PROOF OF THE CONTINUED FRACTION CONJECTURE FOR $(a,b) = (z^6 + z^4 + z^2 + z, z + 1)$

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Abstract. The continued fraction conjecture claims that the continued fraction defined by the (a,b)-Thue-Morse sequence is algebraic over $\mathbb{F}_2(x)$ for all pairs of distinct elements (a,b) in $\mathbb{F}_2[x] \setminus \mathbb{F}_2$. In this paper we prove the conjecture for $(a,b) = (z^6 + z^4 + z^2 + z, z + 1)$.

1. Introduction

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

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

as the limit of the finite continued fractions

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

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

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

admits a continued fraction expansion of form (1.1).

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

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

that we shall denote

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

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Theorem 1.1. *When* $(a,b)=(z^6+z^4+z^2+z,z+1)$*, the two power series* $\mathrm{CF}(a,b)$ *and* $\mathrm{CF}(b,a)$ *are algebraic over* $\mathbb{F}_2(z)$*, with minimal polynomials of the form*

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

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

$$\begin{aligned}
p_0(z)&=z^{15}+z^{14}+z^{11}+z^8+z^7+z^6+z^5+z^4+z^3+z+1,\\
p_1(z)&=z^{21}+z^{20}+z^{19}+z^{18}+z^{16}+z^{14}+z^{12}+z^{11}+z^9+z^5+z^4+z,\\
p_2(z)&=z^{22}+z^{18}+z^{10}+z^8+z^6+z^2,\\
p_3(z)&=z^{21}+z^{20}+z^{19}+z^{18}+z^{16}+z^{14}+z^{12}+z^{11}+z^9+z^5+z^4+z,\\
p_4(z)&=z^{20}+z^{18}+z^{15}+z^{14}+z^{11}+z^{10}+z^7+z^6+z^5+z^3+z,
\end{aligned}$$

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

$$\begin{aligned}
p_0(z)&=z^{18}+z^{16}+z^{15}+z^{14}+z^{11}+z^8+z^7+z^6+z^5+z^4+z^3+z^2+z,\\
p_1(z)&=z^{21}+z^{20}+z^{19}+z^{18}+z^{16}+z^{14}+z^{12}+z^{11}+z^9+z^5+z^4+z,\\
p_2(z)&=z^{22}+z^{18}+z^{10}+z^8+z^6+z^2,\\
p_3(z)&=z^{21}+z^{20}+z^{19}+z^{18}+z^{16}+z^{14}+z^{12}+z^{11}+z^9+z^5+z^4+z,\\
p_4(z)&=z^{20}+z^{16}+z^{15}+z^{14}+z^{11}+z^{10}+z^7+z^6+z^5+z^3+z^2+z+1.
\end{aligned}$$

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

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

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

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

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

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

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

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

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

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

which can be rewritten as

$$0 = T[[10w]_2] + T[[110w]_2] + T[[111w]_2], \tag{2.7}$$

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

$$\begin{aligned} 0 &= T[[w]_2] + T[[10w]_2] + T[[11w]_2] + T[[100w]_2] + T[[110w]_2]\\ &\quad + T[[1001w]_2], \end{aligned} \tag{2.9}$$

$$\begin{aligned} 0 &= T[[w]_2] + T[[1w]_2] + T[[10w]_2] + T[[11w]_2] + T[[100w]_2]\\ &\quad + T[[101w]_2] + T[[110w]_2] + T[[1010w]_2], \end{aligned} \tag{2.10}$$

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

$$\begin{aligned} 0 &= T[[1w]_2] + T[[10w]_2] + T[[100w]_2] + T[[101w]_2] + T[[110w]_2]\\ &\quad + T[[1100w]_2], \end{aligned} \tag{2.12}$$

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

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

$$0 = T[[10w]_2] + T[[110w]_2] + T[[111w]_2], \tag{2.14}$$

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

$$\begin{aligned} 0 &= T[[w]_2] + T[[10w]_2] + T[[11w]_2] + T[[100w]_2] + T[[110w]_2]\\ &\quad + T[[1001w]_2], \end{aligned} \tag{2.16}$$

$$\begin{aligned} 0 &= T[[w]_2] + T[[1w]_2] + T[[10w]_2] + T[[11w]_2] + T[[100w]_2]\\ &\quad + T[[101w]_2] + T[[110w]_2] + T[[1010w]_2], \end{aligned} \tag{2.17}$$

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

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

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

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

First we calculate an 2-automaton that generates T from its minimal polynomial and its first terms. This automaton has 4032 states; its transition function and output function can be found in the annex. Let $A(s, w)$ denote the state reached after reading w from right to left starting from the state s, and τ the output function. Define

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

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

$$0 = \tau(A(s, 10)) + \tau(A(s, 110)) + \tau(A(s, 111)), \tag{2.21}$$

$$0 = \tau(A(s, 10)) + \tau(A(s, 11)) + \tau(A(s, 110)) + \tau(A(s, 1000)), \tag{2.22}$$

$$\begin{aligned}0 &= \tau(A(s,\epsilon)) + \tau(A(s,10)) + \tau(A(s,11)) + \tau(A(s,100)) \\ &\quad + \tau(A(s,110)) + \tau(A(s,1001)),\end{aligned} \tag{2.23}$$

$$\begin{aligned}0 &= \tau(A(s,\epsilon)) + \tau(A(s,1)) + \tau(A(s,10)) + \tau(A(s,11)) + \tau(A(s,100)) \\ &\quad + \tau(A(s,101)) + \tau(A(s,110)) + \tau(A(s,1010)),\end{aligned} \tag{2.24}$$

$$\begin{aligned}0 &= \tau(A(s,\epsilon)) + \tau(A(s,1)) + \tau(A(s,11)) + \tau(A(s,100)) \\ &\quad + \tau(A(s,101)) + \tau(A(s,1011)),\end{aligned} \tag{2.25}$$

$$\begin{aligned}0 &= \tau(A(s,1)) + \tau(A(s,10)) + \tau(A(s,100)) + \tau(A(s,101)) \\ &\quad + \tau(A(s,110)) + \tau(A(s,1100)),\end{aligned} \tag{2.26}$$

$$0 = \tau(A(s,11)) + \tau(A(s,101)) + \tau(A(s,1101)), \tag{2.27}$$

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

$$0 = \tau(A(s,10)) + \tau(A(s,110)) + \tau(A(s,111)), \tag{2.28}$$

$$0 = \tau(A(s,10)) + \tau(A(s,11)) + \tau(A(s,110)) + \tau(A(s,1000)), \tag{2.29}$$

$$\begin{aligned}0 &= \tau(A(s,\epsilon)) + \tau(A(s,10)) + \tau(A(s,11)) + \tau(A(s,100)) \\ &\quad + \tau(A(s,110)) + \tau(A(s,1001)),\end{aligned} \tag{2.30}$$

$$\begin{aligned}0 &= \tau(A(s,\epsilon)) + \tau(A(s,1)) + \tau(A(s,10)) + \tau(A(s,11)) + \tau(A(s,100)) \\ &\quad + \tau(A(s,101)) + \tau(A(s,110)) + \tau(A(s,1010)),\end{aligned} \tag{2.31}$$

$$\begin{aligned}0 &= \tau(A(s,\epsilon)) + \tau(A(s,1)) + \tau(A(s,11)) + \tau(A(s,100)) \\ &\quad + \tau(A(s,101)) + \tau(A(s,1011)),\end{aligned} \tag{2.32}$$

$$\begin{aligned}0 &= \tau(A(s,1)) + \tau(A(s,10)) + \tau(A(s,100)) + \tau(A(s,101)) \\ &\quad + \tau(A(s,110)) + \tau(A(s,1100)),\end{aligned} \tag{2.33}$$

$$0 = \tau(A(s,11)) + \tau(A(s,101)) + \tau(A(s,1101)), \tag{2.34}$$

for $s = A(i, 0^{2k})$. We find that $(A(i, 0^{32}), E_{32}) = (A(i, 0^{20}), E_{20})$, so that we only have to verify that identities (2.21) through (2.34) hold for $2 \le k \le 16$, which turns out to be true. □

In the following lemma, we express M_{2k}, M_{2k+1}, W_{2k}, and W_{2k+1} in terms of M^e, M^o, W^e, and W^o.

Lemma 2.3. *For all integer $k \ge 2$, and $u = 2^{2k-1}$,*

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

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

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

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

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

We give the proof of
$$M_{2k} \wedge W_{2k} \Rightarrow M_{2k+1},$$
the other ones being similar. Set $u = 2^{2k}$ and $v = 2^{2k-1}$. By definition and induction hypothesis, the left side of identity M_{2k+1} is equal to
$$\begin{aligned} W_{2k}M_{2k} = \big(W^e[:7v] + x^v W^e[:6v] + x^{5v}W^e[:2v] + x^{7u}R^e\big) \times \big(M^e[:7v] \\ + x^v M^e[:6v] + x^{5v}M^e[:2v] + x^{7u}R^e\big); \end{aligned} \tag{2.35}$$
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
$$W^e[:14v]M^e[:14v] + x^{2v}W^e[:12v]M^e[:12v] + x^{10v}W^e[:4v]M^e[:4v].$$
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

$$
\begin{aligned}
q_0(x) &= x^{22}+x^{21}+x^{19}+x^{18}+x^{17}+x^{16}+x^{15}+x^{14}+x^{11}+x^{8}+x^{7},\\
q_1(x) &= x^{21}+x^{18}+x^{17}+x^{13}+x^{11}+x^{10}+x^{8}+x^{6}+x^{4}+x^{3}+x^{2}+x,\\
q_2(x) &= x^{20}+x^{16}+x^{14}+x^{12}+x^{4}+1,\\
q_3(x) &= x^{21}+x^{18}+x^{17}+x^{13}+x^{11}+x^{10}+x^{8}+x^{6}+x^{4}+x^{3}+x^{2}+x,\\
q_4(x) &= x^{21}+x^{19}+x^{17}+x^{16}+x^{15}+x^{12}+x^{11}+x^{8}+x^{7}+x^{4}+x^{2}.
\end{aligned}
$$

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

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

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

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

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

$$
\begin{aligned}
p_0(x) &= x^{117}+x^{116}+x^{110}+x^{109}+x^{108}+x^{107}+x^{100}+x^{99}+x^{96}+x^{94}\\
&\quad +x^{89}+x^{86}+x^{83}+x^{80}+x^{79}+x^{75}+x^{74}+x^{70}+x^{69}+x^{67}+x^{64}\\
&\quad +x^{63}+x^{59}+x^{57}+x^{55}+x^{54}+x^{46}+x^{45}+x^{43}+x^{41}+x^{40}+x^{37}
\end{aligned}
$$

$$
\begin{aligned}
&+x^{34}+x^{32}+x^{31}+x^{29}+x^{27},\\
p_3(x)&=x^{115}+x^{113}+x^{109}+x^{107}+x^{105}+x^{101}+x^{93}+x^{85}+x^{77}+x^{75}\\
&+x^{73}+x^{61}+x^{51}+x^{49}+x^{43}+x^{41}+x^{37}+x^{21}+x^{11}+x^{9},\\
p_6(x)&=x^{114}+x^{111}+x^{110}+x^{108}+x^{106}+x^{105}+x^{104}+x^{103}+x^{102}+x^{98}\\
&+x^{95}+x^{92}+x^{91}+x^{90}+x^{89}+x^{85}+x^{82}+x^{81}+x^{79}+x^{77}+x^{76}\\
&+x^{75}+x^{71}+x^{70}+x^{68}+x^{66}+x^{65}+x^{64}+x^{63}+x^{59}+x^{56}+x^{55}\\
&+x^{53}+x^{51}+x^{49}+x^{48}+x^{47}+x^{46}+x^{42}+x^{39}+x^{38}+x^{36}+x^{33}\\
&+x^{32}+x^{28}+x^{26}+x^{25}+x^{24}+x^{23}+x^{19}+x^{16}+x^{15}+x^{13}+x^{11}\\
&+x^{9}+x^{8}+x^{7}+x^{6},\\
p_9(x)&=x^{113}+x^{111}+x^{109}+x^{107}+x^{103}+x^{101}+x^{91}+x^{73}+x^{71}+x^{65}\\
&+x^{57}+x^{47}+x^{45}+x^{43}+x^{41}+x^{39}+x^{35}+x^{33}+x^{29}+x^{27}+x^{25}\\
&+x^{21}+x^{17}+x^{13}+x^{7}+x^{3},\\
p_{12}(x)&=x^{112}+x^{109}+x^{105}+x^{101}+x^{100}+x^{96}+x^{93}+x^{89}+x^{85}+x^{81}+x^{80}\\
&+x^{68}+x^{65}+x^{64}+x^{32}+x^{29}+x^{25}+x^{21}+x^{20}+x^{4}+x+1,
\end{aligned}
$$

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

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

$$
\begin{aligned}
p_0(x)&=x^{117}+x^{116}+x^{110}+x^{109}+x^{108}+x^{107}+x^{100}+x^{99}+x^{96}+x^{94}\\
&+x^{89}+x^{86}+x^{83}+x^{80}+x^{79}+x^{75}+x^{74}+x^{70}+x^{69}+x^{67}+x^{64}\\
&+x^{63}+x^{59}+x^{57}+x^{55}+x^{54}+x^{46}+x^{45}+x^{43}+x^{41}+x^{40}+x^{37}\\
&+x^{34}+x^{32}+x^{31}+x^{29}+x^{27},\\
p_3(x)&=x^{115}+x^{113}+x^{109}+x^{107}+x^{105}+x^{101}+x^{93}+x^{85}+x^{77}+x^{75}\\
&+x^{73}+x^{61}+x^{51}+x^{49}+x^{43}+x^{41}+x^{37}+x^{21}+x^{11}+x^{9},\\
p_6(x)&=x^{114}+x^{111}+x^{110}+x^{108}+x^{106}+x^{105}+x^{104}+x^{103}+x^{102}+x^{98}\\
&+x^{95}+x^{92}+x^{91}+x^{90}+x^{89}+x^{85}+x^{82}+x^{81}+x^{79}+x^{77}+x^{76}\\
&+x^{75}+x^{71}+x^{70}+x^{68}+x^{66}+x^{65}+x^{64}+x^{63}+x^{59}+x^{56}+x^{55}\\
&+x^{53}+x^{51}+x^{49}+x^{48}+x^{47}+x^{46}+x^{42}+x^{39}+x^{38}+x^{36}+x^{33}\\
&+x^{32}+x^{28}+x^{26}+x^{25}+x^{24}+x^{23}+x^{19}+x^{16}+x^{15}+x^{13}+x^{11}\\
&+x^{9}+x^{8}+x^{7}+x^{6},\\
p_9(x)&=x^{113}+x^{111}+x^{109}+x^{107}+x^{103}+x^{101}+x^{91}+x^{73}+x^{71}+x^{65}\\
&+x^{57}+x^{47}+x^{45}+x^{43}+x^{41}+x^{39}+x^{35}+x^{33}+x^{29}+x^{27}+x^{25}\\
&+x^{21}+x^{17}+x^{13}+x^{7}+x^{3},\\
p_{12}(x)&=x^{112}+x^{109}+x^{105}+x^{101}+x^{100}+x^{96}+x^{93}+x^{89}+x^{85}+x^{81}+x^{80}\\
&+x^{68}+x^{65}+x^{64}+x^{32}+x^{29}+x^{25}+x^{21}+x^{20}+x^{4}+x+1,
\end{aligned}
$$

