2963	[3457, 3458]	3997	[1546, 3155]
896	[1534, 1535]	1930	[2779, 2780]	2964	[90, 3459]	3998	[58, 3291]
897	[1536, 224]	1931	[2781, 416]	2965	[2233, 1365]	3999	[2004, 689]
898	[743, 740]	1932	[2782, 1276]	2966	[3460, 321]	4000	[4090, 3199]
899	[1537, 740]	1933	[353, 2783]	2967	[248, 3461]	4001	[3207, 3195]
900	[1538, 1539]	1934	[2784, 2407]	2968	[2352, 3462]	4002	[2937, 3941]
901	[476, 1540]	1935	[1181, 2785]	2969	[2790, 2522]	4003	[1713, 56]
902	[1541, 1542]	1936	[2786, 2663]	2970	[1073, 830]	4004	[3946, 620]
903	[1543, 1544]	1937	[2787, 1126]	2971	[2383, 2463]	4005	[1851, 3056]
904	[1497, 1545]	1938	[425, 330]	2972	[3463, 3464]	4006	[666, 1812]
905	[1546, 468]	1939	[2788, 2789]	2973	[2562, 3465]	4007	[181, 3020]
906	[196, 1547]	1940	[1044, 2618]	2974	[2523, 2581]	4008	[2057, 3150]
907	[147, 618]	1941	[2790, 2791]	2975	[833, 2622]	4009	[3354, 2049]
908	[1498, 628]	1942	[285, 2792]	2976	[987, 3466]	4010	[1916, 1723]
909	[1548, 1549]	1943	[2793, 2794]	2977	[3467, 440]	4011	[4091, 3418]
910	[1550, 1551]	1944	[954, 2591]	2978	[824, 3468]	4012	[3375, 2953]
911	[1552, 1553]	1945	[2267, 1165]	2979	[23, 3469]	4013	[1938, 563]
912	[38, 1554]	1946	[2146, 2795]	2980	[3470, 2082]	4014	[515, 599]
913	[1555, 492]	1947	[2796, 939]	2981	[1042, 2344]	4015	[4092, 1939]
914	[1556, 489]	1948	[2268, 2797]	2982	[2838, 3471]	4016	[1816, 1875]
915	[1557, 1455]	1949	[2798, 2484]	2983	[3472, 2080]	4017	[2969, 1665]
916	[628, 1558]	1950	[2799, 2194]	2984	[927, 3473]	4018	[1853, 472]
917	[1559, 1560]	1951	[2800, 409]	2985	[3474, 66]	4019	[3327, 3111]
918	[1561, 1562]	1952	[2801, 2802]	2986	[374, 912]	4020	[2945, 511]
919	[1563, 1564]	1953	[2803, 2804]	2987	[3475, 2323]	4021	[718, 3311]
920	[1565, 1566]	1954	[350, 2805]	2988	[3476, 3477]	4022	[483, 3851]
921	[1478, 1567]	1955	[2503, 1125]	2989	[3478, 1400]	4023	[1771, 151]
922	[1568, 14]	1956	[2806, 2807]	2990	[1019, 3479]	4024	[4093, 3355]
923	[1569, 1570]	1957	[2808, 2809]	2991	[3480, 1222]	4025	[2050, 3905]
924	[1571, 1418]	1958	[2372, 2810]	2992	[3446, 1167]	4026	[643, 627]
925	[609, 678]	1959	[275, 2154]	2993	[3481, 3482]	4027	[1674, 1405]

926	[1572, 240]	1960	[2109, 2781]	2994	[1154, 2545]	4028	[3067, 217]
927	[1573, 1574]	1961	[2811, 2812]	2995	[2165, 2595]	4029	[1742, 689]
928	[1575, 1576]	1962	[837, 2724]	2996	[1337, 3483]	4030	[4094, 3855]
929	[1577, 710]	1963	[311, 2773]	2997	[2851, 3484]	4031	[4095, 3369]
930	[188, 1578]	1964	[2357, 2813]	2998	[3485, 2845]	4032	[709, 1959]
931	[1579, 1580]	1965	[2814, 2815]	2999	[827, 933]	4033	[2978, 1580]
932	[549, 1581]	1966	[883, 2816]	3000	[2102, 3486]	4034	[3916, 3066]
933	[1582, 1583]	1967	[2817, 337]	3001	[1250, 951]	4035	[1528, 2930]
934	[1425, 218]	1968	[2818, 812]	3002	[2604, 3487]	4036	[3911, 594]
935	[1584, 1585]	1969	[2819, 2820]	3003	[3488, 3484]	4037	[3125, 526]
936	[1586, 155]	1970	[1378, 2821]	3004	[3489, 281]	4038	[1835, 1945]
937	[1587, 1429]	1971	[2822, 2823]	3005	[3490, 3491]	4039	[1524, 2059]
938	[32, 34]	1972	[2128, 1095]	3006	[2393, 2346]	4040	[1592, 1581]
939	[471, 544]	1973	[2824, 2516]	3007	[2824, 1108]	4041	[2058, 1525]
940	[1588, 1589]	1974	[2170, 2171]	3008	[1039, 3492]	4042	[1418, 1439]
941	[574, 526]	1975	[935, 2825]	3009	[3493, 2424]	4043	[536, 778]
942	[1590, 651]	1976	[1119, 1042]	3010	[1293, 3494]	4044	[1907, 3408]
943	[1591, 151]	1977	[827, 2325]	3011	[3495, 1052]	4045	[606, 1549]
944	[1480, 670]	1978	[2826, 2827]	3012	[3496, 3497]	4046	[3262, 706]
945	[1592, 550]	1979	[2828, 2083]	3013	[249, 2093]	4047	[4096, 595]
946	[235, 623]	1980	[339, 2829]	3014	[3498, 2312]	4048	[191, 563]
947	[1593, 1594]	1981	[2830, 939]	3015	[3499, 2690]	4049	[1753, 553]
948	[1595, 203]	1982	[1081, 2831]	3016	[3500, 3501]	4050	[1984, 234]
949	[1596, 1597]	1983	[2832, 2833]	3017	[3502, 2254]	4051	[3222, 1544]
950	[791, 1598]	1984	[2834, 85]	3018	[1165, 3503]	4052	[2055, 3174]
951	[1599, 742]	1985	[2242, 2835]	3019	[3504, 2583]	4053	[4097, 1973]
952	[1426, 1600]	1986	[2836, 1204]	3020	[347, 2539]	4054	[498, 3175]
953	[1601, 464]	1987	[883, 2335]	3021	[1167, 3505]	4055	[1497, 3886]
954	[1602, 738]	1988	[2837, 2816]	3022	[2368, 3506]	4056	[4098, 3872]
955	[1596, 1421]	1989	[2838, 2839]	3023	[328, 3507]	4057	[1772, 3240]
956	[1603, 712]	1990	[2840, 2841]	3024	[3508, 3509]	4058	[1782, 3114]
957	[1604, 1605]	1991	[2842, 2843]	3025	[3510, 2922]	4059	[708, 3891]
958	[1606, 1528]	1992	[2844, 2607]	3026	[3511, 3512]	4060	[1935, 3140]
959	[555, 1607]	1993	[2122, 2845]	3027	[306, 2143]	4061	[1721, 477]
960	[1608, 1609]	1994	[373, 69]	3028	[3513, 3514]	4062	[1733, 1506]
961	[1427, 1610]	1995	[978, 1150]	3029	[3515, 3516]	4063	[3370, 1936]
962	[654, 739]	1996	[2846, 260]	3030	[1101, 3517]	4064	[137, 2929]
963	[1556, 1611]	1997	[2847, 2328]	3031	[3518, 2509]	4065	[2037, 3187]
964	[637, 1612]	1998	[2848, 2849]	3032	[2087, 116]	4066	[3265, 1750]
965	[1613, 1467]	1999	[2142, 2850]	3033	[999, 3519]	4067	[3966, 1453]
966	[1614, 231]	2000	[2851, 2852]	3034	[966, 2315]	4068	[4099, 3311]
967	[1615, 1406]	2001	[67, 2853]	3035	[2635, 3520]	4069	[544, 3894]
968	[753, 729]	2002	[2854, 2855]	3036	[3521, 3522]	4070	[1769, 228]
969	[1616, 1617]	2003	[2556, 1291]	3037	[3523, 2182]	4071	[1982, 2929]

