PROOF OF THE CONTINUED FRACTION CONJECTURE FOR $(a,b)=(z^2+z, z^5+z^2+z)$

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Abstract. The continued fraction conjecture claims that the continued fraction defined by the (a,b)-Thue-Morse sequence is algebraic over $\mathbb{F}_2(x)$ for all pairs of distinct elements (a,b) in $\mathbb{F}_2[x]\setminus\mathbb{F}_2$. In this paper we prove the conjecture for $(a,b)=(z^2+z, z^5+z^2+z)$.

1. Introduction

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

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

as the limit of the finite continued fractions

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

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

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

admits a continued fraction expansion of form (1.1).

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

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

that we shall denote

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

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Theorem 1.1. *When $(a,b)=(z^2+z, z^5+z^2+z)$, 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 $\mathrm{CF}(a,b)$*,*

$$\begin{aligned}
p_0(z)&=z^{15}+z^{13}+z^{11}+z^{10}+z^9+z^6+z^5+z^2+1,\\
p_1(z)&=z^{20}+z^{19}+z^{18}+z^{16}+z^{15}+z^{14}+z^{13}+z^{10}+z^7+z^5,\\
p_2(z)&=z^{22}+z^{16}+z^{12}+z^{10}+z^8+z^2,\\
p_3(z)&=z^{20}+z^{19}+z^{18}+z^{16}+z^{15}+z^{14}+z^{13}+z^{10}+z^7+z^5,\\
p_4(z)&=z^{18}+z^{16}+z^{15}+z^{14}+z^{13}+z^{12}+z^{11}+z^{10}+z^9+z^8+z^6+z^5+z^2\\
&\quad+1,
\end{aligned}$$

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

$$\begin{aligned}
p_0(z)&=z^{15}+z^{14}+z^{13}+z^{11}+z^{10}+z^9+z^6+z^5+z^2+1,\\
p_1(z)&=z^{20}+z^{19}+z^{18}+z^{16}+z^{15}+z^{14}+z^{13}+z^{10}+z^7+z^5,\\
p_2(z)&=z^{22}+z^{16}+z^{12}+z^{10}+z^8+z^2,\\
p_3(z)&=z^{20}+z^{19}+z^{18}+z^{16}+z^{15}+z^{14}+z^{13}+z^{10}+z^7+z^5,\\
p_4(z)&=z^{18}+z^{16}+z^{15}+z^{13}+z^{12}+z^{11}+z^{10}+z^9+z^8+z^6+z^5+z^2+1.
\end{aligned}$$

2. Proof

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

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

By the basic properties of continued fractions, we have

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

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

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

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.*

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

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

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

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

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

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

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

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

which can be rewritten as

$$0 = T[[1w]_2] + T[[11w]_2] + T[[100w]_2] + T[[110w]_2] + T[[111w]_2], \tag{2.7}$$

$$\begin{aligned} 0 = {}& T[[1w]_2] + T[[10w]_2] + T[[11w]_2] + T[[101w]_2] + T[[110w]_2] \\ &+ T[[1000w]_2], \end{aligned} \tag{2.8}$$

$$0 = T[[1w]_2] + T[[10w]_2] + T[[1001w]_2], \tag{2.9}$$

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

$$0 = T[[w]_2] + T[[11w]_2] + T[[100w]_2] + T[[1011w]_2], \tag{2.11}$$

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

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

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

$$0 = T[[1w]_2] + T[[11w]_2] + T[[100w]_2] + T[[110w]_2] + T[[111w]_2], \tag{2.14}$$

$$\begin{aligned} 0 = {}& T[[1w]_2] + T[[10w]_2] + T[[11w]_2] + T[[101w]_2] + T[[110w]_2] \\ &+ T[[1000w]_2], \end{aligned} \tag{2.15}$$

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

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

$$0 = T[[w]_2] + T[[11w]_2] + T[[100w]_2] + T[[1011w]_2], \tag{2.18}$$

$$0 = T[[1w]_2] + T[[100w]_2] + T[[101w]_2] + T[[1100w]_2], \tag{2.19}$$

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

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

First we calculate an 2-automaton that generates T from its minimal polynomial and its first terms. This automaton has 3905 states; its transition function and output function can be found in the annex. Let $A(s, w)$ denote the state reached after reading w from right to left starting from the state s, and τ the output function. Define

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

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

$$\begin{aligned} 0 = {}& \tau(A(s,1)) + \tau(A(s,11)) + \tau(A(s,100)) + \tau(A(s,110)) \\ &+ \tau(A(s,111)), \end{aligned} \tag{2.21}$$

$$\begin{aligned} 0 = {}& \tau(A(s,1)) + \tau(A(s,10)) + \tau(A(s,11)) + \tau(A(s,101)) \\ &+ \tau(A(s,110)) + \tau(A(s,1000)), \end{aligned} \tag{2.22}$$

$$0 = \tau(A(s,1)) + \tau(A(s,10)) + \tau(A(s,1001)), \tag{2.23}$$

$$0 = \tau(A(s,10)) + \tau(A(s,11)) + \tau(A(s,1010)), \tag{2.24}$$

$$0 = \tau(A(s,\epsilon)) + \tau(A(s,11)) + \tau(A(s,100)) + \tau(A(s,1011)), \tag{2.25}$$

$$0 = \tau(A(s,1)) + \tau(A(s,100)) + \tau(A(s,101)) + \tau(A(s,1100)), \tag{2.26}$$

$$\begin{aligned} 0 = {}& \tau(A(s,\epsilon)) + \tau(A(s,10)) + \tau(A(s,101)) + \tau(A(s,110)) \\ &+ \tau(A(s,1101)), \end{aligned} \tag{2.27}$$

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

$$0 = \tau(A(s,1)) + \tau(A(s,11)) + \tau(A(s,100)) + \tau(A(s,110))$$

$$+\tau(A(s,111)), \tag{2.28}$$

$$\begin{aligned}0 &= \tau(A(s,1))+\tau(A(s,10))+\tau(A(s,11))+\tau(A(s,101))\\ &\quad+\tau(A(s,110))+\tau(A(s,1000)),\end{aligned} \tag{2.29}$$

$$0=\tau(A(s,1))+\tau(A(s,10))+\tau(A(s,1001)), \tag{2.30}$$

$$0=\tau(A(s,10))+\tau(A(s,11))+\tau(A(s,1010)), \tag{2.31}$$

$$0=\tau(A(s,\epsilon))+\tau(A(s,11))+\tau(A(s,100))+\tau(A(s,1011)), \tag{2.32}$$

$$0=\tau(A(s,1))+\tau(A(s,100))+\tau(A(s,101))+\tau(A(s,1100)), \tag{2.33}$$

$$\begin{aligned}0 &= \tau(A(s,\epsilon))+\tau(A(s,10))+\tau(A(s,101))+\tau(A(s,110))\\ &\quad+\tau(A(s,1101)),\end{aligned} \tag{2.34}$$

for $s=A(i,0^{2k})$. We find that $(A(i,0^{36}),E_{36})=(A(i,0^{22}),E_{22})$, so that we only have to verify that identities (2.21) through (2.34) hold for $2\le k\le 18$, 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 $u=2^{2k-1}$,*

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

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

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

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

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

We give the proof of

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

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

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

Call this expression lhs. Note that both sides of identity M_{2k+1} have the same term of highest degree $x^{14v}R^o$. Therefore we only need to prove that their difference is

$O(x^{14v})$. Using Lemma 2.1 it can be seen that the right side of identity M_{2k+1} is congruent, modulo x^{14v}, to

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

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. □

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

$$\begin{aligned} q_0(x) &= x^{22} + x^{20} + x^{17} + x^{16} + x^{13} + x^{12} + x^{11} + x^9 + x^7, \\ q_1(x) &= x^{17} + x^{15} + x^{12} + x^9 + x^8 + x^7 + x^6 + x^4 + x^3 + x^2, \\ q_2(x) &= x^{20} + x^{14} + x^{12} + x^{10} + x^6 + 1, \\ q_3(x) &= x^{17} + x^{15} + x^{12} + x^9 + x^8 + x^7 + x^6 + x^4 + x^3 + x^2, \\ q_4(x) &= x^{22} + x^{20} + x^{17} + x^{16} + x^{14} + x^{13} + x^{12} + x^{11} + x^{10} + x^9 + x^8 + x^7 \end{aligned}$$

$$+ x^6 + x^4.$$

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

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

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

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

$$\begin{aligned}
p_0(x) &= x^{117} + x^{115} + x^{112} + x^{111} + x^{108} + x^{107} + x^{105} + x^{103} + x^{102} + x^{101} \\
&\quad + x^{100} + x^{99} + x^{98} + x^{97} + x^{96} + x^{88} + x^{84} + x^{81} + x^{79} + x^{75} + x^{71} \\
&\quad + x^{69} + x^{66} + x^{65} + x^{64} + x^{62} + x^{61} + x^{59} + x^{58} + x^{56} + x^{55} + x^{54} \\
&\quad + x^{53} + x^{51} + x^{49} + x^{46} + x^{43} + x^{42} + x^{41} + x^{39} + x^{37} + x^{34} + x^{33}, \\
p_3(x) &= x^{78} + x^{72} + x^{70} + x^{68} + x^{64} + x^{62} + x^{58} + x^{56} + x^{52} + x^{44} + x^{42} \\
&\quad + x^{36} + x^{34} + x^{30} + x^{28} + x^{26} + x^{24} + x^{18}, \\
p_6(x) &= x^{87} + x^{85} + x^{82} + x^{81} + x^{79} + x^{78} + x^{77} + x^{75} + x^{73} + x^{72} + x^{69}
\end{aligned}$$

$$
\begin{aligned}
&+ x^{67} + x^{64} + x^{60} + x^{59} + x^{58} + x^{57} + x^{55} + x^{53} + x^{52} + x^{49} + x^{47}\\
&+ x^{44} + x^{40} + x^{38} + x^{34} + x^{33} + x^{32} + x^{31} + x^{29} + x^{27} + x^{26} + x^{21}\\
&+ x^{17} + x^{16} + x^{14} + x^{13} + x^{12},\\
p_9(x) &= x^{96} + x^{92} + x^{90} + x^{88} + x^{86} + x^{84} + x^{80} + x^{78} + x^{74} + x^{70} + x^{64}\\
&+ x^{62} + x^{56} + x^{50} + x^{48} + x^{44} + x^{36} + x^{34} + x^{32} + x^{26} + x^{24} + x^{14}\\
&+ x^{12} + x^{10} + x^{8} + x^{6},\\
p_{12}(x) &= x^{105} + x^{103} + x^{101} + x^{100} + x^{97} + x^{95} + x^{93} + x^{92} + x^{89} + x^{87} + x^{84}\\
&+ x^{83} + x^{81} + x^{80} + x^{73} + x^{71} + x^{69} + x^{68} + x^{65} + x^{63} + x^{61} + x^{60}\\
&+ x^{53} + x^{51} + x^{48} + x^{47} + x^{45} + x^{44} + x^{37} + x^{35} + x^{32} + x^{31} + x^{29}\\
&+ x^{28} + x^{21} + x^{19} + x^{16} + x^{15} + x^{13} + x^{12} + x^{9} + x^{7} + x^{4} + x^{3} + x + 1,
\end{aligned}
$$

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

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

$$
\begin{aligned}
p_0(x) &= x^{117} + x^{115} + x^{112} + x^{111} + x^{108} + x^{107} + x^{105} + x^{103} + x^{102} + x^{101}\\
&+ x^{100} + x^{99} + x^{98} + x^{97} + x^{96} + x^{88} + x^{84} + x^{81} + x^{79} + x^{75} + x^{71}\\
&+ x^{69} + x^{66} + x^{65} + x^{64} + x^{62} + x^{61} + x^{59} + x^{58} + x^{56} + x^{55} + x^{54}\\
&+ x^{53} + x^{51} + x^{49} + x^{46} + x^{43} + x^{42} + x^{41} + x^{39} + x^{37} + x^{34} + x^{33},\\
p_3(x) &= x^{78} + x^{72} + x^{70} + x^{68} + x^{64} + x^{62} + x^{58} + x^{56} + x^{52} + x^{44} + x^{42}\\
&+ x^{36} + x^{34} + x^{30} + x^{28} + x^{26} + x^{24} + x^{18},\\
p_6(x) &= x^{87} + x^{85} + x^{82} + x^{81} + x^{79} + x^{78} + x^{77} + x^{75} + x^{73} + x^{72} + x^{69}\\
&+ x^{67} + x^{64} + x^{60} + x^{59} + x^{58} + x^{57} + x^{55} + x^{53} + x^{52} + x^{49} + x^{47}\\
&+ x^{44} + x^{40} + x^{38} + x^{34} + x^{33} + x^{32} + x^{31} + x^{29} + x^{27} + x^{26} + x^{21}\\
&+ x^{17} + x^{16} + x^{14} + x^{13} + x^{12},\\
p_9(x) &= x^{96} + x^{92} + x^{90} + x^{88} + x^{86} + x^{84} + x^{80} + x^{78} + x^{74} + x^{70} + x^{64}\\
&+ x^{62} + x^{56} + x^{50} + x^{48} + x^{44} + x^{36} + x^{34} + x^{32} + x^{26} + x^{24} + x^{14}\\
&+ x^{12} + x^{10} + x^{8} + x^{6},\\
p_{12}(x) &= x^{105} + x^{103} + x^{101} + x^{100} + x^{97} + x^{95} + x^{93} + x^{92} + x^{89} + x^{87} + x^{84}\\
&+ x^{83} + x^{81} + x^{80} + x^{73} + x^{71} + x^{69} + x^{68} + x^{65} + x^{63} + x^{61} + x^{60}\\
&+ x^{53} + x^{51} + x^{48} + x^{47} + x^{45} + x^{44} + x^{37} + x^{35} + x^{32} + x^{31} + x^{29}\\
&+ x^{28} + x^{21} + x^{19} + x^{16} + x^{15} + x^{13} + x^{12} + x^{9} + x^{7} + x^{4} + x^{3} + x + 1,
\end{aligned}
$$

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

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

$$
\begin{aligned}
p_0(x) &= x^{108} + x^{106} + x^{104} + x^{102} + x^{100} + x^{98} + x^{96} + x^{94} + x^{86} + x^{84} + x^{80}\\
&+ x^{78} + x^{70} + x^{68} + x^{60} + x^{58} + x^{54} + x^{50} + x^{48} + x^{46} + x^{42},\\
p_3(x) &= x^{94} + x^{92} + x^{86} + x^{74} + x^{72} + x^{70} + x^{68} + x^{66} + x^{64} + x^{62} + x^{54}\\
&+ x^{52} + x^{46} + x^{44} + x^{42} + x^{40} + x^{38} + x^{34} + x^{32} + x^{28} + x^{22} + x^{20}
\end{aligned}
$$

$$
\begin{aligned}
&+ x^{18} + x^{16} + x^{14} + x^{12},\\
p_6(x) &= x^{100} + x^{98} + x^{94} + x^{92} + x^{90} + x^{88} + x^{86} + x^{84} + x^{70} + x^{68} + x^{66}\\
&\quad + x^{62} + x^{60} + x^{56} + x^{54} + x^{50} + x^{48} + x^{46} + x^{44} + x^{38} + x^{32} + x^{28}\\
&\quad + x^{24} + x^{22} + x^{14} + x^{12} + x^{10} + x^{8} + x^{4} + 1,\\
p_9(x) &= x^{90} + x^{88} + x^{86} + x^{82} + x^{78} + x^{74} + x^{66} + x^{64} + x^{62} + x^{52} + x^{46}\\
&\quad + x^{44} + x^{40} + x^{36} + x^{32} + x^{22} + x^{18} + x^{10} + x^{6} + x^{4},\\
p_{12}(x) &= x^{96} + x^{94} + x^{86} + x^{80} + x^{64} + x^{62} + x^{54} + x^{46} + x^{38} + x^{30} + x^{22}\\
&\quad + x^{14} + x^{6} + 1,
\end{aligned}
$$

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

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

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

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

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

$$
\begin{aligned}
p_0(x) &= x^{117} + x^{115} + x^{112} + x^{111} + x^{108} + x^{107} + x^{105} + x^{103} + x^{102} + x^{101}\\
&\quad + x^{100} + x^{99} + x^{98} + x^{97} + x^{96} + x^{95} + x^{93} + x^{90} + x^{89} + x^{88} + x^{86}\\
&\quad + x^{84} + x^{82} + x^{80} + x^{79} + x^{70} + x^{69} + x^{68} + x^{65} + x^{64} + x^{59} + x^{57}\\
&\quad + x^{54} + x^{51} + x^{48} + x^{47} + x^{43} + x^{36} + x^{33},\\
p_3(x) &= x^{78} + x^{72} + x^{70} + x^{68} + x^{64} + x^{62} + x^{58} + x^{56} + x^{52} + x^{44} + x^{42}\\
&\quad + x^{36} + x^{34} + x^{30} + x^{28} + x^{26} + x^{24} + x^{18},\\
p_6(x) &= x^{87} + x^{85} + x^{82} + x^{81} + x^{79} + x^{78} + x^{77} + x^{75} + x^{73} + x^{72} + x^{69}\\
&\quad + x^{67} + x^{64} + x^{60} + x^{59} + x^{58} + x^{57} + x^{55} + x^{53} + x^{52} + x^{49} + x^{47}\\
&\quad + x^{44} + x^{40} + x^{38} + x^{34} + x^{33} + x^{32} + x^{31} + x^{29} + x^{27} + x^{26} + x^{21}\\
&\quad + x^{17} + x^{16} + x^{14} + x^{13} + x^{12},\\
p_9(x) &= x^{96} + x^{92} + x^{90} + x^{88} + x^{86} + x^{84} + x^{80} + x^{78} + x^{74} + x^{70} + x^{64}
\end{aligned}
$$

$$
\begin{aligned}
&+x^{62}+x^{56}+x^{50}+x^{48}+x^{44}+x^{36}+x^{34}+x^{32}+x^{26}+x^{24}+x^{14}\\
&+x^{12}+x^{10}+x^{8}+x^{6},\\
p_{12}(x)={}&x^{105}+x^{103}+x^{101}+x^{100}+x^{97}+x^{95}+x^{93}+x^{92}+x^{89}+x^{87}+x^{84}\\
&+x^{83}+x^{81}+x^{80}+x^{73}+x^{71}+x^{69}+x^{68}+x^{65}+x^{63}+x^{61}+x^{60}\\
&+x^{53}+x^{51}+x^{48}+x^{47}+x^{45}+x^{44}+x^{37}+x^{35}+x^{32}+x^{31}+x^{29}\\
&+x^{28}+x^{21}+x^{19}+x^{16}+x^{15}+x^{13}+x^{12}+x^{9}+x^{7}+x^{4}+x^{3}+x+1,
\end{aligned}
$$

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

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

$$
\begin{aligned}
p_0(x)={}&x^{117}+x^{115}+x^{112}+x^{111}+x^{108}+x^{107}+x^{105}+x^{103}+x^{102}+x^{101}\\
&+x^{100}+x^{99}+x^{98}+x^{97}+x^{96}+x^{95}+x^{93}+x^{90}+x^{89}+x^{88}+x^{86}\\
&+x^{84}+x^{82}+x^{80}+x^{79}+x^{70}+x^{69}+x^{68}+x^{65}+x^{64}+x^{59}+x^{57}\\
&+x^{54}+x^{51}+x^{48}+x^{47}+x^{43}+x^{36}+x^{33},\\
p_3(x)={}&x^{78}+x^{72}+x^{70}+x^{68}+x^{64}+x^{62}+x^{58}+x^{56}+x^{52}+x^{44}+x^{42}\\
&+x^{36}+x^{34}+x^{30}+x^{28}+x^{26}+x^{24}+x^{18},\\
p_6(x)={}&x^{87}+x^{85}+x^{82}+x^{81}+x^{79}+x^{78}+x^{77}+x^{75}+x^{73}+x^{72}+x^{69}\\
&+x^{67}+x^{64}+x^{60}+x^{59}+x^{58}+x^{57}+x^{55}+x^{53}+x^{52}+x^{49}+x^{47}\\
&+x^{44}+x^{40}+x^{38}+x^{34}+x^{33}+x^{32}+x^{31}+x^{29}+x^{27}+x^{26}+x^{21}\\
&+x^{17}+x^{16}+x^{14}+x^{13}+x^{12},\\
p_9(x)={}&x^{96}+x^{92}+x^{90}+x^{88}+x^{86}+x^{84}+x^{80}+x^{78}+x^{74}+x^{70}+x^{64}\\
&+x^{62}+x^{56}+x^{50}+x^{48}+x^{44}+x^{36}+x^{34}+x^{32}+x^{26}+x^{24}+x^{14}\\
&+x^{12}+x^{10}+x^{8}+x^{6},\\
p_{12}(x)={}&x^{105}+x^{103}+x^{101}+x^{100}+x^{97}+x^{95}+x^{93}+x^{92}+x^{89}+x^{87}+x^{84}\\
&+x^{83}+x^{81}+x^{80}+x^{73}+x^{71}+x^{69}+x^{68}+x^{65}+x^{63}+x^{61}+x^{60}\\
&+x^{53}+x^{51}+x^{48}+x^{47}+x^{45}+x^{44}+x^{37}+x^{35}+x^{32}+x^{31}+x^{29}\\
&+x^{28}+x^{21}+x^{19}+x^{16}+x^{15}+x^{13}+x^{12}+x^{9}+x^{7}+x^{4}+x^{3}+x+1,
\end{aligned}
$$