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

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

$$\begin{aligned}
p_0(x) &= x^{132} + x^{130} + x^{128} + x^{124} + x^{120} + x^{118} + x^{116} + x^{114} + x^{112} + x^{108} \\
&\quad + x^{106} + x^{104} + x^{102} + x^{100} + x^{96} + x^{82} + x^{78} + x^{76} + x^{74} + x^{72} \\
&\quad + x^{70} + x^{68} + x^{66} + x^{60} + x^{56} + x^{54} + x^{50} + x^{48} + x^{46} + x^{44} + x^{42}, \\
p_3(x) &= x^{126} + x^{122} + x^{120} + x^{118} + x^{114} + x^{112} + x^{106} + x^{104} + x^{102} + x^{96} \\
&\quad + x^{94} + x^{92} + x^{88} + x^{86} + x^{82} + x^{78} + x^{76} + x^{72} + x^{68} + x^{66} + x^{62} \\
&\quad + x^{54} + x^{48} + x^{46} + x^{44} + x^{34} + x^{32} + x^{30} + x^{28} + x^{26} + x^{22} + x^{20} \\
&\quad + x^{10} + x^{6}, \\
p_6(x) &= x^{126} + x^{124} + x^{120} + x^{118} + x^{114} + x^{110} + x^{108} + x^{106} + x^{102} + x^{100} \\
&\quad + x^{98} + x^{96} + x^{94} + x^{92} + x^{90} + x^{82} + x^{78} + x^{70} + x^{66} + x^{64} + x^{58} \\
&\quad + x^{54} + x^{50} + x^{48} + x^{40} + x^{34} + x^{32} + x^{30} + x^{26} + x^{22} + x^{20} + x^{18} \\
&\quad + x^{14} + x^{12} + x^{8} + x^{6} + x^{2} + 1, \\
p_9(x) &= x^{124} + x^{122} + x^{114} + x^{104} + x^{102} + x^{96} + x^{92} + x^{90} + x^{88} + x^{82} + x^{78} \\
&\quad + x^{76} + x^{74} + x^{66} + x^{64} + x^{62} + x^{54} + x^{40} + x^{38} + x^{36} + x^{34} + x^{32} \\
&\quad + x^{26} + x^{24} + x^{20} + x^{18} + x^{16} + x^{12} + x^{6} + x^{2}, \\
p_{12}(x) &= x^{124} + x^{120} + x^{116} + x^{112} + x^{108} + x^{104} + x^{68} + x^{64} + x^{44} + x^{40} \\
&\quad + x^{36} + x^{32} + x^{20} + x^{16} + x^{4} + 1,
\end{aligned}$$

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

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

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

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

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

$$\begin{aligned}
p_0(x) &= x^{117} + x^{115} + x^{114} + x^{107} + x^{101} + x^{99} + x^{97} + x^{96} + x^{95} + x^{94} + x^{92} \\
&\quad + x^{90} + x^{87} + x^{86} + x^{85} + x^{84} + x^{81} + x^{80} + x^{77} + x^{73} + x^{72} + x^{70} \\
&\quad + x^{69} + x^{67} + x^{64} + x^{63} + x^{60} + x^{59} + x^{56} + x^{55} + x^{54} + x^{52} + x^{51} \\
&\quad + x^{47} + x^{44} + x^{42} + x^{41} + x^{37} + x^{36} + x^{34} + x^{32} + x^{27} + x^{26} + x^{25} \\
&\quad + x^{24} + x^{23} + x^{20} + x^{19} + x^{18}, \\
p_3(x) &= x^{115} + x^{113} + x^{109} + x^{107} + x^{105} + x^{101} + x^{93} + x^{85} + x^{77} + x^{75} \\
&\quad + x^{73} + x^{61} + x^{51} + x^{49} + x^{43} + x^{41} + x^{37} + x^{21} + x^{11} + x^{9}, \\
p_6(x) &= x^{114} + x^{111} + x^{110} + x^{108} + x^{106} + x^{105} + x^{104} + x^{103} + x^{102} + x^{98} \\
&\quad + x^{95} + x^{92} + x^{91} + x^{90} + x^{89} + x^{85} + x^{82} + x^{81} + x^{79} + x^{77} + x^{76} \\
&\quad + x^{75} + x^{71} + x^{70} + x^{68} + x^{66} + x^{65} + x^{64} + x^{63} + x^{59} + x^{56} + x^{55} \\
&\quad + x^{53} + x^{51} + x^{49} + x^{48} + x^{47} + x^{46} + x^{42} + x^{39} + x^{38} + x^{36} + x^{33} \\
&\quad + x^{32} + x^{28} + x^{26} + x^{25} + x^{24} + x^{23} + x^{19} + x^{16} + x^{15} + x^{13} + x^{11} \\
&\quad + x^{9} + x^{8} + x^{7} + x^{6}, \\
p_9(x) &= x^{113} + x^{111} + x^{109} + x^{107} + x^{103} + x^{101} + x^{91} + x^{73} + x^{71} + x^{65} \\
&\quad + x^{57} + x^{47} + x^{45} + x^{43} + x^{41} + x^{39} + x^{35} + x^{33} + x^{29} + x^{27} + x^{25} \\
&\quad + x^{21} + x^{17} + x^{13} + x^{7} + x^{3}, \\
p_{12}(x) &= x^{112} + x^{109} + x^{105} + x^{101} + x^{100} + x^{96} + x^{93} + x^{89} + x^{85} + x^{81} + x^{80} \\
&\quad + x^{68} + x^{65} + x^{64} + x^{32} + x^{29} + x^{25} + x^{21} + x^{20} + x^{4} + x + 1,
\end{aligned}$$

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

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

$$\begin{aligned}
p_0(x) &= x^{117} + x^{115} + x^{114} + x^{107} + x^{101} + x^{99} + x^{97} + x^{96} + x^{95} + x^{94} + x^{92} \\
&\quad + x^{90} + x^{87} + x^{86} + x^{85} + x^{84} + x^{81} + x^{80} + x^{77} + x^{73} + x^{72} + x^{70} \\
&\quad + x^{69} + x^{67} + x^{64} + x^{63} + x^{60} + x^{59} + x^{56} + x^{55} + x^{54} + x^{52} + x^{51} \\
&\quad + x^{47} + x^{44} + x^{42} + x^{41} + x^{37} + x^{36} + x^{34} + x^{32} + x^{27} + x^{26} + x^{25} \\
&\quad + x^{24} + x^{23} + x^{20} + x^{19} + x^{18}, \\
p_3(x) &= x^{115} + x^{113} + x^{109} + x^{107} + x^{105} + x^{101} + x^{93} + x^{85} + x^{77} + x^{75} \\
&\quad + x^{73} + x^{61} + x^{51} + x^{49} + x^{43} + x^{41} + x^{37} + x^{21} + x^{11} + x^{9}, \\
p_6(x) &= x^{114} + x^{111} + x^{110} + x^{108} + x^{106} + x^{105} + x^{104} + x^{103} + x^{102} + x^{98} \\
&\quad + x^{95} + x^{92} + x^{91} + x^{90} + x^{89} + x^{85} + x^{82} + x^{81} + x^{79} + x^{77} + x^{76} \\
&\quad + x^{75} + x^{71} + x^{70} + x^{68} + x^{66} + x^{65} + x^{64} + x^{63} + x^{59} + x^{56} + x^{55} \\
&\quad + x^{53} + x^{51} + x^{49} + x^{48} + x^{47} + x^{46} + x^{42} + x^{39} + x^{38} + x^{36} + x^{33} \\
&\quad + x^{32} + x^{28} + x^{26} + x^{25} + x^{24} + x^{23} + x^{19} + x^{16} + x^{15} + x^{13} + x^{11} \\
&\quad + x^{9} + x^{8} + x^{7} + x^{6}, \\
p_9(x) &= x^{113} + x^{111} + x^{109} + x^{107} + x^{103} + x^{101} + x^{91} + x^{73} + x^{71} + x^{65}
\end{aligned}$$

$$
\begin{aligned}
&+ x^{57} + x^{47} + x^{45} + x^{43} + x^{41} + x^{39} + x^{35} + x^{33} + x^{29} + x^{27} + x^{25}\\
&+ x^{21} + x^{17} + x^{13} + x^{7} + x^{3},\\
p_{12}(x) &= x^{112} + x^{109} + x^{105} + x^{101} + x^{100} + x^{96} + x^{93} + x^{89} + x^{85} + x^{81} + x^{80}\\
&+ x^{68} + x^{65} + x^{64} + x^{32} + x^{29} + x^{25} + x^{21} + x^{20} + x^{4} + x + 1,
\end{aligned}
$$

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

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

$$
\begin{aligned}
p_0(x) &= x^{102} + x^{100} + x^{96} + x^{94} + x^{88} + x^{84} + x^{82} + x^{76} + x^{74} + x^{70} + x^{58}\\
&+ x^{46} + x^{42} + x^{38} + x^{34} + x^{32} + x^{28} + x^{26} + x^{24},\\
p_3(x) &= x^{94} + x^{92} + x^{88} + x^{84} + x^{78} + x^{76} + x^{72} + x^{60} + x^{56} + x^{48} + x^{46}\\
&+ x^{44} + x^{38} + x^{36} + x^{28} + x^{16} + x^{14} + x^{12} + x^{8} + x^{6},\\
p_6(x) &= x^{98} + x^{96} + x^{94} + x^{88} + x^{86} + x^{84} + x^{82} + x^{76} + x^{72} + x^{64} + x^{60}\\
&+ x^{58} + x^{56} + x^{54} + x^{50} + x^{48} + x^{46} + x^{44} + x^{38} + x^{36} + x^{20} + x^{12}\\
&+ x^{8} + x^{6} + x^{4} + 1,\\
p_9(x) &= x^{100} + x^{98} + x^{94} + x^{84} + x^{82} + x^{80} + x^{78} + x^{76} + x^{72} + x^{66} + x^{60}\\
&+ x^{50} + x^{48} + x^{46} + x^{44} + x^{42} + x^{38} + x^{34} + x^{28} + x^{26} + x^{20} + x^{14}\\
&+ x^{8} + x^{6} + x^{4} + x^{2},\\
p_{12}(x) &= x^{100} + x^{96} + x^{94} + x^{90} + x^{86} + x^{82} + x^{78} + x^{74} + x^{70} + x^{68} + x^{66}\\
&+ x^{64} + x^{20} + x^{16} + x^{14} + x^{10} + x^{6} + x^{4} + x^{2} + 1,
\end{aligned}
$$

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

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

$$
\begin{aligned}
p_0(x) &= x^{117} + x^{116} + x^{115} + x^{109} + x^{108} + x^{107} + x^{105} + x^{101} + x^{100} + x^{97}\\
&+ x^{93} + x^{92} + x^{91} + x^{90} + x^{89} + x^{87} + x^{86} + x^{80} + x^{79} + x^{78} + x^{76}\\
&+ x^{74} + x^{73} + x^{72} + x^{71} + x^{69} + x^{68} + x^{61} + x^{60} + x^{59} + x^{55} + x^{52}\\
&+ x^{50} + x^{49} + x^{48} + x^{46} + x^{45} + x^{43} + x^{41} + x^{39} + x^{38} + x^{35} + x^{33}\\
&+ x^{31} + x^{29} + x^{26} + x^{25} + x^{23} + x^{22} + x^{21} + x^{17} + x^{15} + x^{14} + x^{13}\\
&+ x^{12},\\
p_3(x) &= x^{116} + x^{115} + x^{114} + x^{113} + x^{112} + x^{110} + x^{109} + x^{107} + x^{102} + x^{99}\\
&+ x^{95} + x^{93} + x^{87} + x^{83} + x^{82} + x^{78} + x^{77} + x^{75} + x^{69} + x^{68} + x^{67}\\
&+ x^{66} + x^{65} + x^{64} + x^{63} + x^{60} + x^{59} + x^{58} + x^{57} + x^{56} + x^{51} + x^{50}\\
&+ x^{43} + x^{42} + x^{38} + x^{37} + x^{34} + x^{29} + x^{27} + x^{26} + x^{23} + x^{19} + x^{18}\\
&+ x^{12} + x^{11} + x^{10} + x^{9} + x^{8},\\
p_6(x) &= x^{116} + x^{115} + x^{114} + x^{113} + x^{112} + x^{111} + x^{109} + x^{108} + x^{107} + x^{106}\\
&+ x^{103} + x^{102} + x^{101} + x^{97} + x^{94} + x^{93} + x^{87} + x^{86} + x^{85} + x^{84} + x^{78}\\
&+ x^{77} + x^{74} + x^{73} + x^{70} + x^{69} + x^{68} + x^{66} + x^{63} + x^{62} + x^{58} + x^{57}\\
&+ x^{52} + x^{51} + x^{47} + x^{46} + x^{45} + x^{44} + x^{41} + x^{40} + x^{38} + x^{35} + x^{33}
\end{aligned}
$$

$$
\begin{aligned}
&+x^{32}+x^{30}+x^{29}+x^{28}+x^{27}+x^{26}+x^{25}+x^{24}+x^{23}+x^{22}+x^{21}\\
&+x^{20}+x^{19}+x^{15}+x^{14}+x^{8}+x^{7}+x^{6}+x^{5}+x+1,\\
p_9(x)=&\,x^{116}+x^{113}+x^{109}+x^{105}+x^{101}+x^{100}+x^{84}+x^{81}+x^{77}+x^{73}\\
&+x^{69}+x^{68}+x^{36}+x^{33}+x^{29}+x^{25}+x^{21}+x^{17}+x^{13}+x^{9}+x^{5}+x^{4},\\
p_{12}(x)=&\,x^{116}+x^{113}+x^{112}+x^{96}+x^{93}+x^{89}+x^{85}+x^{84}+x^{80}+x^{77}+x^{73}\\
&+x^{69}+x^{65}+x^{64}+x^{36}+x^{33}+x^{32}+x^{20}+x^{17}+x^{13}+x^{9}+x^{5}+x\\
&+1,
\end{aligned}
$$