970	[1618, 635]	2004	[2856, 2149]	3038	[3524, 2192]	4072	[2035, 1839]
971	[1619, 1620]	2005	[2857, 2858]	3039	[3525, 410]	4073	[4100, 1891]
972	[1621, 1622]	2006	[2859, 2860]	3040	[82, 3526]	4074	[1906, 3297]
973	[1623, 677]	2007	[2861, 2125]	3041	[3527, 2911]	4075	[3055, 1852]
974	[1624, 1625]	2008	[2862, 2863]	3042	[2830, 2499]	4076	[1423, 458]
975	[1600, 1626]	2009	[2864, 2865]	3043	[2634, 3528]	4077	[1488, 697]
976	[660, 32]	2010	[2302, 97]	3044	[3529, 2887]	4078	[3041, 3057]
977	[1627, 1628]	2011	[2341, 2303]	3045	[3530, 3531]	4079	[3294, 759]
978	[1629, 470]	2012	[2866, 2561]	3046	[3532, 3533]	4080	[208, 720]
979	[642, 1630]	2013	[2867, 2282]	3047	[3534, 2422]	4081	[4100, 3969]
980	[128, 1631]	2014	[1177, 2868]	3048	[3535, 2847]	4082	[3382, 3214]
981	[565, 782]	2015	[2715, 2468]	3049	[3536, 3432]	4083	[1951, 214]
982	[1632, 1633]	2016	[2869, 2075]	3050	[274, 2153]	4084	[3345, 2987]
983	[1634, 1635]	2017	[2870, 2633]	3051	[3537, 2745]	4085	[671, 785]
984	[1636, 179]	2018	[2871, 1344]	3052	[331, 399]	4086	[4101, 1496]
985	[1465, 1637]	2019	[2872, 2873]	3053	[3538, 2528]	4087	[4102, 4103]
986	[1638, 771]	2020	[2874, 2468]	3054	[358, 2510]	4088	[4104, 1357]
987	[1417, 1639]	2021	[2806, 2875]	3055	[3539, 2309]	4089	[2501, 4105]
988	[1640, 1531]	2022	[1254, 2370]	3056	[3540, 2136]	4090	[4106, 4107]
989	[1641, 554]	2023	[1265, 2861]	3057	[3541, 2881]	4091	[3823, 4108]
990	[1642, 1643]	2024	[2777, 2876]	3058	[2539, 3542]	4092	[2098, 4109]
991	[1644, 664]	2025	[2877, 1384]	3059	[2240, 3543]	4093	[66, 4110]
992	[700, 481]	2026	[2878, 2879]	3060	[3544, 303]	4094	[4111, 4112]
993	[1645, 1646]	2027	[2880, 2881]	3061	[2691, 3545]	4095	[4113, 4114]
994	[1491, 781]	2028	[2454, 2882]	3062	[3546, 3443]	4096	[982, 4115]
995	[225, 1647]	2029	[1378, 2883]	3063	[2125, 1057]	4097	[3991, 4116]
996	[1648, 1649]	2030	[2642, 2340]	3064	[2410, 3547]	4098	[2113, 4117]
997	[1650, 1651]	2031	[2884, 2451]	3065	[3548, 3549]	4099	[4005, 4118]
998	[1652, 642]	2032	[2885, 2601]	3066	[2416, 1386]	4100	[2654, 4119]
999	[1653, 1654]	2033	[1307, 352]	3067	[1094, 3550]	4101	[4120, 4121]
1000	[1655, 501]	2034	[2784, 2337]	3068	[3551, 3552]	4102	[4091, 3855]
1001	[1656, 1657]	2035	[2886, 2887]	3069	[1046, 3553]	4103	[3046, 3905]
1002	[682, 1658]	2036	[2888, 2393]	3070	[2404, 2216]	4104	[3087, 3282]
1003	[617, 528]	2037	[2750, 2889]	3071	[3554, 2373]	4105	[583, 704]
1004	[614, 1659]	2038	[2890, 2891]	3072	[2301, 96]	4106	[3975, 800]
1005	[1660, 1661]	2039	[2892, 2893]	3073	[2255, 3555]	4107	[3172, 511]
1006	[1662, 1663]	2040	[2894, 2895]	3074	[903, 2347]	4108	[4122, 2931]
1007	[1664, 1665]	2041	[422, 293]	3075	[3556, 1352]	4109	[2060, 3886]
1008	[153, 1579]	2042	[1166, 291]	3076	[2611, 3557]	4110	[4123, 2955]
1009	[1666, 1545]	2043	[1324, 2896]	3077	[2375, 2294]	4111	[3935, 3901]
1010	[707, 1667]	2044	[1369, 2897]	3078	[3558, 1135]	4112	[2993, 3297]
1011	[1668, 552]	2045	[2898, 2899]	3079	[901, 3559]	4113	[4093, 3199]
1012	[1603, 1669]	2046	[2900, 2901]	3080	[2455, 3560]	4114	[482, 2953]
1013	[1670, 137]	2047	[2525, 2902]	3081	[982, 434]	4115	[4124, 1483]

1014	[746, 161]	2048	[2903, 2904]	3082	[1022, 441]	4116	[3246, 3049]
1015	[1671, 1672]	2049	[2905, 68]	3083	[3561, 986]	4117	[3165, 1967]
1016	[1673, 497]	2050	[2906, 2907]	3084	[3562, 3563]	4118	[3365, 4088]
1017	[1674, 535]	2051	[1266, 2229]	3085	[3564, 3464]	4119	[4125, 1555]
1018	[1675, 1676]	2052	[2464, 1213]	3086	[2231, 2366]	4120	[3959, 637]
1019	[1677, 1678]	2053	[2908, 2731]	3087	[2826, 2860]	4121	[3204, 170]
1020	[543, 472]	2054	[2586, 927]	3088	[3565, 104]	4122	[4126, 4127]
1021	[1679, 160]	2055	[909, 2909]	3089	[3566, 423]	4123	[2608, 4128]
1022	[168, 746]	2056	[2910, 2562]	3090	[2568, 2421]	4124	[3514, 4129]
1023	[529, 224]	2057	[2911, 2689]	3091	[3535, 2422]	4125	[4130, 4131]
1024	[1680, 1681]	2058	[2912, 2913]	3092	[22, 3567]	4126	[4089, 1529]
1025	[1682, 1683]	2059	[2914, 2915]	3093	[1372, 2509]	4127	[3218, 139]
1026	[1684, 1685]	2060	[2916, 2413]	3094	[3505, 2224]	4128	[3964, 3243]
1027	[1686, 1687]	2061	[266, 2917]	3095	[417, 1088]	4129	[3083, 60]
1028	[1688, 1689]	2062	[2918, 2858]	3096	[3481, 3568]	4130	[3279, 228]
1029	[1690, 1691]	2063	[2108, 1243]	3097	[2461, 3569]	4131	[3407, 2958]
1030	[1692, 1693]	2064	[2919, 2461]	3098	[2735, 3570]		
1031	[1694, 1511]	2065	[1262, 2920]	3099	[3439, 3571]		
1032	[1695, 574]	2066	[2921, 2922]	3100	[3572, 1323]		
1033	[1696, 1697]	2067	[1275, 2923]	3101	[2626, 3573]		