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

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

$$
\begin{aligned}
p_0(x)={}&x^{126}+x^{124}+x^{122}+x^{120}+x^{116}+x^{112}+x^{108}+x^{106}+x^{104}+x^{102}\\
&+x^{100}+x^{96}+x^{94}+x^{90}+x^{84}+x^{76}+x^{70}+x^{68}+x^{66}+x^{64}+x^{62}\\
&+x^{60}+x^{58}+x^{56}+x^{52}+x^{50}+x^{48}+x^{46}+x^{42},\\
p_3(x)={}&x^{112}+x^{110}+x^{92}+x^{90}+x^{88}+x^{86}+x^{84}+x^{76}+x^{74}+x^{70}+x^{68}\\
&+x^{64}+x^{62}+x^{56}+x^{46}+x^{38}+x^{30}+x^{20}+x^{18}+x^{12},\\
p_6(x)={}&x^{118}+x^{116}+x^{112}+x^{108}+x^{106}+x^{98}+x^{96}+x^{94}+x^{92}+x^{90}+x^{88}\\
&+x^{82}+x^{80}+x^{78}+x^{76}+x^{72}+x^{70}+x^{68}+x^{66}+x^{60}+x^{56}+x^{52}\\
&+x^{50}+x^{48}+x^{46}+x^{44}+x^{30}+x^{26}+x^{24}+x^{22}+x^{20}+x^{18}+x^{16}
\end{aligned}
$$

$$
\begin{aligned}
&+ x^{14} + x^{10} + x^4 + x^2 + 1,\\
p_9(x) &= x^{108} + x^{106} + x^{104} + x^{94} + x^{90} + x^{88} + x^{84} + x^{80} + x^{72} + x^{70} + x^{66}\\
&+ x^{62} + x^{60} + x^{58} + x^{56} + x^{54} + x^{52} + x^{50} + x^{44} + x^{38} + x^{34} + x^{32}\\
&+ x^{28} + x^{24} + x^{20} + x^{18} + x^{14} + x^{12} + x^8 + x^4,\\
p_{12}(x) &= x^{114} + x^{112} + x^{106} + x^{104} + x^{74} + x^{72} + x^{66} + x^{64} + x^{58} + x^{56} + x^{42}\\
&+ x^{40} + x^{26} + x^{24} + x^{18} + x^{16} + x^2 + 1,
\end{aligned}
$$

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

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

$$
\begin{aligned}
p_0(x) &= x^{117} + x^{115} + x^{112} + x^{111} + x^{109} + x^{108} + x^{107} + x^{103} + x^{102} + x^{101}\\
&+ x^{100} + x^{99} + x^{97} + x^{94} + x^{92} + x^{91} + x^{90} + x^{88} + x^{87} + x^{86} + x^{84}\\
&+ x^{83} + x^{80} + x^{78} + x^{77} + x^{76} + x^{74} + x^{73} + x^{71} + x^{69} + x^{65} + x^{62}\\
&+ x^{61} + x^{60} + x^{59} + x^{56} + x^{55} + x^{53} + x^{52} + x^{51} + x^{48} + x^{47} + x^{44}\\
&+ x^{41} + x^{40} + x^{39} + x^{37} + x^{35} + x^{33} + x^{28} + x^{27} + x^{25} + x^{24},\\
p_3(x) &= x^{97} + x^{95} + x^{92} + x^{91} + x^{89} + x^{88} + x^{87} + x^{83} + x^{82} + x^{81} + x^{80}\\
&+ x^{79} + x^{77} + x^{74} + x^{73} + x^{72} + x^{70} + x^{66} + x^{63} + x^{56} + x^{54} + x^{53}\\
&+ x^{52} + x^{51} + x^{46} + x^{43} + x^{39} + x^{38} + x^{34} + x^{32} + x^{31} + x^{30} + x^{29}\\
&+ x^{28} + x^{27} + x^{25} + x^{24} + x^{23} + x^{21} + x^{19} + x^{17} + x^{16},\\
p_6(x) &= x^{109} + x^{107} + x^{105} + x^{104} + x^{101} + x^{96} + x^{94} + x^{87} + x^{85} + x^{84} + x^{83}\\
&+ x^{80} + x^{79} + x^{78} + x^{77} + x^{75} + x^{74} + x^{70} + x^{69} + x^{68} + x^{67} + x^{65}\\
&+ x^{63} + x^{61} + x^{59} + x^{58} + x^{57} + x^{55} + x^{54} + x^{51} + x^{50} + x^{49} + x^{48}\\
&+ x^{47} + x^{46} + x^{44} + x^{42} + x^{41} + x^{40} + x^{39} + x^{38} + x^{35} + x^{34} + x^{32}\\
&+ x^{31} + x^{30} + x^{28} + x^{27} + x^{25} + x^{24} + x^{22} + x^{21} + x^{20} + x^{17} + x^{16}\\
&+ x^{15} + x^{13} + x^{11} + x^8 + x^7 + x^4 + x^3 + x + 1,\\
p_9(x) &= x^{93} + x^{91} + x^{89} + x^{88} + x^{61} + x^{59} + x^{57} + x^{56} + x^{45} + x^{43} + x^{41}\\
&+ x^{40} + x^{29} + x^{27} + x^{25} + x^{24} + x^{13} + x^{11} + x^9 + x^8,\\
p_{12}(x) &= x^{105} + x^{103} + x^{101} + x^{100} + x^{97} + x^{95} + x^{92} + x^{91} + x^{88} + x^{87} + x^{84}\\
&+ x^{83} + x^{81} + x^{80} + x^{73} + x^{71} + x^{69} + x^{68} + x^{65} + x^{63} + x^{60} + x^{59}\\
&+ x^{57} + x^{56} + x^{53} + x^{51} + x^{48} + x^{47} + x^{44} + x^{43} + x^{41} + x^{40} + x^{37}\\
&+ x^{35} + x^{32} + x^{31} + x^{28} + x^{27} + x^{25} + x^{24} + x^{21} + x^{19} + x^{16} + x^{15}\\
&+ x^{12} + x^{11} + x^8 + x^7 + x^4 + x^3 + x + 1,
\end{aligned}
$$

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

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

$$
\begin{aligned}
p_0(x) &= x^{116} + x^{104} + x^{103} + x^{100} + x^{99} + x^{98} + x^{97} + x^{95} + x^{92} + x^{91} + x^{88}\\
&+ x^{86} + x^{85} + x^{84} + x^{78} + x^{73} + x^{72} + x^{70} + x^{69} + x^{67} + x^{66} + x^{65}\\
&+ x^{64} + x^{63} + x^{58} + x^{55} + x^{54} + x^{51} + x^{49} + x^{48} + x^{47} + x^{46} + x^{38}
\end{aligned}
$$

$$
\begin{aligned}
&+ x^{36} + x^{33},\\
p_3(x) &= x^{77} + x^{75} + x^{73} + x^{72} + x^{67} + x^{63} + x^{62} + x^{61} + x^{60} + x^{58} + x^{57}\\
&+ x^{56} + x^{53} + x^{49} + x^{48} + x^{47} + x^{46} + x^{45} + x^{44} + x^{43} + x^{42} + x^{41}\\
&+ x^{40} + x^{39} + x^{38} + x^{37} + x^{36} + x^{35} + x^{34} + x^{33} + x^{32} + x^{31} + x^{30}\\
&+ x^{28} + x^{26} + x^{23} + x^{22} + x^{20} + x^{19} + x^{18},\\
p_6(x) &= x^{86} + x^{78} + x^{76} + x^{72} + x^{68} + x^{62} + x^{60} + x^{58} + x^{56} + x^{52} + x^{48}\\
&+ x^{42} + x^{40} + x^{36} + x^{34} + x^{32} + x^{30} + x^{26} + x^{20} + x^{18} + x^{14} + x^{12},\\
p_9(x) &= x^{95} + x^{93} + x^{90} + x^{89} + x^{87} + x^{86} + x^{63} + x^{61} + x^{58} + x^{57} + x^{55}\\
&+ x^{54} + x^{47} + x^{45} + x^{42} + x^{41} + x^{39} + x^{38} + x^{31} + x^{29} + x^{26} + x^{25}\\
&+ x^{23} + x^{22} + x^{15} + x^{13} + x^{10} + x^{9} + x^{7} + x^{6},\\
p_{12}(x) &= x^{104} + x^{100} + x^{96} + x^{80} + x^{72} + x^{68} + x^{64} + x^{56} + x^{52} + x^{40} + x^{36}\\
&+ x^{24} + x^{20} + 1,
\end{aligned}
$$

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

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

$$
\begin{aligned}
p_0(x) &= x^{128} + x^{116} + x^{115} + x^{111} + x^{110} + x^{109} + x^{108} + x^{107} + x^{106} + x^{103}\\
&+ x^{99} + x^{98} + x^{97} + x^{93} + x^{91} + x^{90} + x^{89} + x^{86} + x^{81} + x^{80} + x^{79}\\
&+ x^{77} + x^{76} + x^{75} + x^{72} + x^{71} + x^{69} + x^{65} + x^{64} + x^{63} + x^{62} + x^{60}\\
&+ x^{59} + x^{57} + x^{56} + x^{54} + x^{53} + x^{48} + x^{45} + x^{44} + x^{43} + x^{42} + x^{38}\\
&+ x^{37} + x^{36} + x^{35} + x^{34} + x^{33},\\
p_3(x) &= x^{89} + x^{87} + x^{85} + x^{84} + x^{79} + x^{75} + x^{74} + x^{72} + x^{71} + x^{70} + x^{69}\\
&+ x^{67} + x^{65} + x^{64} + x^{61} + x^{56} + x^{54} + x^{53} + x^{50} + x^{46} + x^{45} + x^{44}\\
&+ x^{43} + x^{41} + x^{39} + x^{38} + x^{35} + x^{33} + x^{30} + x^{26} + x^{24} + x^{20} + x^{19}\\
&+ x^{18},\\
p_6(x) &= x^{98} + x^{90} + x^{88} + x^{84} + x^{82} + x^{80} + x^{78} + x^{74} + x^{70} + x^{68} + x^{58}\\
&+ x^{54} + x^{48} + x^{46} + x^{42} + x^{40} + x^{34} + x^{30} + x^{24} + x^{16} + x^{14} + x^{12},\\
p_9(x) &= x^{107} + x^{105} + x^{102} + x^{101} + x^{99} + x^{98} + x^{91} + x^{89} + x^{87} + x^{86} + x^{75}\\
&+ x^{73} + x^{70} + x^{69} + x^{67} + x^{66} + x^{55} + x^{53} + x^{51} + x^{50} + x^{39} + x^{37}\\
&+ x^{35} + x^{34} + x^{23} + x^{21} + x^{19} + x^{18} + x^{11} + x^{9} + x^{7} + x^{6},\\
p_{12}(x) &= x^{116} + x^{112} + x^{108} + x^{100} + x^{88} + x^{76} + x^{64} + x^{60} + x^{56} + x^{52} + x^{44}\\
&+ x^{40} + x^{36} + x^{28} + x^{24} + x^{16} + x^{8} + x^{4} + 1,
\end{aligned}
$$

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

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

$$
\begin{aligned}
p_0(x) &= x^{117} + x^{115} + x^{112} + x^{111} + x^{109} + x^{108} + x^{107} + x^{103} + x^{102} + x^{100}\\
&+ x^{96} + x^{95} + x^{94} + x^{92} + x^{87} + x^{85} + x^{84} + x^{82} + x^{80} + x^{79} + x^{78}\\
&+ x^{76} + x^{75} + x^{73} + x^{71} + x^{69} + x^{67} + x^{66} + x^{64} + x^{63} + x^{60} + x^{56}
\end{aligned}
$$

$$
\begin{aligned}
&+ x^{53} + x^{52} + x^{51} + x^{50} + x^{47} + x^{46} + x^{42},\\
p_3(x) &= x^{97} + x^{95} + x^{92} + x^{91} + x^{89} + x^{88} + x^{87} + x^{83} + x^{82} + x^{80} + x^{76}\\
&+ x^{75} + x^{74} + x^{73} + x^{72} + x^{71} + x^{68} + x^{63} + x^{62} + x^{60} + x^{52} + x^{50}\\
&+ x^{47} + x^{46} + x^{43} + x^{42} + x^{41} + x^{40} + x^{38} + x^{31} + x^{30} + x^{26} + x^{25}\\
&+ x^{22},\\
p_6(x) &= x^{109} + x^{107} + x^{105} + x^{104} + x^{101} + x^{96} + x^{94} + x^{93} + x^{91} + x^{89} + x^{88}\\
&+ x^{84} + x^{83} + x^{82} + x^{80} + x^{79} + x^{77} + x^{76} + x^{74} + x^{72} + x^{71} + x^{70}\\
&+ x^{67} + x^{63} + x^{61} + x^{60} + x^{54} + x^{52} + x^{50} + x^{47} + x^{46} + x^{44} + x^{43}\\
&+ x^{42} + x^{41} + x^{40} + x^{37} + x^{36} + x^{35} + x^{33} + x^{30} + x^{28} + x^{27} + x^{26}\\
&+ x^{25} + x^{23} + x^{22} + x^{19} + x^{17} + x^{16} + x^{15} + x^{14} + x^{13} + x^{12} + x^{9}\\
&+ x^{7} + x^{4} + x^{3} + x + 1,\\
p_9(x) &= x^{93} + x^{91} + x^{89} + x^{88} + x^{61} + x^{59} + x^{57} + x^{56} + x^{45} + x^{43} + x^{41}\\
&+ x^{40} + x^{29} + x^{27} + x^{25} + x^{24} + x^{13} + x^{11} + x^{9} + x^{8},\\
p_{12}(x) &= x^{105} + x^{103} + x^{101} + x^{100} + x^{97} + x^{95} + x^{92} + x^{91} + x^{88} + x^{87} + x^{84}\\
&+ x^{83} + x^{81} + x^{80} + x^{73} + x^{71} + x^{69} + x^{68} + x^{65} + x^{63} + x^{60} + x^{59}\\
&+ x^{57} + x^{56} + x^{53} + x^{51} + x^{48} + x^{47} + x^{44} + x^{43} + x^{41} + x^{40} + x^{37}\\
&+ x^{35} + x^{32} + x^{31} + x^{28} + x^{27} + x^{25} + x^{24} + x^{21} + x^{19} + x^{16} + x^{15}\\
&+ x^{12} + x^{11} + x^{8} + x^{7} + x^{4} + x^{3} + x + 1,
\end{aligned}
$$

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

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

$$
\begin{aligned}
p_0(x) &= x^{117} + x^{115} + x^{112} + x^{111} + x^{109} + x^{108} + x^{107} + x^{103} + x^{102} + x^{101}\\
&+ x^{100} + x^{99} + x^{97} + x^{94} + x^{92} + x^{91} + x^{90} + x^{88} + x^{87} + x^{86} + x^{84}\\
&+ x^{83} + x^{80} + x^{78} + x^{77} + x^{76} + x^{74} + x^{73} + x^{71} + x^{69} + x^{65} + x^{62}\\
&+ x^{61} + x^{60} + x^{59} + x^{56} + x^{55} + x^{53} + x^{52} + x^{51} + x^{48} + x^{47} + x^{44}\\
&+ x^{41} + x^{40} + x^{39} + x^{37} + x^{35} + x^{33} + x^{28} + x^{27} + x^{25} + x^{24},\\
p_3(x) &= x^{97} + x^{95} + x^{92} + x^{91} + x^{89} + x^{88} + x^{87} + x^{83} + x^{82} + x^{81} + x^{80}\\
&+ x^{79} + x^{77} + x^{74} + x^{73} + x^{72} + x^{70} + x^{66} + x^{63} + x^{56} + x^{54} + x^{53}\\
&+ x^{52} + x^{51} + x^{46} + x^{43} + x^{39} + x^{38} + x^{34} + x^{32} + x^{31} + x^{30} + x^{29}\\
&+ x^{28} + x^{27} + x^{25} + x^{24} + x^{23} + x^{21} + x^{19} + x^{17} + x^{16},\\
p_6(x) &= x^{109} + x^{107} + x^{105} + x^{104} + x^{101} + x^{96} + x^{94} + x^{87} + x^{85} + x^{84} + x^{83}\\
&+ x^{80} + x^{79} + x^{78} + x^{77} + x^{75} + x^{74} + x^{70} + x^{69} + x^{68} + x^{67} + x^{65}\\
&+ x^{63} + x^{61} + x^{59} + x^{58} + x^{57} + x^{55} + x^{54} + x^{51} + x^{50} + x^{49} + x^{48}\\
&+ x^{47} + x^{46} + x^{44} + x^{42} + x^{41} + x^{40} + x^{39} + x^{38} + x^{35} + x^{34} + x^{32}\\
&+ x^{31} + x^{30} + x^{28} + x^{27} + x^{25} + x^{24} + x^{22} + x^{21} + x^{20} + x^{17} + x^{16}\\
&+ x^{15} + x^{13} + x^{11} + x^{8} + x^{7} + x^{4} + x^{3} + x + 1,
\end{aligned}
$$

$$\begin{aligned}
p_9(x) &= x^{93} + x^{91} + x^{89} + x^{88} + x^{61} + x^{59} + x^{57} + x^{56} + x^{45} + x^{43} + x^{41} \\
&\quad + x^{40} + x^{29} + x^{27} + x^{25} + x^{24} + x^{13} + x^{11} + x^9 + x^8, \\
p_{12}(x) &= x^{105} + x^{103} + x^{101} + x^{100} + x^{97} + x^{95} + x^{92} + x^{91} + x^{88} + x^{87} + x^{84} \\
&\quad + x^{83} + x^{81} + x^{80} + x^{73} + x^{71} + x^{69} + x^{68} + x^{65} + x^{63} + x^{60} + x^{59} \\
&\quad + x^{57} + x^{56} + x^{53} + x^{51} + x^{48} + x^{47} + x^{44} + x^{43} + x^{41} + x^{40} + x^{37} \\
&\quad + x^{35} + x^{32} + x^{31} + x^{28} + x^{27} + x^{25} + x^{24} + x^{21} + x^{19} + x^{16} + x^{15} \\
&\quad + x^{12} + x^{11} + x^8 + x^7 + x^4 + x^3 + x + 1,
\end{aligned}$$

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

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

$$\begin{aligned}
p_0(x) &= x^{128} + x^{116} + x^{115} + x^{111} + x^{110} + x^{109} + x^{108} + x^{107} + x^{106} + x^{103} \\
&\quad + x^{99} + x^{98} + x^{97} + x^{93} + x^{91} + x^{90} + x^{89} + x^{86} + x^{81} + x^{80} + x^{79} \\
&\quad + x^{77} + x^{76} + x^{75} + x^{72} + x^{71} + x^{69} + x^{65} + x^{64} + x^{63} + x^{62} + x^{60} \\
&\quad + x^{59} + x^{57} + x^{56} + x^{54} + x^{53} + x^{48} + x^{45} + x^{44} + x^{43} + x^{42} + x^{38} \\
&\quad + x^{37} + x^{36} + x^{35} + x^{34} + x^{33}, \\
p_3(x) &= x^{89} + x^{87} + x^{85} + x^{84} + x^{79} + x^{75} + x^{74} + x^{72} + x^{71} + x^{70} + x^{69} \\
&\quad + x^{67} + x^{65} + x^{64} + x^{61} + x^{56} + x^{54} + x^{53} + x^{50} + x^{46} + x^{45} + x^{44} \\
&\quad + x^{43} + x^{41} + x^{39} + x^{38} + x^{35} + x^{33} + x^{30} + x^{26} + x^{24} + x^{20} + x^{19} \\
&\quad + x^{18}, \\
p_6(x) &= x^{98} + x^{90} + x^{88} + x^{84} + x^{82} + x^{80} + x^{78} + x^{74} + x^{70} + x^{68} + x^{58} \\
&\quad + x^{54} + x^{48} + x^{46} + x^{42} + x^{40} + x^{34} + x^{30} + x^{24} + x^{16} + x^{14} + x^{12}, \\
p_9(x) &= x^{107} + x^{105} + x^{102} + x^{101} + x^{99} + x^{98} + x^{91} + x^{89} + x^{87} + x^{86} + x^{75} \\
&\quad + x^{73} + x^{70} + x^{69} + x^{67} + x^{66} + x^{55} + x^{53} + x^{51} + x^{50} + x^{39} + x^{37} \\
&\quad + x^{35} + x^{34} + x^{23} + x^{21} + x^{19} + x^{18} + x^{11} + x^9 + x^7 + x^6, \\
p_{12}(x) &= x^{116} + x^{112} + x^{108} + x^{100} + x^{88} + x^{76} + x^{64} + x^{60} + x^{56} + x^{52} + x^{44} \\
&\quad + x^{40} + x^{36} + x^{28} + x^{24} + x^{16} + x^8 + x^4 + 1,
\end{aligned}$$