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

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

$$
\begin{aligned}
p_0(x)=&\,x^{132}+x^{129}+x^{128}+x^{126}+x^{124}+x^{122}+x^{119}+x^{118}+x^{116}+x^{115}\\
&+x^{113}+x^{110}+x^{109}+x^{108}+x^{107}+x^{106}+x^{104}+x^{102}+x^{100}\\
&+x^{96}+x^{94}+x^{92}+x^{91}+x^{90}+x^{86}+x^{84}+x^{83}+x^{81}+x^{80}+x^{79}\\
&+x^{78}+x^{77}+x^{76}+x^{75}+x^{71}+x^{68}+x^{65}+x^{61}+x^{59}+x^{58}+x^{57}\\
&+x^{53}+x^{51}+x^{50}+x^{49}+x^{45}+x^{42}+x^{39}+x^{36}+x^{30}+x^{29}+x^{28}\\
&+x^{27},\\
p_3(x)=&\,x^{125}+x^{122}+x^{121}+x^{119}+x^{116}+x^{115}+x^{113}+x^{111}+x^{110}+x^{108}\\
&+x^{106}+x^{105}+x^{104}+x^{103}+x^{99}+x^{96}+x^{95}+x^{91}+x^{88}+x^{87}\\
&+x^{85}+x^{83}+x^{82}+x^{81}+x^{80}+x^{77}+x^{76}+x^{74}+x^{72}+x^{71}+x^{70}\\
&+x^{69}+x^{65}+x^{62}+x^{59}+x^{58}+x^{56}+x^{54}+x^{53}+x^{52}+x^{51}+x^{47}\\
&+x^{45}+x^{44}+x^{43}+x^{42}+x^{38}+x^{37}+x^{35}+x^{33}+x^{32}+x^{31}+x^{30}\\
&+x^{29}+x^{25}+x^{22}+x^{19}+x^{18}+x^{16}+x^{14}+x^{12}+x^{11}+x^{10}+x^{9},\\
p_6(x)=&\,x^{126}+x^{120}+x^{118}+x^{114}+x^{108}+x^{102}+x^{100}+x^{98}+x^{96}+x^{94}\\
&+x^{86}+x^{82}+x^{80}+x^{78}+x^{76}+x^{74}+x^{62}+x^{56}+x^{54}+x^{46}+x^{42}\\
&+x^{40}+x^{36}+x^{34}+x^{32}+x^{30}+x^{22}+x^{16}+x^{8}+x^{6},\\
p_9(x)=&\,x^{127}+x^{124}+x^{123}+x^{119}+x^{116}+x^{112}+x^{108}+x^{104}+x^{100}+x^{99}\\
&+x^{95}+x^{92}+x^{91}+x^{87}+x^{84}+x^{80}+x^{76}+x^{72}+x^{68}+x^{67}+x^{47}\\
&+x^{44}+x^{43}+x^{39}+x^{36}+x^{32}+x^{31}+x^{27}+x^{24}+x^{23}+x^{19}+x^{16}\\
&+x^{12}+x^{8}+x^{4}+x^{3},\\
p_{12}(x)=&\,x^{128}+x^{116}+x^{112}+x^{108}+x^{104}+x^{100}+x^{96}+x^{92}+x^{88}+x^{64}\\
&+x^{48}+x^{36}+x^{28}+x^{24}+x^{16}+1,
\end{aligned}
$$

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

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

$$
\begin{aligned}
p_0(x)=&\,x^{110}+x^{109}+x^{108}+x^{107}+x^{106}+x^{103}+x^{101}+x^{95}+x^{94}+x^{92}\\
&+x^{91}+x^{90}+x^{88}+x^{82}+x^{81}+x^{77}+x^{76}+x^{74}+x^{68}+x^{67}+x^{66}\\
&+x^{65}+x^{63}+x^{59}+x^{56}+x^{54}+x^{53}+x^{50}+x^{49}+x^{46}+x^{43}+x^{42}
\end{aligned}
$$

$$
\begin{aligned}
&+ x^{38} + x^{34} + x^{31} + x^{29} + x^{27} + x^{26} + x^{25} + x^{24} + x^{22} + x^{21} + x^{18},\\
p_3(x) &= x^{109} + x^{106} + x^{105} + x^{103} + x^{100} + x^{99} + x^{95} + x^{92} + x^{91} + x^{87} + x^{84}\\
&+ x^{83} + x^{79} + x^{76} + x^{75} + x^{71} + x^{69} + x^{68} + x^{67} + x^{66} + x^{65} + x^{61}\\
&+ x^{58} + x^{57} + x^{55} + x^{53} + x^{52} + x^{51} + x^{50} + x^{49} + x^{37} + x^{34} + x^{33}\\
&+ x^{31} + x^{29} + x^{28} + x^{27} + x^{26} + x^{25} + x^{21} + x^{18} + x^{17} + x^{15} + x^{13}\\
&+ x^{12} + x^{11} + x^{10} + x^{9},\\
p_6(x) &= x^{110} + x^{104} + x^{102} + x^{94} + x^{90} + x^{88} + x^{84} + x^{80} + x^{78} + x^{76} + x^{74}\\
&+ x^{70} + x^{64} + x^{62} + x^{58} + x^{54} + x^{52} + x^{50} + x^{48} + x^{46} + x^{38} + x^{32}\\
&+ x^{24} + x^{22} + x^{18} + x^{14} + x^{12} + x^{10} + x^{8} + x^{6},\\
p_9(x) &= x^{111} + x^{108} + x^{107} + x^{103} + x^{100} + x^{99} + x^{79} + x^{76} + x^{75} + x^{71} + x^{68}\\
&+ x^{67} + x^{31} + x^{28} + x^{27} + x^{23} + x^{20} + x^{19} + x^{15} + x^{12} + x^{11} + x^{7}\\
&+ x^{4} + x^{3},\\
p_{12}(x) &= x^{112} + x^{92} + x^{88} + x^{84} + x^{76} + x^{72} + x^{68} + x^{64} + x^{32} + x^{16} + x^{12}\\
&+ x^{8} + x^{4} + 1,
\end{aligned}
$$

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

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

$$
\begin{aligned}
p_0(x) &= x^{117} + x^{113} + x^{112} + x^{108} + x^{104} + x^{103} + x^{102} + x^{101} + x^{99} + x^{98}\\
&+ x^{96} + x^{94} + x^{93} + x^{89} + x^{85} + x^{84} + x^{83} + x^{81} + x^{78} + x^{77} + x^{76}\\
&+ x^{73} + x^{72} + x^{71} + x^{67} + x^{66} + x^{65} + x^{64} + x^{63} + x^{62} + x^{60} + x^{55}\\
&+ x^{53} + x^{50} + x^{48} + x^{42} + x^{41} + x^{40} + x^{36} + x^{35} + x^{33},\\
p_3(x) &= x^{116} + x^{115} + x^{113} + x^{111} + x^{110} + x^{108} + x^{106} + x^{104} + x^{102} + x^{101}\\
&+ x^{100} + x^{99} + x^{95} + x^{93} + x^{92} + x^{89} + x^{87} + x^{85} + x^{84} + x^{83} + x^{82}\\
&+ x^{78} + x^{77} + x^{76} + x^{75} + x^{74} + x^{73} + x^{72} + x^{71} + x^{69} + x^{68} + x^{66}\\
&+ x^{65} + x^{64} + x^{58} + x^{56} + x^{55} + x^{53} + x^{49} + x^{48} + x^{43} + x^{40} + x^{39}\\
&+ x^{38} + x^{36} + x^{35} + x^{34} + x^{31} + x^{29} + x^{26} + x^{20} + x^{18} + x^{17} + x^{15}\\
&+ x^{13} + x^{12},\\
p_6(x) &= x^{116} + x^{115} + x^{113} + x^{110} + x^{108} + x^{107} + x^{105} + x^{98} + x^{95} + x^{94}\\
&+ x^{91} + x^{90} + x^{89} + x^{87} + x^{86} + x^{84} + x^{82} + x^{81} + x^{79} + x^{78} + x^{76}\\
&+ x^{75} + x^{74} + x^{73} + x^{72} + x^{71} + x^{64} + x^{62} + x^{61} + x^{59} + x^{58} + x^{56}\\
&+ x^{55} + x^{52} + x^{45} + x^{42} + x^{39} + x^{35} + x^{33} + x^{30} + x^{28} + x^{27} + x^{22}\\
&+ x^{21} + x^{20} + x^{16} + x^{14} + x^{13} + x^{11} + x^{9} + x^{8} + x^{4} + x + 1,\\
p_9(x) &= x^{116} + x^{113} + x^{109} + x^{105} + x^{101} + x^{100} + x^{84} + x^{81} + x^{77} + x^{73}\\
&+ x^{69} + x^{68} + x^{36} + x^{33} + x^{29} + x^{25} + x^{21} + x^{17} + x^{13} + x^{9} + x^{5} + x^{4},\\
p_{12}(x) &= x^{116} + x^{113} + x^{112} + x^{96} + x^{93} + x^{89} + x^{85} + x^{84} + x^{80} + x^{77} + x^{73}\\
&+ x^{69} + x^{65} + x^{64} + x^{36} + x^{33} + x^{32} + x^{20} + x^{17} + x^{13} + x^{9} + x^{5} + x
\end{aligned}
$$

$$+1,$$

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

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

$$\begin{aligned}
p_0(x) &= x^{117} + x^{116} + x^{115} + x^{109} + x^{108} + x^{107} + x^{105} + x^{101} + x^{100} + x^{97} \\
&\quad + x^{93} + x^{92} + x^{91} + x^{90} + x^{89} + x^{87} + x^{86} + x^{80} + x^{79} + x^{78} + x^{76} \\
&\quad + x^{74} + x^{73} + x^{72} + x^{71} + x^{69} + x^{68} + x^{61} + x^{60} + x^{59} + x^{55} + x^{52} \\
&\quad + x^{50} + x^{49} + x^{48} + x^{46} + x^{45} + x^{43} + x^{41} + x^{39} + x^{38} + x^{35} + x^{33} \\
&\quad + x^{31} + x^{29} + x^{26} + x^{25} + x^{23} + x^{22} + x^{21} + x^{17} + x^{15} + x^{14} + x^{13} \\
&\quad + x^{12}, \\
p_3(x) &= x^{116} + x^{115} + x^{114} + x^{113} + x^{112} + x^{110} + x^{109} + x^{107} + x^{102} + x^{99} \\
&\quad + x^{95} + x^{93} + x^{87} + x^{83} + x^{82} + x^{78} + x^{77} + x^{75} + x^{69} + x^{68} + x^{67} \\
&\quad + x^{66} + x^{65} + x^{64} + x^{63} + x^{60} + x^{59} + x^{58} + x^{57} + x^{56} + x^{51} + x^{50} \\
&\quad + x^{43} + x^{42} + x^{38} + x^{37} + x^{34} + x^{29} + x^{27} + x^{26} + x^{23} + x^{19} + x^{18} \\
&\quad + x^{12} + x^{11} + x^{10} + x^{9} + x^{8}, \\
p_6(x) &= x^{116} + x^{115} + x^{114} + x^{113} + x^{112} + x^{111} + x^{109} + x^{108} + x^{107} + x^{106} \\
&\quad + x^{103} + x^{102} + x^{101} + x^{97} + x^{94} + x^{93} + x^{87} + x^{86} + x^{85} + x^{84} + x^{78} \\
&\quad + x^{77} + x^{74} + x^{73} + x^{70} + x^{69} + x^{68} + x^{66} + x^{63} + x^{62} + x^{58} + x^{57} \\
&\quad + x^{52} + x^{51} + x^{47} + x^{46} + x^{45} + x^{44} + x^{41} + x^{40} + x^{38} + x^{35} + x^{33} \\
&\quad + x^{32} + x^{30} + x^{29} + x^{28} + x^{27} + x^{26} + x^{25} + x^{24} + x^{23} + x^{22} + x^{21} \\
&\quad + x^{20} + x^{19} + x^{15} + x^{14} + x^{8} + x^{7} + x^{6} + x^{5} + x + 1, \\
p_9(x) &= x^{116} + x^{113} + x^{109} + x^{105} + x^{101} + x^{100} + x^{84} + x^{81} + x^{77} + x^{73} \\
&\quad + x^{69} + x^{68} + x^{36} + x^{33} + x^{29} + x^{25} + x^{21} + x^{17} + x^{13} + x^{9} + x^{5} + x^{4}, \\
p_{12}(x) &= x^{116} + x^{113} + x^{112} + x^{96} + x^{93} + x^{89} + x^{85} + x^{84} + x^{80} + x^{77} + x^{73} \\
&\quad + x^{69} + x^{65} + x^{64} + x^{36} + x^{33} + x^{32} + x^{20} + x^{17} + x^{13} + x^{9} + x^{5} + x \\
&\quad + 1,
\end{aligned}$$