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	689	0	1378	1	2067	0	2756	0	3445	0
1	0	690	0	1379	1	2068	1	2757	0	3446	0
2	1	691	1	1380	0	2069	1	2758	0	3447	0
3	0	692	0	1381	1	2070	1	2759	0	3448	1
4	1	693	1	1382	1	2071	0	2760	1	3449	1
5	1	694	0	1383	0	2072	1	2761	1	3450	0
6	0	695	1	1384	0	2073	1	2762	1	3451	0
7	0	696	0	1385	0	2074	1	2763	1	3452	0
8	0	697	0	1386	1	2075	1	2764	1	3453	0
9	1	698	1	1387	0	2076	1	2765	1	3454	0
10	1	699	1	1388	1	2077	1	2766	0	3455	1
11	1	700	0	1389	1	2078	1	2767	1	3456	0
12	1	701	0	1390	0	2079	1	2768	1	3457	1
13	0	702	0	1391	1	2080	1	2769	0	3458	0
14	0	703	0	1392	1	2081	1	2770	1	3459	0
15	0	704	1	1393	0	2082	1	2771	0	3460	0
16	0	705	0	1394	1	2083	1	2772	0	3461	1
17	0	706	1	1395	1	2084	0	2773	1	3462	1
18	0	707	1	1396	0	2085	0	2774	0	3463	0
19	1	708	1	1397	0	2086	1	2775	1	3464	1
20	0	709	0	1398	0	2087	0	2776	0	3465	1

21	1	710	1	1399	1	2088	1	2777	0	3466	0
22	1	711	0	1400	0	2089	0	2778	0	3467	0
23	1	712	0	1401	0	2090	0	2779	0	3468	1
24	0	713	0	1402	0	2091	0	2780	0	3469	1
25	1	714	1	1403	1	2092	0	2781	1	3470	0
26	1	715	1	1404	1	2093	0	2782	1	3471	1
27	0	716	0	1405	1	2094	1	2783	1	3472	0
28	0	717	0	1406	1	2095	0	2784	0	3473	1
29	0	718	0	1407	1	2096	1	2785	1	3474	0
30	1	719	1	1408	1	2097	0	2786	1	3475	1
31	0	720	0	1409	1	2098	1	2787	1	3476	1
32	1	721	0	1410	0	2099	0	2788	0	3477	0
33	0	722	0	1411	1	2100	0	2789	0	3478	0
34	0	723	1	1412	1	2101	1	2790	1	3479	0
35	0	724	1	1413	0	2102	1	2791	1	3480	1
36	0	725	0	1414	0	2103	1	2792	0	3481	1
37	0	726	1	1415	1	2104	1	2793	0	3482	1
38	1	727	1	1416	1	2105	0	2794	0	3483	1
39	1	728	1	1417	1	2106	1	2795	0	3484	0
40	1	729	0	1418	0	2107	0	2796	1	3485	0
41	0	730	0	1419	0	2108	1	2797	0	3486	1
42	1	731	1	1420	0	2109	0	2798	1	3487	1
43	1	732	1	1421	1	2110	1	2799	1	3488	1
44	0	733	1	1422	0	2111	0	2800	0	3489	0
45	1	734	0	1423	0	2112	1	2801	1	3490	1
46	0	735	1	1424	0	2113	1	2802	1	3491	1
47	1	736	1	1425	1	2114	0	2803	1	3492	1
48	1	737	0	1426	0	2115	1	2804	0	3493	0
49	0	738	1	1427	1	2116	1	2805	1	3494	1
50	0	739	0	1428	0	2117	1	2806	1	3495	0
51	1	740	0	1429	0	2118	1	2807	1	3496	1
52	0	741	0	1430	1	2119	0	2808	0	3497	1
53	1	742	1	1431	0	2120	0	2809	0	3498	0
54	0	743	1	1432	0	2121	1	2810	1	3499	1
55	0	744	1	1433	0	2122	1	2811	0	3500	0
56	1	745	1	1434	0	2123	1	2812	0	3501	1
57	0	746	1	1435	1	2124	1	2813	1	3502	0
58	1	747	1	1436	1	2125	0	2814	1	3503	0
59	0	748	0	1437	1	2126	1	2815	1	3504	1
60	0	749	1	1438	0	2127	0	2816	1	3505	1
61	1	750	1	1439	0	2128	0	2817	0	3506	1
62	1	751	1	1440	1	2129	1	2818	1	3507	1
63	0	752	0	1441	1	2130	0	2819	0	3508	0
64	0	753	0	1442	1	2131	1	2820	0	3509	0

65	1	754	0	1443	0	2132	1	2821	0	3510	1
66	1	755	0	1444	0	2133	0	2822	0	3511	1
67	0	756	0	1445	1	2134	0	2823	1	3512	1
68	0	757	0	1446	1	2135	0	2824	0	3513	1
69	1	758	0	1447	1	2136	1	2825	1	3514	1
70	0	759	1	1448	0	2137	1	2826	0	3515	0
71	1	760	0	1449	0	2138	0	2827	0	3516	0
72	0	761	0	1450	1	2139	1	2828	0	3517	1
73	1	762	1	1451	1	2140	0	2829	0	3518	1
74	0	763	1	1452	1	2141	0	2830	0	3519	0
75	0	764	0	1453	0	2142	0	2831	1	3520	1
76	1	765	1	1454	0	2143	1	2832	1	3521	0
77	1	766	1	1455	1	2144	0	2833	1	3522	1
78	1	767	0	1456	0	2145	1	2834	0	3523	1
79	0	768	0	1457	1	2146	0	2835	1	3524	0
80	1	769	1	1458	1	2147	0	2836	0	3525	0
81	0	770	0	1459	1	2148	0	2837	0	3526	0
82	0	771	1	1460	1	2149	1	2838	1	3527	0
83	1	772	1	1461	1	2150	0	2839	0	3528	0
84	1	773	1	1462	1	2151	1	2840	1	3529	0
85	0	774	0	1463	1	2152	0	2841	1	3530	0
86	1	775	1	1464	0	2153	1	2842	0	3531	0
87	0	776	0	1465	0	2154	1	2843	1	3532	0
88	0	777	0	1466	1	2155	0	2844	1	3533	1
89	1	778	0	1467	1	2156	1	2845	0	3534	1
90	1	779	0	1468	0	2157	1	2846	0	3535	0
91	1	780	0	1469	0	2158	1	2847	0	3536	1
92	0	781	1	1470	0	2159	1	2848	1	3537	0
93	0	782	0	1471	1	2160	0	2849	0	3538	1
94	1	783	0	1472	0	2161	0	2850	1	3539	1
95	0	784	0	1473	0	2162	1	2851	0	3540	1
96	1	785	1	1474	0	2163	1	2852	1	3541	1
97	0	786	0	1475	1	2164	0	2853	1	3542	1
98	0	787	0	1476	0	2165	0	2854	0	3543	0
99	1	788	0	1477	1	2166	1	2855	1	3544	0
100	0	789	0	1478	0	2167	0	2856	1	3545	1
101	1	790	1	1479	1	2168	1	2857	1	3546	1
102	1	791	1	1480	0	2169	0	2858	1	3547	0
103	0	792	0	1481	1	2170	1	2859	1	3548	0
104	1	793	0	1482	1	2171	1	2860	1	3549	1
105	1	794	1	1483	0	2172	0	2861	0	3550	1
106	0	795	1	1484	0	2173	0	2862	1	3551	1
107	0	796	1	1485	1	2174	1	2863	0	3552	1
108	0	797	1	1486	0	2175	0	2864	0	3553	1