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

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

$$\begin{aligned}
p_0(x) &= x^{116} + x^{104} + x^{103} + x^{100} + x^{99} + x^{98} + x^{97} + x^{95} + x^{92} + x^{91} + x^{88} \\
&\quad + x^{86} + x^{85} + x^{84} + x^{78} + x^{73} + x^{72} + x^{70} + x^{69} + x^{67} + x^{66} + x^{65} \\
&\quad + x^{64} + x^{63} + x^{58} + x^{55} + x^{54} + x^{51} + x^{49} + x^{48} + x^{47} + x^{46} + x^{38} \\
&\quad + x^{36} + x^{33}, \\
p_3(x) &= x^{77} + x^{75} + x^{73} + x^{72} + x^{67} + x^{63} + x^{62} + x^{61} + x^{60} + x^{58} + x^{57} \\
&\quad + x^{56} + x^{53} + x^{49} + x^{48} + x^{47} + x^{46} + x^{45} + x^{44} + x^{43} + x^{42} + x^{41} \\
&\quad + x^{40} + x^{39} + x^{38} + x^{37} + x^{36} + x^{35} + x^{34} + x^{33} + x^{32} + x^{31} + x^{30} \\
&\quad + x^{28} + x^{26} + x^{23} + x^{22} + x^{20} + x^{19} + x^{18},
\end{aligned}$$

$$\begin{aligned}
p_6(x) &= x^{86} + x^{78} + x^{76} + x^{72} + x^{68} + x^{62} + x^{60} + x^{58} + x^{56} + x^{52} + x^{48}\\
&\quad + x^{42} + x^{40} + x^{36} + x^{34} + x^{32} + x^{30} + x^{26} + x^{20} + x^{18} + x^{14} + x^{12},\\
p_9(x) &= x^{95} + x^{93} + x^{90} + x^{89} + x^{87} + x^{86} + x^{63} + x^{61} + x^{58} + x^{57} + x^{55}\\
&\quad + x^{54} + x^{47} + x^{45} + x^{42} + x^{41} + x^{39} + x^{38} + x^{31} + x^{29} + x^{26} + x^{25}\\
&\quad + x^{23} + x^{22} + x^{15} + x^{13} + x^{10} + x^{9} + x^{7} + x^{6},\\
p_{12}(x) &= x^{104} + x^{100} + x^{96} + x^{80} + x^{72} + x^{68} + x^{64} + x^{56} + x^{52} + x^{40} + x^{36}\\
&\quad + x^{24} + x^{20} + 1,
\end{aligned}$$

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

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

$$\begin{aligned}
p_0(x) &= x^{117} + x^{115} + x^{112} + x^{111} + x^{109} + x^{108} + x^{107} + x^{103} + x^{102} + x^{100}\\
&\quad + x^{96} + x^{95} + x^{94} + x^{92} + x^{87} + x^{85} + x^{84} + x^{82} + x^{80} + x^{79} + x^{78}\\
&\quad + x^{76} + x^{75} + x^{73} + x^{71} + x^{69} + x^{67} + x^{66} + x^{64} + x^{63} + x^{60} + x^{56}\\
&\quad + x^{53} + x^{52} + x^{51} + x^{50} + x^{47} + x^{46} + x^{42},\\
p_3(x) &= x^{97} + x^{95} + x^{92} + x^{91} + x^{89} + x^{88} + x^{87} + x^{83} + x^{82} + x^{80} + x^{76}\\
&\quad + x^{75} + x^{74} + x^{73} + x^{72} + x^{71} + x^{68} + x^{63} + x^{62} + x^{60} + x^{52} + x^{50}\\
&\quad + x^{47} + x^{46} + x^{43} + x^{42} + x^{41} + x^{40} + x^{38} + x^{31} + x^{30} + x^{26} + x^{25}\\
&\quad + x^{22},\\
p_6(x) &= x^{109} + x^{107} + x^{105} + x^{104} + x^{101} + x^{96} + x^{94} + x^{93} + x^{91} + x^{89} + x^{88}\\
&\quad + x^{84} + x^{83} + x^{82} + x^{80} + x^{79} + x^{77} + x^{76} + x^{74} + x^{72} + x^{71} + x^{70}\\
&\quad + x^{67} + x^{63} + x^{61} + x^{60} + x^{54} + x^{52} + x^{50} + x^{47} + x^{46} + x^{44} + x^{43}\\
&\quad + x^{42} + x^{41} + x^{40} + x^{37} + x^{36} + x^{35} + x^{33} + x^{30} + x^{28} + x^{27} + x^{26}\\
&\quad + x^{25} + x^{23} + x^{22} + x^{19} + x^{17} + x^{16} + x^{15} + x^{14} + x^{13} + x^{12} + x^{9}\\
&\quad + x^{7} + x^{4} + x^{3} + x + 1,\\
p_9(x) &= x^{93} + x^{91} + x^{89} + x^{88} + x^{61} + x^{59} + x^{57} + x^{56} + x^{45} + x^{43} + x^{41}\\
&\quad + x^{40} + x^{29} + x^{27} + x^{25} + x^{24} + x^{13} + x^{11} + x^{9} + x^{8},\\
p_{12}(x) &= x^{105} + x^{103} + x^{101} + x^{100} + x^{97} + x^{95} + x^{92} + x^{91} + x^{88} + x^{87} + x^{84}\\
&\quad + x^{83} + x^{81} + x^{80} + x^{73} + x^{71} + x^{69} + x^{68} + x^{65} + x^{63} + x^{60} + x^{59}\\
&\quad + x^{57} + x^{56} + x^{53} + x^{51} + x^{48} + x^{47} + x^{44} + x^{43} + x^{41} + x^{40} + x^{37}\\
&\quad + x^{35} + x^{32} + x^{31} + x^{28} + x^{27} + x^{25} + x^{24} + x^{21} + x^{19} + x^{16} + x^{15}\\
&\quad + x^{12} + x^{11} + x^{8} + x^{7} + x^{4} + x^{3} + x + 1,
\end{aligned}$$

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

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

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

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

0	[1, 2]	977	[1602, 1603]	1954	[2584, 2641]	2931	[3281, 1416]
1	[3, 4]	978	[1604, 1605]	1955	[376, 1294]	2932	[3282, 404]
2	[5, 6]	979	[138, 1606]	1956	[2642, 1020]	2933	[2671, 1116]
3	[7, 8]	980	[1607, 1608]	1957	[2643, 2341]	2934	[3283, 2357]
4	[9, 10]	981	[884, 828]	1958	[1449, 1151]	2935	[2317, 354]
5	[11, 12]	982	[1609, 1610]	1959	[2644, 2348]	2936	[3284, 1273]
6	[13, 14]	983	[1611, 1612]	1960	[293, 1007]	2937	[263, 1093]
7	[15, 16]	984	[1613, 1614]	1961	[2645, 448]	2938	[1455, 1134]
8	[17, 18]	985	[704, 1615]	1962	[2646, 324]	2939	[3285, 2365]
9	[19, 20]	986	[1616, 872]	1963	[2647, 2525]	2940	[472, 2287]
10	[21, 22]	987	[1617, 1618]	1964	[2648, 426]	2941	[3286, 112]
11	[23, 24]	988	[1619, 874]	1965	[372, 2581]	2942	[1071, 29]
12	[25, 26]	989	[1620, 1621]	1966	[2649, 2616]	2943	[3287, 2505]
13	[27, 28]	990	[1622, 201]	1967	[2650, 2559]	2944	[3288, 2541]
14	[29, 30]	991	[1623, 1624]	1968	[2356, 2509]	2945	[3289, 2413]
15	[31, 32]	992	[1625, 1626]	1969	[2651, 2546]	2946	[3290, 3231]
16	[33, 34]	993	[1627, 1628]	1970	[2346, 2432]	2947	[1428, 1342]
17	[35, 36]	994	[1629, 1630]	1971	[359, 2652]	2948	[1003, 261]
18	[37, 38]	995	[1631, 1632]	1972	[1377, 350]	2949	[3291, 1023]
19	[39, 40]	996	[1633, 1634]	1973	[1016, 2435]	2950	[2624, 966]
20	[41, 42]	997	[1635, 753]	1974	[925, 2653]	2951	[3292, 2673]
21	[43, 44]	998	[1636, 1637]	1975	[2654, 2655]	2952	[3293, 1207]
22	[45, 46]	999	[1638, 1639]	1976	[2483, 2618]	2953	[2561, 419]
23	[47, 48]	1000	[1640, 1641]	1977	[2656, 2515]	2954	[3294, 1233]
24	[49, 50]	1001	[1642, 1643]	1978	[2595, 1364]	2955	[3295, 1052]
25	[51, 52]	1002	[1644, 126]	1979	[1284, 1439]	2956	[3296, 2410]
26	[53, 54]	1003	[866, 135]	1980	[1285, 1339]	2957	[3221, 1408]
27	[55, 56]	1004	[1520, 1645]	1981	[2582, 2657]	2958	[3297, 347]
28	[57, 58]	1005	[1646, 1647]	1982	[2516, 2647]	2959	[2246, 1239]
29	[59, 60]	1006	[1648, 1649]	1983	[101, 2481]	2960	[3298, 2425]
30	[61, 62]	1007	[1650, 1651]	1984	[1381, 1216]	2961	[3231, 1102]
31	[63, 64]	1008	[834, 502]	1985	[2658, 1261]	2962	[941, 1418]
32	[65, 66]	1009	[1652, 1653]	1986	[1197, 25]	2963	[3299, 362]
33	[67, 68]	1010	[1654, 479]	1987	[2332, 83]	2964	[260, 2491]
34	[69, 70]	1011	[1655, 1656]	1988	[2659, 81]	2965	[3300, 2757]
35	[71, 72]	1012	[1657, 1658]	1989	[2457, 98]	2966	[3301, 2480]
36	[73, 74]	1013	[1659, 1660]	1990	[1181, 2476]	2967	[3302, 1302]
37	[75, 76]	1014	[1661, 1662]	1991	[2660, 1010]	2968	[3303, 2319]
38	[77, 78]	1015	[1663, 562]	1992	[2661, 1066]	2969	[3304, 2596]
39	[79, 80]	1016	[1664, 1665]	1993	[2662, 1061]	2970	[3305, 467]
40	[81, 82]	1017	[1666, 1667]	1994	[932, 2322]	2971	[3306, 2587]
41	[83, 84]	1018	[1668, 1669]	1995	[1046, 2663]	2972	[1441, 1461]
42	[85, 86]	1019	[1670, 45]	1996	[2664, 2665]	2973	[462, 2692]

43	[87, 88]	1020	[1671, 1672]	1997	[2666, 2610]	2974	[250, 1241]
44	[89, 90]	1021	[1673, 604]	1998	[448, 932]	2975	[3307, 2645]
45	[91, 92]	1022	[883, 1674]	1999	[1134, 2667]	2976	[3308, 1206]
46	[93, 94]	1023	[1675, 1676]	2000	[66, 362]	2977	[299, 103]
47	[95, 74]	1024	[1677, 1678]	2001	[2612, 2456]	2978	[3309, 24]
48	[96, 97]	1025	[196, 1679]	2002	[934, 1265]	2979	[899, 1413]
49	[98, 99]	1026	[1680, 1681]	2003	[2668, 268]	2980	[3310, 934]
50	[100, 101]	1027	[1682, 214]	2004	[2669, 994]	2981	[2237, 3311]
51	[102, 103]	1028	[1683, 1684]	2005	[1291, 2524]	2982	[3312, 261]
52	[104, 105]	1029	[1685, 1686]	2006	[2480, 2339]	2983	[3313, 1116]
53	[106, 107]	1030	[1687, 883]	2007	[2670, 2667]	2984	[3314, 272]
54	[108, 109]	1031	[1688, 1689]	2008	[2295, 1085]	2985	[3315, 285]
55	[110, 91]	1032	[1690, 1691]	2009	[297, 2671]	2986	[3316, 352]
56	[111, 112]	1033	[807, 1692]	2010	[2672, 1034]	2987	[344, 2382]
57	[113, 114]	1034	[1693, 1480]	2011	[2304, 2497]	2988	[3317, 2593]
58	[115, 116]	1035	[840, 792]	2012	[2673, 1043]	2989	[361, 253]
59	[117, 118]	1036	[1694, 1695]	2013	[443, 121]	2990	[3318, 1168]
60	[119, 120]	1037	[1696, 1697]	2014	[2674, 1132]	2991	[2539, 2677]
61	[121, 122]	1038	[1698, 1490]	2015	[2675, 2406]	2992	[3319, 2323]
62	[123, 124]	1039	[1699, 1700]	2016	[2676, 2677]	2993	[3320, 2516]
63	[125, 126]	1040	[551, 1639]	2017	[2641, 2674]	2994	[2549, 114]
64	[127, 128]	1041	[1701, 852]	2018	[1386, 2678]	2995	[3321, 2561]
65	[129, 130]	1042	[1702, 1703]	2019	[418, 1443]	2996	[3322, 2358]
66	[131, 132]	1043	[1704, 1705]	2020	[2548, 1225]	2997	[3323, 1412]
67	[133, 134]	1044	[1706, 1707]	2021	[2679, 2331]	2998	[3324, 968]
68	[135, 136]	1045	[1708, 613]	2022	[2680, 1425]	2999	[3325, 328]
69	[137, 138]	1046	[42, 1709]	2023	[1089, 2303]	3000	[3326, 351]
70	[139, 140]	1047	[1710, 1711]	2024	[433, 1242]	3001	[3327, 284]
71	[141, 142]	1048	[1712, 1713]	2025	[1213, 1060]	3002	[3328, 2759]
72	[143, 144]	1049	[1714, 889]	2026	[2681, 1200]	3003	[1148, 2288]
73	[145, 146]	1050	[1715, 8]	2027	[256, 1245]	3004	[3329, 1411]
74	[147, 148]	1051	[848, 1716]	2028	[2682, 1388]	3005	[3330, 935]
75	[149, 150]	1052	[1717, 1718]	2029	[2593, 920]	3006	[3331, 1100]
76	[151, 152]	1053	[10, 1634]	2030	[2683, 440]	3007	[2653, 2622]
77	[153, 154]	1054	[1719, 1642]	2031	[271, 2494]	3008	[1103, 366]
78	[155, 156]	1055	[625, 866]	2032	[2684, 413]	3009	[3332, 2432]
79	[157, 158]	1056	[1720, 1721]	2033	[2232, 2547]	3010	[3333, 332]
80	[159, 160]	1057	[1722, 1723]	2034	[1069, 1017]	3011	[3334, 1181]
81	[161, 162]	1058	[687, 1724]	2035	[422, 2261]	3012	[3335, 436]
82	[163, 164]	1059	[1725, 1499]	2036	[2685, 1060]	3013	[2331, 989]
83	[165, 166]	1060	[1726, 1727]	2037	[2686, 2687]	3014	[3336, 2451]
84	[167, 168]	1061	[766, 1728]	2038	[2667, 2415]	3015	[3337, 1364]
85	[169, 170]	1062	[1729, 1730]	2039	[2688, 1304]	3016	[3338, 119]
86	[171, 172]	1063	[1731, 1732]	2040	[2689, 942]	3017	[3339, 2542]

87	[173, 174]	1064	[1733, 1556]	2041	[1355, 467]	3018	[3340, 408]
88	[175, 176]	1065	[202, 1734]	2042	[2690, 437]	3019	[3341, 1376]
89	[177, 178]	1066	[1735, 1736]	2043	[2344, 2333]	3020	[3342, 96]
90	[179, 180]	1067	[1737, 486]	2044	[2691, 2349]	3021	[3343, 1366]
91	[181, 182]	1068	[1738, 1666]	2045	[2692, 2378]	3022	[3344, 2428]
92	[183, 184]	1069	[1739, 1668]	2046	[2693, 1167]	3023	[2240, 915]
93	[185, 186]	1070	[511, 1740]	2047	[78, 1317]	3024	[2364, 897]
94	[187, 188]	1071	[1741, 61]	2048	[906, 2649]	3025	[3345, 3232]
95	[189, 190]	1072	[1742, 1743]	2049	[2694, 2306]	3026	[3346, 2748]
96	[191, 192]	1073	[1744, 1745]	2050	[2695, 371]	3027	[980, 1401]
97	[193, 194]	1074	[1746, 190]	2051	[1209, 1456]	3028	[3347, 1361]
98	[195, 196]	1075	[1747, 1748]	2052	[2696, 978]	3029	[3348, 976]
99	[197, 198]	1076	[1749, 179]	2053	[2551, 2664]	3030	[3349, 1226]
100	[199, 200]	1077	[1750, 1751]	2054	[2697, 2698]	3031	[2743, 69]
101	[201, 202]	1078	[1752, 1753]	2055	[1111, 2514]	3032	[3350, 1253]
102	[203, 204]	1079	[1754, 151]	2056	[2699, 2489]	3033	[955, 1446]
103	[205, 206]	1080	[1755, 155]	2057	[2318, 2446]	3034	[1382, 2427]
104	[207, 208]	1081	[1756, 1510]	2058	[2700, 2564]	3035	[3351, 461]
105	[209, 210]	1082	[1757, 13]	2059	[990, 100]	3036	[1464, 2442]
106	[211, 212]	1083	[1758, 1759]	2060	[2259, 6]	3037	[3352, 1250]
107	[213, 214]	1084	[1760, 1761]	2061	[2701, 1372]	3038	[3353, 1271]
108	[215, 216]	1085	[1762, 1671]	2062	[2702, 2369]	3039	[3354, 2595]
109	[217, 218]	1086	[1763, 1764]	2063	[313, 2313]	3040	[3355, 2492]
110	[219, 220]	1087	[1765, 1766]	2064	[2519, 407]	3041	[945, 324]
111	[221, 222]	1088	[1767, 60]	2065	[1252, 1306]	3042	[2655, 2408]
112	[223, 224]	1089	[568, 1768]	2066	[2703, 2376]	3043	[3356, 1146]
113	[225, 226]	1090	[1769, 1770]	2067	[1407, 1333]	3044	[3357, 2476]
114	[227, 43]	1091	[702, 1771]	2068	[2704, 1464]	3045	[3358, 429]
115	[228, 229]	1092	[1772, 1773]	2069	[2555, 282]	3046	[3359, 2519]
116	[230, 231]	1093	[1774, 1775]	2070	[2705, 1219]	3047	[2603, 310]
117	[232, 233]	1094	[1776, 609]	2071	[2261, 2368]	3048	[391, 388]
118	[234, 235]	1095	[1777, 1778]	2072	[2706, 88]	3049	[2515, 1199]
119	[236, 237]	1096	[1779, 1780]	2073	[1337, 1194]	3050	[456, 2323]
120	[238, 149]	1097	[166, 1781]	2074	[2300, 1131]	3051	[3360, 2387]
121	[239, 240]	1098	[720, 1782]	2075	[2377, 19]	3052	[2349, 2698]
122	[241, 242]	1099	[1783, 1784]	2076	[2707, 1117]	3053	[2580, 2276]
123	[243, 244]	1100	[1493, 1785]	2077	[387, 2708]	3054	[3361, 1018]
124	[245, 246]	1101	[1468, 1601]	2078	[2709, 2436]	3055	[3362, 340]
125	[247, 248]	1102	[1786, 1787]	2079	[1010, 2478]	3056	[3363, 248]
126	[249, 250]	1103	[1788, 697]	2080	[2710, 2481]	3057	[3364, 977]
127	[251, 252]	1104	[1789, 1790]	2081	[2369, 347]	3058	[1202, 292]
128	[253, 254]	1105	[1791, 1792]	2082	[2711, 898]	3059	[3365, 1187]
129	[255, 256]	1106	[1743, 1793]	2083	[2712, 1192]	3060	[1085, 1019]
130	[257, 258]	1107	[717, 1794]	2084	[1048, 2327]	3061	[3366, 2573]