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

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

$$\begin{aligned}
p_0(x) &= x^{110} + x^{109} + x^{108} + x^{107} + x^{106} + x^{103} + x^{101} + x^{95} + x^{94} + x^{92} \\
&\quad + x^{91} + x^{90} + x^{88} + x^{82} + x^{81} + x^{77} + x^{76} + x^{74} + x^{68} + x^{67} + x^{66} \\
&\quad + x^{65} + x^{63} + x^{59} + x^{56} + x^{54} + x^{53} + x^{50} + x^{49} + x^{46} + x^{43} + x^{42} \\
&\quad + x^{38} + x^{34} + x^{31} + x^{29} + x^{27} + x^{26} + x^{25} + x^{24} + x^{22} + x^{21} + x^{18}, \\
p_3(x) &= x^{109} + x^{106} + x^{105} + x^{103} + x^{100} + x^{99} + x^{95} + x^{92} + x^{91} + x^{87} + x^{84} \\
&\quad + x^{83} + x^{79} + x^{76} + x^{75} + x^{71} + x^{69} + x^{68} + x^{67} + x^{66} + x^{65} + x^{61} \\
&\quad + x^{58} + x^{57} + x^{55} + x^{53} + x^{52} + x^{51} + x^{50} + x^{49} + x^{37} + x^{34} + x^{33} \\
&\quad + x^{31} + x^{29} + x^{28} + x^{27} + x^{26} + x^{25} + x^{21} + x^{18} + x^{17} + x^{15} + x^{13}
\end{aligned}$$

$$
\begin{aligned}
&+ x^{12} + x^{11} + x^{10} + x^{9},\\
p_6(x) &= x^{110} + x^{104} + x^{102} + x^{94} + x^{90} + x^{88} + x^{84} + x^{80} + x^{78} + x^{76} + x^{74}\\
&+ x^{70} + x^{64} + x^{62} + x^{58} + x^{54} + x^{52} + x^{50} + x^{48} + x^{46} + x^{38} + x^{32}\\
&+ x^{24} + x^{22} + x^{18} + x^{14} + x^{12} + x^{10} + x^{8} + x^{6},\\
p_9(x) &= x^{111} + x^{108} + x^{107} + x^{103} + x^{100} + x^{99} + x^{79} + x^{76} + x^{75} + x^{71} + x^{68}\\
&+ x^{67} + x^{31} + x^{28} + x^{27} + x^{23} + x^{20} + x^{19} + x^{15} + x^{12} + x^{11} + x^{7}\\
&+ x^{4} + x^{3},\\
p_{12}(x) &= x^{112} + x^{92} + x^{88} + x^{84} + x^{76} + x^{72} + x^{68} + x^{64} + x^{32} + x^{16} + x^{12}\\
&+ x^{8} + x^{4} + 1,
\end{aligned}
$$

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

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

$$
\begin{aligned}
p_0(x) &= x^{132} + x^{129} + x^{128} + x^{126} + x^{124} + x^{122} + x^{119} + x^{118} + x^{116} + x^{115}\\
&+ x^{113} + x^{110} + x^{109} + x^{108} + x^{107} + x^{106} + x^{104} + x^{102} + x^{100}\\
&+ x^{96} + x^{94} + x^{92} + x^{91} + x^{90} + x^{86} + x^{84} + x^{83} + x^{81} + x^{80} + x^{79}\\
&+ x^{78} + x^{77} + x^{76} + x^{75} + x^{71} + x^{68} + x^{65} + x^{61} + x^{59} + x^{58} + x^{57}\\
&+ x^{53} + x^{51} + x^{50} + x^{49} + x^{45} + x^{42} + x^{39} + x^{36} + x^{30} + x^{29} + x^{28}\\
&+ x^{27},\\
p_3(x) &= x^{125} + x^{122} + x^{121} + x^{119} + x^{116} + x^{115} + x^{113} + x^{111} + x^{110} + x^{108}\\
&+ x^{106} + x^{105} + x^{104} + x^{103} + x^{99} + x^{96} + x^{95} + x^{91} + x^{88} + x^{87}\\
&+ x^{85} + x^{83} + x^{82} + x^{81} + x^{80} + x^{77} + x^{76} + x^{74} + x^{72} + x^{71} + x^{70}\\
&+ x^{69} + x^{65} + x^{62} + x^{59} + x^{58} + x^{56} + x^{54} + x^{53} + x^{52} + x^{51} + x^{47}\\
&+ x^{45} + x^{44} + x^{43} + x^{42} + x^{38} + x^{37} + x^{35} + x^{33} + x^{32} + x^{31} + x^{30}\\
&+ x^{29} + x^{25} + x^{22} + x^{19} + x^{18} + x^{16} + x^{14} + x^{12} + x^{11} + x^{10} + x^{9},\\
p_6(x) &= x^{126} + x^{120} + x^{118} + x^{114} + x^{108} + x^{102} + x^{100} + x^{98} + x^{96} + x^{94}\\
&+ x^{86} + x^{82} + x^{80} + x^{78} + x^{76} + x^{74} + x^{62} + x^{56} + x^{54} + x^{46} + x^{42}\\
&+ x^{40} + x^{36} + x^{34} + x^{32} + x^{30} + x^{22} + x^{16} + x^{8} + x^{6},\\
p_9(x) &= x^{127} + x^{124} + x^{123} + x^{119} + x^{116} + x^{112} + x^{108} + x^{104} + x^{100} + x^{99}\\
&+ x^{95} + x^{92} + x^{91} + x^{87} + x^{84} + x^{80} + x^{76} + x^{72} + x^{68} + x^{67} + x^{47}\\
&+ x^{44} + x^{43} + x^{39} + x^{36} + x^{32} + x^{31} + x^{27} + x^{24} + x^{23} + x^{19} + x^{16}\\
&+ x^{12} + x^{8} + x^{4} + x^{3},\\
p_{12}(x) &= x^{128} + x^{116} + x^{112} + x^{108} + x^{104} + x^{100} + x^{96} + x^{92} + x^{88} + x^{64}\\
&+ x^{48} + x^{36} + x^{28} + x^{24} + x^{16} + 1,
\end{aligned}
$$

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

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

$$
p_0(x) = x^{117} + x^{113} + x^{112} + x^{108} + x^{104} + x^{103} + x^{102} + x^{101} + x^{99} + x^{98}
$$

$$
\begin{aligned}
&+ x^{96} + x^{94} + x^{93} + x^{89} + x^{85} + x^{84} + x^{83} + x^{81} + x^{78} + x^{77} + x^{76}\\
&+ x^{73} + x^{72} + x^{71} + x^{67} + x^{66} + x^{65} + x^{64} + x^{63} + x^{62} + x^{60} + x^{55}\\
&+ x^{53} + x^{50} + x^{48} + x^{42} + x^{41} + x^{40} + x^{36} + x^{35} + x^{33},\\
p_3(x) = {}& x^{116} + x^{115} + x^{113} + x^{111} + x^{110} + x^{108} + x^{106} + x^{104} + x^{102} + x^{101}\\
&+ x^{100} + x^{99} + x^{95} + x^{93} + x^{92} + x^{89} + x^{87} + x^{85} + x^{84} + x^{83} + x^{82}\\
&+ x^{78} + x^{77} + x^{76} + x^{75} + x^{74} + x^{73} + x^{72} + x^{71} + x^{69} + x^{68} + x^{66}\\
&+ x^{65} + x^{64} + x^{58} + x^{56} + x^{55} + x^{53} + x^{49} + x^{48} + x^{43} + x^{40} + x^{39}\\
&+ x^{38} + x^{36} + x^{35} + x^{34} + x^{31} + x^{29} + x^{26} + x^{20} + x^{18} + x^{17} + x^{15}\\
&+ x^{13} + x^{12},\\
p_6(x) = {}& x^{116} + x^{115} + x^{113} + x^{110} + x^{108} + x^{107} + x^{105} + x^{98} + x^{95} + x^{94}\\
&+ x^{91} + x^{90} + x^{89} + x^{87} + x^{86} + x^{84} + x^{82} + x^{81} + x^{79} + x^{78} + x^{76}\\
&+ x^{75} + x^{74} + x^{73} + x^{72} + x^{71} + x^{64} + x^{62} + x^{61} + x^{59} + x^{58} + x^{56}\\
&+ x^{55} + x^{52} + x^{45} + x^{42} + x^{39} + x^{35} + x^{33} + x^{30} + x^{28} + x^{27} + x^{22}\\
&+ x^{21} + x^{20} + x^{16} + x^{14} + x^{13} + x^{11} + x^{9} + x^{8} + x^{4} + x + 1,\\
p_9(x) = {}& x^{116} + x^{113} + x^{109} + x^{105} + x^{101} + x^{100} + x^{84} + x^{81} + x^{77} + x^{73}\\
&+ x^{69} + x^{68} + x^{36} + x^{33} + x^{29} + x^{25} + x^{21} + x^{17} + x^{13} + x^{9} + x^{5} + x^{4},\\
p_{12}(x) = {}& x^{116} + x^{113} + x^{112} + x^{96} + x^{93} + x^{89} + x^{85} + x^{84} + x^{80} + x^{77} + x^{73}\\
&+ x^{69} + x^{65} + x^{64} + x^{36} + x^{33} + x^{32} + x^{20} + x^{17} + x^{13} + x^{9} + x^{5} + x\\
&+ 1,
\end{aligned}
$$

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

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

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

n	$\Lambda(n)$	n	$\Lambda(n)$	n	$\Lambda(n)$	n	$\Lambda(n)$
0	[1, 2]	1009	[1630, 684]	2018	[2595, 1167]	3027	[463, 349]
1	[3, 4]	1010	[1631, 531]	2019	[2681, 2682]	3028	[3462, 3022]
2	[5, 6]	1011	[1632, 1633]	2020	[2683, 974]	3029	[3463, 1185]
3	[7, 8]	1012	[747, 1558]	2021	[2320, 99]	3030	[3464, 2299]
4	[9, 10]	1013	[659, 664]	2022	[1142, 2506]	3031	[3465, 414]
5	[11, 12]	1014	[749, 473]	2023	[2684, 2685]	3032	[3322, 2639]
6	[13, 14]	1015	[1634, 1635]	2024	[2686, 2380]	3033	[2674, 2415]
7	[15, 16]	1016	[1636, 1637]	2025	[2611, 2332]	3034	[3466, 942]
8	[17, 18]	1017	[1638, 775]	2026	[2366, 457]	3035	[2485, 2256]
9	[19, 20]	1018	[199, 1468]	2027	[2687, 2513]	3036	[3467, 3468]
10	[21, 22]	1019	[1639, 1444]	2028	[2257, 250]	3037	[3469, 319]
11	[23, 24]	1020	[138, 676]	2029	[2248, 425]	3038	[1151, 1246]
12	[25, 26]	1021	[1640, 1641]	2030	[2688, 436]	3039	[3470, 356]
13	[27, 28]	1022	[1642, 216]	2031	[2689, 958]	3040	[3471, 1231]
14	[29, 30]	1023	[1643, 1424]	2032	[2095, 417]	3041	[3472, 900]

15	[31, 32]	1024	[1644, 725]	2033	[2690, 2691]	3042	[3473, 3474]
16	[33, 34]	1025	[1645, 555]	2034	[2692, 1163]	3043	[3422, 421]
17	[35, 36]	1026	[1646, 484]	2035	[2693, 408]	3044	[2491, 2601]
18	[37, 38]	1027	[187, 1647]	2036	[2694, 1275]	3045	[3475, 1088]
19	[39, 40]	1028	[1648, 1649]	2037	[2695, 960]	3046	[3476, 2433]
20	[41, 42]	1029	[1650, 1447]	2038	[2696, 1287]	3047	[3477, 2628]
21	[43, 44]	1030	[154, 1441]	2039	[2697, 326]	3048	[2383, 3478]
22	[45, 46]	1031	[1651, 1652]	2040	[2698, 388]	3049	[1006, 3268]
23	[47, 48]	1032	[1653, 1654]	2041	[2699, 2456]	3050	[3479, 2336]
24	[49, 50]	1033	[1655, 603]	2042	[2700, 402]	3051	[3480, 3478]
25	[51, 52]	1034	[193, 1656]	2043	[2701, 2447]	3052	[3481, 2348]
26	[53, 54]	1035	[1396, 1657]	2044	[2702, 2304]	3053	[82, 1079]
27	[55, 56]	1036	[1658, 61]	2045	[2703, 464]	3054	[3482, 1099]
28	[57, 58]	1037	[1659, 1660]	2046	[2639, 1057]	3055	[1315, 1354]
29	[59, 60]	1038	[1661, 1423]	2047	[2704, 404]	3056	[3483, 1008]
30	[61, 62]	1039	[1662, 653]	2048	[1254, 2582]	3057	[3335, 96]
31	[63, 64]	1040	[1663, 1664]	2049	[2304, 270]	3058	[3484, 383]
32	[65, 66]	1041	[176, 1665]	2050	[2705, 281]	3059	[3485, 909]
33	[67, 68]	1042	[1666, 829]	2051	[2706, 2083]	3060	[3342, 2458]
34	[69, 70]	1043	[1667, 1668]	2052	[2707, 1379]	3061	[3486, 3487]
35	[71, 72]	1044	[1669, 775]	2053	[2708, 372]	3062	[2628, 1128]
36	[73, 74]	1045	[1670, 1671]	2054	[2066, 2612]	3063	[3293, 2230]
37	[75, 76]	1046	[1672, 1656]	2055	[2709, 1534]	3064	[3478, 3488]
38	[77, 78]	1047	[1673, 1674]	2056	[2015, 1570]	3065	[2172, 851]
39	[79, 80]	1048	[1675, 725]	2057	[2710, 1584]	3066	[3489, 2298]
40	[81, 82]	1049	[1676, 1677]	2058	[2711, 699]	3067	[3490, 2608]
41	[83, 84]	1050	[1678, 848]	2059	[835, 2712]	3068	[3491, 894]
42	[85, 86]	1051	[1679, 1680]	2060	[2713, 673]	3069	[3492, 2550]
43	[87, 88]	1052	[1681, 1682]	2061	[2714, 1568]	3070	[3493, 2281]
44	[89, 90]	1053	[1683, 1684]	2062	[2049, 2715]	3071	[2471, 2396]
45	[91, 92]	1054	[566, 1685]	2063	[2716, 818]	3072	[3494, 3495]
46	[93, 94]	1055	[1649, 1472]	2064	[2717, 1423]	3073	[3496, 2142]
47	[95, 96]	1056	[1686, 656]	2065	[2718, 2719]	3074	[3497, 2101]
48	[97, 98]	1057	[1687, 1688]	2066	[2720, 2009]	3075	[2078, 3310]
49	[99, 100]	1058	[1689, 628]	2067	[1469, 1895]	3076	[3498, 937]
50	[101, 102]	1059	[740, 1690]	2068	[827, 240]	3077	[911, 2176]
51	[103, 104]	1060	[1691, 1692]	2069	[2721, 1533]	3078	[2147, 997]
52	[105, 106]	1061	[1693, 1404]	2070	[1738, 799]	3079	[374, 2499]
53	[107, 108]	1062	[1525, 1694]	2071	[2722, 2014]	3080	[1350, 989]
54	[109, 110]	1063	[1695, 1696]	2072	[2723, 1923]	3081	[2108, 3499]
55	[111, 112]	1064	[1697, 1484]	2073	[2724, 2725]	3082	[3256, 2358]
56	[113, 114]	1065	[1698, 1699]	2074	[2726, 694]	3083	[2245, 2116]
57	[115, 116]	1066	[201, 1700]	2075	[2727, 230]	3084	[2513, 350]
58	[117, 118]	1067	[716, 797]	2076	[1671, 1696]	3085	[1301, 1032]