109	0	798	1	1487	0	2176	0	2865	0	3554	0
110	1	799	1	1488	0	2177	0	2866	0	3555	1
111	1	800	0	1489	1	2178	1	2867	1	3556	1
112	0	801	0	1490	1	2179	1	2868	1	3557	0
113	0	802	0	1491	0	2180	1	2869	1	3558	0
114	0	803	1	1492	1	2181	0	2870	0	3559	1
115	1	804	1	1493	1	2182	1	2871	0	3560	1
116	0	805	1	1494	1	2183	1	2872	1	3561	1
117	0	806	1	1495	0	2184	0	2873	0	3562	1
118	1	807	0	1496	1	2185	0	2874	0	3563	1
119	0	808	1	1497	0	2186	1	2875	0	3564	1
120	0	809	0	1498	1	2187	0	2876	1	3565	1
121	1	810	0	1499	1	2188	0	2877	1	3566	0
122	1	811	1	1500	0	2189	1	2878	1	3567	1
123	1	812	0	1501	0	2190	1	2879	0	3568	0
124	1	813	0	1502	0	2191	1	2880	0	3569	0
125	0	814	1	1503	1	2192	1	2881	1	3570	0
126	1	815	1	1504	1	2193	0	2882	1	3571	0
127	0	816	1	1505	0	2194	1	2883	1	3572	1
128	0	817	1	1506	0	2195	0	2884	0	3573	0
129	1	818	1	1507	0	2196	0	2885	0	3574	1
130	0	819	1	1508	0	2197	0	2886	1	3575	0
131	1	820	0	1509	0	2198	0	2887	0	3576	1
132	0	821	1	1510	1	2199	0	2888	1	3577	1
133	0	822	1	1511	0	2200	1	2889	1	3578	0
134	1	823	0	1512	0	2201	1	2890	1	3579	0
135	0	824	0	1513	1	2202	1	2891	0	3580	0
136	1	825	0	1514	1	2203	0	2892	1	3581	0
137	1	826	0	1515	1	2204	0	2893	0	3582	1
138	0	827	0	1516	1	2205	1	2894	1	3583	0
139	0	828	0	1517	0	2206	1	2895	0	3584	1
140	1	829	1	1518	1	2207	1	2896	0	3585	0
141	1	830	1	1519	1	2208	0	2897	1	3586	0
142	0	831	0	1520	0	2209	0	2898	1	3587	0
143	1	832	0	1521	0	2210	1	2899	0	3588	1
144	1	833	0	1522	1	2211	1	2900	1	3589	1
145	1	834	1	1523	1	2212	1	2901	1	3590	0
146	0	835	0	1524	1	2213	1	2902	1	3591	0
147	0	836	0	1525	1	2214	0	2903	0	3592	1
148	0	837	1	1526	0	2215	1	2904	1	3593	1
149	0	838	1	1527	1	2216	0	2905	1	3594	0
150	1	839	0	1528	0	2217	0	2906	1	3595	0
151	0	840	1	1529	1	2218	0	2907	0	3596	1
152	1	841	1	1530	0	2219	0	2908	1	3597	0

153	1	842	0	1531	0	2220	0	2909	0	3598	0
154	1	843	1	1532	1	2221	0	2910	1	3599	0
155	1	844	1	1533	1	2222	1	2911	0	3600	1
156	0	845	1	1534	1	2223	0	2912	0	3601	1
157	1	846	0	1535	0	2224	1	2913	0	3602	1
158	1	847	0	1536	1	2225	0	2914	0	3603	1
159	0	848	1	1537	0	2226	0	2915	1	3604	1
160	0	849	1	1538	0	2227	0	2916	1	3605	0
161	0	850	0	1539	0	2228	0	2917	0	3606	0
162	0	851	1	1540	0	2229	1	2918	0	3607	0
163	0	852	0	1541	1	2230	0	2919	0	3608	0
164	1	853	1	1542	1	2231	1	2920	0	3609	1
165	1	854	0	1543	0	2232	0	2921	0	3610	0
166	1	855	0	1544	0	2233	1	2922	1	3611	0
167	1	856	0	1545	0	2234	1	2923	1	3612	1
168	0	857	1	1546	1	2235	1	2924	1	3613	0
169	1	858	0	1547	1	2236	0	2925	0	3614	0
170	1	859	0	1548	1	2237	1	2926	1	3615	1
171	0	860	0	1549	0	2238	0	2927	1	3616	0
172	0	861	0	1550	1	2239	1	2928	1	3617	0
173	0	862	1	1551	1	2240	1	2929	1	3618	0
174	0	863	0	1552	0	2241	1	2930	0	3619	1
175	1	864	1	1553	1	2242	1	2931	1	3620	1
176	1	865	0	1554	1	2243	1	2932	0	3621	1
177	0	866	0	1555	0	2244	1	2933	1	3622	0
178	1	867	1	1556	0	2245	1	2934	1	3623	1
179	1	868	1	1557	1	2246	1	2935	0	3624	1
180	0	869	1	1558	1	2247	1	2936	1	3625	1
181	1	870	1	1559	1	2248	0	2937	0	3626	0
182	0	871	1	1560	1	2249	1	2938	1	3627	0
183	1	872	1	1561	1	2250	0	2939	0	3628	1
184	1	873	0	1562	0	2251	1	2940	0	3629	0
185	0	874	0	1563	0	2252	1	2941	1	3630	0
186	0	875	1	1564	0	2253	1	2942	0	3631	1
187	0	876	0	1565	0	2254	0	2943	0	3632	1
188	1	877	1	1566	1	2255	1	2944	1	3633	1
189	1	878	0	1567	0	2256	0	2945	0	3634	0
190	0	879	0	1568	1	2257	1	2946	1	3635	1
191	1	880	0	1569	1	2258	0	2947	0	3636	1
192	1	881	1	1570	1	2259	1	2948	1	3637	1
193	1	882	0	1571	1	2260	1	2949	0	3638	1
194	1	883	1	1572	0	2261	0	2950	0	3639	0
195	0	884	1	1573	1	2262	0	2951	0	3640	1
196	1	885	0	1574	1	2263	0	2952	1	3641	1

197	0	886	1	1575	0	2264	1	2953	1	3642	0
198	1	887	0	1576	1	2265	0	2954	0	3643	1
199	1	888	0	1577	1	2266	0	2955	1	3644	0
200	0	889	1	1578	0	2267	1	2956	0	3645	0
201	0	890	1	1579	0	2268	0	2957	1	3646	0
202	1	891	1	1580	0	2269	1	2958	0	3647	0
203	0	892	0	1581	1	2270	1	2959	1	3648	0
204	1	893	0	1582	0	2271	1	2960	0	3649	1
205	0	894	0	1583	1	2272	0	2961	0	3650	1
206	0	895	1	1584	1	2273	0	2962	0	3651	0
207	1	896	1	1585	1	2274	1	2963	1	3652	0
208	0	897	1	1586	0	2275	1	2964	1	3653	0
209	1	898	1	1587	1	2276	1	2965	1	3654	1
210	0	899	0	1588	0	2277	0	2966	0	3655	0
211	0	900	0	1589	1	2278	1	2967	0	3656	0
212	0	901	1	1590	0	2279	0	2968	1	3657	1
213	0	902	1	1591	1	2280	0	2969	1	3658	0
214	1	903	0	1592	1	2281	0	2970	0	3659	1
215	1	904	0	1593	1	2282	0	2971	0	3660	1
216	1	905	1	1594	1	2283	1	2972	0	3661	1
217	0	906	1	1595	0	2284	1	2973	1	3662	0
218	0	907	0	1596	0	2285	1	2974	0	3663	0
219	0	908	1	1597	0	2286	0	2975	0	3664	0
220	0	909	1	1598	1	2287	1	2976	1	3665	0
221	1	910	1	1599	1	2288	0	2977	0	3666	1
222	1	911	0	1600	1	2289	0	2978	0	3667	0
223	1	912	1	1601	0	2290	0	2979	1	3668	0
224	0	913	0	1602	0	2291	1	2980	0	3669	1
225	1	914	0	1603	0	2292	0	2981	1	3670	1
226	0	915	1	1604	1	2293	1	2982	1	3671	0
227	0	916	0	1605	0	2294	1	2983	0	3672	0
228	1	917	1	1606	1	2295	0	2984	1	3673	1
229	1	918	1	1607	0	2296	0	2985	0	3674	0
230	0	919	0	1608	1	2297	1	2986	1	3675	1
231	0	920	0	1609	0	2298	1	2987	1	3676	0
232	1	921	0	1610	1	2299	1	2988	1	3677	0
233	1	922	1	1611	0	2300	1	2989	0	3678	1
234	1	923	1	1612	0	2301	0	2990	1	3679	0
235	1	924	1	1613	1	2302	0	2991	1	3680	1
236	1	925	1	1614	0	2303	1	2992	0	3681	0
237	1	926	0	1615	1	2304	1	2993	1	3682	0
238	1	927	1	1616	0	2305	1	2994	0	3683	1
239	1	928	0	1617	0	2306	0	2995	0	3684	1
240	1	929	1	1618	1	2307	1	2996	1	3685	0