131	[259, 260]	1108	[1795, 1662]	2085	[2713, 1080]	3062	[3367, 2473]
132	[261, 4]	1109	[1562, 1796]	2086	[2324, 431]	3063	[3368, 473]
133	[262, 263]	1110	[480, 1797]	2087	[2714, 1369]	3064	[3369, 1285]
134	[264, 265]	1111	[1798, 1799]	2088	[2282, 1175]	3065	[3370, 2378]
135	[266, 267]	1112	[130, 734]	2089	[2715, 2551]	3066	[3371, 1083]
136	[268, 269]	1113	[1800, 1801]	2090	[2608, 1124]	3067	[3372, 1099]
137	[270, 271]	1114	[1802, 179]	2091	[2716, 1147]	3068	[1022, 981]
138	[272, 273]	1115	[1803, 1804]	2092	[2717, 2570]	3069	[3373, 109]
139	[274, 275]	1116	[576, 1805]	2093	[2718, 2374]	3070	[2708, 894]
140	[276, 277]	1117	[1806, 1807]	2094	[1052, 1313]	3071	[3374, 2525]
141	[278, 279]	1118	[1808, 1686]	2095	[2719, 892]	3072	[1410, 268]
142	[280, 281]	1119	[1809, 1810]	2096	[1032, 996]	3073	[3375, 1436]
143	[282, 283]	1120	[1811, 1812]	2097	[2720, 269]	3074	[2785, 1292]
144	[284, 285]	1121	[1518, 1813]	2098	[2721, 1263]	3075	[3376, 1127]
145	[286, 287]	1122	[1814, 1815]	2099	[2410, 2249]	3076	[1020, 3288]
146	[288, 289]	1123	[1674, 778]	2100	[2722, 1148]	3077	[1018, 1250]
147	[290, 291]	1124	[1816, 1817]	2101	[2723, 969]	3078	[3377, 1035]
148	[292, 293]	1125	[1818, 1819]	2102	[2724, 1414]	3079	[3378, 922]
149	[294, 295]	1126	[1820, 1821]	2103	[2725, 2671]	3080	[3232, 2448]
150	[296, 297]	1127	[1822, 1823]	2104	[2665, 1086]	3081	[3379, 2641]
151	[298, 299]	1128	[182, 1824]	2105	[2726, 2293]	3082	[3380, 2342]
152	[300, 301]	1129	[186, 1825]	2106	[2386, 2468]	3083	[3381, 2458]
153	[302, 303]	1130	[1826, 1493]	2107	[2727, 338]	3084	[3382, 900]
154	[304, 305]	1131	[1827, 544]	2108	[2276, 952]	3085	[3383, 2472]
155	[306, 307]	1132	[1828, 518]	2109	[2290, 2268]	3086	[3384, 93]
156	[308, 309]	1133	[1829, 1830]	2110	[367, 440]	3087	[3385, 1311]
157	[310, 311]	1134	[1689, 877]	2111	[2728, 2524]	3088	[2309, 1226]
158	[312, 313]	1135	[1831, 1588]	2112	[2617, 410]	3089	[3386, 2535]
159	[314, 315]	1136	[1832, 636]	2113	[2729, 2478]	3090	[967, 984]
160	[316, 317]	1137	[1833, 506]	2114	[2730, 92]	3091	[3387, 348]
161	[318, 319]	1138	[140, 1834]	2115	[2731, 313]	3092	[3388, 964]
162	[320, 321]	1139	[1835, 1836]	2116	[2732, 1239]	3093	[2759, 1420]
163	[322, 323]	1140	[1745, 1564]	2117	[2733, 1065]	3094	[3389, 2271]
164	[324, 325]	1141	[1837, 1838]	2118	[420, 1323]	3095	[3390, 2362]
165	[326, 327]	1142	[1839, 1840]	2119	[2734, 1141]	3096	[3391, 86]
166	[328, 329]	1143	[1841, 1729]	2120	[2578, 892]	3097	[3392, 411]
167	[330, 331]	1144	[497, 540]	2121	[2735, 2547]	3098	[3393, 449]
168	[332, 333]	1145	[1842, 1511]	2122	[2736, 1227]	3099	[3394, 2282]
169	[334, 335]	1146	[1843, 1844]	2123	[2737, 2738]	3100	[3395, 3288]
170	[336, 337]	1147	[1845, 1846]	2124	[2375, 358]	3101	[2425, 2237]
171	[338, 339]	1148	[1847, 1631]	2125	[2739, 1402]	3102	[3396, 1115]
172	[340, 341]	1149	[1848, 1849]	2126	[2474, 2738]	3103	[2385, 304]
173	[342, 25]	1150	[1641, 1850]	2127	[2441, 1274]	3104	[3397, 2785]
174	[343, 344]	1151	[1851, 1852]	2128	[2740, 425]	3105	[1097, 2687]

175	[345, 346]	1152	[1853, 516]	2129	[1254, 2521]	3106	[3398, 1395]
176	[347, 348]	1153	[1854, 725]	2130	[2741, 29]	3107	[3399, 2649]
177	[349, 350]	1154	[499, 1855]	2131	[88, 2592]	3108	[3400, 1029]
178	[116, 351]	1155	[1856, 1857]	2132	[2742, 2360]	3109	[3401, 3311]
179	[352, 353]	1156	[564, 1858]	2133	[2404, 2673]	3110	[3402, 2375]
180	[354, 355]	1157	[801, 1859]	2134	[2657, 2743]	3111	[3403, 1434]
181	[356, 357]	1158	[1860, 514]	2135	[2373, 2319]	3112	[3404, 2663]
182	[358, 359]	1159	[1861, 1862]	2136	[2473, 2645]	3113	[3405, 306]
183	[360, 361]	1160	[1863, 1864]	2137	[2698, 2286]	3114	[3406, 458]
184	[362, 363]	1161	[541, 1865]	2138	[2336, 2643]	3115	[3407, 2288]
185	[364, 365]	1162	[1866, 1867]	2139	[2744, 1047]	3116	[3408, 252]
186	[366, 367]	1163	[1868, 776]	2140	[2745, 2592]	3117	[3409, 1456]
187	[368, 369]	1164	[1869, 668]	2141	[2746, 2747]	3118	[3410, 962]
188	[370, 371]	1165	[1870, 1871]	2142	[1054, 319]	3119	[3411, 1389]
189	[283, 372]	1166	[1872, 1873]	2143	[2587, 2748]	3120	[3412, 2582]
190	[373, 374]	1167	[1874, 1625]	2144	[2749, 2534]	3121	[3413, 1074]
191	[375, 376]	1168	[1875, 1876]	2145	[2750, 372]	3122	[3311, 2253]
192	[4, 377]	1169	[1700, 1877]	2146	[1024, 2384]	3123	[3414, 329]
193	[378, 379]	1170	[1878, 1879]	2147	[2513, 2352]	3124	[2506, 2284]
194	[380, 381]	1171	[1880, 1721]	2148	[2751, 2377]	3125	[3415, 966]
195	[382, 383]	1172	[1881, 1882]	2149	[355, 997]	3126	[122, 1453]
196	[384, 385]	1173	[1551, 1883]	2150	[2362, 1011]	3127	[3416, 1128]
197	[386, 387]	1174	[1884, 1885]	2151	[74, 1387]	3128	[3417, 388]
198	[388, 389]	1175	[1886, 1887]	2152	[2752, 392]	3129	[3418, 1236]
199	[390, 391]	1176	[1888, 1889]	2153	[984, 2505]	3130	[2687, 2428]
200	[392, 393]	1177	[1890, 1573]	2154	[2753, 370]	3131	[3419, 1063]
201	[394, 395]	1178	[746, 1684]	2155	[2754, 1109]	3132	[1204, 2775]
202	[396, 392]	1179	[1891, 1892]	2156	[2379, 1121]	3133	[3420, 937]
203	[397, 398]	1180	[1893, 1894]	2157	[2755, 952]	3134	[72, 1310]
204	[399, 400]	1181	[1812, 731]	2158	[2366, 2258]	3135	[3421, 2332]
205	[401, 402]	1182	[891, 1895]	2159	[1243, 1351]	3136	[3422, 2708]
206	[403, 404]	1183	[1896, 1897]	2160	[2431, 1419]	3137	[3423, 943]
207	[405, 406]	1184	[1898, 1899]	2161	[97, 965]	3138	[3424, 1058]
208	[407, 408]	1185	[1900, 1901]	2162	[2756, 2657]	3139	[3425, 2274]
209	[409, 410]	1186	[1647, 505]	2163	[1293, 2757]	3140	[3426, 2344]
210	[411, 412]	1187	[1902, 1903]	2164	[2758, 453]	3141	[3427, 902]
211	[413, 414]	1188	[1904, 1905]	2165	[2416, 2759]	3142	[3428, 2230]
212	[415, 416]	1189	[1906, 232]	2166	[2760, 1178]	3143	[3429, 250]
213	[417, 418]	1190	[1907, 1908]	2167	[281, 2231]	3144	[3430, 293]
214	[419, 420]	1191	[1909, 1910]	2168	[2761, 1265]	3145	[3431, 330]
215	[421, 422]	1192	[1911, 1912]	2169	[2748, 2619]	3146	[3432, 84]
216	[423, 423]	1193	[1913, 1744]	2170	[2762, 1409]	3147	[3433, 2372]
217	[424, 82]	1194	[1914, 1629]	2171	[277, 939]	3148	[3434, 2514]
218	[425, 426]	1195	[1915, 1916]	2172	[2763, 1203]	3149	[3435, 1326]

219	[427, 343]	1196	[1917, 1918]	2173	[2764, 451]	3150	[3436, 94]
220	[428, 429]	1197	[617, 661]	2174	[2765, 2435]	3151	[3437, 1159]
221	[430, 431]	1198	[621, 1806]	2175	[2507, 2444]	3152	[3438, 23]
222	[432, 433]	1199	[1919, 1830]	2176	[389, 2527]	3153	[3439, 1343]
223	[434, 435]	1200	[1920, 1921]	2177	[2294, 2546]	3154	[3440, 78]
224	[436, 437]	1201	[1922, 565]	2178	[2766, 2448]	3155	[3441, 903]
225	[438, 439]	1202	[1923, 1924]	2179	[2767, 915]	3156	[3442, 115]
226	[440, 441]	1203	[204, 1925]	2180	[1348, 913]	3157	[3443, 1086]
227	[442, 443]	1204	[1926, 1927]	2181	[2768, 2555]	3158	[3444, 1196]
228	[444, 403]	1205	[1728, 1928]	2182	[1398, 2596]	3159	[3445, 385]
229	[445, 446]	1206	[1929, 1930]	2183	[2769, 2457]	3160	[3446, 2248]
230	[447, 448]	1207	[1931, 1655]	2184	[2552, 909]	3161	[3447, 2256]
231	[449, 450]	1208	[1932, 1933]	2185	[2770, 104]	3162	[3448, 2341]
232	[451, 452]	1209	[1934, 1935]	2186	[1165, 380]	3163	[3449, 2577]
233	[453, 454]	1210	[1936, 1937]	2187	[2771, 1373]	3164	[3450, 2318]
234	[455, 456]	1211	[1938, 1939]	2188	[2772, 375]	3165	[3451, 283]
235	[457, 458]	1212	[1940, 881]	2189	[1140, 2371]	3166	[3452, 986]
236	[459, 460]	1213	[1941, 1942]	2190	[2773, 1103]	3167	[3453, 393]
237	[461, 462]	1214	[1943, 1944]	2191	[2774, 1453]	3168	[3454, 1232]
238	[463, 464]	1215	[1945, 1946]	2192	[2316, 1141]	3169	[3455, 2322]
239	[465, 466]	1216	[1823, 1947]	2193	[1050, 951]	3170	[3456, 1169]
240	[467, 468]	1217	[1948, 1917]	2194	[2775, 1083]	3171	[3457, 1426]
241	[469, 310]	1218	[1949, 1950]	2195	[2776, 1194]	3172	[3458, 455]
242	[470, 346]	1219	[1951, 532]	2196	[2610, 2564]	3173	[348, 387]
243	[471, 472]	1220	[1952, 852]	2197	[2604, 1144]	3174	[3459, 2494]
244	[473, 474]	1221	[1953, 1954]	2198	[2777, 333]	3175	[2342, 1191]
245	[475, 476]	1222	[1787, 748]	2199	[2778, 2253]	3176	[3460, 2532]
246	[477, 478]	1223	[1955, 742]	2200	[2779, 323]	3177	[3461, 1110]
247	[479, 480]	1224	[1956, 1957]	2201	[2780, 251]	3178	[3462, 19]
248	[481, 482]	1225	[696, 1473]	2202	[2781, 2539]	3179	[3463, 369]
249	[483, 484]	1226	[1958, 1894]	2203	[2782, 2313]	3180	[3464, 1458]
250	[485, 486]	1227	[1959, 1960]	2204	[2469, 2374]	3181	[3465, 2533]
251	[487, 488]	1228	[1961, 1930]	2205	[2783, 945]	3182	[3466, 1150]
252	[52, 489]	1229	[1962, 1963]	2206	[1198, 1065]	3183	[3467, 1006]
253	[490, 491]	1230	[1964, 1601]	2207	[26, 2784]	3184	[3468, 1462]
254	[492, 493]	1231	[1965, 1966]	2208	[1179, 2785]	3185	[3469, 2422]
255	[494, 495]	1232	[1967, 1968]	2209	[2786, 1051]	3186	[3470, 28]
256	[496, 497]	1233	[1969, 1970]	2210	[2747, 1023]	3187	[3471, 2692]
257	[498, 499]	1234	[1971, 1972]	2211	[2787, 1262]	3188	[3472, 85]
258	[500, 501]	1235	[1576, 1973]	2212	[2427, 2391]	3189	[3473, 2597]
259	[502, 503]	1236	[1974, 1923]	2213	[2403, 1267]	3190	[400, 271]
260	[504, 505]	1237	[1975, 1976]	2214	[2466, 1269]	3191	[3474, 1277]
261	[506, 507]	1238	[1977, 1978]	2215	[2788, 1280]	3192	[3475, 2290]
262	[508, 509]	1239	[1979, 1980]	2216	[1129, 284]	3193	[3476, 1160]

263	[510, 511]	1240	[1981, 1982]	2217	[1264, 1098]	3194	[3477, 2232]
264	[512, 513]	1241	[1724, 1983]	2218	[6, 436]	3195	[3478, 1375]
265	[514, 515]	1242	[813, 1984]	2219	[2789, 2790]	3196	[3479, 2259]
266	[516, 517]	1243	[1985, 1986]	2220	[2791, 2269]	3197	[1600, 2149]
267	[518, 32]	1244	[1987, 1817]	2221	[1092, 1258]	3198	[881, 577]
268	[519, 520]	1245	[1988, 39]	2222	[2792, 412]	3199	[3480, 3024]
269	[521, 522]	1246	[1989, 1990]	2223	[2576, 1454]	3200	[3481, 2828]
270	[523, 242]	1247	[643, 889]	2224	[1566, 834]	3201	[3482, 186]
271	[524, 525]	1248	[1991, 37]	2225	[482, 1503]	3202	[2959, 699]
272	[526, 527]	1249	[1992, 1488]	2226	[2793, 817]	3203	[825, 801]
273	[528, 529]	1250	[1667, 751]	2227	[2029, 1812]	3204	[3483, 1961]
274	[530, 531]	1251	[1993, 128]	2228	[2794, 1895]	3205	[3484, 3090]
275	[532, 533]	1252	[501, 1994]	2229	[2795, 1973]	3206	[3485, 545]
276	[534, 535]	1253	[1995, 1996]	2230	[2796, 2186]	3207	[3036, 166]
277	[536, 537]	1254	[1997, 1539]	2231	[2797, 2798]	3208	[2854, 1727]
278	[538, 539]	1255	[1805, 1998]	2232	[545, 2079]	3209	[1582, 657]
279	[540, 541]	1256	[819, 1680]	2233	[2799, 643]	3210	[3486, 847]
280	[542, 543]	1257	[1999, 2000]	2234	[2800, 1642]	3211	[3487, 515]
281	[544, 545]	1258	[1984, 2001]	2235	[2801, 2071]	3212	[1555, 213]
282	[546, 547]	1259	[1994, 2002]	2236	[2802, 818]	3213	[655, 1625]
283	[548, 549]	1260	[2003, 135]	2237	[2803, 2804]	3214	[3076, 1887]
284	[550, 551]	1261	[2004, 2005]	2238	[2176, 1791]	3215	[3488, 840]
285	[552, 553]	1262	[126, 1706]	2239	[603, 659]	3216	[3489, 1737]
286	[554, 201]	1263	[1543, 2006]	2240	[2805, 2806]	3217	[2810, 847]
287	[555, 556]	1264	[2007, 2008]	2241	[2807, 2808]	3218	[821, 2835]
288	[557, 558]	1265	[1531, 2009]	2242	[2809, 1774]	3219	[1485, 1536]
289	[559, 560]	1266	[2010, 1807]	2243	[1838, 1986]	3220	[3074, 2858]
290	[561, 562]	1267	[2011, 2012]	2244	[651, 2810]	3221	[3490, 678]
291	[563, 564]	1268	[1973, 746]	2245	[2811, 698]	3222	[229, 663]
292	[565, 566]	1269	[1942, 2013]	2246	[738, 1661]	3223	[3491, 642]
293	[567, 568]	1270	[148, 2014]	2247	[2006, 2812]	3224	[3492, 172]
294	[569, 570]	1271	[2015, 1851]	2248	[2813, 2814]	3225	[3493, 2014]
295	[571, 572]	1272	[2016, 2017]	2249	[2815, 1955]	3226	[572, 497]
296	[573, 574]	1273	[818, 2018]	2250	[2816, 2175]	3227	[675, 3027]
297	[575, 576]	1274	[2019, 2020]	2251	[2817, 671]	3228	[2165, 689]
298	[577, 578]	1275	[799, 1718]	2252	[2818, 1698]	3229	[3070, 479]
299	[579, 234]	1276	[2021, 1550]	2253	[2819, 1688]	3230	[2094, 222]
300	[580, 581]	1277	[2022, 2023]	2254	[2136, 2109]	3231	[1525, 1788]
301	[582, 583]	1278	[587, 2024]	2255	[2820, 239]	3232	[2831, 3494]
302	[584, 581]	1279	[2025, 1693]	2256	[2821, 1868]	3233	[3175, 668]
303	[585, 483]	1280	[2026, 2027]	2257	[864, 516]	3234	[3495, 1918]
304	[586, 587]	1281	[2028, 2029]	2258	[2822, 1526]	3235	[3496, 1877]
305	[588, 589]	1282	[2030, 2031]	2259	[2823, 2824]	3236	[3497, 3072]
306	[590, 591]	1283	[2032, 2033]	2260	[156, 846]	3237	[879, 1955]

307	[592, 593]	1284	[581, 2034]	2261	[795, 2825]	3238	[3498, 541]
308	[594, 595]	1285	[216, 2035]	2262	[2826, 2827]	3239	[1980, 2961]
309	[596, 597]	1286	[2036, 861]	2263	[724, 2828]	3240	[192, 1488]
310	[598, 599]	1287	[2037, 2038]	2264	[2829, 1547]	3241	[2842, 758]
311	[600, 601]	1288	[649, 1935]	2265	[1748, 2806]	3242	[3499, 144]
312	[602, 603]	1289	[2039, 521]	2266	[2830, 2831]	3243	[764, 157]
313	[604, 605]	1290	[2040, 1558]	2267	[2832, 2833]	3244	[747, 2099]
314	[220, 551]	1291	[805, 2041]	2268	[1656, 1623]	3245	[1628, 56]
315	[509, 606]	1292	[2042, 2043]	2269	[2124, 2834]	3246	[3500, 2002]
316	[194, 607]	1293	[515, 531]	2270	[2835, 2836]	3247	[3501, 2019]
317	[608, 609]	1294	[2044, 2045]	2271	[214, 2019]	3248	[1976, 2158]
318	[610, 582]	1295	[2046, 805]	2272	[2837, 237]	3249	[3502, 168]
319	[611, 612]	1296	[623, 2047]	2273	[2838, 1715]	3250	[3503, 1669]
320	[613, 614]	1297	[844, 1668]	2274	[2839, 2840]	3251	[3504, 1661]
321	[615, 204]	1298	[2048, 1820]	2275	[2841, 731]	3252	[2171, 1937]
322	[616, 617]	1299	[2049, 634]	2276	[533, 2842]	3253	[1692, 1715]
323	[618, 619]	1300	[2050, 2051]	2277	[2843, 212]	3254	[188, 184]
324	[620, 621]	1301	[1895, 1814]	2278	[2844, 41]	3255	[3505, 2867]
325	[622, 623]	1302	[2052, 2053]	2279	[2845, 46]	3256	[3506, 492]
326	[624, 625]	1303	[2054, 685]	2280	[2846, 2847]	3257	[1937, 3003]
327	[626, 627]	1304	[762, 2055]	2281	[1695, 1836]	3258	[3507, 1781]
328	[628, 629]	1305	[2056, 1920]	2282	[2848, 809]	3259	[1530, 1570]
329	[630, 631]	1306	[1553, 2057]	2283	[2849, 1939]	3260	[3508, 1538]
330	[632, 633]	1307	[2058, 2059]	2284	[2850, 1857]	3261	[2917, 1641]
331	[634, 635]	1308	[2060, 9]	2285	[547, 1576]	3262	[3509, 2892]
332	[636, 637]	1309	[2061, 1707]	2286	[1770, 1974]	3263	[3510, 1480]
333	[638, 243]	1310	[2062, 2063]	2287	[2851, 1971]	3264	[1736, 1543]
334	[639, 640]	1311	[2064, 2065]	2288	[2852, 808]	3265	[2, 793]
335	[641, 185]	1312	[2066, 2067]	2289	[1691, 2853]	3266	[2192, 1908]
336	[642, 643]	1313	[2068, 2069]	2290	[162, 2854]	3267	[2134, 1530]
337	[644, 645]	1314	[2070, 585]	2291	[2855, 2856]	3268	[3511, 40]
338	[646, 647]	1315	[2071, 1607]	2292	[2208, 2820]	3269	[1522, 780]
339	[648, 649]	1316	[2072, 2073]	2293	[2857, 2858]	3270	[3512, 484]
340	[650, 651]	1317	[2074, 2075]	2294	[2859, 2149]	3271	[2827, 2874]
341	[652, 653]	1318	[2076, 2077]	2295	[888, 1808]	3272	[3513, 2974]
342	[654, 655]	1319	[2078, 2079]	2296	[2860, 1589]	3273	[1697, 762]
343	[656, 657]	1320	[2080, 2081]	2297	[2861, 2862]	3274	[2002, 719]
344	[658, 659]	1321	[2082, 561]	2298	[2863, 772]	3275	[3514, 3105]
345	[660, 661]	1322	[2083, 2084]	2299	[2864, 1566]	3276	[860, 1651]
346	[662, 663]	1323	[1479, 604]	2300	[2865, 1572]	3277	[3515, 480]
347	[664, 665]	1324	[716, 702]	2301	[1825, 2866]	3278	[3516, 42]
348	[666, 495]	1325	[2085, 2086]	2302	[1547, 2867]	3279	[3517, 2151]
349	[489, 667]	1326	[2087, 831]	2303	[2868, 2869]	3280	[3518, 792]
350	[668, 669]	1327	[2088, 730]	2304	[1768, 2084]	3281	[711, 686]