59	[119, 120]	1068	[1701, 1702]	2077	[1968, 2728]	3086	[3500, 2197]
60	[121, 122]	1069	[1703, 1549]	2078	[2729, 589]	3087	[3501, 2471]
61	[123, 124]	1070	[1704, 680]	2079	[178, 1661]	3088	[314, 3356]
62	[125, 126]	1071	[555, 1705]	2080	[2730, 2022]	3089	[3344, 2362]
63	[127, 128]	1072	[507, 54]	2081	[1823, 1833]	3090	[3502, 2253]
64	[129, 130]	1073	[1706, 1707]	2082	[695, 1567]	3091	[1264, 2232]
65	[131, 132]	1074	[1708, 46]	2083	[2731, 800]	3092	[3503, 308]
66	[133, 134]	1075	[1709, 1710]	2084	[2732, 1473]	3093	[3504, 1035]
67	[135, 136]	1076	[1711, 1712]	2085	[2733, 239]	3094	[3505, 342]
68	[137, 138]	1077	[1713, 701]	2086	[1815, 1801]	3095	[3506, 1018]
69	[139, 43]	1078	[1714, 1715]	2087	[2734, 1466]	3096	[108, 1195]
70	[140, 45]	1079	[1716, 1717]	2088	[582, 1619]	3097	[1121, 2360]
71	[141, 142]	1080	[1674, 1494]	2089	[1476, 2735]	3098	[3507, 1124]
72	[143, 144]	1081	[1718, 1719]	2090	[1951, 2736]	3099	[3508, 2557]
73	[145, 146]	1082	[1720, 1721]	2091	[2737, 130]	3100	[3509, 1282]
74	[147, 148]	1083	[1722, 1723]	2092	[2738, 1883]	3101	[1294, 2633]
75	[149, 150]	1084	[559, 1628]	2093	[689, 2739]	3102	[3510, 2255]
76	[151, 152]	1085	[1724, 479]	2094	[2740, 2741]	3103	[947, 3344]
77	[153, 154]	1086	[1725, 1726]	2095	[2742, 529]	3104	[3511, 2601]
78	[155, 156]	1087	[1710, 1727]	2096	[1504, 1760]	3105	[3512, 1093]
79	[157, 158]	1088	[1705, 1728]	2097	[2743, 1794]	3106	[3513, 1382]
80	[159, 160]	1089	[1707, 49]	2098	[2744, 181]	3107	[3514, 3382]
81	[161, 162]	1090	[1729, 1730]	2099	[1540, 1756]	3108	[3243, 1147]
82	[163, 164]	1091	[1731, 1615]	2100	[547, 1790]	3109	[3515, 2058]
83	[165, 166]	1092	[1732, 1733]	2101	[1989, 494]	3110	[3516, 2653]
84	[167, 168]	1093	[1734, 1504]	2102	[2745, 170]	3111	[3517, 2152]
85	[169, 170]	1094	[685, 1735]	2103	[2746, 686]	3112	[3518, 856]
86	[171, 172]	1095	[1736, 149]	2104	[2747, 228]	3113	[3519, 2400]
87	[173, 174]	1096	[1737, 1738]	2105	[2748, 693]	3114	[2527, 2202]
88	[175, 176]	1097	[1739, 575]	2106	[848, 503]	3115	[3520, 929]
89	[177, 178]	1098	[1740, 1741]	2107	[2749, 1631]	3116	[3521, 250]
90	[179, 180]	1099	[1742, 808]	2108	[563, 1780]	3117	[3522, 2093]
91	[181, 182]	1100	[1743, 1671]	2109	[2750, 1709]	3118	[3523, 2460]
92	[183, 184]	1101	[477, 1446]	2110	[2751, 1905]	3119	[1391, 109]
93	[1, 185]	1102	[1744, 1745]	2111	[610, 621]	3120	[3524, 1215]
94	[186, 187]	1103	[1746, 60]	2112	[1959, 619]	3121	[3525, 466]
95	[188, 189]	1104	[485, 1747]	2113	[2752, 2753]	3122	[1059, 2487]
96	[190, 191]	1105	[1748, 1749]	2114	[2754, 1808]	3123	[3351, 2063]
97	[192, 193]	1106	[1750, 716]	2115	[2755, 707]	3124	[3526, 2108]
98	[194, 195]	1107	[1466, 819]	2116	[2756, 1753]	3125	[3527, 86]
99	[196, 197]	1108	[1751, 1752]	2117	[2757, 1870]	3126	[2570, 1278]
100	[198, 199]	1109	[1717, 1753]	2118	[2758, 819]	3127	[3528, 3341]
101	[200, 201]	1110	[1754, 132]	2119	[2759, 1572]	3128	[1220, 367]
102	[202, 203]	1111	[481, 1488]	2120	[2760, 140]	3129	[351, 120]

103	[204, 205]	1112	[1755, 1756]	2121	[2761, 695]	3130	[2557, 1313]
104	[206, 207]	1113	[1757, 1758]	2122	[491, 1435]	3131	[3529, 1303]
105	[208, 209]	1114	[1759, 206]	2123	[2762, 2763]	3132	[2420, 2436]
106	[210, 42]	1115	[1760, 1761]	2124	[1730, 2764]	3133	[3530, 1118]
107	[211, 212]	1116	[1762, 597]	2125	[2765, 1783]	3134	[1110, 3450]
108	[213, 214]	1117	[1763, 687]	2126	[2766, 2767]	3135	[1166, 2209]
109	[215, 216]	1118	[1411, 1764]	2127	[2768, 638]	3136	[2284, 1178]
110	[217, 218]	1119	[1765, 1766]	2128	[2769, 500]	3137	[1355, 281]
111	[219, 220]	1120	[228, 1767]	2129	[2770, 2771]	3138	[1050, 83]
112	[221, 222]	1121	[232, 1768]	2130	[2772, 1761]	3139	[988, 1301]
113	[223, 224]	1122	[1769, 1505]	2131	[793, 759]	3140	[3531, 1120]
114	[225, 226]	1123	[1770, 43]	2132	[2773, 843]	3141	[1362, 1185]
115	[227, 228]	1124	[1771, 1772]	2133	[2774, 1827]	3142	[3532, 1096]
116	[229, 230]	1125	[1773, 1552]	2134	[2775, 2776]	3143	[1188, 2293]
117	[231, 232]	1126	[1774, 1689]	2135	[589, 1641]	3144	[3336, 117]
118	[233, 214]	1127	[766, 1775]	2136	[1917, 2019]	3145	[3533, 3305]
119	[234, 235]	1128	[1776, 1777]	2137	[2777, 2021]	3146	[3534, 4]
120	[236, 237]	1129	[1582, 1648]	2138	[2778, 1751]	3147	[3535, 1368]
121	[238, 239]	1130	[483, 1778]	2139	[2779, 1611]	3148	[2239, 3474]
122	[240, 241]	1131	[1779, 1780]	2140	[703, 1438]	3149	[3536, 3320]
123	[242, 243]	1132	[816, 837]	2141	[1656, 2753]	3150	[3537, 312]
124	[244, 245]	1133	[1781, 567]	2142	[2780, 596]	3151	[3538, 77]
125	[246, 247]	1134	[1782, 1635]	2143	[1680, 2781]	3152	[3539, 2509]
126	[248, 249]	1135	[1783, 1784]	2144	[2782, 1805]	3153	[1241, 3540]
127	[250, 251]	1136	[1785, 1786]	2145	[2783, 2784]	3154	[2204, 278]
128	[252, 253]	1137	[1664, 1544]	2146	[2785, 1767]	3155	[3541, 2484]
129	[254, 255]	1138	[1787, 1788]	2147	[2786, 58]	3156	[372, 252]
130	[256, 257]	1139	[1789, 1790]	2148	[622, 1919]	3157	[3542, 3256]
131	[258, 259]	1140	[1791, 1525]	2149	[2787, 1726]	3158	[3543, 2355]
132	[260, 261]	1141	[1622, 1792]	2150	[2788, 643]	3159	[873, 1265]
133	[90, 262]	1142	[1793, 1619]	2151	[2789, 2790]	3160	[3544, 2272]
134	[263, 264]	1143	[1794, 713]	2152	[2791, 1411]	3161	[3545, 3356]
135	[265, 266]	1144	[645, 1795]	2153	[1433, 1421]	3162	[3546, 930]
136	[267, 268]	1145	[1796, 1797]	2154	[1436, 154]	3163	[3547, 3330]
137	[269, 270]	1146	[1798, 698]	2155	[2792, 1920]	3164	[2281, 69]
138	[271, 272]	1147	[1799, 31]	2156	[2793, 1760]	3165	[3548, 1222]
139	[273, 89]	1148	[8, 1749]	2157	[10, 2794]	3166	[2388, 63]
140	[274, 93]	1149	[1772, 1783]	2158	[2795, 2796]	3167	[3549, 3392]
141	[275, 276]	1150	[781, 1573]	2159	[2797, 483]	3168	[3550, 2140]
142	[277, 278]	1151	[1752, 821]	2160	[136, 2780]	3169	[2624, 2527]
143	[279, 280]	1152	[1800, 1505]	2161	[2798, 607]	3170	[2101, 260]
144	[281, 282]	1153	[1801, 564]	2162	[1414, 641]	3171	[3551, 447]
145	[283, 284]	1154	[776, 549]	2163	[846, 1670]	3172	[3552, 2209]
146	[285, 286]	1155	[1802, 1758]	2164	[2033, 1907]	3173	[3488, 2685]

147	[287, 288]	1156	[1803, 595]	2165	[2799, 1400]	3174	[3553, 3495]
148	[289, 290]	1157	[1804, 759]	2166	[2800, 2801]	3175	[3554, 1332]
149	[291, 116]	1158	[1805, 625]	2167	[2802, 2803]	3176	[3555, 344]
150	[292, 293]	1159	[1572, 735]	2168	[2804, 2805]	3177	[3556, 1269]
151	[294, 295]	1160	[1806, 1807]	2169	[60, 2806]	3178	[2633, 3298]
152	[296, 297]	1161	[1564, 1723]	2170	[2807, 485]	3179	[2150, 2682]
153	[298, 299]	1162	[1808, 806]	2171	[2808, 1448]	3180	[3557, 849]
154	[300, 301]	1163	[1809, 1810]	2172	[2809, 1685]	3181	[2162, 3468]
155	[302, 303]	1164	[1811, 199]	2173	[1629, 2021]	3182	[3558, 1130]
156	[304, 305]	1165	[800, 1812]	2174	[2810, 1465]	3183	[2636, 107]
157	[306, 307]	1166	[1813, 1446]	2175	[2811, 1651]	3184	[3559, 1062]
158	[308, 309]	1167	[1766, 1580]	2176	[2812, 2813]	3185	[3560, 985]
159	[251, 310]	1168	[1814, 1815]	2177	[1488, 166]	3186	[3561, 1040]
160	[311, 312]	1169	[1482, 56]	2178	[2814, 2715]	3187	[3562, 3529]
161	[313, 314]	1170	[597, 1816]	2179	[631, 2815]	3188	[1116, 919]
162	[315, 283]	1171	[1817, 1764]	2180	[1589, 1798]	3189	[3563, 2473]
163	[316, 317]	1172	[1818, 649]	2181	[487, 2009]	3190	[3564, 888]
164	[318, 319]	1173	[1819, 694]	2182	[2816, 129]	3191	[3565, 79]
165	[320, 321]	1174	[1820, 1396]	2183	[2817, 1626]	3192	[2390, 397]
166	[322, 323]	1175	[1821, 1479]	2184	[2818, 1501]	3193	[2088, 124]
167	[324, 325]	1176	[1822, 1823]	2185	[2819, 820]	3194	[3566, 3553]
168	[326, 327]	1177	[1824, 171]	2186	[2820, 2821]	3195	[3567, 2562]
169	[328, 329]	1178	[1825, 160]	2187	[2822, 2823]	3196	[3568, 2415]
170	[330, 331]	1179	[1826, 1827]	2188	[2824, 628]	3197	[3569, 2121]
171	[332, 333]	1180	[619, 711]	2189	[2825, 1912]	3198	[253, 2139]
172	[334, 335]	1181	[1828, 1675]	2190	[2826, 1668]	3199	[3570, 1306]
173	[336, 337]	1182	[1829, 1830]	2191	[162, 1738]	3200	[3571, 384]
174	[338, 339]	1183	[1831, 622]	2192	[789, 2827]	3201	[2685, 3486]
175	[340, 341]	1184	[1832, 1833]	2193	[2828, 225]	3202	[2474, 3433]
176	[342, 343]	1185	[1834, 1540]	2194	[2829, 2830]	3203	[3499, 1138]
177	[344, 345]	1186	[1835, 218]	2195	[2831, 1508]	3204	[2227, 3422]
178	[346, 20]	1187	[1836, 546]	2196	[2832, 726]	3205	[3572, 951]
179	[347, 348]	1188	[1702, 1602]	2197	[1519, 2833]	3206	[3573, 2092]
180	[349, 29]	1189	[1837, 1838]	2198	[2834, 2835]	3207	[3574, 998]
181	[350, 351]	1190	[1839, 1428]	2199	[2836, 2837]	3208	[857, 2221]
182	[352, 353]	1191	[1840, 612]	2200	[2838, 2835]	3209	[3575, 1330]
183	[354, 355]	1192	[1841, 1842]	2201	[2833, 2839]	3210	[2321, 1285]
184	[356, 357]	1193	[1843, 1550]	2202	[2840, 1522]	3211	[3576, 1321]
185	[358, 359]	1194	[1844, 1845]	2203	[1982, 2841]	3212	[3577, 2122]
186	[360, 361]	1195	[1846, 1657]	2204	[525, 1982]	3213	[3578, 2641]
187	[362, 363]	1196	[1838, 1847]	2205	[2842, 2843]	3214	[3579, 1098]
188	[364, 365]	1197	[1848, 1453]	2206	[1692, 2844]	3215	[3455, 3553]
189	[366, 367]	1198	[1849, 1583]	2207	[813, 560]	3216	[2230, 3580]
190	[368, 369]	1199	[1850, 36]	2208	[2845, 178]	3217	[3581, 962]