241	0	930	1	1619	1	2308	0	2997	0	3686	0
242	1	931	0	1620	0	2309	1	2998	0	3687	1
243	1	932	0	1621	0	2310	0	2999	0	3688	1
244	1	933	0	1622	1	2311	1	3000	1	3689	1
245	0	934	1	1623	0	2312	0	3001	0	3690	1
246	1	935	1	1624	1	2313	1	3002	0	3691	0
247	0	936	0	1625	1	2314	0	3003	1	3692	0
248	0	937	1	1626	0	2315	1	3004	0	3693	1
249	1	938	1	1627	1	2316	1	3005	1	3694	0
250	1	939	0	1628	1	2317	1	3006	1	3695	1
251	0	940	0	1629	0	2318	0	3007	0	3696	0
252	1	941	0	1630	0	2319	1	3008	0	3697	0
253	1	942	0	1631	1	2320	0	3009	0	3698	0
254	0	943	1	1632	0	2321	1	3010	0	3699	1
255	0	944	0	1633	1	2322	0	3011	0	3700	1
256	1	945	1	1634	0	2323	0	3012	1	3701	0
257	0	946	1	1635	1	2324	1	3013	1	3702	0
258	1	947	1	1636	0	2325	1	3014	0	3703	0
259	1	948	0	1637	0	2326	0	3015	1	3704	1
260	0	949	0	1638	1	2327	1	3016	0	3705	1
261	0	950	1	1639	1	2328	1	3017	0	3706	1
262	0	951	1	1640	1	2329	1	3018	1	3707	1
263	1	952	0	1641	1	2330	1	3019	1	3708	0
264	0	953	0	1642	0	2331	0	3020	1	3709	1
265	0	954	0	1643	1	2332	1	3021	0	3710	1
266	0	955	0	1644	0	2333	1	3022	0	3711	1
267	1	956	0	1645	1	2334	1	3023	0	3712	1
268	0	957	1	1646	1	2335	0	3024	0	3713	1
269	0	958	1	1647	1	2336	1	3025	1	3714	0
270	1	959	1	1648	0	2337	1	3026	1	3715	0
271	1	960	1	1649	0	2338	1	3027	0	3716	0
272	1	961	1	1650	0	2339	1	3028	1	3717	1
273	1	962	0	1651	0	2340	0	3029	0	3718	1
274	0	963	0	1652	1	2341	0	3030	0	3719	0
275	0	964	1	1653	1	2342	0	3031	1	3720	1
276	1	965	1	1654	1	2343	0	3032	0	3721	0
277	1	966	0	1655	1	2344	0	3033	1	3722	0
278	0	967	1	1656	1	2345	0	3034	0	3723	0
279	1	968	0	1657	1	2346	1	3035	1	3724	1
280	0	969	0	1658	0	2347	1	3036	0	3725	0
281	0	970	1	1659	0	2348	0	3037	1	3726	0
282	1	971	1	1660	0	2349	0	3038	0	3727	0
283	0	972	0	1661	1	2350	0	3039	0	3728	0
284	0	973	0	1662	0	2351	1	3040	0	3729	0

285	0	974	1	1663	0	2352	1	3041	0	3730	0
286	1	975	1	1664	1	2353	0	3042	0	3731	1
287	0	976	0	1665	1	2354	1	3043	1	3732	1
288	1	977	1	1666	0	2355	0	3044	0	3733	1
289	1	978	0	1667	0	2356	1	3045	0	3734	0
290	0	979	1	1668	1	2357	1	3046	0	3735	1
291	0	980	0	1669	1	2358	0	3047	1	3736	0
292	0	981	0	1670	0	2359	1	3048	0	3737	0
293	1	982	0	1671	1	2360	0	3049	1	3738	1
294	0	983	0	1672	1	2361	0	3050	0	3739	0
295	1	984	0	1673	1	2362	1	3051	0	3740	1
296	0	985	0	1674	0	2363	1	3052	1	3741	1
297	1	986	1	1675	0	2364	1	3053	1	3742	1
298	1	987	1	1676	0	2365	1	3054	0	3743	1
299	1	988	1	1677	1	2366	0	3055	1	3744	1
300	0	989	1	1678	0	2367	1	3056	1	3745	1
301	1	990	0	1679	0	2368	0	3057	1	3746	0
302	1	991	0	1680	0	2369	0	3058	1	3747	1
303	1	992	0	1681	1	2370	0	3059	1	3748	0
304	1	993	1	1682	1	2371	1	3060	0	3749	1
305	0	994	0	1683	1	2372	1	3061	0	3750	0
306	0	995	1	1684	1	2373	0	3062	1	3751	1
307	0	996	0	1685	1	2374	1	3063	0	3752	0
308	1	997	0	1686	1	2375	1	3064	1	3753	0
309	0	998	1	1687	1	2376	0	3065	0	3754	0
310	1	999	1	1688	1	2377	0	3066	1	3755	0
311	0	1000	1	1689	0	2378	0	3067	1	3756	1
312	0	1001	1	1690	1	2379	1	3068	1	3757	1
313	0	1002	1	1691	0	2380	1	3069	0	3758	0
314	0	1003	1	1692	1	2381	0	3070	1	3759	1
315	1	1004	0	1693	0	2382	0	3071	0	3760	1
316	0	1005	0	1694	0	2383	0	3072	0	3761	1
317	1	1006	0	1695	0	2384	1	3073	1	3762	1
318	0	1007	1	1696	1	2385	0	3074	0	3763	1
319	1	1008	1	1697	1	2386	1	3075	1	3764	0
320	0	1009	0	1698	1	2387	0	3076	0	3765	1
321	1	1010	1	1699	0	2388	0	3077	1	3766	0
322	1	1011	1	1700	0	2389	1	3078	0	3767	1
323	0	1012	0	1701	1	2390	1	3079	1	3768	0
324	1	1013	0	1702	0	2391	0	3080	1	3769	1
325	0	1014	1	1703	0	2392	0	3081	0	3770	0
326	1	1015	1	1704	1	2393	1	3082	0	3771	1
327	1	1016	1	1705	0	2394	0	3083	1	3772	1
328	0	1017	0	1706	1	2395	0	3084	1	3773	0

329	0	1018	0	1707	0	2396	0	3085	1	3774	1
330	0	1019	1	1708	0	2397	0	3086	1	3775	1
331	1	1020	1	1709	1	2398	0	3087	0	3776	0
332	0	1021	0	1710	0	2399	1	3088	1	3777	1
333	0	1022	0	1711	0	2400	0	3089	0	3778	1
334	0	1023	0	1712	1	2401	1	3090	1	3779	0
335	0	1024	0	1713	0	2402	0	3091	0	3780	1
336	1	1025	1	1714	0	2403	1	3092	1	3781	0
337	0	1026	1	1715	0	2404	1	3093	0	3782	0
338	1	1027	1	1716	0	2405	1	3094	1	3783	1
339	1	1028	1	1717	1	2406	1	3095	0	3784	1
340	0	1029	1	1718	1	2407	0	3096	1	3785	1
341	0	1030	1	1719	0	2408	1	3097	1	3786	1
342	1	1031	0	1720	1	2409	1	3098	1	3787	1
343	1	1032	0	1721	0	2410	1	3099	1	3788	1
344	1	1033	1	1722	1	2411	1	3100	1	3789	1
345	0	1034	1	1723	0	2412	0	3101	1	3790	0
346	0	1035	0	1724	0	2413	0	3102	1	3791	1
347	1	1036	1	1725	0	2414	1	3103	0	3792	0
348	1	1037	0	1726	1	2415	1	3104	0	3793	0
349	0	1038	0	1727	0	2416	1	3105	1	3794	0
350	0	1039	0	1728	0	2417	0	3106	1	3795	1
351	1	1040	0	1729	0	2418	1	3107	1	3796	1
352	1	1041	1	1730	1	2419	1	3108	0	3797	0
353	1	1042	1	1731	0	2420	0	3109	0	3798	1
354	0	1043	0	1732	0	2421	0	3110	0	3799	0
355	0	1044	0	1733	0	2422	1	3111	1	3800	0
356	0	1045	1	1734	1	2423	1	3112	0	3801	1
357	0	1046	0	1735	0	2424	0	3113	1	3802	1
358	0	1047	0	1736	0	2425	1	3114	0	3803	0
359	0	1048	0	1737	1	2426	1	3115	0	3804	1
360	1	1049	0	1738	0	2427	0	3116	1	3805	0
361	1	1050	1	1739	1	2428	0	3117	1	3806	0
362	1	1051	1	1740	0	2429	1	3118	1	3807	1
363	0	1052	0	1741	0	2430	1	3119	0	3808	1
364	0	1053	1	1742	0	2431	1	3120	1	3809	1
365	1	1054	0	1743	1	2432	0	3121	1	3810	1
366	0	1055	1	1744	1	2433	1	3122	1	3811	1
367	1	1056	0	1745	0	2434	0	3123	1	3812	0
368	1	1057	0	1746	1	2435	1	3124	0	3813	0
369	1	1058	1	1747	0	2436	0	3125	0	3814	0
370	1	1059	1	1748	1	2437	0	3126	0	3815	1
371	1	1060	0	1749	1	2438	0	3127	1	3816	0
372	0	1061	0	1750	1	2439	0	3128	0	3817	1