351	[670, 582]	1328	[2089, 2090]	2305	[2870, 758]	3282	[142, 2182]
352	[671, 534]	1329	[2091, 44]	2306	[2871, 667]	3283	[3519, 1745]
353	[672, 673]	1330	[488, 498]	2307	[2872, 489]	3284	[700, 1754]
354	[674, 675]	1331	[2092, 535]	2308	[1510, 2038]	3285	[3520, 527]
355	[34, 676]	1332	[1474, 1903]	2309	[2873, 2874]	3286	[2840, 1784]
356	[677, 678]	1333	[2093, 2094]	2310	[2186, 1849]	3287	[3521, 2024]
357	[679, 680]	1334	[2095, 2096]	2311	[2053, 1995]	3288	[2051, 2989]
358	[681, 682]	1335	[210, 1691]	2312	[2875, 726]	3289	[2994, 1582]
359	[683, 684]	1336	[2097, 732]	2313	[2876, 2877]	3290	[3522, 2013]
360	[36, 685]	1337	[2098, 2099]	2314	[2878, 2194]	3291	[3523, 2127]
361	[686, 687]	1338	[2100, 1879]	2315	[2879, 653]	3292	[3524, 1704]
362	[688, 689]	1339	[218, 642]	2316	[1793, 1916]	3293	[1558, 1550]
363	[690, 691]	1340	[2101, 1841]	2317	[2880, 717]	3294	[505, 1653]
364	[692, 693]	1341	[2102, 697]	2318	[2853, 1767]	3295	[3525, 2001]
365	[694, 189]	1342	[2103, 2104]	2319	[2881, 2882]	3296	[208, 2126]
366	[695, 696]	1343	[2105, 1738]	2320	[2883, 856]	3297	[3526, 3132]
367	[697, 698]	1344	[789, 2106]	2321	[890, 2884]	3298	[3527, 156]
368	[699, 700]	1345	[2107, 2108]	2322	[1528, 1552]	3299	[3528, 1645]
369	[701, 702]	1346	[2109, 1961]	2323	[853, 2885]	3300	[3529, 1855]
370	[703, 704]	1347	[2012, 191]	2324	[2886, 1885]	3301	[226, 1603]
371	[146, 705]	1348	[484, 2110]	2325	[2887, 1923]	3302	[3530, 158]
372	[706, 707]	1349	[2111, 2112]	2326	[2888, 2204]	3303	[3531, 2883]
373	[708, 709]	1350	[2113, 202]	2327	[1711, 2889]	3304	[3532, 842]
374	[710, 711]	1351	[1771, 1882]	2328	[2890, 1681]	3305	[2065, 874]
375	[712, 713]	1352	[2047, 811]	2329	[2891, 2034]	3306	[1930, 1743]
376	[714, 715]	1353	[2114, 1622]	2330	[689, 2892]	3307	[2979, 633]
377	[8, 716]	1354	[2115, 584]	2331	[691, 1622]	3308	[58, 1960]
378	[172, 717]	1355	[2116, 1594]	2332	[522, 167]	3309	[3023, 1470]
379	[32, 718]	1356	[2117, 577]	2333	[1, 191]	3310	[3533, 872]
380	[719, 720]	1357	[1821, 2118]	2334	[2893, 127]	3311	[2833, 1579]
381	[721, 722]	1358	[2119, 2120]	2335	[1482, 2048]	3312	[3534, 9]
382	[723, 724]	1359	[635, 830]	2336	[2806, 1616]	3313	[3535, 1806]
383	[725, 726]	1360	[2023, 1537]	2337	[1679, 1864]	3314	[3536, 10]
384	[727, 728]	1361	[2121, 2048]	2338	[1509, 1828]	3315	[1918, 1800]
385	[729, 730]	1362	[2122, 1708]	2339	[1968, 2894]	3316	[3093, 1897]
386	[731, 732]	1363	[2123, 2124]	2340	[2895, 2850]	3317	[537, 1511]
387	[733, 734]	1364	[2125, 2126]	2341	[705, 1909]	3318	[3537, 498]
388	[735, 736]	1365	[2127, 869]	2342	[2896, 1911]	3319	[1560, 722]
389	[737, 738]	1366	[2128, 2129]	2343	[2897, 841]	3320	[3538, 1921]
390	[739, 548]	1367	[513, 162]	2344	[1469, 1533]	3321	[614, 1787]
391	[740, 741]	1368	[2106, 1617]	2345	[2898, 2899]	3322	[3539, 651]
392	[742, 743]	1369	[2130, 2131]	2346	[2900, 2853]	3323	[3540, 687]
393	[744, 157]	1370	[2132, 2133]	2347	[520, 680]	3324	[1515, 704]
394	[745, 746]	1371	[1982, 2134]	2348	[2901, 125]	3325	[3541, 2137]

395	[663, 747]	1372	[2135, 2136]	2349	[2902, 1666]	3326	[1564, 224]
396	[748, 749]	1373	[685, 2137]	2350	[1590, 671]	3327	[3542, 552]
397	[750, 245]	1374	[2055, 1774]	2351	[2903, 2831]	3328	[877, 785]
398	[751, 752]	1375	[2067, 232]	2352	[2904, 1878]	3329	[2798, 2175]
399	[753, 524]	1376	[1844, 2138]	2353	[2905, 880]	3330	[1933, 1499]
400	[754, 755]	1377	[2139, 757]	2354	[2075, 2060]	3331	[2882, 1468]
401	[756, 757]	1378	[2140, 2035]	2355	[886, 855]	3332	[222, 587]
402	[758, 646]	1379	[2141, 2142]	2356	[2906, 523]	3333	[3543, 1643]
403	[759, 760]	1380	[1796, 1823]	2357	[707, 2907]	3334	[3544, 2907]
404	[761, 762]	1381	[1873, 2143]	2358	[531, 639]	3335	[3545, 1728]
405	[763, 764]	1382	[2144, 1606]	2359	[2908, 1749]	3336	[3546, 2018]
406	[765, 766]	1383	[2035, 1545]	2360	[709, 2899]	3337	[3547, 2972]
407	[767, 768]	1384	[2145, 2146]	2361	[2909, 603]	3338	[176, 1944]
408	[769, 770]	1385	[2147, 1631]	2362	[2910, 1657]	3339	[3548, 752]
409	[771, 772]	1386	[2148, 12]	2363	[2911, 1473]	3340	[1901, 2942]
410	[773, 774]	1387	[190, 1965]	2364	[1855, 2849]	3341	[3549, 1785]
411	[775, 776]	1388	[2149, 2150]	2365	[2912, 1999]	3342	[3550, 873]
412	[777, 778]	1389	[48, 2151]	2366	[1487, 1761]	3343	[2120, 2964]
413	[779, 780]	1390	[2152, 2153]	2367	[2018, 1957]	3344	[3551, 1980]
414	[781, 748]	1391	[726, 2127]	2368	[2913, 2914]	3345	[3552, 638]
415	[782, 783]	1392	[2154, 187]	2369	[2825, 2915]	3346	[3553, 3077]
416	[784, 785]	1393	[2155, 2156]	2370	[2916, 1628]	3347	[1830, 850]
417	[786, 787]	1394	[2157, 2158]	2371	[1836, 2917]	3348	[578, 864]
418	[788, 789]	1395	[669, 2159]	2372	[2918, 1729]	3349	[2063, 2147]
419	[790, 791]	1396	[2160, 2161]	2373	[2919, 2920]	3350	[529, 871]
420	[792, 793]	1397	[2162, 1989]	2374	[2921, 2796]	3351	[3554, 1614]
421	[794, 795]	1398	[1970, 1819]	2375	[2922, 2088]	3352	[3555, 491]
422	[796, 797]	1399	[743, 2163]	2376	[2923, 2924]	3353	[3556, 2213]
423	[798, 799]	1400	[543, 797]	2377	[1817, 41]	3354	[2108, 1927]
424	[627, 564]	1401	[2164, 2165]	2378	[2925, 2926]	3355	[2929, 1541]
425	[800, 801]	1402	[2166, 2167]	2379	[2214, 2847]	3356	[2814, 2067]
426	[802, 803]	1403	[2168, 596]	2380	[2927, 1883]	3357	[3557, 3076]
427	[804, 525]	1404	[2169, 1851]	2381	[2928, 2929]	3358	[3558, 526]
428	[791, 805]	1405	[1972, 1954]	2382	[2930, 213]	3359	[3047, 2914]
429	[806, 807]	1406	[2158, 2088]	2383	[2931, 2835]	3360	[3559, 1734]
430	[808, 809]	1407	[2170, 2171]	2384	[2932, 1987]	3361	[3560, 2176]
431	[810, 811]	1408	[2172, 1928]	2385	[601, 2933]	3362	[3561, 652]
432	[812, 813]	1409	[2173, 1613]	2386	[2934, 2863]	3363	[3562, 1513]
433	[814, 815]	1410	[2174, 1880]	2387	[1883, 2935]	3364	[3563, 1809]
434	[816, 747]	1411	[2146, 492]	2388	[2936, 2937]	3365	[3564, 875]
435	[817, 818]	1412	[2175, 1611]	2389	[1790, 2938]	3366	[3565, 1820]
436	[12, 819]	1413	[1963, 2176]	2390	[2939, 2940]	3367	[832, 1671]
437	[820, 821]	1414	[1570, 2177]	2391	[2941, 2942]	3368	[778, 200]
438	[822, 823]	1415	[2178, 1805]	2392	[2943, 2944]	3369	[2151, 589]

439	[824, 825]	1416	[2179, 490]	2393	[2945, 635]	3370	[3566, 2214]
440	[826, 143]	1417	[1859, 178]	2394	[1727, 2135]	3371	[3567, 1608]
441	[698, 827]	1418	[1903, 2180]	2395	[2899, 1594]	3372	[3568, 3126]
442	[828, 813]	1419	[2181, 2182]	2396	[2892, 2196]	3373	[1960, 155]
443	[829, 830]	1420	[785, 1958]	2397	[2946, 1998]	3374	[553, 131]
444	[831, 832]	1421	[2183, 2184]	2398	[2221, 1610]	3375	[2153, 1946]
445	[833, 834]	1422	[2185, 2186]	2399	[772, 2947]	3376	[3569, 1623]
446	[835, 836]	1423	[2187, 1506]	2400	[1966, 2948]	3377	[676, 584]
447	[837, 838]	1424	[2188, 2000]	2401	[2949, 2950]	3378	[3570, 1512]
448	[839, 840]	1425	[1618, 2133]	2402	[2951, 2011]	3379	[2057, 2944]
449	[841, 842]	1426	[631, 2189]	2403	[2952, 2953]	3380	[3571, 1873]
450	[843, 844]	1427	[2190, 677]	2404	[38, 1919]	3381	[3572, 637]
451	[845, 846]	1428	[2191, 2192]	2405	[2954, 735]	3382	[3573, 167]
452	[847, 848]	1429	[2031, 2193]	2406	[2847, 2929]	3383	[3574, 2193]
453	[849, 850]	1430	[2194, 220]	2407	[2955, 2206]	3384	[2804, 1665]
454	[851, 163]	1431	[855, 808]	2408	[2956, 2957]	3385	[1651, 198]
455	[852, 853]	1432	[2195, 2196]	2409	[2958, 2959]	3386	[3575, 827]
456	[854, 855]	1433	[780, 1872]	2410	[2960, 2961]	3387	[1649, 2165]
457	[856, 857]	1434	[212, 2197]	2411	[2962, 1905]	3388	[2874, 1899]
458	[486, 858]	1435	[2198, 2047]	2412	[1916, 2023]	3389	[3576, 11]
459	[859, 860]	1436	[2199, 1490]	2413	[2963, 2964]	3390	[3122, 2919]
460	[633, 861]	1437	[2200, 2055]	2414	[1876, 39]	3391	[2196, 1950]
461	[154, 862]	1438	[2201, 862]	2415	[2965, 2064]	3392	[3577, 2221]
462	[863, 864]	1439	[583, 509]	2416	[2966, 869]	3393	[3578, 543]
463	[865, 866]	1440	[2202, 1800]	2417	[2967, 1615]	3394	[3579, 3050]
464	[867, 868]	1441	[2203, 2204]	2418	[861, 575]	3395	[3580, 1972]
465	[869, 727]	1442	[2205, 605]	2419	[2968, 1552]	3396	[3581, 2935]
466	[870, 871]	1443	[787, 2206]	2420	[198, 1963]	3397	[3053, 1549]
467	[872, 873]	1444	[2207, 724]	2421	[2969, 1551]	3398	[2877, 2120]
468	[874, 875]	1445	[868, 2208]	2422	[2970, 239]	3399	[1709, 2104]
469	[876, 877]	1446	[2209, 2210]	2423	[1892, 1700]	3400	[3582, 1966]
470	[715, 655]	1447	[2211, 2212]	2424	[2971, 751]	3401	[1639, 844]
471	[878, 879]	1448	[1801, 547]	2425	[1612, 2833]	3402	[2008, 1901]
472	[880, 881]	1449	[2213, 2156]	2426	[1703, 1867]	3403	[3583, 150]
473	[882, 883]	1450	[1660, 770]	2427	[1498, 2972]	3404	[3584, 2163]
474	[200, 884]	1451	[1721, 2214]	2428	[2973, 2974]	3405	[2184, 208]
475	[885, 886]	1452	[2215, 2216]	2429	[2975, 1507]	3406	[3585, 2009]
476	[887, 888]	1453	[1850, 2217]	2430	[645, 134]	3407	[1927, 2171]
477	[889, 890]	1454	[2216, 1589]	2431	[2976, 2977]	3408	[2014, 1970]
478	[134, 891]	1455	[793, 2218]	2432	[2978, 2074]	3409	[730, 1878]
479	[892, 893]	1456	[2219, 1612]	2433	[1605, 1978]	3410	[3586, 1579]
480	[894, 895]	1457	[1935, 2073]	2434	[2161, 519]	3411	[3587, 1974]
481	[896, 897]	1458	[1513, 1744]	2435	[562, 2883]	3412	[3588, 3080]
482	[898, 899]	1459	[1610, 673]	2436	[1665, 2979]	3413	[653, 760]

483	[900, 901]	1460	[2220, 2109]	2437	[2980, 2981]	3414	[3589, 1618]
484	[902, 903]	1461	[62, 2221]	2438	[1780, 2153]	3415	[3590, 2012]
485	[904, 312]	1462	[2222, 2161]	2439	[2982, 131]	3416	[2034, 3060]
486	[905, 906]	1463	[164, 674]	2440	[2177, 1495]	3417	[875, 1723]
487	[907, 908]	1464	[803, 1528]	2441	[2983, 613]	3418	[3591, 152]
488	[909, 910]	1465	[1862, 2223]	2442	[2984, 211]	3419	[3592, 828]
489	[911, 912]	1466	[2224, 1007]	2443	[2964, 1826]	3420	[1732, 2112]
490	[913, 914]	1467	[2225, 301]	2444	[2985, 1710]	3421	[2189, 482]
491	[915, 303]	1468	[1363, 2226]	2445	[2986, 2987]	3422	[2045, 1568]
492	[916, 917]	1469	[1036, 2227]	2446	[589, 37]	3423	[3593, 1825]
493	[918, 919]	1470	[992, 2228]	2447	[2988, 2138]	3424	[3594, 2177]
494	[920, 921]	1471	[2229, 1166]	2448	[1643, 2213]	3425	[1536, 684]
495	[922, 923]	1472	[2230, 449]	2449	[1472, 2069]	3426	[3595, 517]
496	[924, 925]	1473	[2231, 2232]	2450	[2989, 882]	3427	[2110, 570]
497	[926, 927]	1474	[1059, 1348]	2451	[2990, 650]	3428	[1877, 1844]
498	[908, 928]	1475	[2233, 366]	2452	[619, 2146]	3429	[3596, 1724]
499	[929, 930]	1476	[2234, 300]	2453	[1686, 2991]	3430	[3597, 2189]
500	[931, 932]	1477	[1371, 2235]	2454	[1834, 511]	3431	[1944, 634]
501	[933, 934]	1478	[2236, 2237]	2455	[2005, 2940]	3432	[231, 1695]
502	[935, 96]	1479	[2238, 1104]	2456	[607, 823]	3433	[2033, 1655]
503	[936, 937]	1480	[1146, 1375]	2457	[2992, 1776]	3434	[224, 645]
504	[938, 939]	1481	[2239, 2240]	2458	[2920, 1604]	3435	[1867, 58]
505	[940, 941]	1482	[1458, 2241]	2459	[2993, 2994]	3436	[3598, 540]
506	[942, 943]	1483	[2242, 1440]	2460	[2995, 2820]	3437	[3599, 2854]
507	[944, 945]	1484	[2243, 276]	2461	[1523, 1587]	3438	[2059, 49]
508	[946, 947]	1485	[2244, 1115]	2462	[2996, 699]	3439	[1910, 1487]
509	[948, 949]	1486	[2245, 2246]	2463	[2129, 1759]	3440	[1615, 2074]
510	[950, 951]	1487	[2247, 2248]	2464	[2997, 38]	3441	[178, 3074]
511	[952, 953]	1488	[2249, 2250]	2465	[1718, 1942]	3442	[3600, 2159]
512	[954, 955]	1489	[468, 2251]	2466	[2998, 2025]	3443	[3601, 2915]
513	[956, 957]	1490	[311, 2252]	2467	[2999, 2837]	3444	[2099, 879]
514	[303, 958]	1491	[2253, 2254]	2468	[3000, 610]	3445	[3602, 2812]
515	[910, 959]	1492	[2255, 433]	2469	[2212, 2829]	3446	[3603, 728]
516	[458, 960]	1493	[2256, 1366]	2470	[3001, 143]	3447	[1713, 1868]
517	[961, 908]	1494	[2257, 1132]	2471	[1621, 2881]	3448	[3604, 1730]
518	[962, 963]	1495	[2258, 2259]	2472	[3002, 3003]	3449	[2223, 1520]
519	[307, 964]	1496	[2260, 2261]	2473	[3004, 839]	3450	[2137, 218]
520	[965, 316]	1497	[1215, 335]	2474	[3005, 1914]	3451	[2991, 513]
521	[966, 967]	1498	[315, 1040]	2475	[599, 1713]	3452	[3605, 188]
522	[968, 332]	1499	[2262, 1217]	2476	[1813, 2937]	3453	[3606, 1862]
523	[969, 970]	1500	[2263, 72]	2477	[3006, 602]	3454	[3607, 493]
524	[971, 972]	1501	[2264, 1093]	2478	[1653, 838]	3455	[1990, 1621]
525	[973, 974]	1502	[2265, 2266]	2479	[54, 735]	3456	[3608, 628]
526	[975, 976]	1503	[124, 1403]	2480	[493, 3007]	3457	[3609, 1983]