191	[370, 338]	1200	[837, 212]	2209	[2846, 2735]	3218	[3582, 3340]
192	[371, 372]	1201	[839, 1851]	2210	[2847, 1854]	3219	[945, 979]
193	[373, 374]	1202	[774, 1852]	2211	[2848, 148]	3220	[1197, 1166]
194	[20, 375]	1203	[1853, 1537]	2212	[1864, 500]	3221	[339, 464]
195	[376, 377]	1204	[1854, 1855]	2213	[2849, 538]	3222	[3450, 1386]
196	[378, 275]	1205	[148, 493]	2214	[2850, 1480]	3223	[2238, 329]
197	[379, 380]	1206	[1856, 1443]	2215	[2851, 1917]	3224	[3583, 1385]
198	[381, 382]	1207	[1857, 546]	2216	[2852, 736]	3225	[3584, 1169]
199	[383, 384]	1208	[1858, 1859]	2217	[2739, 615]	3226	[3585, 3342]
200	[385, 386]	1209	[1860, 1694]	2218	[2853, 1556]	3227	[3586, 1307]
201	[387, 388]	1210	[475, 1861]	2219	[2854, 1465]	3228	[3587, 1243]
202	[389, 390]	1211	[1862, 1863]	2220	[2855, 141]	3229	[3588, 267]
203	[391, 392]	1212	[574, 1864]	2221	[2856, 1919]	3230	[1875, 1415]
204	[393, 394]	1213	[1865, 1866]	2222	[1407, 2821]	3231	[3589, 150]
205	[395, 396]	1214	[1867, 1810]	2223	[1784, 489]	3232	[3590, 1659]
206	[397, 398]	1215	[1868, 1655]	2224	[1721, 1984]	3233	[3591, 3592]
207	[399, 400]	1216	[1527, 221]	2225	[2857, 1669]	3234	[3593, 1897]
208	[401, 402]	1217	[1409, 1869]	2226	[2041, 520]	3235	[754, 3594]
209	[403, 284]	1218	[578, 1596]	2227	[2025, 1550]	3236	[3151, 37]
210	[394, 404]	1219	[1870, 1730]	2228	[2858, 591]	3237	[3595, 639]
211	[405, 406]	1220	[1871, 1872]	2229	[2859, 2860]	3238	[3596, 621]
212	[407, 408]	1221	[1873, 1440]	2230	[2861, 2862]	3239	[3597, 2905]
213	[409, 410]	1222	[1874, 1875]	2231	[2863, 2864]	3240	[3598, 200]
214	[411, 412]	1223	[1876, 1877]	2232	[2865, 1509]	3241	[3599, 3036]
215	[413, 121]	1224	[1878, 1869]	2233	[1668, 696]	3242	[3600, 203]
216	[414, 415]	1225	[1549, 1622]	2234	[1419, 2843]	3243	[751, 762]
217	[416, 417]	1226	[1511, 1879]	2235	[1984, 637]	3244	[499, 1731]
218	[68, 418]	1227	[1712, 1675]	2236	[2866, 1933]	3245	[3601, 1629]
219	[419, 376]	1228	[1719, 164]	2237	[2790, 1590]	3246	[1728, 1624]
220	[420, 421]	1229	[1880, 1881]	2238	[2867, 187]	3247	[1420, 2905]
221	[72, 91]	1230	[1882, 596]	2239	[2776, 1815]	3248	[1442, 846]
222	[422, 423]	1231	[224, 1883]	2240	[2868, 625]	3249	[1886, 2741]
223	[424, 425]	1232	[1884, 1741]	2241	[1923, 1886]	3250	[3602, 2895]
224	[426, 427]	1233	[205, 1417]	2242	[534, 1922]	3251	[3603, 3109]
225	[428, 429]	1234	[166, 558]	2243	[2869, 1404]	3252	[1807, 610]
226	[303, 356]	1235	[168, 1856]	2244	[2870, 2871]	3253	[3604, 2921]
227	[430, 28]	1236	[1885, 1886]	2245	[2872, 1808]	3254	[3605, 1752]
228	[431, 432]	1237	[1529, 1636]	2246	[2873, 484]	3255	[3606, 817]
229	[433, 434]	1238	[1887, 1778]	2247	[2874, 773]	3256	[2784, 1765]
230	[435, 436]	1239	[584, 1888]	2248	[2875, 1768]	3257	[3607, 656]
231	[437, 438]	1240	[1889, 1462]	2249	[2876, 2877]	3258	[3608, 1969]
232	[439, 440]	1241	[1890, 1891]	2250	[2878, 663]	3259	[3609, 155]
233	[441, 442]	1242	[1892, 1893]	2251	[2879, 1547]	3260	[1635, 1473]
234	[443, 444]	1243	[718, 539]	2252	[2880, 2013]	3261	[1845, 1539]

235	[445, 446]	1244	[594, 1830]	2253	[1506, 31]	3262	[489, 1563]
236	[447, 448]	1245	[1894, 1895]	2254	[2881, 752]	3263	[3610, 3611]
237	[449, 450]	1246	[1896, 159]	2255	[726, 146]	3264	[3612, 3076]
238	[451, 452]	1247	[1576, 1689]	2256	[2882, 1655]	3265	[3613, 1772]
239	[453, 454]	1248	[638, 1897]	2257	[2883, 1422]	3266	[3614, 2876]
240	[455, 456]	1249	[1595, 1669]	2258	[2884, 2036]	3267	[3615, 1989]
241	[457, 458]	1250	[1898, 1765]	2259	[2885, 1470]	3268	[3616, 582]
242	[459, 333]	1251	[1899, 1900]	2260	[2886, 1690]	3269	[226, 183]
243	[460, 461]	1252	[1901, 803]	2261	[2887, 1881]	3270	[2813, 785]
244	[462, 463]	1253	[184, 1902]	2262	[2888, 2889]	3271	[722, 3167]
245	[464, 465]	1254	[1903, 226]	2263	[2890, 2891]	3272	[1816, 2726]
246	[466, 467]	1255	[1904, 662]	2264	[2892, 1766]	3273	[3617, 1851]
247	[423, 468]	1256	[1881, 1905]	2265	[2893, 553]	3274	[2735, 2050]
248	[469, 470]	1257	[1906, 1907]	2266	[2894, 147]	3275	[3618, 719]
249	[471, 394]	1258	[195, 1875]	2267	[2823, 2895]	3276	[1764, 1715]
250	[472, 473]	1259	[1652, 768]	2268	[2896, 588]	3277	[1534, 3189]
251	[474, 475]	1260	[1654, 514]	2269	[2897, 2019]	3278	[3619, 2791]
252	[476, 477]	1261	[1908, 667]	2270	[1413, 1547]	3279	[691, 238]
253	[478, 479]	1262	[1909, 1910]	2271	[2898, 1573]	3280	[3620, 804]
254	[480, 481]	1263	[1911, 1912]	2272	[2899, 2022]	3281	[1810, 792]
255	[482, 483]	1264	[1913, 831]	2273	[241, 39]	3282	[1726, 754]
256	[484, 485]	1265	[1914, 825]	2274	[1907, 2900]	3283	[3621, 174]
257	[486, 487]	1266	[1915, 714]	2275	[2901, 673]	3284	[1943, 1483]
258	[488, 489]	1267	[1916, 481]	2276	[720, 1965]	3285	[3622, 1658]
259	[490, 491]	1268	[1745, 1917]	2277	[2029, 2902]	3286	[3015, 3623]
260	[492, 493]	1269	[1918, 782]	2278	[2903, 1854]	3287	[156, 1663]
261	[494, 495]	1270	[1919, 732]	2279	[2904, 1609]	3288	[3624, 2006]
262	[496, 497]	1271	[620, 1920]	2280	[2905, 175]	3289	[576, 1842]
263	[498, 499]	1272	[1921, 135]	2281	[1883, 1733]	3290	[3625, 563]
264	[500, 501]	1273	[1922, 1923]	2282	[150, 2906]	3291	[3626, 3213]
265	[502, 503]	1274	[1924, 629]	2283	[2907, 2908]	3292	[3627, 188]
266	[504, 505]	1275	[1925, 601]	2284	[2909, 1433]	3293	[3628, 3629]
267	[506, 507]	1276	[669, 171]	2285	[1902, 2910]	3294	[2939, 1941]
268	[508, 509]	1277	[1402, 1823]	2286	[2911, 1939]	3295	[3630, 1798]
269	[510, 217]	1278	[1926, 1888]	2287	[2912, 669]	3296	[3631, 2739]
270	[511, 512]	1279	[1927, 41]	2288	[1788, 2818]	3297	[3052, 3161]
271	[513, 514]	1280	[1928, 1929]	2289	[1458, 133]	3298	[3632, 2841]
272	[515, 516]	1281	[1930, 1931]	2290	[1812, 1536]	3299	[2929, 229]
273	[517, 179]	1282	[1932, 636]	2291	[527, 1826]	3300	[3633, 1710]
274	[518, 186]	1283	[652, 1933]	2292	[2913, 220]	3301	[3634, 1704]
275	[519, 207]	1284	[1934, 1935]	2293	[2914, 1700]	3302	[3635, 1421]
276	[520, 521]	1285	[1936, 161]	2294	[2915, 217]	3303	[3636, 771]
277	[522, 523]	1286	[1937, 1938]	2295	[2916, 751]	3304	[3637, 2881]
278	[524, 525]	1287	[1939, 730]	2296	[2917, 1865]	3305	[1948, 2836]

279	[526, 527]	1288	[1940, 241]	2297	[2728, 2006]	3306	[3638, 681]
280	[528, 529]	1289	[1941, 823]	2298	[2918, 49]	3307	[3639, 1735]
281	[530, 531]	1290	[1942, 1943]	2299	[2919, 2891]	3308	[3640, 1904]
282	[532, 152]	1291	[1944, 584]	2300	[1501, 2790]	3309	[1863, 2855]
283	[533, 534]	1292	[495, 652]	2301	[2920, 1469]	3310	[3641, 2743]
284	[535, 536]	1293	[1945, 1946]	2302	[2921, 2922]	3311	[3642, 2023]
285	[537, 538]	1294	[1947, 1948]	2303	[2923, 2924]	3312	[1768, 486]
286	[539, 540]	1295	[1677, 1646]	2304	[1565, 1889]	3313	[643, 2876]
287	[541, 511]	1296	[1949, 633]	2305	[2925, 2926]	3314	[3643, 1868]
288	[542, 543]	1297	[1950, 706]	2306	[2927, 2928]	3315	[713, 1634]
289	[544, 545]	1298	[728, 1951]	2307	[565, 2929]	3316	[3644, 229]
290	[546, 547]	1299	[1647, 1952]	2308	[2930, 494]	3317	[3645, 3030]
291	[548, 549]	1300	[1953, 1954]	2309	[2796, 149]	3318	[3177, 2908]
292	[550, 551]	1301	[1955, 44]	2310	[2931, 1574]	3319	[3646, 2899]
293	[552, 553]	1302	[1440, 1956]	2311	[2932, 1400]	3320	[2972, 1509]
294	[554, 555]	1303	[1957, 1863]	2312	[1580, 543]	3321	[3647, 558]
295	[556, 557]	1304	[1753, 208]	2313	[2933, 1995]	3322	[3648, 2945]
296	[558, 559]	1305	[1958, 1959]	2314	[2934, 2015]	3323	[2835, 1948]
297	[560, 561]	1306	[1536, 498]	2315	[2935, 521]	3324	[2837, 2803]
298	[562, 563]	1307	[1960, 1961]	2316	[2936, 2937]	3325	[605, 1838]
299	[564, 565]	1308	[1532, 1633]	2317	[2938, 2939]	3326	[1567, 1464]
300	[521, 566]	1309	[1962, 532]	2318	[2940, 1816]	3327	[249, 3127]
301	[567, 568]	1310	[1963, 683]	2319	[2941, 196]	3328	[3649, 2975]
302	[569, 570]	1311	[1964, 1965]	2320	[2942, 512]	3329	[570, 1448]
303	[571, 572]	1312	[1966, 1667]	2321	[608, 691]	3330	[3650, 240]
304	[573, 574]	1313	[1967, 1968]	2322	[2943, 637]	3331	[1961, 3194]
305	[575, 576]	1314	[1969, 478]	2323	[2944, 2759]	3332	[1694, 3651]
306	[577, 578]	1315	[674, 605]	2324	[2815, 2763]	3333	[3652, 2020]
307	[579, 580]	1316	[1970, 781]	2325	[1866, 2945]	3334	[3653, 1750]
308	[581, 582]	1317	[1971, 1418]	2326	[2946, 2947]	3335	[3654, 566]
309	[583, 584]	1318	[1972, 724]	2327	[2948, 811]	3336	[3655, 233]
310	[473, 585]	1319	[811, 161]	2328	[1869, 705]	3337	[3656, 2759]
311	[586, 587]	1320	[1973, 1974]	2329	[501, 802]	3338	[2924, 3657]
312	[588, 589]	1321	[1975, 799]	2330	[2949, 528]	3339	[3046, 2847]
313	[590, 498]	1322	[1976, 1977]	2331	[2950, 635]	3340	[3658, 2986]
314	[591, 592]	1323	[1978, 1431]	2332	[2891, 1532]	3341	[3659, 3202]
315	[593, 594]	1324	[1979, 1980]	2333	[2843, 2864]	3342	[3202, 3658]
316	[152, 595]	1325	[1981, 1982]	2334	[829, 1490]	3343	[3660, 581]
317	[596, 597]	1326	[1983, 1984]	2335	[2951, 2008]	3344	[3661, 172]
318	[598, 599]	1327	[1985, 1607]	2336	[2952, 208]	3345	[617, 1439]
319	[600, 601]	1328	[1986, 497]	2337	[1741, 765]	3346	[3662, 2958]
320	[602, 603]	1329	[1987, 564]	2338	[2953, 2725]	3347	[777, 2724]
321	[604, 605]	1330	[699, 1742]	2339	[2954, 561]	3348	[3663, 1662]
322	[203, 606]	1331	[1988, 1893]	2340	[2955, 594]	3349	[3194, 3664]