373	1	1062	0	1751	0	2440	0	3129	1	3818	0
374	1	1063	0	1752	0	2441	0	3130	1	3819	0
375	0	1064	0	1753	0	2442	1	3131	0	3820	1
376	0	1065	1	1754	0	2443	0	3132	1	3821	1
377	0	1066	0	1755	1	2444	0	3133	1	3822	0
378	1	1067	1	1756	1	2445	1	3134	0	3823	0
379	0	1068	0	1757	1	2446	1	3135	0	3824	0
380	1	1069	0	1758	0	2447	0	3136	0	3825	0
381	0	1070	1	1759	1	2448	1	3137	0	3826	0
382	0	1071	0	1760	1	2449	0	3138	1	3827	0
383	1	1072	0	1761	1	2450	1	3139	1	3828	1
384	0	1073	0	1762	1	2451	1	3140	0	3829	1
385	1	1074	1	1763	1	2452	0	3141	0	3830	0
386	0	1075	0	1764	0	2453	0	3142	0	3831	0
387	0	1076	1	1765	1	2454	0	3143	1	3832	0
388	0	1077	1	1766	0	2455	1	3144	0	3833	0
389	1	1078	1	1767	0	2456	0	3145	1	3834	0
390	0	1079	0	1768	1	2457	1	3146	0	3835	0
391	0	1080	0	1769	0	2458	0	3147	0	3836	1
392	1	1081	0	1770	0	2459	1	3148	0	3837	1
393	0	1082	0	1771	0	2460	1	3149	0	3838	0
394	1	1083	1	1772	0	2461	1	3150	0	3839	0
395	1	1084	1	1773	1	2462	1	3151	1	3840	1
396	0	1085	1	1774	0	2463	0	3152	1	3841	0
397	1	1086	0	1775	1	2464	0	3153	0	3842	0
398	1	1087	1	1776	0	2465	0	3154	1	3843	1
399	0	1088	0	1777	0	2466	0	3155	1	3844	0
400	1	1089	1	1778	0	2467	1	3156	1	3845	1
401	0	1090	1	1779	0	2468	1	3157	1	3846	0
402	1	1091	1	1780	0	2469	0	3158	0	3847	0
403	0	1092	1	1781	0	2470	1	3159	1	3848	1
404	1	1093	1	1782	1	2471	0	3160	1	3849	0
405	0	1094	1	1783	1	2472	1	3161	1	3850	1
406	0	1095	1	1784	0	2473	1	3162	1	3851	1
407	1	1096	0	1785	0	2474	0	3163	1	3852	1
408	1	1097	0	1786	0	2475	0	3164	0	3853	0
409	1	1098	0	1787	1	2476	0	3165	0	3854	0
410	1	1099	0	1788	1	2477	0	3166	1	3855	0
411	1	1100	1	1789	0	2478	0	3167	1	3856	0
412	0	1101	0	1790	0	2479	1	3168	1	3857	1
413	0	1102	0	1791	0	2480	0	3169	1	3858	0
414	0	1103	0	1792	0	2481	1	3170	1	3859	0
415	0	1104	0	1793	1	2482	1	3171	1	3860	1
416	1	1105	0	1794	0	2483	0	3172	1	3861	1

417	0	1106	1	1795	1	2484	1	3173	1	3862	0
418	1	1107	0	1796	0	2485	0	3174	0	3863	1
419	0	1108	1	1797	0	2486	1	3175	1	3864	0
420	1	1109	1	1798	0	2487	0	3176	1	3865	1
421	1	1110	0	1799	0	2488	1	3177	1	3866	0
422	0	1111	0	1800	0	2489	0	3178	0	3867	1
423	1	1112	0	1801	0	2490	1	3179	0	3868	0
424	0	1113	1	1802	1	2491	0	3180	0	3869	1
425	0	1114	0	1803	0	2492	0	3181	0	3870	1
426	1	1115	0	1804	1	2493	1	3182	1	3871	1
427	1	1116	1	1805	1	2494	0	3183	1	3872	1
428	0	1117	1	1806	1	2495	1	3184	1	3873	1
429	0	1118	0	1807	1	2496	0	3185	0	3874	1
430	0	1119	0	1808	0	2497	1	3186	0	3875	0
431	1	1120	0	1809	1	2498	0	3187	0	3876	1
432	1	1121	0	1810	0	2499	1	3188	0	3877	1
433	1	1122	1	1811	0	2500	1	3189	1	3878	1
434	0	1123	1	1812	1	2501	1	3190	0	3879	0
435	0	1124	1	1813	1	2502	0	3191	1	3880	1
436	1	1125	1	1814	0	2503	0	3192	0	3881	1
437	0	1126	1	1815	1	2504	0	3193	0	3882	0
438	0	1127	1	1816	0	2505	0	3194	1	3883	1
439	1	1128	0	1817	1	2506	1	3195	1	3884	1
440	0	1129	0	1818	1	2507	0	3196	1	3885	1
441	1	1130	1	1819	1	2508	0	3197	0	3886	1
442	0	1131	1	1820	0	2509	0	3198	1	3887	0
443	1	1132	0	1821	1	2510	1	3199	0	3888	0
444	1	1133	0	1822	1	2511	1	3200	0	3889	1
445	1	1134	1	1823	0	2512	1	3201	1	3890	1
446	0	1135	0	1824	0	2513	1	3202	1	3891	0
447	1	1136	0	1825	1	2514	0	3203	0	3892	1
448	1	1137	1	1826	1	2515	1	3204	0	3893	0
449	1	1138	1	1827	0	2516	0	3205	0	3894	0
450	0	1139	1	1828	1	2517	0	3206	0	3895	1
451	1	1140	1	1829	1	2518	0	3207	1	3896	1
452	1	1141	1	1830	0	2519	1	3208	0	3897	0
453	1	1142	0	1831	1	2520	0	3209	1	3898	0
454	0	1143	1	1832	1	2521	1	3210	1	3899	0
455	1	1144	0	1833	1	2522	0	3211	0	3900	1
456	0	1145	0	1834	0	2523	0	3212	1	3901	0
457	0	1146	1	1835	1	2524	1	3213	1	3902	1
458	0	1147	1	1836	0	2525	1	3214	0	3903	1
459	1	1148	1	1837	0	2526	0	3215	1	3904	1
460	1	1149	0	1838	0	2527	0	3216	0	3905	0