527	[977, 978]	1504	[2267, 1272]	2481	[2808, 526]	3458	[2834, 1497]
528	[979, 980]	1505	[2268, 1356]	2482	[3008, 185]	3459	[3610, 2889]
529	[981, 982]	1506	[2226, 2269]	2483	[507, 677]	3460	[3611, 2836]
530	[983, 984]	1507	[2270, 2271]	2484	[1761, 245]	3461	[3130, 821]
531	[985, 986]	1508	[2272, 1135]	2485	[3009, 819]	3462	[3612, 164]
532	[987, 988]	1509	[1273, 2273]	2486	[3010, 736]	3463	[3613, 858]
533	[989, 990]	1510	[1106, 1140]	2487	[827, 231]	3464	[1740, 2077]
534	[991, 992]	1511	[2274, 1325]	2488	[1819, 2207]	3465	[3614, 1604]
535	[993, 994]	1512	[998, 399]	2489	[3011, 1982]	3466	[2073, 3173]
536	[995, 996]	1513	[371, 985]	2490	[14, 1584]	3467	[722, 176]
537	[997, 998]	1514	[2275, 2276]	2491	[3012, 3013]	3468	[3615, 2217]
538	[999, 1000]	1515	[1384, 2277]	2492	[3014, 2919]	3469	[3616, 566]
539	[319, 1001]	1516	[2278, 1156]	2493	[3015, 1808]	3470	[755, 591]
540	[1002, 1003]	1517	[2279, 975]	2494	[3016, 1826]	3471	[2938, 1600]
541	[927, 1004]	1518	[1374, 263]	2495	[2937, 596]	3472	[1534, 880]
542	[1005, 1006]	1519	[2280, 2281]	2496	[3017, 1996]	3473	[1595, 2017]
543	[1007, 1008]	1520	[974, 2282]	2497	[3018, 832]	3474	[3617, 1740]
544	[1009, 1010]	1521	[2283, 1090]	2498	[144, 753]	3475	[3618, 1656]
545	[1011, 1012]	1522	[2284, 287]	2499	[591, 2957]	3476	[3619, 743]
546	[1013, 1014]	1523	[2250, 1223]	2500	[3019, 640]	3477	[1794, 2903]
547	[1015, 1016]	1524	[2285, 2286]	2501	[3020, 1782]	3478	[2197, 841]
548	[1017, 1018]	1525	[2287, 1233]	2502	[527, 568]	3479	[2942, 13]
549	[1019, 1020]	1526	[2288, 1078]	2503	[1846, 2814]	3480	[3620, 311]
550	[1021, 1022]	1527	[2289, 305]	2504	[3021, 2834]	3481	[3621, 1463]
551	[1023, 1024]	1528	[1368, 2290]	2505	[1587, 2850]	3482	[3622, 65]
552	[99, 1025]	1529	[2291, 2292]	2506	[3022, 3023]	3483	[3623, 249]
553	[1026, 383]	1530	[2293, 2294]	2507	[1603, 3024]	3484	[3624, 1235]
554	[1027, 266]	1531	[1037, 2295]	2508	[3025, 2207]	3485	[3625, 77]
555	[1028, 462]	1532	[2296, 1346]	2509	[3026, 3027]	3486	[3626, 1399]
556	[254, 1029]	1533	[2297, 2298]	2510	[3028, 3008]	3487	[3627, 985]
557	[1030, 1031]	1534	[2227, 2281]	2511	[3029, 1952]	3488	[3628, 1300]
558	[937, 1032]	1535	[2299, 2262]	2512	[3030, 3031]	3489	[3629, 2431]
559	[1033, 73]	1536	[86, 2300]	2513	[2081, 1737]	3490	[3630, 1357]
560	[1034, 900]	1537	[2301, 2302]	2514	[2079, 1704]	3491	[3631, 2226]
561	[1035, 1036]	1538	[2303, 2304]	2515	[1799, 1920]	3492	[3632, 2598]
562	[70, 1037]	1539	[2305, 2306]	2516	[3032, 3033]	3493	[3633, 416]
563	[1038, 1039]	1540	[2307, 22]	2517	[1804, 2869]	3494	[1039, 1298]
564	[1040, 1041]	1541	[1101, 975]	2518	[517, 803]	3495	[3634, 1210]
565	[1042, 417]	1542	[2308, 1274]	2519	[2180, 3034]	3496	[3635, 2474]
566	[1043, 1044]	1543	[1301, 2309]	2520	[682, 537]	3497	[3636, 1012]
567	[1045, 1046]	1544	[2310, 2311]	2521	[3035, 3036]	3498	[3637, 2581]
568	[1047, 1048]	1545	[1276, 1229]	2522	[3037, 807]	3499	[3638, 336]
569	[1049, 1050]	1546	[2312, 441]	2523	[3038, 1689]	3500	[3639, 1451]
570	[1051, 1052]	1547	[2313, 2314]	2524	[3039, 2888]	3501	[3640, 2548]

571	[1053, 1054]	1548	[2315, 2316]	2525	[3040, 3041]	3502	[3641, 930]
572	[1055, 1002]	1549	[1090, 1069]	2526	[3042, 1981]	3503	[3642, 2305]
573	[1056, 1057]	1550	[1376, 1168]	2527	[736, 1979]	3504	[3643, 1104]
574	[1058, 1059]	1551	[1463, 2317]	2528	[2894, 1841]	3505	[3644, 906]
575	[1060, 1061]	1552	[305, 2318]	2529	[1681, 494]	3506	[3645, 918]
576	[1062, 279]	1553	[2319, 2320]	2530	[3043, 1693]	3507	[3646, 1356]
577	[1063, 1064]	1554	[2321, 956]	2531	[3044, 2903]	3508	[3647, 1151]
578	[1065, 1066]	1555	[2322, 1153]	2532	[1491, 1809]	3509	[3648, 1325]
579	[1067, 457]	1556	[2323, 2324]	2533	[3045, 2947]	3510	[3649, 2270]
580	[1068, 1069]	1557	[2325, 1201]	2534	[3046, 3047]	3511	[3650, 2251]
581	[1070, 1071]	1558	[2269, 435]	2535	[3048, 1749]	3512	[3651, 367]
582	[1064, 948]	1559	[2326, 2327]	2536	[3049, 34]	3513	[3652, 257]
583	[1072, 1073]	1560	[1066, 905]	2537	[1592, 1773]	3514	[3653, 260]
584	[1074, 370]	1561	[2328, 1445]	2538	[235, 3050]	3515	[3654, 1386]
585	[476, 1075]	1562	[2327, 343]	2539	[1580, 1472]	3516	[3655, 1247]
586	[1076, 1077]	1563	[2329, 987]	2540	[1658, 154]	3517	[3656, 321]
587	[1078, 1005]	1564	[2330, 2331]	2541	[3051, 3052]	3518	[3657, 76]
588	[1079, 75]	1565	[437, 2332]	2542	[1864, 3053]	3519	[3658, 1234]
589	[1080, 77]	1566	[2333, 935]	2543	[3054, 1680]	3520	[3659, 2284]
590	[1081, 1082]	1567	[2334, 1137]	2544	[3055, 171]	3521	[3660, 2652]
591	[1083, 453]	1568	[2314, 902]	2545	[1632, 2131]	3522	[3661, 87]
592	[1084, 1085]	1569	[2335, 961]	2546	[2858, 1861]	3523	[3662, 2450]
593	[1086, 1087]	1570	[1192, 1277]	2547	[3056, 826]	3524	[3663, 395]
594	[1088, 1089]	1571	[2266, 2336]	2548	[1797, 652]	3525	[3664, 2453]
595	[408, 1090]	1572	[1334, 2274]	2549	[1840, 1708]	3526	[3665, 320]
596	[1091, 1092]	1573	[1328, 1091]	2550	[3057, 1565]	3527	[3666, 105]
597	[1093, 1070]	1574	[2337, 1202]	2551	[678, 3058]	3528	[3667, 277]
598	[1094, 974]	1575	[2338, 1303]	2552	[693, 1933]	3529	[3668, 331]
599	[1014, 1095]	1576	[2339, 445]	2553	[3052, 48]	3530	[3669, 1282]
600	[1096, 1097]	1577	[2340, 1102]	2554	[3059, 749]	3531	[3670, 295]
601	[1098, 1099]	1578	[2341, 2342]	2555	[3060, 548]	3532	[3671, 967]
602	[1012, 987]	1579	[2343, 2230]	2556	[3061, 499]	3533	[3672, 325]
603	[1100, 1101]	1580	[928, 2344]	2557	[2862, 149]	3534	[3673, 21]
604	[1102, 1103]	1581	[2345, 2346]	2558	[3062, 2989]	3535	[3674, 988]
605	[1104, 1105]	1582	[2248, 1276]	2559	[128, 2837]	3536	[3675, 1439]
606	[1073, 1106]	1583	[2347, 1242]	2560	[3063, 243]	3537	[3676, 929]
607	[379, 1107]	1584	[2348, 2349]	2561	[2138, 2029]	3538	[3677, 2488]
608	[1108, 475]	1585	[2350, 998]	2562	[1676, 2008]	3539	[3678, 1355]
609	[1109, 406]	1586	[2351, 1001]	2563	[3064, 1580]	3540	[3679, 2468]
610	[1110, 1111]	1587	[2352, 1289]	2564	[3065, 2106]	3541	[3680, 1114]
611	[1112, 957]	1588	[2353, 471]	2565	[1707, 61]	3542	[3681, 1026]
612	[1113, 1114]	1589	[1280, 2354]	2566	[2142, 612]	3543	[3682, 99]
613	[1115, 322]	1590	[1397, 1161]	2567	[3066, 1796]	3544	[3683, 2317]
614	[1116, 1117]	1591	[2355, 2247]	2568	[3067, 1679]	3545	[3684, 359]

615	[1118, 1119]	1592	[1044, 2356]	2569	[1614, 206]	3546	[3685, 2643]
616	[1120, 1121]	1593	[963, 2357]	2570	[2947, 3068]	3547	[3686, 355]
617	[1122, 115]	1594	[970, 2353]	2571	[2953, 1588]	3548	[3687, 1267]
618	[1123, 1124]	1595	[2358, 955]	2572	[3069, 1788]	3549	[3688, 358]
619	[976, 916]	1596	[2359, 982]	2573	[1477, 3070]	3550	[3689, 2549]
620	[1125, 450]	1597	[2360, 91]	2574	[3071, 583]	3551	[3690, 20]
621	[1126, 1127]	1598	[353, 276]	2575	[768, 1572]	3552	[3691, 2510]
622	[92, 1128]	1599	[2361, 1044]	2576	[3072, 602]	3553	[3692, 2678]
623	[94, 1129]	1600	[1207, 2362]	2577	[3073, 3074]	3554	[3693, 1184]
624	[1130, 1131]	1601	[107, 2270]	2578	[1978, 3049]	3555	[3694, 3221]
625	[1132, 266]	1602	[2363, 2364]	2579	[3075, 533]	3556	[3695, 2379]
626	[1133, 1134]	1603	[2365, 1282]	2580	[1957, 3076]	3557	[3696, 2320]
627	[1135, 1136]	1604	[1343, 2366]	2581	[549, 3077]	3558	[3697, 2333]
628	[1137, 64]	1605	[2367, 340]	2582	[1578, 2981]	3559	[3698, 2238]
629	[1075, 1138]	1606	[949, 1009]	2583	[3078, 891]	3560	[3699, 948]
630	[1139, 1140]	1607	[398, 368]	2584	[3079, 1692]	3561	[3700, 1170]
631	[1141, 1142]	1608	[2368, 2369]	2585	[132, 565]	3562	[3701, 2343]
632	[1143, 1144]	1609	[2370, 1122]	2586	[1573, 836]	3563	[3702, 1293]
633	[1145, 1146]	1610	[2371, 1237]	2587	[1857, 3080]	3564	[3703, 288]
634	[1147, 1148]	1611	[2372, 2373]	2588	[3081, 2800]	3565	[3704, 374]
635	[1149, 1150]	1612	[2374, 2343]	2589	[3082, 1994]	3566	[3705, 895]
636	[1151, 432]	1613	[1006, 2375]	2590	[3083, 639]	3567	[3706, 1246]
637	[1152, 75]	1614	[2376, 1203]	2591	[3084, 686]	3568	[3707, 2389]
638	[1153, 1154]	1615	[1245, 2377]	2592	[3085, 2160]	3569	[3708, 1154]
639	[959, 922]	1616	[464, 1444]	2593	[3086, 3060]	3570	[3709, 27]
640	[22, 944]	1617	[2378, 2379]	2594	[3087, 2110]	3571	[3710, 1308]
641	[1155, 100]	1618	[1218, 1429]	2595	[240, 3088]	3572	[3711, 2444]
642	[82, 1156]	1619	[2380, 477]	2596	[3089, 1754]	3573	[3712, 1284]
643	[426, 1157]	1620	[2381, 2244]	2597	[842, 3090]	3574	[3713, 1401]
644	[1158, 264]	1621	[2382, 2383]	2598	[3091, 1632]	3575	[3714, 267]
645	[1159, 1160]	1622	[1223, 396]	2599	[3092, 3093]	3576	[3715, 1041]
646	[1161, 79]	1623	[2384, 2385]	2600	[1824, 595]	3577	[3716, 79]
647	[1162, 980]	1624	[1154, 275]	2601	[1773, 1753]	3578	[3717, 1078]
648	[1163, 116]	1625	[273, 2386]	2602	[3094, 494]	3579	[3718, 468]
649	[1164, 1165]	1626	[68, 2387]	2603	[1781, 794]	3580	[3719, 1005]
650	[1166, 1167]	1627	[2388, 273]	2604	[3095, 2881]	3581	[3720, 2354]
651	[1168, 257]	1628	[903, 1363]	2605	[3096, 718]	3582	[3721, 1003]
652	[1169, 328]	1629	[1105, 2389]	2606	[1785, 2987]	3583	[3722, 1037]
653	[1170, 1171]	1630	[2390, 338]	2607	[3097, 2829]	3584	[3723, 2552]
654	[1172, 111]	1631	[2391, 2392]	2608	[3098, 2884]	3585	[3724, 2385]
655	[1173, 68]	1632	[2251, 1432]	2609	[3099, 1834]	3586	[3725, 928]
656	[1174, 1175]	1633	[2393, 247]	2610	[3100, 3101]	3587	[3726, 471]
657	[416, 1176]	1634	[2394, 1249]	2611	[2206, 1790]	3588	[3727, 280]
658	[1177, 921]	1635	[2395, 971]	2612	[3102, 3103]	3589	[3728, 2404]

659	[1178, 1179]	1636	[2396, 1301]	2613	[1879, 1637]	3590	[3729, 1032]
660	[1180, 407]	1637	[2397, 1135]	2614	[1908, 593]	3591	[3730, 1071]
661	[1121, 1181]	1638	[2398, 1217]	2615	[3104, 2917]	3592	[3731, 18]
662	[1182, 1183]	1639	[429, 1291]	2616	[2104, 3105]	3593	[3732, 901]
663	[1184, 1185]	1640	[2399, 2400]	2617	[1678, 2959]	3594	[3733, 1164]
664	[1186, 344]	1641	[350, 2401]	2618	[3106, 2916]	3595	[3734, 1403]
665	[1187, 1188]	1642	[2402, 2403]	2619	[3077, 2856]	3596	[3735, 101]
666	[1189, 1101]	1643	[2273, 2404]	2620	[3107, 1965]	3597	[3736, 70]
667	[412, 956]	1644	[2405, 282]	2621	[1912, 36]	3598	[3737, 418]
668	[1150, 1190]	1645	[2281, 2406]	2622	[2926, 3048]	3599	[3738, 97]
669	[1191, 1192]	1646	[2407, 909]	2623	[3108, 1706]	3600	[3739, 2507]
670	[1193, 1072]	1647	[2408, 2397]	2624	[3027, 2169]	3601	[3740, 2339]
671	[1194, 993]	1648	[2409, 1299]	2625	[3109, 1474]	3602	[3741, 298]
672	[1195, 905]	1649	[1227, 2410]	2626	[3110, 1672]	3603	[3742, 292]
673	[1196, 1080]	1650	[2411, 1315]	2627	[2824, 514]	3604	[3743, 940]
674	[323, 1197]	1651	[1175, 2293]	2628	[3111, 882]	3605	[3744, 2235]
675	[325, 1198]	1652	[2412, 1408]	2629	[3112, 1815]	3606	[3745, 2367]
676	[1199, 1200]	1653	[2413, 2256]	2630	[605, 1914]	3607	[3746, 2653]
677	[1201, 1202]	1654	[2414, 1011]	2631	[174, 825]	3608	[3747, 1075]
678	[1203, 1204]	1655	[2415, 918]	2632	[3113, 14]	3609	[3748, 2366]
679	[1205, 121]	1656	[2241, 473]	2633	[3114, 3088]	3610	[3749, 1107]
680	[1206, 1207]	1657	[2389, 2416]	2634	[1921, 2071]	3611	[3750, 997]
681	[1208, 1209]	1658	[2277, 1433]	2635	[2096, 768]	3612	[3751, 1321]
682	[1210, 1211]	1659	[2417, 1129]	2636	[3115, 520]	3613	[3752, 2314]
683	[1212, 1213]	1660	[331, 460]	2637	[3116, 576]	3614	[3753, 2576]
684	[1214, 1215]	1661	[923, 2418]	2638	[136, 3036]	3615	[3754, 992]
685	[1216, 1000]	1662	[1287, 1046]	2639	[3117, 2135]	3616	[3755, 2439]
686	[1217, 1218]	1663	[2419, 258]	2640	[2013, 2924]	3617	[3756, 2647]
687	[1219, 1026]	1664	[2420, 899]	2641	[3118, 1828]	3618	[3757, 2384]
688	[1220, 1221]	1665	[2302, 1164]	2642	[2836, 2051]	3619	[3758, 2254]
689	[1185, 27]	1666	[953, 1307]	2643	[612, 539]	3620	[3050, 1560]
690	[1222, 1223]	1667	[2421, 1308]	2644	[593, 2977]	3621	[3759, 2150]
691	[346, 394]	1668	[1426, 2422]	2645	[3003, 3093]	3622	[1983, 3042]
692	[1224, 1225]	1669	[1392, 93]	2646	[3119, 549]	3623	[3760, 1858]
693	[1226, 1227]	1670	[2423, 1017]	2647	[3120, 3042]	3624	[3761, 50]
694	[1228, 1229]	1671	[1326, 1184]	2648	[1885, 542]	3625	[657, 216]
695	[1230, 944]	1672	[446, 1089]	2649	[3121, 3122]	3626	[661, 1989]
696	[1231, 1232]	1673	[2424, 1287]	2650	[3123, 3124]	3627	[3762, 1616]
697	[1233, 1234]	1674	[1457, 2425]	2651	[2017, 148]	3628	[1759, 43]
698	[1235, 1236]	1675	[2426, 2427]	2652	[3125, 1884]	3629	[3763, 503]
699	[1237, 1238]	1676	[2428, 375]	2653	[3090, 1780]	3630	[1645, 1911]
700	[1239, 1014]	1677	[2429, 2430]	2654	[713, 2994]	3631	[2957, 774]
701	[1240, 1241]	1678	[994, 2431]	2655	[597, 3126]	3632	[3764, 1598]
702	[1242, 1243]	1679	[383, 2263]	2656	[3127, 1919]	3633	[3765, 3053]

703	[1244, 1245]	1680	[2432, 1278]	2657	[3080, 142]	3634	[3766, 1716]
704	[1246, 1187]	1681	[1389, 942]	2658	[3128, 2842]	3635	[3767, 3068]
705	[337, 1247]	1682	[2433, 927]	2659	[3041, 163]	3636	[3768, 1617]
706	[1248, 1249]	1683	[2434, 1410]	2660	[2126, 1971]	3637	[3101, 1578]
707	[1250, 397]	1684	[2435, 2436]	2661	[3129, 136]	3638	[1626, 211]
708	[1251, 1252]	1685	[2437, 2438]	2662	[539, 691]	3639	[246, 741]
709	[1253, 1254]	1686	[982, 2439]	2663	[2038, 3130]	3640	[2167, 696]
710	[1255, 120]	1687	[2440, 1157]	2664	[3131, 2147]	3641	[637, 817]
711	[1256, 1219]	1688	[333, 2441]	2665	[3058, 3132]	3642	[3769, 783]
712	[1257, 1258]	1689	[2442, 1035]	2666	[1753, 649]	3643	[3770, 674]
713	[1259, 475]	1690	[2443, 1419]	2667	[3133, 3134]	3644	[2889, 523]
714	[1260, 1173]	1691	[2444, 2445]	2668	[1858, 521]	3645	[606, 558]
715	[1258, 1210]	1692	[2446, 17]	2669	[3033, 2184]	3646	[3771, 1821]
716	[16, 379]	1693	[1304, 1373]	2670	[3135, 794]	3647	[3772, 553]
717	[1261, 926]	1694	[2447, 1379]	2671	[574, 1735]	3648	[2869, 831]
718	[64, 1262]	1695	[2448, 16]	2672	[1947, 2798]	3649	[3773, 518]
719	[1263, 1264]	1696	[2449, 2249]	2673	[1505, 3124]	3650	[3774, 1990]
720	[1265, 415]	1697	[2450, 1072]	2674	[3136, 151]	3651	[2069, 826]
721	[1266, 1237]	1698	[18, 2451]	2675	[3137, 1793]	3652	[2867, 3023]
722	[1267, 425]	1699	[2452, 414]	2676	[3138, 2849]	3653	[3775, 1630]
723	[1268, 1269]	1700	[2453, 940]	2677	[2907, 203]	3654	[809, 2124]
724	[1270, 1159]	1701	[2454, 2301]	2678	[774, 2962]	3655	[659, 1799]
725	[267, 1271]	1702	[2455, 2456]	2679	[3139, 2962]	3656	[3776, 1500]
726	[1272, 1273]	1703	[2387, 2457]	2680	[2933, 782]	3657	[3777, 1872]
727	[1274, 320]	1704	[2436, 2458]	2681	[3140, 2218]	3658	[1730, 488]
728	[317, 1051]	1705	[395, 1279]	2682	[3141, 483]	3659	[3024, 1876]
729	[1275, 1276]	1706	[248, 1110]	2683	[3142, 1979]	3660	[2000, 2096]
730	[1277, 357]	1707	[1029, 2400]	2684	[2218, 2167]	3661	[871, 1846]
731	[1278, 461]	1708	[1031, 1346]	2685	[1539, 766]	3662	[158, 2027]
732	[1279, 1280]	1709	[84, 1097]	2686	[3143, 2973]	3663	[749, 2025]
733	[1281, 1036]	1710	[2311, 2459]	2687	[168, 1660]	3664	[3778, 1910]
734	[1282, 1283]	1711	[285, 1113]	2688	[741, 490]	3665	[3779, 1865]
735	[301, 1284]	1712	[2460, 1345]	2689	[3144, 2197]	3666	[242, 2129]
736	[109, 1285]	1713	[1025, 1213]	2690	[3145, 522]	3667	[3780, 647]
737	[1286, 923]	1714	[2461, 1457]	2691	[1734, 3101]	3668	[1571, 839]
738	[20, 1287]	1715	[2271, 2462]	2692	[1684, 3072]	3669	[3132, 3033]
739	[1288, 1289]	1716	[1349, 384]	2693	[3146, 1909]	3670	[2866, 2194]
740	[1290, 1291]	1717	[2463, 1087]	2694	[1807, 1710]	3671	[1764, 1613]
741	[1229, 23]	1718	[2422, 443]	2695	[1723, 636]	3672	[770, 1688]
742	[1292, 1293]	1719	[2464, 2273]	2696	[2193, 1968]	3673	[1669, 45]
743	[1294, 470]	1720	[2465, 2466]	2697	[1950, 1770]	3674	[3781, 629]
744	[1295, 1296]	1721	[1298, 1169]	2698	[3147, 1489]	3675	[3782, 1658]
745	[1297, 1298]	1722	[2467, 981]	2699	[3148, 1533]	3676	[2977, 1526]
746	[1299, 1300]	1723	[335, 81]	2700	[1705, 125]	3677	[3068, 2804]