323	[607, 608]	1332	[1602, 810]	2341	[180, 2805]	3350	[823, 1877]
324	[609, 610]	1333	[671, 1989]	2342	[2956, 1541]	3351	[3665, 45]
325	[611, 612]	1334	[1990, 1578]	2343	[2957, 1786]	3352	[516, 1427]
326	[613, 614]	1335	[1733, 1991]	2344	[2958, 724]	3353	[1767, 1667]
327	[615, 580]	1336	[235, 1688]	2345	[1780, 1739]	3354	[1977, 1704]
328	[616, 617]	1337	[1992, 1993]	2346	[2959, 756]	3355	[2908, 1693]
329	[618, 619]	1338	[1682, 1605]	2347	[2960, 1861]	3356	[3666, 1856]
330	[612, 620]	1339	[661, 1977]	2348	[2961, 728]	3357	[1422, 721]
331	[621, 622]	1340	[1952, 1994]	2349	[2962, 1857]	3358	[3667, 196]
332	[623, 624]	1341	[1513, 1482]	2350	[2963, 202]	3359	[3668, 570]
333	[625, 578]	1342	[1995, 1996]	2351	[2964, 755]	3360	[3669, 1913]
334	[626, 627]	1343	[1997, 1998]	2352	[1530, 1682]	3361	[3670, 722]
335	[628, 629]	1344	[1999, 2000]	2353	[2965, 32]	3362	[1428, 1561]
336	[630, 631]	1345	[2001, 1402]	2354	[531, 1451]	3363	[818, 1455]
337	[632, 62]	1346	[2002, 1565]	2355	[185, 661]	3364	[3671, 714]
338	[633, 634]	1347	[2003, 774]	2356	[1994, 248]	3365	[1593, 1890]
339	[635, 505]	1348	[212, 1797]	2357	[2966, 2967]	3366	[2830, 2784]
340	[128, 159]	1349	[2004, 1600]	2358	[2968, 2806]	3367	[3672, 1963]
341	[130, 636]	1350	[2005, 221]	2359	[2969, 772]	3368	[540, 1491]
342	[637, 638]	1351	[2006, 1588]	2360	[2970, 1727]	3369	[3673, 3674]
343	[639, 614]	1352	[2007, 2008]	2361	[2971, 2972]	3370	[3675, 3676]
344	[640, 641]	1353	[2009, 1968]	2362	[2973, 662]	3371	[655, 3165]
345	[642, 643]	1354	[2010, 1616]	2363	[1610, 1969]	3372	[3677, 2859]
346	[644, 645]	1355	[2011, 532]	2364	[2974, 592]	3373	[1542, 2033]
347	[646, 647]	1356	[536, 200]	2365	[1855, 795]	3374	[505, 2027]
348	[648, 649]	1357	[2012, 1530]	2366	[820, 2018]	3375	[3678, 3010]
349	[650, 585]	1358	[1490, 591]	2367	[174, 2975]	3376	[3679, 180]
350	[651, 652]	1359	[2013, 2014]	2368	[1574, 35]	3377	[3680, 1802]
351	[653, 158]	1360	[1786, 2015]	2369	[783, 1872]	3378	[3611, 1800]
352	[654, 655]	1361	[2016, 1961]	2370	[58, 642]	3379	[3681, 1663]
353	[656, 657]	1362	[580, 1626]	2371	[2976, 744]	3380	[1954, 2915]
354	[658, 659]	1363	[2017, 2018]	2372	[2977, 61]	3381	[3682, 667]
355	[660, 661]	1364	[2019, 1476]	2373	[2978, 201]	3382	[3683, 720]
356	[662, 219]	1365	[2020, 1900]	2374	[2052, 832]	3383	[3684, 763]
357	[572, 185]	1366	[2021, 1745]	2375	[2979, 2728]	3384	[3685, 1941]
358	[529, 663]	1367	[2022, 2023]	2376	[2980, 1506]	3385	[3686, 1557]
359	[664, 515]	1368	[2024, 2025]	2377	[1827, 517]	3386	[3687, 202]
360	[12, 573]	1369	[2026, 2027]	2378	[2981, 1992]	3387	[3688, 1608]
361	[665, 666]	1370	[2028, 2029]	2379	[2982, 655]	3388	[3689, 1978]
362	[667, 536]	1371	[2030, 821]	2380	[2983, 559]	3389	[1544, 3112]
363	[668, 669]	1372	[2031, 824]	2381	[647, 2984]	3390	[1551, 1908]
364	[670, 671]	1373	[2032, 2033]	2382	[2985, 1996]	3391	[3690, 828]
365	[672, 568]	1374	[2034, 664]	2383	[2986, 2928]	3392	[3691, 3692]
366	[673, 674]	1375	[2035, 2036]	2384	[503, 2987]	3393	[3693, 792]

367	[675, 676]	1376	[2037, 1994]	2385	[2988, 2045]	3394	[3694, 1652]
368	[677, 678]	1377	[1451, 1711]	2386	[738, 1538]	3395	[2945, 225]
369	[679, 680]	1378	[1453, 34]	2387	[2989, 1852]	3396	[3695, 3113]
370	[681, 635]	1379	[2038, 1485]	2388	[1464, 2813]	3397	[3696, 562]
371	[682, 683]	1380	[1965, 2039]	2389	[568, 1459]	3398	[1980, 3107]
372	[684, 685]	1381	[683, 41]	2390	[2990, 599]	3399	[2889, 1548]
373	[686, 687]	1382	[2014, 740]	2391	[2991, 2992]	3400	[1605, 700]
374	[688, 689]	1383	[2040, 2041]	2392	[2993, 1684]	3401	[3697, 2794]
375	[690, 691]	1384	[2042, 2025]	2393	[2895, 706]	3402	[1556, 1734]
376	[692, 693]	1385	[2043, 224]	2394	[2994, 2796]	3403	[3698, 2890]
377	[694, 695]	1386	[2044, 1497]	2395	[825, 1962]	3404	[1797, 598]
378	[696, 697]	1387	[2045, 1537]	2396	[2995, 1784]	3405	[3699, 3121]
379	[698, 699]	1388	[2046, 2047]	2397	[209, 1510]	3406	[3076, 709]
380	[700, 701]	1389	[2048, 2049]	2398	[2844, 1721]	3407	[3700, 1636]
381	[702, 703]	1390	[2050, 192]	2399	[2996, 1492]	3408	[1688, 631]
382	[704, 569]	1391	[2051, 1889]	2400	[2997, 1647]	3409	[170, 647]
383	[705, 689]	1392	[1933, 2052]	2401	[1447, 1457]	3410	[191, 173]
384	[706, 707]	1393	[2053, 136]	2402	[709, 1910]	3411	[3163, 824]
385	[708, 709]	1394	[2054, 606]	2403	[1546, 2007]	3412	[3701, 478]
386	[710, 711]	1395	[1935, 1485]	2404	[2998, 2999]	3413	[1790, 2823]
387	[712, 713]	1396	[2055, 2056]	2405	[3000, 1826]	3414	[1615, 727]
388	[714, 557]	1397	[2057, 2058]	2406	[1432, 237]	3415	[3702, 1511]
389	[715, 716]	1398	[2059, 2060]	2407	[2987, 1809]	3416	[3703, 3704]
390	[717, 718]	1399	[2061, 1264]	2408	[3001, 565]	3417	[3705, 608]
391	[719, 720]	1400	[2062, 2063]	2409	[172, 2944]	3418	[3706, 1617]
392	[721, 722]	1401	[2064, 867]	2410	[769, 198]	3419	[3707, 2900]
393	[723, 167]	1402	[2065, 1328]	2411	[3002, 633]	3420	[144, 1467]
394	[724, 128]	1403	[1004, 2066]	2412	[3003, 2922]	3421	[3708, 1563]
395	[725, 726]	1404	[927, 1040]	2413	[1584, 1904]	3422	[3709, 810]
396	[727, 728]	1405	[2067, 455]	2414	[1893, 3004]	3423	[3710, 692]
397	[729, 730]	1406	[317, 1358]	2415	[3005, 537]	3424	[3711, 40]
398	[599, 247]	1407	[333, 2068]	2416	[3006, 3007]	3425	[3712, 1415]
399	[731, 732]	1408	[2069, 2070]	2417	[1613, 3008]	3426	[3713, 169]
400	[733, 624]	1409	[2071, 405]	2418	[3009, 3010]	3427	[2805, 1479]
401	[734, 735]	1410	[2072, 286]	2419	[3011, 1589]	3428	[687, 186]
402	[736, 737]	1411	[2073, 2070]	2420	[1833, 627]	3429	[3714, 1862]
403	[549, 738]	1412	[2074, 2075]	2421	[1795, 600]	3430	[3715, 1951]
404	[739, 740]	1413	[1101, 2076]	2422	[3012, 1551]	3431	[3716, 227]
405	[741, 490]	1414	[2077, 2078]	2423	[3013, 620]	3432	[1735, 1805]
406	[742, 168]	1415	[2079, 27]	2424	[3014, 3015]	3433	[3061, 3692]
407	[743, 744]	1416	[295, 2080]	2425	[3016, 1963]	3434	[2821, 1545]
408	[182, 745]	1417	[1278, 2081]	2426	[1570, 3017]	3435	[601, 2020]
409	[746, 747]	1418	[2082, 2083]	2427	[62, 477]	3436	[3717, 843]
410	[748, 749]	1419	[2084, 2085]	2428	[3018, 696]	3437	[3718, 3719]

411	[750, 751]	1420	[64, 340]	2429	[3019, 3020]	3438	[693, 3007]
412	[752, 205]	1421	[2086, 912]	2430	[3021, 3022]	3439	[3720, 35]
413	[753, 754]	1422	[2087, 2088]	2431	[3023, 1648]	3440	[3721, 598]
414	[755, 756]	1423	[1346, 2089]	2432	[3024, 1560]	3441	[3722, 1970]
415	[757, 758]	1424	[2090, 2091]	2433	[3025, 50]	3442	[3723, 758]
416	[759, 760]	1425	[950, 2092]	2434	[1611, 826]	3443	[164, 2921]
417	[761, 762]	1426	[2093, 976]	2435	[3026, 2844]	3444	[1562, 789]
418	[763, 545]	1427	[2094, 2095]	2436	[3027, 540]	3445	[1684, 2016]
419	[514, 764]	1428	[924, 2096]	2437	[3028, 3029]	3446	[2771, 235]
420	[765, 766]	1429	[2097, 2098]	2438	[1617, 1788]	3447	[2910, 3191]
421	[767, 768]	1430	[2099, 867]	2439	[3030, 1992]	3448	[3724, 1559]
422	[592, 769]	1431	[1258, 1123]	2440	[3031, 1642]	3449	[3725, 2797]
423	[770, 534]	1432	[1331, 2100]	2441	[3032, 2039]	3450	[3726, 1665]
424	[771, 772]	1433	[1334, 2101]	2442	[3033, 1711]	3451	[3727, 3667]
425	[773, 774]	1434	[2102, 2103]	2443	[3034, 528]	3452	[1696, 1862]
426	[775, 776]	1435	[879, 300]	2444	[3035, 1795]	3453	[3728, 3196]
427	[479, 777]	1436	[2104, 2105]	2445	[3036, 1978]	3454	[3729, 3730]
428	[778, 779]	1437	[2106, 282]	2446	[2741, 1985]	3455	[3731, 3201]
429	[780, 781]	1438	[1207, 882]	2447	[3037, 1582]	3456	[1444, 169]
430	[782, 783]	1439	[2107, 1009]	2448	[3038, 668]	3457	[1470, 1557]
431	[784, 785]	1440	[432, 1044]	2449	[3039, 844]	3458	[1424, 3163]
432	[786, 787]	1441	[299, 2108]	2450	[764, 1785]	3459	[3730, 3206]
433	[788, 789]	1442	[301, 1054]	2451	[3040, 1559]	3460	[3732, 1637]
434	[790, 192]	1443	[2109, 2110]	2452	[3041, 575]	3461	[3733, 59]
435	[791, 39]	1444	[2111, 330]	2453	[3010, 2889]	3462	[3734, 3735]
436	[792, 793]	1445	[450, 6]	2454	[808, 3042]	3463	[3736, 3737]
437	[794, 795]	1446	[126, 966]	2455	[3043, 539]	3464	[50, 2713]
438	[796, 797]	1447	[1052, 2112]	2456	[3044, 1864]	3465	[56, 757]
439	[798, 184]	1448	[2113, 2114]	2457	[3045, 3046]	3466	[1872, 1533]
440	[799, 800]	1449	[1260, 2115]	2458	[3047, 3048]	3467	[3738, 1596]
441	[772, 801]	1450	[2116, 2117]	2459	[3049, 3050]	3468	[3739, 616]
442	[802, 138]	1451	[2118, 2119]	2460	[1497, 2049]	3469	[3740, 3004]
443	[614, 681]	1452	[2120, 69]	2461	[1897, 733]	3470	[44, 1677]
444	[676, 803]	1453	[2121, 914]	2462	[3051, 3052]	3471	[3741, 1561]
445	[744, 804]	1454	[2122, 2123]	2463	[3053, 1879]	3472	[779, 1935]
446	[805, 509]	1455	[2124, 406]	2464	[2999, 537]	3473	[3742, 2043]
447	[806, 10]	1456	[418, 2125]	2465	[701, 2976]	3474	[3743, 1660]
448	[807, 808]	1457	[2126, 2127]	2466	[3054, 654]	3475	[3744, 3187]
449	[809, 233]	1458	[2128, 263]	2467	[3055, 769]	3476	[3172, 3116]
450	[810, 811]	1459	[2129, 1224]	2468	[3056, 677]	3477	[1998, 3064]
451	[812, 813]	1460	[2130, 2131]	2469	[553, 2743]	3478	[3692, 3629]
452	[814, 634]	1461	[2068, 121]	2470	[3057, 1468]	3479	[218, 2795]
453	[815, 816]	1462	[2132, 2133]	2471	[3058, 1562]	3480	[3745, 3730]
454	[817, 818]	1463	[2134, 2135]	2472	[3059, 2887]	3481	[3746, 1849]