461	1	1150	0	1839	0	2528	0	3217	0	3906	0
462	0	1151	1	1840	1	2529	1	3218	1	3907	1
463	1	1152	1	1841	0	2530	0	3219	0	3908	0
464	0	1153	0	1842	0	2531	0	3220	0	3909	0
465	0	1154	0	1843	0	2532	0	3221	0	3910	0
466	0	1155	1	1844	0	2533	1	3222	0	3911	0
467	1	1156	1	1845	0	2534	0	3223	1	3912	1
468	0	1157	1	1846	0	2535	0	3224	0	3913	0
469	0	1158	0	1847	1	2536	0	3225	1	3914	1
470	1	1159	1	1848	1	2537	1	3226	1	3915	0
471	0	1160	1	1849	1	2538	0	3227	1	3916	1
472	1	1161	1	1850	1	2539	1	3228	1	3917	0
473	1	1162	0	1851	1	2540	0	3229	0	3918	0
474	1	1163	1	1852	0	2541	0	3230	1	3919	1
475	1	1164	0	1853	0	2542	0	3231	0	3920	1
476	1	1165	1	1854	1	2543	1	3232	0	3921	1
477	0	1166	0	1855	0	2544	0	3233	0	3922	0
478	1	1167	0	1856	0	2545	0	3234	0	3923	0
479	0	1168	0	1857	0	2546	1	3235	0	3924	0
480	1	1169	1	1858	0	2547	1	3236	1	3925	1
481	1	1170	1	1859	0	2548	0	3237	1	3926	0
482	0	1171	0	1860	1	2549	1	3238	0	3927	1
483	0	1172	0	1861	1	2550	0	3239	0	3928	0
484	0	1173	0	1862	1	2551	1	3240	0	3929	0
485	0	1174	1	1863	0	2552	1	3241	0	3930	0
486	1	1175	0	1864	1	2553	0	3242	0	3931	1
487	1	1176	0	1865	0	2554	0	3243	1	3932	0
488	0	1177	1	1866	1	2555	1	3244	1	3933	0
489	1	1178	1	1867	1	2556	0	3245	1	3934	1
490	1	1179	1	1868	0	2557	1	3246	0	3935	1
491	1	1180	0	1869	1	2558	0	3247	1	3936	1
492	0	1181	1	1870	1	2559	1	3248	1	3937	0
493	0	1182	1	1871	0	2560	1	3249	1	3938	0
494	0	1183	1	1872	1	2561	0	3250	0	3939	0
495	0	1184	0	1873	0	2562	1	3251	0	3940	0
496	0	1185	0	1874	1	2563	0	3252	0	3941	0
497	1	1186	1	1875	1	2564	1	3253	1	3942	0
498	1	1187	0	1876	0	2565	0	3254	0	3943	0
499	0	1188	1	1877	0	2566	0	3255	1	3944	1
500	0	1189	0	1878	1	2567	0	3256	1	3945	1
501	1	1190	1	1879	1	2568	1	3257	0	3946	1
502	0	1191	1	1880	0	2569	1	3258	0	3947	1
503	0	1192	1	1881	0	2570	1	3259	0	3948	0
504	1	1193	1	1882	1	2571	1	3260	1	3949	0

505	1	1194	0	1883	0	2572	1	3261	0	3950	0
506	0	1195	1	1884	0	2573	0	3262	0	3951	1
507	1	1196	1	1885	0	2574	1	3263	1	3952	0
508	0	1197	1	1886	1	2575	0	3264	1	3953	1
509	1	1198	0	1887	1	2576	1	3265	0	3954	1
510	0	1199	0	1888	1	2577	1	3266	1	3955	1
511	1	1200	1	1889	0	2578	1	3267	0	3956	0
512	1	1201	1	1890	1	2579	1	3268	0	3957	1
513	0	1202	0	1891	1	2580	0	3269	0	3958	0
514	1	1203	1	1892	1	2581	1	3270	1	3959	1
515	0	1204	0	1893	0	2582	0	3271	0	3960	0
516	0	1205	0	1894	0	2583	1	3272	0	3961	1
517	1	1206	1	1895	1	2584	1	3273	0	3962	0
518	0	1207	0	1896	0	2585	0	3274	0	3963	0
519	0	1208	0	1897	1	2586	0	3275	0	3964	1
520	1	1209	0	1898	1	2587	0	3276	0	3965	0
521	1	1210	0	1899	1	2588	0	3277	0	3966	0
522	1	1211	1	1900	1	2589	0	3278	0	3967	0
523	1	1212	1	1901	0	2590	0	3279	1	3968	0
524	0	1213	1	1902	0	2591	1	3280	0	3969	0
525	0	1214	1	1903	1	2592	0	3281	0	3970	0
526	1	1215	1	1904	1	2593	0	3282	1	3971	0
527	1	1216	0	1905	0	2594	0	3283	1	3972	0
528	0	1217	1	1906	0	2595	0	3284	1	3973	0
529	0	1218	0	1907	0	2596	0	3285	0	3974	1
530	1	1219	0	1908	0	2597	0	3286	1	3975	0
531	1	1220	0	1909	0	2598	0	3287	0	3976	0
532	1	1221	0	1910	0	2599	1	3288	1	3977	1
533	0	1222	1	1911	1	2600	1	3289	0	3978	1
534	1	1223	1	1912	1	2601	1	3290	0	3979	1
535	0	1224	0	1913	0	2602	0	3291	0	3980	1
536	0	1225	1	1914	1	2603	0	3292	1	3981	0
537	0	1226	1	1915	1	2604	0	3293	0	3982	0
538	1	1227	0	1916	1	2605	0	3294	0	3983	1
539	1	1228	0	1917	1	2606	0	3295	1	3984	0
540	1	1229	0	1918	1	2607	0	3296	1	3985	1
541	0	1230	0	1919	1	2608	1	3297	1	3986	1
542	1	1231	1	1920	1	2609	0	3298	1	3987	0
543	1	1232	0	1921	0	2610	1	3299	0	3988	0
544	0	1233	0	1922	0	2611	0	3300	1	3989	1
545	1	1234	1	1923	0	2612	0	3301	1	3990	0
546	0	1235	1	1924	1	2613	0	3302	1	3991	1
547	1	1236	1	1925	1	2614	0	3303	0	3992	1
548	1	1237	1	1926	1	2615	0	3304	0	3993	0

549	0	1238	1	1927	0	2616	1	3305	1	3994	1
550	0	1239	1	1928	0	2617	1	3306	1	3995	1
551	1	1240	1	1929	0	2618	1	3307	0	3996	1
552	0	1241	0	1930	0	2619	0	3308	0	3997	1
553	0	1242	0	1931	1	2620	0	3309	0	3998	1
554	0	1243	0	1932	1	2621	0	3310	0	3999	1
555	1	1244	1	1933	1	2622	0	3311	0	4000	0
556	1	1245	0	1934	0	2623	0	3312	1	4001	1
557	0	1246	0	1935	1	2624	0	3313	0	4002	0
558	1	1247	0	1936	1	2625	0	3314	1	4003	0
559	1	1248	1	1937	1	2626	1	3315	1	4004	1
560	0	1249	1	1938	0	2627	1	3316	1	4005	1
561	1	1250	0	1939	0	2628	0	3317	0	4006	0
562	1	1251	1	1940	0	2629	1	3318	1	4007	1
563	1	1252	1	1941	1	2630	1	3319	1	4008	0
564	1	1253	0	1942	0	2631	0	3320	0	4009	1
565	0	1254	0	1943	0	2632	1	3321	1	4010	1
566	1	1255	0	1944	0	2633	1	3322	0	4011	0
567	0	1256	1	1945	1	2634	1	3323	0	4012	1
568	1	1257	1	1946	0	2635	1	3324	0	4013	0
569	0	1258	0	1947	1	2636	0	3325	1	4014	0
570	1	1259	0	1948	0	2637	1	3326	0	4015	1
571	1	1260	0	1949	1	2638	0	3327	1	4016	0
572	0	1261	1	1950	1	2639	0	3328	1	4017	1
573	1	1262	0	1951	0	2640	1	3329	0	4018	0
574	0	1263	1	1952	1	2641	0	3330	1	4019	1
575	0	1264	1	1953	1	2642	0	3331	0	4020	0
576	0	1265	0	1954	0	2643	1	3332	1	4021	0
577	1	1266	1	1955	0	2644	1	3333	1	4022	0
578	1	1267	0	1956	1	2645	1	3334	1	4023	0
579	1	1268	0	1957	0	2646	0	3335	1	4024	1
580	0	1269	0	1958	1	2647	0	3336	0	4025	1
581	1	1270	1	1959	0	2648	0	3337	0	4026	0
582	1	1271	0	1960	0	2649	1	3338	1	4027	0
583	0	1272	1	1961	0	2650	1	3339	0	4028	1
584	0	1273	1	1962	1	2651	0	3340	1	4029	0
585	1	1274	0	1963	0	2652	0	3341	0	4030	1
586	0	1275	0	1964	1	2653	1	3342	1	4031	1
587	1	1276	0	1965	1	2654	0	3343	0	4032	0
588	0	1277	1	1966	1	2655	0	3344	0	4033	0
589	0	1278	1	1967	0	2656	0	3345	1	4034	1
590	0	1279	1	1968	1	2657	0	3346	0	4035	0
591	1	1280	1	1969	0	2658	1	3347	1	4036	0
592	1	1281	1	1970	1	2659	0	3348	0	4037	0