747	[1183, 1301]	1724	[2468, 2469]	2701	[566, 627]	3678	[3783, 1531]
748	[972, 1302]	1725	[2470, 2263]	2702	[3134, 2950]	3679	[1624, 2212]
749	[1303, 1304]	1726	[2471, 2373]	2703	[2935, 234]	3680	[3784, 1626]
750	[1305, 1306]	1727	[2472, 2473]	2704	[3149, 1824]	3681	[2884, 725]
751	[1307, 1109]	1728	[2306, 402]	2705	[3150, 2060]	3682	[1865, 2081]
752	[1308, 1173]	1729	[1107, 2474]	2706	[1606, 682]	3683	[3785, 1791]
753	[90, 973]	1730	[291, 1368]	2707	[3151, 890]	3684	[2950, 174]
754	[1309, 1310]	1731	[2475, 1461]	2708	[3152, 1470]	3685	[3786, 705]
755	[1311, 1312]	1732	[2476, 2365]	2709	[3153, 2920]	3686	[3787, 1775]
756	[103, 118]	1733	[2477, 1323]	2710	[3154, 623]	3687	[1871, 1698]
757	[1313, 1314]	1734	[2478, 2479]	2711	[2828, 3013]	3688	[2204, 210]
758	[1315, 1162]	1735	[1057, 1451]	2712	[3155, 1810]	3689	[206, 3041]
759	[1316, 1317]	1736	[1232, 2480]	2713	[3156, 2065]	3690	[3788, 1571]
760	[269, 1318]	1737	[2481, 1296]	2714	[3157, 132]	3691	[873, 715]
761	[1319, 1111]	1738	[2354, 2421]	2715	[1512, 815]	3692	[491, 2824]
762	[1320, 1321]	1739	[2482, 1392]	2716	[2914, 2086]	3693	[2940, 2840]
763	[1322, 1254]	1740	[951, 2483]	2717	[3158, 2118]	3694	[3789, 192]
764	[1323, 312]	1741	[2484, 123]	2718	[3159, 2933]	3695	[2944, 1518]
765	[1324, 1149]	1742	[2485, 1318]	2719	[3160, 1981]	3696	[3790, 3494]
766	[1325, 1326]	1743	[279, 1201]	2720	[3161, 1767]	3697	[3791, 856]
767	[1327, 1211]	1744	[363, 2330]	2721	[838, 1751]	3698	[3792, 1611]
768	[369, 1328]	1745	[958, 1231]	2722	[1986, 1884]	3699	[2133, 693]
769	[1329, 1330]	1746	[2486, 916]	2723	[3162, 2057]	3700	[3494, 1880]
770	[460, 327]	1747	[2487, 1384]	2724	[3163, 1667]	3701	[665, 182]
771	[1331, 339]	1748	[2488, 464]	2725	[3164, 806]	3702	[1939, 868]
772	[474, 1022]	1749	[2489, 457]	2726	[2856, 1766]	3703	[1882, 1976]
773	[1332, 941]	1750	[2490, 1008]	2727	[1778, 3103]	3704	[1810, 1840]
774	[1333, 1334]	1751	[2491, 2492]	2728	[3165, 203]	3705	[3793, 1491]
775	[1335, 1336]	1752	[2493, 2258]	2729	[152, 54]	3706	[3794, 1709]
776	[1302, 1337]	1753	[2494, 2348]	2730	[776, 2796]	3707	[3795, 606]
777	[1338, 1339]	1754	[351, 300]	2731	[3166, 1705]	3708	[3013, 532]
778	[921, 1340]	1755	[2495, 308]	2732	[3167, 2208]	3709	[3103, 1649]
779	[1341, 337]	1756	[2496, 2497]	2733	[3168, 1735]	3710	[495, 501]
780	[1342, 1343]	1757	[2498, 1432]	2734	[3169, 1736]	3711	[3796, 2938]
781	[1344, 1016]	1758	[2499, 2500]	2735	[3170, 1797]	3712	[3797, 1861]
782	[1345, 364]	1759	[1114, 89]	2736	[3171, 3034]	3713	[3798, 3190]
783	[1346, 969]	1760	[2501, 2408]	2737	[1662, 2053]	3714	[3799, 1523]
784	[1347, 1348]	1761	[2430, 477]	2738	[3172, 3173]	3715	[3800, 1947]
785	[309, 1349]	1762	[2502, 446]	2739	[684, 665]	3716	[3801, 2020]
786	[1350, 1198]	1763	[2503, 1313]	2740	[3174, 2169]	3717	[1597, 799]
787	[1351, 439]	1764	[321, 2376]	2741	[2974, 194]	3718	[3802, 1534]
788	[1352, 454]	1765	[2504, 1279]	2742	[1897, 130]	3719	[2112, 2094]
789	[265, 1137]	1766	[2505, 2506]	2743	[2981, 3175]	3720	[858, 3052]
790	[1353, 1354]	1767	[2445, 1047]	2744	[2024, 1871]	3721	[640, 506]

791	[986, 1355]	1768	[978, 2507]	2745	[609, 1647]	3722	[1593, 888]
792	[1300, 21]	1769	[2508, 1002]	2746	[3176, 1674]	3723	[3173, 1738]
793	[76, 1166]	1770	[2509, 2510]	2747	[3124, 1952]	3724	[60, 619]
794	[1356, 1357]	1771	[1241, 1371]	2748	[556, 2973]	3725	[3803, 1469]
795	[1008, 1358]	1772	[2511, 2512]	2749	[3177, 2041]	3726	[1775, 171]
796	[1359, 1360]	1773	[1138, 1145]	2750	[3178, 622]	3727	[2150, 544]
797	[431, 1361]	1774	[1321, 2513]	2751	[2027, 1657]	3728	[1766, 1505]
798	[1362, 1363]	1775	[2514, 2515]	2752	[3179, 3070]	3729	[3804, 2885]
799	[1364, 1206]	1776	[2292, 2516]	2753	[170, 146]	3730	[3805, 1912]
800	[1365, 1176]	1777	[2517, 1098]	2754	[1497, 1748]	3731	[1852, 1515]
801	[1366, 306]	1778	[478, 2262]	2755	[3180, 716]	3732	[1634, 791]
802	[1367, 1368]	1779	[2518, 959]	2756	[3181, 3048]	3733	[3806, 578]
803	[1369, 251]	1780	[1414, 2238]	2757	[2043, 1565]	3734	[3807, 2134]
804	[1370, 1371]	1781	[327, 1055]	2758	[2086, 1764]	3735	[1541, 2808]
805	[1249, 1372]	1782	[2401, 2519]	2759	[3182, 233]	3736	[535, 1804]
806	[1373, 1374]	1783	[2520, 2521]	2760	[3183, 756]	3737	[752, 1562]
807	[1375, 1376]	1784	[80, 911]	2761	[3105, 631]	3738	[3808, 3130]
808	[339, 403]	1785	[1077, 1315]	2762	[3184, 3049]	3739	[3809, 2143]
809	[914, 1377]	1786	[2522, 2483]	2763	[44, 1889]	3740	[3810, 1624]
810	[1378, 1171]	1787	[404, 1303]	2764	[2041, 160]	3741	[3811, 2948]
811	[1330, 1379]	1788	[2286, 1235]	2765	[1549, 187]	3742	[3812, 244]
812	[1380, 1381]	1789	[2523, 1455]	2766	[3185, 2882]	3743	[3813, 676]
813	[30, 1382]	1790	[2524, 2402]	2767	[560, 585]	3744	[3814, 246]
814	[1383, 90]	1791	[2525, 2526]	2768	[3186, 1859]	3745	[1998, 738]
815	[112, 1384]	1792	[2527, 2246]	2769	[3187, 2810]	3746	[1887, 2926]
816	[1385, 1333]	1793	[1318, 1256]	2770	[673, 2160]	3747	[718, 140]
817	[410, 1386]	1794	[341, 2244]	2771	[3188, 742]	3748	[1889, 189]
818	[1387, 1388]	1795	[2528, 1256]	2772	[3189, 1590]	3749	[3815, 2866]
819	[24, 1389]	1796	[1445, 2529]	2773	[783, 2142]	3750	[3816, 2991]
820	[1390, 1391]	1797	[893, 280]	2774	[2210, 755]	3751	[2948, 196]
821	[454, 1392]	1798	[2530, 2531]	2775	[1925, 3190]	3752	[2084, 1776]
822	[1393, 1113]	1799	[2532, 2533]	2776	[1672, 2090]	3753	[760, 574]
823	[1394, 1395]	1800	[2534, 1320]	2777	[3191, 2979]	3754	[3817, 3007]
824	[1396, 1215]	1801	[2438, 2535]	2778	[3192, 2136]	3755	[3126, 2827]
825	[1041, 422]	1802	[2536, 354]	2779	[2020, 2011]	3756	[1598, 1999]
826	[1236, 1397]	1803	[2537, 2538]	2780	[1784, 52]	3757	[2009, 601]
827	[1234, 1398]	1804	[1391, 2512]	2781	[3193, 1813]	3758	[811, 621]
828	[393, 1399]	1805	[1061, 2394]	2782	[3194, 3175]	3759	[3818, 3210]
829	[1400, 452]	1806	[450, 2488]	2783	[1500, 1892]	3760	[3819, 2228]
830	[939, 898]	1807	[988, 971]	2784	[2131, 860]	3761	[3820, 2403]
831	[1401, 1402]	1808	[2357, 2539]	2785	[862, 127]	3762	[3821, 1283]
832	[1403, 1183]	1809	[289, 1311]	2786	[3031, 1597]	3763	[3822, 415]
833	[1404, 1105]	1810	[2254, 1031]	2787	[3195, 1553]	3764	[3823, 1040]
834	[1360, 936]	1811	[2540, 1278]	2788	[3196, 2075]	3765	[3824, 1342]

835	[1405, 912]	1812	[1388, 249]	2789	[2077, 1477]	3766	[3825, 368]
836	[1211, 1015]	1813	[2541, 2450]	2790	[1568, 628]	3767	[3826, 294]
837	[1406, 1407]	1814	[1465, 2542]	2791	[40, 1525]	3768	[3827, 1218]
838	[1408, 1360]	1815	[381, 2247]	2792	[1899, 229]	3769	[3828, 926]
839	[1409, 1410]	1816	[2543, 2421]	2793	[3197, 1387]	3770	[3829, 1444]
840	[1411, 1412]	1817	[2544, 85]	2794	[3198, 1191]	3771	[3830, 420]
841	[114, 330]	1818	[2545, 26]	2795	[3199, 2416]	3772	[3831, 2578]
842	[1413, 1414]	1819	[2546, 1270]	2796	[2652, 87]	3773	[3832, 365]
843	[1415, 478]	1820	[2547, 2548]	2797	[3200, 2743]	3774	[3833, 2509]
844	[120, 1416]	1821	[374, 2549]	2798	[2492, 2372]	3775	[3834, 1070]
845	[1417, 1418]	1822	[2550, 341]	2799	[3201, 1062]	3776	[3835, 1024]
846	[1419, 1074]	1823	[1310, 2544]	2800	[1372, 962]	3777	[3836, 2588]
847	[1420, 1421]	1824	[357, 2551]	2801	[3202, 398]	3778	[3837, 1138]
848	[1399, 1246]	1825	[365, 2552]	2802	[3203, 893]	3779	[3838, 2513]
849	[1422, 281]	1826	[2235, 1077]	2803	[3204, 1259]	3780	[3839, 124]
850	[1171, 264]	1827	[2553, 894]	2804	[1314, 2266]	3781	[3840, 963]
851	[1423, 389]	1828	[2439, 65]	2805	[3205, 296]	3782	[3841, 445]
852	[118, 1424]	1829	[2554, 1126]	2806	[1447, 2297]	3783	[3842, 2527]
853	[1425, 1426]	1830	[1128, 2555]	2807	[3206, 2541]	3784	[3843, 2415]
854	[1427, 1428]	1831	[2556, 1153]	2808	[2458, 977]	3785	[3844, 297]
855	[1429, 1082]	1832	[2557, 1152]	2809	[3207, 2227]	3786	[3845, 2252]
856	[295, 1430]	1833	[2558, 2231]	2810	[1167, 1381]	3787	[3846, 1004]
857	[947, 1252]	1834	[1262, 2559]	2811	[3208, 2330]	3788	[3847, 960]
858	[1296, 272]	1835	[2560, 2462]	2812	[466, 2655]	3789	[3848, 1320]
859	[1431, 423]	1836	[1379, 2561]	2813	[3209, 2491]	3790	[3849, 914]
860	[1432, 352]	1837	[2562, 2304]	2814	[3210, 451]	3791	[3850, 1073]
861	[1144, 1062]	1838	[897, 1428]	2815	[3211, 1292]	3792	[3851, 432]
862	[1433, 1434]	1839	[2563, 1106]	2816	[3212, 2250]	3793	[3852, 289]
863	[1435, 377]	1840	[1395, 1214]	2817	[3213, 991]	3794	[3853, 66]
864	[1436, 961]	1841	[2564, 291]	2818	[3214, 2591]	3795	[3854, 2624]
865	[1437, 396]	1842	[2565, 965]	2819	[3215, 2442]	3796	[3855, 2353]
866	[1131, 1100]	1843	[2566, 2336]	2820	[1440, 315]	3797	[3856, 1307]
867	[1438, 1179]	1844	[406, 2466]	2821	[3216, 2300]	3798	[3857, 1216]
868	[1439, 1440]	1845	[2567, 1009]	2822	[3217, 911]	3799	[3858, 80]
869	[912, 1441]	1846	[1462, 119]	2823	[3218, 1433]	3800	[3859, 322]
870	[1442, 69]	1847	[2568, 2287]	2824	[1082, 929]	3801	[3860, 1197]
871	[1443, 1209]	1848	[2569, 1420]	2825	[1357, 298]	3802	[3861, 2616]
872	[1283, 1196]	1849	[2521, 2240]	2826	[3219, 384]	3803	[3862, 2297]
873	[1444, 1445]	1850	[2400, 2570]	2827	[1200, 1345]	3804	[3863, 913]
874	[1446, 1447]	1851	[2512, 288]	2828	[1269, 1178]	3805	[3864, 476]
875	[1306, 1259]	1852	[2406, 2316]	2829	[275, 2364]	3806	[3865, 1238]
876	[1448, 265]	1853	[2571, 2294]	2830	[3220, 1136]	3807	[3866, 953]
877	[1271, 1449]	1854	[2572, 2506]	2831	[2663, 3221]	3808	[3867, 2386]
878	[1450, 1015]	1855	[2573, 1126]	2832	[3222, 363]	3809	[3868, 1429]

879	[1451, 1452]	1856	[2574, 1270]	2833	[2790, 2573]	3810	[3869, 2295]
880	[1453, 411]	1857	[1289, 1170]	2834	[2738, 2311]	3811	[3870, 2298]
881	[1454, 1455]	1858	[1136, 968]	2835	[2570, 3210]	3812	[3871, 2526]
882	[1456, 1457]	1859	[1176, 465]	2836	[1416, 361]	3813	[3872, 1142]
883	[1434, 933]	1860	[2575, 910]	2837	[252, 1330]	3814	[3873, 373]
884	[1340, 1458]	1861	[1452, 2576]	2838	[3223, 989]	3815	[3874, 470]
885	[1459, 1351]	1862	[2577, 2578]	2839	[3224, 2352]	3816	[3875, 417]
886	[377, 1261]	1863	[2579, 2580]	2840	[439, 2500]	3817	[3876, 1430]
887	[1460, 474]	1864	[1095, 294]	2841	[3225, 2268]	3818	[3877, 1794]
888	[1461, 1462]	1865	[2581, 2582]	2842	[1127, 991]	3819	[3878, 1801]
889	[1156, 1463]	1866	[2583, 1446]	2843	[3226, 2604]	3820	[2118, 617]
890	[1157, 1464]	1867	[1430, 2346]	2844	[3227, 1294]	3821	[3007, 1917]
891	[1160, 1465]	1868	[385, 2584]	2845	[3228, 394]	3822	[3879, 857]
892	[1466, 542]	1869	[2585, 1465]	2846	[3229, 2784]	3823	[3880, 1792]
893	[1467, 1468]	1870	[2586, 30]	2847	[895, 2532]	3824	[1894, 713]
894	[734, 1469]	1871	[1336, 256]	2848	[3230, 2608]	3825	[3881, 2223]
895	[1470, 11]	1872	[287, 2587]	2849	[930, 3231]	3826	[2001, 3047]
896	[1471, 1472]	1873	[2588, 2360]	2850	[1001, 3232]	3827	[1924, 2031]
897	[1473, 1474]	1874	[2589, 1199]	2851	[3233, 1377]	3828	[3190, 3134]
898	[1475, 49]	1875	[2590, 2371]	2852	[3234, 1312]	3829	[850, 2043]
899	[1476, 1477]	1876	[2591, 1152]	2853	[105, 1407]	3830	[2961, 1479]
900	[1478, 1479]	1877	[414, 1411]	2854	[957, 2790]	3831	[1584, 1482]
901	[1480, 806]	1878	[2592, 2413]	2855	[3235, 1374]	3832	[2156, 1556]
902	[1481, 1482]	1879	[1188, 1263]	2856	[2678, 2627]	3833	[1996, 1485]
903	[570, 226]	1880	[1312, 2593]	2857	[3236, 1452]	3834	[3882, 675]
904	[1483, 884]	1881	[2594, 972]	2858	[1238, 2577]	3835	[1782, 1703]
905	[1484, 1485]	1882	[1190, 2595]	2859	[3237, 2383]	3836	[2163, 709]
906	[1486, 1487]	1883	[2596, 2597]	2860	[3238, 1397]	3837	[2987, 2059]
907	[1488, 1489]	1884	[2598, 1336]	2861	[3239, 1314]	3838	[667, 1509]
908	[1490, 1491]	1885	[2228, 308]	2862	[2418, 296]	3839	[3883, 1924]
909	[1492, 1493]	1886	[2599, 2479]	2863	[2538, 2598]	3840	[1946, 707]
910	[1494, 1495]	1887	[2479, 391]	2864	[3240, 1055]	3841	[3884, 1852]
911	[1496, 1497]	1888	[2600, 399]	2865	[3241, 2445]	3842	[2182, 650]
912	[160, 1498]	1889	[2392, 73]	2866	[901, 428]	3843	[2885, 2005]
913	[1499, 1500]	1890	[2601, 1334]	2867	[441, 1391]	3844	[237, 2216]
914	[1501, 719]	1891	[2602, 2603]	2868	[3242, 2356]	3845	[1792, 1678]
915	[1502, 1503]	1892	[1124, 2604]	2869	[2526, 1409]	3846	[797, 572]
916	[1504, 1505]	1893	[2605, 2302]	2870	[3243, 1161]	3847	[3885, 700]
917	[1506, 1507]	1894	[1421, 1122]	2871	[3244, 1091]	3848	[3034, 1778]
918	[1508, 1509]	1895	[1418, 1394]	2872	[3245, 307]	3849	[3886, 614]
919	[558, 1510]	1896	[2606, 380]	2873	[3246, 1095]	3850	[732, 556]
920	[1511, 1512]	1897	[1087, 2591]	2874	[2298, 1299]	3851	[3887, 2894]
921	[184, 1513]	1898	[2607, 304]	2875	[3247, 2441]	3852	[857, 2064]
922	[1495, 625]	1899	[1099, 2608]	2876	[3248, 259]	3853	[680, 2800]

923	[1514, 1515]	1900	[2609, 108]	2877	[1117, 1042]	3854	[595, 2862]
924	[1516, 575]	1901	[2497, 2610]	2878	[3249, 2622]	3855	[728, 2916]
925	[1517, 1518]	1902	[2611, 1449]	2879	[3250, 254]	3856	[2143, 787]
926	[1519, 1520]	1903	[452, 2612]	2880	[3251, 2529]	3857	[3888, 1605]
927	[1521, 1522]	1904	[2613, 309]	2881	[2542, 2305]	3858	[3889, 1595]
928	[1489, 1523]	1905	[996, 413]	2882	[2383, 107]	3859	[503, 138]
929	[1524, 1525]	1906	[2614, 1185]	2883	[258, 947]	3860	[1751, 1987]
930	[1526, 756]	1907	[2615, 1042]	2884	[435, 1272]	3861	[1637, 1555]
931	[1527, 1528]	1908	[2616, 108]	2885	[1424, 2538]	3862	[244, 2863]
932	[1529, 1530]	1909	[2252, 2617]	2886	[3252, 2584]	3863	[3890, 1593]
933	[150, 1531]	1910	[1247, 2430]	2887	[3253, 917]	3864	[2812, 2888]
934	[1532, 782]	1911	[2618, 373]	2888	[2535, 1063]	3865	[2159, 3031]
935	[1533, 1534]	1912	[2619, 2603]	2889	[2459, 1253]	3866	[2915, 599]
936	[1535, 1536]	1913	[2620, 958]	2890	[3254, 920]	3867	[1608, 2108]
937	[1537, 1538]	1914	[402, 2390]	2891	[3255, 299]	3868	[815, 170]
938	[56, 1539]	1915	[2621, 2418]	2892	[1221, 455]	3869	[1905, 789]
939	[1540, 1541]	1916	[943, 2301]	2893	[3256, 253]	3870	[1928, 3008]
940	[1542, 1543]	1917	[2456, 111]	2894	[2559, 2747]	3871	[2090, 711]
941	[1544, 1545]	1918	[2622, 2438]	2895	[3257, 1019]	3872	[1630, 2063]
942	[50, 552]	1919	[1412, 1058]	2896	[3258, 2619]	3873	[2972, 1592]
943	[1546, 1547]	1920	[2531, 1034]	2897	[3259, 1413]	3874	[2924, 610]
944	[1548, 1549]	1921	[2533, 1119]	2898	[3260, 2324]	3875	[2217, 1676]
945	[46, 622]	1922	[2623, 1043]	2899	[2757, 2358]	3876	[757, 1522]
946	[1550, 1551]	1923	[2510, 2624]	2900	[3261, 1328]	3877	[3891, 364]
947	[1552, 1553]	1924	[917, 1050]	2901	[3262, 2627]	3878	[3892, 376]
948	[1554, 1555]	1925	[1119, 2453]	2902	[3263, 83]	3879	[3893, 919]
949	[1556, 764]	1926	[2625, 2618]	2903	[1361, 1039]	3880	[3894, 472]
950	[1557, 507]	1927	[1004, 1369]	2904	[3264, 1188]	3881	[3895, 1025]
951	[1507, 1558]	1928	[1402, 1054]	2905	[3265, 1454]	3882	[3896, 1443]
952	[1559, 1560]	1929	[2626, 1398]	2906	[3266, 2775]	3883	[3897, 949]
953	[1561, 1562]	1930	[2627, 1057]	2907	[1354, 336]	3884	[3898, 1447]
954	[1563, 1564]	1931	[2628, 2241]	2908	[3267, 990]	3885	[3899, 1064]
955	[1565, 1566]	1932	[2629, 1214]	2909	[3268, 1231]	3886	[3900, 2544]
956	[1567, 1568]	1933	[1225, 2580]	2910	[3269, 2277]	3887	[3901, 98]
957	[1569, 1570]	1934	[2630, 1337]	2911	[3270, 1059]	3888	[3902, 2469]
958	[1503, 1571]	1935	[28, 1147]	2912	[3271, 2665]	3889	[3903, 2402]
959	[1572, 1573]	1936	[2631, 2397]	2913	[3272, 970]	3890	[3904, 2617]
960	[1574, 795]	1937	[960, 1221]	2914	[919, 2472]	3891	[1538, 529]
961	[1575, 1576]	1938	[2632, 2394]	2915	[1358, 259]	3892	[1716, 2192]
962	[1577, 1578]	1939	[1317, 2531]	2916	[2677, 2534]	3893	[846, 561]
963	[1579, 1580]	1940	[2633, 2391]	2917	[2462, 123]	3894	[233, 2033]
964	[1581, 1582]	1941	[2634, 89]	2918	[3273, 2674]	3895	[1545, 560]
965	[1583, 1584]	1942	[964, 104]	2919	[1142, 2588]	3896	[836, 1697]
966	[1585, 519]	1943	[2635, 2392]	2920	[2451, 2367]	3897	[830, 3122]

967	[1586, 1587]	1944	[1000, 1149]	2921	[3274, 1165]	3898	[1815, 1732]
968	[1588, 638]	1945	[2636, 2446]	2922	[3275, 1145]	3899	[823, 2210]
969	[1589, 1590]	1946	[1339, 1354]	2923	[3276, 316]	3900	[647, 1838]
970	[1591, 1592]	1947	[2529, 2292]	2924	[2500, 1436]	3901	[525, 2877]
971	[629, 1593]	1948	[2637, 428]	2925	[3277, 1340]	3902	[1849, 2045]
972	[1594, 1595]	1949	[2638, 2382]	2926	[2320, 2489]	3903	[3088, 886]
973	[1596, 1597]	1950	[2597, 925]	2927	[3278, 397]	3904	[1954, 2953]
974	[180, 1598]	1951	[2639, 17]	2928	[3279, 933]		
975	[1599, 1600]	1952	[329, 1425]	2929	[2784, 247]		
976	[1601, 1506]	1953	[2640, 465]	2930	[3280, 419]		

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	651	1	1302	1	1953	1	2604	1	3255	1
1	0	652	1	1303	0	1954	0	2605	0	3256	0
2	0	653	0	1304	0	1955	0	2606	0	3257	1
3	0	654	0	1305	1	1956	0	2607	1	3258	0
4	0	655	0	1306	1	1957	1	2608	1	3259	0
5	0	656	1	1307	1	1958	1	2609	1	3260	0
6	0	657	1	1308	1	1959	1	2610	0	3261	1
7	0	658	0	1309	0	1960	1	2611	1	3262	0
8	0	659	1	1310	1	1961	1	2612	0	3263	1
9	0	660	0	1311	1	1962	1	2613	0	3264	0
10	0	661	0	1312	1	1963	0	2614	0	3265	0
11	0	662	0	1313	1	1964	1	2615	1	3266	0
12	1	663	1	1314	1	1965	1	2616	0	3267	1
13	0	664	0	1315	0	1966	0	2617	0	3268	1
14	0	665	1	1316	1	1967	0	2618	0	3269	0
15	0	666	0	1317	1	1968	0	2619	1	3270	0
16	1	667	1	1318	0	1969	0	2620	0	3271	0
17	0	668	1	1319	0	1970	1	2621	1	3272	0
18	1	669	1	1320	0	1971	1	2622	0	3273	1
19	0	670	0	1321	0	1972	0	2623	0	3274	0
20	0	671	0	1322	0	1973	0	2624	1	3275	1
21	0	672	1	1323	0	1974	1	2625	1	3276	0
22	0	673	1	1324	1	1975	0	2626	0	3277	1
23	0	674	0	1325	0	1976	0	2627	1	3278	1
24	0	675	1	1326	1	1977	0	2628	0	3279	0
25	1	676	0	1327	0	1978	0	2629	0	3280	0
26	1	677	0	1328	1	1979	0	2630	0	3281	0
27	0	678	0	1329	1	1980	0	2631	1	3282	0
28	0	679	0	1330	1	1981	0	2632	1	3283	1
29	0	680	0	1331	1	1982	0	2633	1	3284	0
30	1	681	0	1332	0	1983	1	2634	1	3285	0

31	0	682	1	1333	1	1984	1	2635	1	3286	0
32	1	683	1	1334	1	1985	1	2636	0	3287	0
33	1	684	1	1335	0	1986	1	2637	1	3288	0
34	1	685	1	1336	0	1987	0	2638	1	3289	1
35	0	686	1	1337	1	1988	0	2639	1	3290	1
36	1	687	1	1338	1	1989	0	2640	1	3291	0
37	1	688	0	1339	0	1990	1	2641	0	3292	0
38	1	689	1	1340	0	1991	1	2642	0	3293	1
39	0	690	0	1341	1	1992	1	2643	1	3294	1
40	1	691	0	1342	1	1993	1	2644	1	3295	0
41	0	692	0	1343	1	1994	0	2645	1	3296	0
42	1	693	1	1344	1	1995	1	2646	1	3297	1
43	0	694	1	1345	1	1996	1	2647	0	3298	1
44	1	695	1	1346	1	1997	0	2648	1	3299	1
45	0	696	1	1347	1	1998	1	2649	0	3300	1
46	0	697	0	1348	1	1999	1	2650	0	3301	1
47	0	698	0	1349	0	2000	0	2651	0	3302	1
48	1	699	0	1350	0	2001	0	2652	0	3303	0
49	0	700	0	1351	1	2002	0	2653	0	3304	0
50	1	701	0	1352	0	2003	0	2654	0	3305	0
51	1	702	1	1353	1	2004	1	2655	0	3306	1
52	0	703	0	1354	1	2005	1	2656	0	3307	1
53	1	704	0	1355	1	2006	0	2657	1	3308	0
54	0	705	0	1356	0	2007	0	2658	1	3309	1
55	0	706	1	1357	0	2008	0	2659	0	3310	1
56	1	707	0	1358	1	2009	0	2660	1	3311	1
57	0	708	1	1359	0	2010	1	2661	1	3312	0
58	0	709	1	1360	0	2011	1	2662	1	3313	0
59	0	710	0	1361	0	2012	1	2663	1	3314	1
60	1	711	0	1362	0	2013	1	2664	1	3315	0
61	1	712	1	1363	0	2014	1	2665	0	3316	1
62	0	713	0	1364	1	2015	0	2666	0	3317	0
63	0	714	0	1365	0	2016	1	2667	1	3318	0
64	0	715	1	1366	0	2017	0	2668	0	3319	0
65	1	716	1	1367	0	2018	1	2669	1	3320	1
66	0	717	1	1368	1	2019	0	2670	0	3321	1
67	1	718	0	1369	1	2020	1	2671	1	3322	1
68	0	719	1	1370	0	2021	0	2672	1	3323	0
69	1	720	0	1371	0	2022	1	2673	1	3324	1
70	1	721	1	1372	1	2023	0	2674	1	3325	0
71	0	722	1	1373	1	2024	0	2675	0	3326	1
72	1	723	0	1374	0	2025	1	2676	1	3327	0
73	1	724	1	1375	1	2026	1	2677	1	3328	0
74	1	725	1	1376	1	2027	1	2678	1	3329	0

75	1	726	1	1377	0	2028	0	2679	0	3330	1
76	0	727	0	1378	1	2029	1	2680	1	3331	0
77	1	728	1	1379	0	2030	1	2681	1	3332	0
78	0	729	1	1380	0	2031	1	2682	0	3333	1
79	0	730	1	1381	1	2032	0	2683	1	3334	1
80	0	731	1	1382	0	2033	1	2684	0	3335	1
81	1	732	1	1383	0	2034	0	2685	0	3336	0
82	0	733	0	1384	1	2035	0	2686	0	3337	1
83	0	734	1	1385	0	2036	0	2687	0	3338	0
84	0	735	0	1386	1	2037	0	2688	1	3339	0
85	1	736	0	1387	1	2038	1	2689	0	3340	1
86	0	737	0	1388	1	2039	1	2690	0	3341	0
87	0	738	0	1389	1	2040	0	2691	1	3342	1
88	0	739	1	1390	1	2041	1	2692	1	3343	0
89	1	740	0	1391	1	2042	0	2693	1	3344	1
90	0	741	1	1392	0	2043	0	2694	1	3345	1
91	0	742	0	1393	0	2044	1	2695	1	3346	0
92	1	743	1	1394	1	2045	1	2696	1	3347	0
93	0	744	1	1395	1	2046	1	2697	0	3348	0
94	0	745	1	1396	0	2047	0	2698	1	3349	0
95	0	746	1	1397	1	2048	1	2699	1	3350	0
96	1	747	0	1398	1	2049	1	2700	1	3351	0
97	0	748	0	1399	1	2050	1	2701	0	3352	0
98	0	749	0	1400	1	2051	0	2702	1	3353	0
99	1	750	1	1401	0	2052	1	2703	1	3354	0
100	1	751	1	1402	1	2053	0	2704	1	3355	0
101	1	752	1	1403	1	2054	0	2705	1	3356	0
102	1	753	0	1404	1	2055	0	2706	1	3357	0
103	1	754	0	1405	0	2056	1	2707	0	3358	1
104	0	755	1	1406	0	2057	1	2708	0	3359	1
105	1	756	1	1407	1	2058	1	2709	0	3360	1
106	1	757	1	1408	1	2059	0	2710	0	3361	1
107	0	758	0	1409	1	2060	1	2711	0	3362	0
108	0	759	1	1410	1	2061	0	2712	0	3363	1
109	0	760	1	1411	1	2062	1	2713	0	3364	1
110	0	761	0	1412	0	2063	0	2714	1	3365	1
111	1	762	0	1413	0	2064	1	2715	1	3366	0
112	0	763	0	1414	0	2065	0	2716	1	3367	1
113	0	764	0	1415	0	2066	1	2717	1	3368	0
114	1	765	1	1416	0	2067	1	2718	1	3369	1
115	0	766	0	1417	0	2068	1	2719	1	3370	0
116	0	767	0	1418	1	2069	0	2720	0	3371	0
117	0	768	0	1419	1	2070	1	2721	1	3372	1
118	0	769	1	1420	1	2071	0	2722	1	3373	1

119	1	770	1	1421	0	2072	1	2723	0	3374	1
120	1	771	1	1422	1	2073	1	2724	1	3375	1
121	1	772	0	1423	1	2074	1	2725	1	3376	0
122	0	773	0	1424	0	2075	0	2726	1	3377	0
123	0	774	1	1425	1	2076	0	2727	1	3378	0
124	0	775	0	1426	1	2077	0	2728	0	3379	1
125	0	776	1	1427	1	2078	0	2729	0	3380	1
126	1	777	1	1428	1	2079	1	2730	1	3381	1
127	0	778	0	1429	1	2080	0	2731	1	3382	1
128	1	779	1	1430	1	2081	0	2732	1	3383	0
129	1	780	1	1431	1	2082	0	2733	0	3384	1
130	1	781	1	1432	0	2083	0	2734	1	3385	0
131	0	782	1	1433	1	2084	1	2735	0	3386	1
132	1	783	1	1434	1	2085	0	2736	0	3387	1
133	1	784	1	1435	1	2086	0	2737	0	3388	0
134	1	785	1	1436	0	2087	1	2738	0	3389	0
135	0	786	0	1437	1	2088	0	2739	1	3390	1
136	1	787	1	1438	0	2089	1	2740	0	3391	0
137	1	788	0	1439	0	2090	1	2741	1	3392	1
138	1	789	1	1440	1	2091	1	2742	0	3393	1
139	1	790	1	1441	1	2092	1	2743	0	3394	1
140	0	791	0	1442	1	2093	1	2744	0	3395	0
141	0	792	1	1443	1	2094	0	2745	1	3396	0
142	0	793	0	1444	1	2095	1	2746	0	3397	1
143	1	794	0	1445	0	2096	1	2747	1	3398	0
144	1	795	0	1446	0	2097	0	2748	1	3399	0
145	1	796	0	1447	1	2098	1	2749	0	3400	0
146	1	797	1	1448	0	2099	1	2750	1	3401	1
147	1	798	0	1449	1	2100	1	2751	1	3402	0
148	1	799	1	1450	0	2101	0	2752	1	3403	0
149	1	800	0	1451	1	2102	1	2753	0	3404	0
150	0	801	0	1452	0	2103	1	2754	0	3405	1
151	0	802	0	1453	0	2104	0	2755	1	3406	1
152	0	803	1	1454	1	2105	1	2756	1	3407	0
153	1	804	0	1455	0	2106	1	2757	0	3408	1
154	1	805	1	1456	0	2107	1	2758	0	3409	1
155	0	806	1	1457	0	2108	0	2759	1	3410	0
156	1	807	1	1458	1	2109	1	2760	1	3411	1
157	0	808	1	1459	0	2110	0	2761	1	3412	0
158	0	809	1	1460	1	2111	0	2762	1	3413	0
159	0	810	1	1461	0	2112	0	2763	1	3414	0
160	1	811	1	1462	1	2113	0	2764	1	3415	0
161	1	812	0	1463	0	2114	1	2765	1	3416	0
162	1	813	1	1464	1	2115	1	2766	0	3417	1

163	0	814	0	1465	1	2116	1	2767	0	3418	1
164	0	815	0	1466	0	2117	0	2768	1	3419	1
165	0	816	0	1467	1	2118	1	2769	0	3420	1
166	1	817	0	1468	0	2119	1	2770	1	3421	0
167	0	818	1	1469	0	2120	0	2771	1	3422	1
168	0	819	0	1470	1	2121	0	2772	0	3423	0
169	1	820	1	1471	1	2122	0	2773	1	3424	1
170	0	821	1	1472	0	2123	0	2774	1	3425	0
171	0	822	0	1473	0	2124	1	2775	1	3426	1
172	0	823	1	1474	0	2125	1	2776	0	3427	0
173	0	824	0	1475	1	2126	1	2777	1	3428	1
174	1	825	1	1476	1	2127	0	2778	0	3429	0
175	0	826	1	1477	0	2128	0	2779	1	3430	0
176	0	827	1	1478	1	2129	0	2780	0	3431	0
177	1	828	1	1479	0	2130	1	2781	1	3432	1
178	0	829	1	1480	0	2131	0	2782	1	3433	1
179	0	830	1	1481	1	2132	0	2783	1	3434	1
180	0	831	0	1482	1	2133	1	2784	0	3435	1
181	0	832	1	1483	1	2134	1	2785	1	3436	1
182	0	833	1	1484	0	2135	1	2786	0	3437	0
183	1	834	0	1485	1	2136	0	2787	1	3438	0
184	0	835	0	1486	1	2137	1	2788	0	3439	0
185	0	836	1	1487	0	2138	1	2789	0	3440	0
186	1	837	0	1488	0	2139	0	2790	1	3441	0
187	0	838	1	1489	0	2140	1	2791	1	3442	0
188	0	839	1	1490	1	2141	0	2792	1	3443	1
189	0	840	1	1491	0	2142	0	2793	0	3444	1
190	1	841	1	1492	1	2143	1	2794	1	3445	1
191	1	842	0	1493	1	2144	0	2795	1	3446	1
192	0	843	0	1494	0	2145	1	2796	0	3447	0
193	0	844	1	1495	1	2146	1	2797	0	3448	0
194	1	845	0	1496	1	2147	0	2798	0	3449	1
195	0	846	1	1497	0	2148	1	2799	1	3450	1
196	0	847	1	1498	0	2149	1	2800	1	3451	0
197	1	848	1	1499	1	2150	0	2801	0	3452	1
198	0	849	1	1500	1	2151	1	2802	1	3453	1
199	1	850	1	1501	1	2152	1	2803	0	3454	0
200	0	851	1	1502	0	2153	1	2804	1	3455	1
201	1	852	0	1503	0	2154	0	2805	1	3456	0
202	0	853	1	1504	1	2155	0	2806	1	3457	0
203	1	854	1	1505	1	2156	1	2807	1	3458	0
204	0	855	1	1506	0	2157	1	2808	0	3459	0
205	1	856	0	1507	1	2158	0	2809	1	3460	0
206	1	857	0	1508	0	2159	1	2810	1	3461	0

207	0	858	0	1509	1	2160	0	2811	1	3462	1
208	0	859	1	1510	1	2161	0	2812	1	3463	1
209	1	860	0	1511	1	2162	1	2813	0	3464	1
210	0	861	0	1512	1	2163	0	2814	0	3465	1
211	1	862	1	1513	1	2164	0	2815	0	3466	1
212	1	863	1	1514	0	2165	1	2816	1	3467	1
213	0	864	0	1515	1	2166	1	2817	0	3468	1
214	1	865	1	1516	1	2167	0	2818	1	3469	0
215	0	866	1	1517	1	2168	1	2819	0	3470	1
216	0	867	0	1518	0	2169	1	2820	1	3471	0
217	0	868	0	1519	0	2170	1	2821	1	3472	1
218	0	869	1	1520	0	2171	0	2822	1	3473	0
219	0	870	1	1521	0	2172	1	2823	1	3474	1
220	0	871	1	1522	0	2173	1	2824	1	3475	0
221	1	872	0	1523	1	2174	1	2825	0	3476	1
222	0	873	1	1524	0	2175	0	2826	1	3477	1
223	0	874	0	1525	0	2176	0	2827	0	3478	1
224	1	875	1	1526	0	2177	1	2828	0	3479	0
225	0	876	0	1527	0	2178	0	2829	1	3480	1
226	1	877	0	1528	1	2179	0	2830	1	3481	0
227	1	878	0	1529	0	2180	1	2831	1	3482	1
228	0	879	1	1530	0	2181	1	2832	1	3483	0
229	1	880	0	1531	0	2182	1	2833	1	3484	1
230	0	881	1	1532	0	2183	0	2834	0	3485	1
231	1	882	0	1533	0	2184	1	2835	1	3486	0
232	0	883	1	1534	1	2185	1	2836	0	3487	0
233	1	884	0	1535	0	2186	1	2837	0	3488	0
234	0	885	0	1536	0	2187	1	2838	1	3489	1
235	0	886	0	1537	1	2188	0	2839	1	3490	1
236	1	887	1	1538	0	2189	0	2840	0	3491	1
237	1	888	0	1539	0	2190	1	2841	0	3492	1
238	1	889	1	1540	1	2191	1	2842	1	3493	0
239	1	890	0	1541	0	2192	0	2843	0	3494	0
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243	0	894	1	1545	0	2196	0	2847	1	3498	0
244	0	895	1	1546	0	2197	1	2848	0	3499	0
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246	1	897	0	1548	0	2199	0	2850	0	3501	0
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248	1	899	1	1550	1	2201	0	2852	0	3503	0
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298	0	949	1	1600	0	2251	0	2902	1	3553	0
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487	0	1138	0	1789	0	2440	1	3091	1	3742	1
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649	1	1300	1	1951	1	2602	0	3253	0	3904	0
650	0	1301	1	1952	0	2603	1	3254	0		

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