593	1	1282	1	1971	0	2660	1	3349	1	4038	1
594	0	1283	1	1972	0	2661	1	3350	0	4039	1
595	0	1284	1	1973	0	2662	0	3351	0	4040	1
596	1	1285	0	1974	1	2663	1	3352	0	4041	0
597	0	1286	0	1975	1	2664	1	3353	1	4042	0
598	0	1287	0	1976	0	2665	1	3354	1	4043	0
599	0	1288	1	1977	0	2666	1	3355	1	4044	0
600	0	1289	1	1978	0	2667	1	3356	1	4045	1
601	0	1290	0	1979	0	2668	1	3357	0	4046	0
602	1	1291	0	1980	1	2669	0	3358	0	4047	0
603	0	1292	0	1981	0	2670	1	3359	1	4048	1
604	1	1293	0	1982	0	2671	0	3360	1	4049	0
605	0	1294	0	1983	1	2672	0	3361	0	4050	0
606	1	1295	1	1984	0	2673	0	3362	0	4051	0
607	1	1296	0	1985	1	2674	1	3363	1	4052	1
608	0	1297	1	1986	0	2675	0	3364	1	4053	1
609	1	1298	1	1987	1	2676	0	3365	0	4054	1
610	1	1299	1	1988	0	2677	1	3366	1	4055	0
611	1	1300	1	1989	1	2678	0	3367	0	4056	1
612	0	1301	1	1990	1	2679	1	3368	0	4057	0
613	1	1302	1	1991	0	2680	0	3369	1	4058	1
614	0	1303	0	1992	1	2681	1	3370	0	4059	1
615	1	1304	1	1993	1	2682	1	3371	1	4060	1
616	1	1305	0	1994	1	2683	1	3372	1	4061	0
617	1	1306	0	1995	0	2684	0	3373	0	4062	0
618	1	1307	0	1996	0	2685	0	3374	1	4063	0
619	0	1308	1	1997	0	2686	0	3375	1	4064	1
620	0	1309	1	1998	1	2687	0	3376	1	4065	1
621	0	1310	0	1999	0	2688	0	3377	0	4066	0
622	0	1311	1	2000	0	2689	0	3378	0	4067	0
623	0	1312	0	2001	0	2690	0	3379	0	4068	1
624	0	1313	0	2002	0	2691	0	3380	0	4069	0
625	1	1314	0	2003	0	2692	0	3381	0	4070	0
626	1	1315	0	2004	1	2693	0	3382	1	4071	0
627	0	1316	1	2005	1	2694	0	3383	1	4072	1
628	0	1317	0	2006	1	2695	1	3384	0	4073	0
629	1	1318	0	2007	0	2696	0	3385	1	4074	0
630	0	1319	1	2008	1	2697	1	3386	0	4075	1
631	1	1320	0	2009	0	2698	1	3387	0	4076	0
632	0	1321	0	2010	0	2699	1	3388	1	4077	0
633	0	1322	0	2011	0	2700	0	3389	1	4078	0
634	0	1323	0	2012	0	2701	1	3390	1	4079	0
635	1	1324	1	2013	1	2702	1	3391	1	4080	0
636	1	1325	1	2014	1	2703	0	3392	0	4081	0

637	1	1326	0	2015	1	2704	1	3393	0	4082	1
638	1	1327	0	2016	1	2705	1	3394	0	4083	0
639	0	1328	0	2017	0	2706	1	3395	0	4084	1
640	1	1329	1	2018	0	2707	0	3396	0	4085	0
641	0	1330	0	2019	1	2708	0	3397	1	4086	1
642	1	1331	1	2020	0	2709	1	3398	1	4087	0
643	0	1332	0	2021	1	2710	1	3399	1	4088	0
644	1	1333	0	2022	0	2711	0	3400	1	4089	1
645	1	1334	1	2023	0	2712	1	3401	1	4090	0
646	1	1335	1	2024	0	2713	0	3402	0	4091	0
647	0	1336	1	2025	1	2714	1	3403	1	4092	1
648	0	1337	1	2026	1	2715	1	3404	0	4093	1
649	1	1338	0	2027	0	2716	0	3405	1	4094	1
650	1	1339	0	2028	0	2717	1	3406	1	4095	1
651	1	1340	0	2029	1	2718	0	3407	0	4096	0
652	0	1341	0	2030	0	2719	0	3408	0	4097	1
653	1	1342	0	2031	0	2720	0	3409	1	4098	1
654	0	1343	0	2032	0	2721	0	3410	1	4099	1
655	1	1344	1	2033	0	2722	1	3411	0	4100	0
656	0	1345	1	2034	0	2723	0	3412	0	4101	1
657	1	1346	1	2035	1	2724	0	3413	1	4102	0
658	0	1347	0	2036	1	2725	0	3414	0	4103	0
659	0	1348	1	2037	1	2726	1	3415	0	4104	0
660	0	1349	1	2038	1	2727	1	3416	1	4105	0
661	0	1350	0	2039	1	2728	1	3417	0	4106	0
662	1	1351	0	2040	1	2729	0	3418	1	4107	1
663	0	1352	1	2041	0	2730	0	3419	1	4108	1
664	0	1353	0	2042	0	2731	1	3420	0	4109	1
665	1	1354	1	2043	1	2732	1	3421	1	4110	1
666	0	1355	1	2044	1	2733	1	3422	1	4111	1
667	1	1356	1	2045	1	2734	1	3423	1	4112	1
668	0	1357	1	2046	1	2735	1	3424	0	4113	1
669	1	1358	0	2047	1	2736	1	3425	0	4114	0
670	0	1359	1	2048	0	2737	0	3426	1	4115	1
671	0	1360	0	2049	1	2738	1	3427	1	4116	0
672	0	1361	0	2050	1	2739	1	3428	1	4117	0
673	1	1362	0	2051	1	2740	1	3429	0	4118	0
674	1	1363	0	2052	0	2741	1	3430	1	4119	1
675	1	1364	0	2053	1	2742	1	3431	0	4120	1
676	1	1365	0	2054	0	2743	1	3432	0	4121	0
677	1	1366	0	2055	1	2744	1	3433	0	4122	1
678	0	1367	1	2056	1	2745	0	3434	0	4123	1
679	1	1368	1	2057	0	2746	0	3435	1	4124	1
680	1	1369	1	2058	0	2747	0	3436	0	4125	1

681	0	1370	0	2059	0	2748	0	3437	1	4126	1
682	1	1371	0	2060	1	2749	1	3438	0	4127	1
683	1	1372	0	2061	0	2750	1	3439	1	4128	1
684	0	1373	0	2062	0	2751	0	3440	1	4129	1
685	1	1374	1	2063	1	2752	0	3441	1	4130	1
686	1	1375	1	2064	0	2753	0	3442	0	4131	0
687	0	1376	1	2065	0	2754	0	3443	1		
688	1	1377	1	2066	0	2755	0	3444	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