455	[819, 820]	1464	[1194, 1018]	2473	[3060, 3061]	3482	[3747, 1747]
456	[821, 782]	1465	[2136, 1279]	2474	[3062, 2986]	3483	[636, 1818]
457	[822, 823]	1466	[2137, 1365]	2475	[3063, 3064]	3484	[146, 1750]
458	[824, 825]	1467	[2138, 2139]	2476	[2862, 3061]	3485	[3748, 2971]
459	[826, 827]	1468	[382, 2140]	2477	[3065, 3066]	3486	[3048, 1998]
460	[828, 829]	1469	[384, 2093]	2478	[1515, 1702]	3487	[3216, 3174]
461	[830, 831]	1470	[84, 1234]	2479	[1747, 817]	3488	[2928, 3048]
462	[832, 833]	1471	[2141, 956]	2480	[756, 3067]	3489	[2900, 3729]
463	[834, 835]	1472	[86, 2142]	2481	[3068, 2853]	3490	[3749, 486]
464	[836, 837]	1473	[2143, 935]	2482	[1588, 842]	3491	[34, 2872]
465	[838, 839]	1474	[2144, 463]	2483	[1399, 1943]	3492	[3750, 760]
466	[840, 177]	1475	[2145, 952]	2484	[666, 2029]	3493	[3751, 1791]
467	[841, 842]	1476	[2146, 2147]	2485	[3069, 197]	3494	[3594, 3046]
468	[843, 844]	1477	[2148, 1269]	2486	[3070, 2815]	3495	[3201, 2862]
469	[845, 846]	1478	[2149, 2150]	2487	[3071, 501]	3496	[3752, 2972]
470	[847, 491]	1479	[2151, 1019]	2488	[3072, 1928]	3497	[3753, 2884]
471	[758, 848]	1480	[994, 2152]	2489	[3073, 1866]	3498	[3754, 1770]
472	[849, 850]	1481	[2153, 2154]	2490	[3074, 1845]	3499	[3755, 1413]
473	[851, 852]	1482	[2155, 2156]	2491	[3075, 1742]	3500	[3756, 1980]
474	[853, 15]	1483	[2157, 294]	2492	[1910, 3076]	3501	[2047, 3142]
475	[854, 855]	1484	[1353, 2158]	2493	[3077, 2818]	3502	[3757, 2877]
476	[122, 856]	1485	[66, 2159]	2494	[3078, 757]	3503	[3758, 583]
477	[124, 857]	1486	[2160, 2103]	2495	[230, 2884]	3504	[3007, 773]
478	[858, 859]	1487	[2161, 322]	2496	[3079, 1441]	3505	[3657, 639]
479	[110, 860]	1488	[862, 2162]	2497	[3080, 1645]	3506	[3759, 1467]
480	[861, 862]	1489	[2163, 1044]	2498	[2, 1911]	3507	[3760, 1731]
481	[863, 864]	1490	[883, 2164]	2499	[3081, 516]	3508	[1842, 227]
482	[865, 866]	1491	[2165, 851]	2500	[3082, 1740]	3509	[3761, 1800]
483	[867, 868]	1492	[2166, 2167]	2501	[493, 3066]	3510	[3762, 1496]
484	[869, 870]	1493	[2168, 1217]	2502	[3083, 222]	3511	[2027, 2773]
485	[327, 871]	1494	[30, 2169]	2503	[2906, 677]	3512	[3763, 140]
486	[872, 873]	1495	[1057, 2170]	2504	[2036, 1399]	3513	[3764, 2736]
487	[874, 875]	1496	[2171, 2172]	2505	[3084, 1462]	3514	[3765, 2007]
488	[6, 876]	1497	[1172, 2173]	2506	[1560, 1959]	3515	[1690, 2993]
489	[877, 878]	1498	[1149, 1134]	2507	[3085, 765]	3516	[3623, 2801]
490	[276, 879]	1499	[2174, 2158]	2508	[3086, 3087]	3517	[3766, 1600]
491	[880, 881]	1500	[2175, 1058]	2509	[3088, 133]	3518	[3767, 2799]
492	[882, 883]	1501	[2176, 2177]	2510	[3089, 2929]	3519	[3592, 2963]
493	[884, 885]	1502	[2178, 21]	2511	[3090, 574]	3520	[3768, 1510]
494	[886, 447]	1503	[2179, 2180]	2512	[3091, 1844]	3521	[2725, 1892]
495	[887, 888]	1504	[1303, 2181]	2513	[3092, 653]	3522	[3769, 1581]
496	[889, 890]	1505	[2182, 63]	2514	[1609, 2791]	3523	[3770, 3651]
497	[891, 892]	1506	[2183, 2184]	2515	[1657, 2890]	3524	[842, 1802]
498	[893, 894]	1507	[2185, 2186]	2516	[48, 2958]	3525	[1616, 1651]

499	[895, 896]	1508	[2187, 2188]	2517	[3093, 793]	3526	[3771, 698]
500	[897, 898]	1509	[1030, 880]	2518	[132, 2992]	3527	[3772, 2780]
501	[293, 899]	1510	[2189, 2190]	2519	[222, 2047]	3528	[3773, 2]
502	[900, 901]	1511	[1244, 2191]	2520	[3094, 175]	3529	[3774, 487]
503	[902, 903]	1512	[2192, 1089]	2521	[3095, 573]	3530	[1778, 2967]
504	[434, 904]	1513	[2193, 113]	2522	[2719, 1717]	3531	[3775, 1436]
505	[905, 906]	1514	[2194, 875]	2523	[3096, 3042]	3532	[3776, 2724]
506	[907, 908]	1515	[2195, 2196]	2524	[3097, 697]	3533	[3777, 2937]
507	[312, 909]	1516	[2197, 2198]	2525	[3098, 1583]	3534	[2871, 1686]
508	[910, 911]	1517	[1281, 2199]	2526	[3099, 3100]	3535	[3778, 1693]
509	[912, 317]	1518	[2200, 1294]	2527	[3101, 2838]	3536	[3779, 1801]
510	[913, 914]	1519	[2198, 2201]	2528	[1480, 813]	3537	[1633, 2013]
511	[915, 916]	1520	[2202, 935]	2529	[3102, 1419]	3538	[627, 155]
512	[917, 918]	1521	[2203, 2204]	2530	[3103, 764]	3539	[1758, 3121]
513	[919, 920]	1522	[2167, 2197]	2531	[2712, 3104]	3540	[3780, 1458]
514	[921, 414]	1523	[2205, 1007]	2532	[3105, 839]	3541	[3781, 1792]
515	[922, 379]	1524	[2206, 335]	2533	[1727, 3050]	3542	[2763, 1692]
516	[923, 924]	1525	[1390, 1360]	2534	[3106, 1429]	3543	[3782, 617]
517	[925, 349]	1526	[2098, 72]	2535	[3107, 2041]	3544	[1920, 2799]
518	[926, 362]	1527	[2207, 2208]	2536	[1879, 1844]	3545	[3783, 3784]
519	[319, 927]	1528	[885, 2146]	2537	[3108, 1956]	3546	[3785, 2764]
520	[388, 928]	1529	[2209, 884]	2538	[678, 1496]	3547	[3786, 1427]
521	[929, 930]	1530	[2210, 2211]	2539	[1991, 1707]	3548	[1891, 2024]
522	[931, 928]	1531	[2212, 2213]	2540	[634, 1654]	3549	[2827, 3735]
523	[932, 401]	1532	[2214, 1241]	2541	[1895, 607]	3550	[737, 2786]
524	[933, 934]	1533	[2215, 2216]	2542	[2975, 475]	3551	[1455, 1429]
525	[935, 936]	1534	[2131, 1150]	2543	[3109, 1659]	3552	[2860, 3724]
526	[937, 938]	1535	[2217, 2218]	2544	[3110, 2827]	3553	[3787, 3658]
527	[939, 940]	1536	[2219, 895]	2545	[3111, 1564]	3554	[3788, 809]
528	[941, 919]	1537	[2092, 2220]	2546	[3112, 3113]	3555	[3789, 2955]
529	[942, 943]	1538	[2221, 2222]	2547	[3114, 2839]	3556	[3790, 2004]
530	[944, 945]	1539	[2223, 990]	2548	[1431, 527]	3557	[3791, 209]
531	[946, 947]	1540	[954, 929]	2549	[3115, 520]	3558	[3792, 1592]
532	[948, 391]	1541	[2224, 2225]	2550	[2922, 787]	3559	[3793, 2902]
533	[949, 950]	1542	[2226, 2227]	2551	[2877, 645]	3560	[160, 1598]
534	[951, 952]	1543	[1205, 2228]	2552	[3116, 583]	3561	[1620, 562]
535	[953, 954]	1544	[2229, 2230]	2553	[3117, 1578]	3562	[3794, 2872]
536	[955, 956]	1545	[2231, 2232]	2554	[3118, 1891]	3563	[1474, 3795]
537	[957, 958]	1546	[2110, 2233]	2555	[3119, 1620]	3564	[142, 3704]
538	[959, 960]	1547	[2234, 1163]	2556	[3120, 1597]	3565	[2937, 3211]
539	[961, 962]	1548	[2235, 2236]	2557	[3121, 1870]	3566	[3146, 3796]
540	[963, 964]	1549	[2114, 946]	2558	[216, 779]	3567	[36, 1709]
541	[965, 966]	1550	[402, 352]	2559	[3122, 2944]	3568	[3797, 3623]
542	[856, 967]	1551	[2237, 2238]	2560	[844, 1791]	3569	[3798, 1491]

543	[968, 969]	1552	[876, 2239]	2561	[2947, 1865]	3570	[3167, 1680]
544	[970, 971]	1553	[2240, 2241]	2562	[1912, 572]	3571	[3799, 1911]
545	[972, 973]	1554	[2242, 2243]	2563	[3123, 1725]	3572	[3800, 1548]
546	[974, 975]	1555	[2244, 471]	2564	[3124, 1439]	3573	[3801, 2855]
547	[976, 977]	1556	[894, 2245]	2565	[3125, 1649]	3574	[3802, 750]
548	[943, 978]	1557	[2246, 1236]	2566	[134, 1751]	3575	[239, 1740]
549	[979, 980]	1558	[2247, 2248]	2567	[3126, 3127]	3576	[3803, 2976]
550	[981, 934]	1559	[2249, 2250]	2568	[1888, 736]	3577	[3804, 1985]
551	[982, 251]	1560	[2251, 1086]	2569	[762, 2871]	3578	[3805, 827]
552	[983, 984]	1561	[2252, 107]	2570	[3128, 219]	3579	[3806, 2773]
553	[985, 986]	1562	[2096, 2253]	2571	[3129, 3067]	3580	[3629, 1777]
554	[987, 988]	1563	[2254, 1355]	2572	[3130, 1420]	3581	[3807, 1962]
555	[989, 112]	1564	[878, 2154]	2573	[2018, 1771]	3582	[3087, 1806]
556	[990, 991]	1565	[396, 2255]	2574	[3131, 1734]	3583	[3808, 783]
557	[992, 993]	1566	[2256, 2257]	2575	[3017, 2999]	3584	[711, 2043]
558	[321, 994]	1567	[2258, 2259]	2576	[3132, 3017]	3585	[3104, 2]
559	[323, 995]	1568	[467, 89]	2577	[3133, 801]	3586	[3809, 3229]
560	[996, 997]	1569	[906, 893]	2578	[551, 47]	3587	[803, 3674]
561	[998, 411]	1570	[2260, 2180]	2579	[1472, 1418]	3588	[3810, 508]
562	[999, 1000]	1571	[2261, 1255]	2580	[1486, 1581]	3589	[1348, 2205]
563	[1001, 1002]	1572	[2262, 2263]	2581	[3134, 1712]	3590	[3811, 860]
564	[1003, 1004]	1573	[2264, 2265]	2582	[3135, 833]	3591	[3812, 943]
565	[1005, 308]	1574	[2266, 73]	2583	[3136, 1812]	3592	[3813, 2213]
566	[928, 1006]	1575	[2267, 2268]	2584	[3137, 1554]	3593	[1148, 1069]
567	[1007, 1008]	1576	[1330, 1098]	2585	[3138, 1902]	3594	[3814, 2149]
568	[1009, 1010]	1577	[2269, 1119]	2586	[3139, 1414]	3595	[3815, 2191]
569	[1011, 959]	1578	[1138, 2270]	2587	[3140, 1670]	3596	[3816, 2354]
570	[1012, 1011]	1579	[2271, 968]	2588	[3141, 705]	3597	[404, 466]
571	[1013, 358]	1580	[2272, 2273]	2589	[2000, 2776]	3598	[1266, 387]
572	[1014, 1015]	1581	[2274, 2275]	2590	[207, 2924]	3599	[2598, 1350]
573	[1016, 1017]	1582	[2276, 1097]	2591	[3142, 1608]	3600	[3817, 2506]
574	[1018, 897]	1583	[2277, 854]	2592	[3143, 1634]	3601	[3818, 2239]
575	[1019, 1020]	1584	[1124, 1091]	2593	[3144, 2786]	3602	[3819, 368]
576	[1021, 1022]	1585	[1289, 2262]	2594	[3145, 3146]	3603	[3820, 449]
577	[1023, 305]	1586	[1226, 2122]	2595	[3147, 515]	3604	[3540, 2275]
578	[1024, 1025]	1587	[2278, 2159]	2596	[158, 763]	3605	[3821, 1337]
579	[1026, 400]	1588	[2279, 2280]	2597	[1993, 750]	3606	[3822, 1180]
580	[329, 1027]	1589	[2220, 2281]	2598	[3148, 1610]	3607	[3823, 257]
581	[1028, 1029]	1590	[2282, 921]	2599	[2008, 3015]	3608	[2089, 2172]
582	[78, 1030]	1591	[2283, 2284]	2600	[3149, 156]	3609	[361, 911]
583	[1031, 1032]	1592	[2285, 313]	2601	[3150, 141]	3610	[3824, 392]
584	[1033, 1034]	1593	[2286, 2287]	2602	[624, 2771]	3611	[3825, 3322]
585	[850, 1035]	1594	[2288, 2289]	2603	[2715, 3151]	3612	[3468, 3255]
586	[1036, 29]	1595	[2290, 1305]	2604	[1591, 3152]	3613	[3826, 1395]

587	[1037, 1038]	1596	[2291, 1178]	2605	[3153, 499]	3614	[3273, 291]
588	[331, 1039]	1597	[2292, 2293]	2606	[3154, 2836]	3615	[3827, 2370]
589	[1040, 1041]	1598	[2294, 109]	2607	[2803, 1521]	3616	[3828, 2312]
590	[1042, 1043]	1599	[1135, 2295]	2608	[3155, 1993]	3617	[3474, 77]
591	[1044, 1045]	1600	[2296, 1183]	2609	[1401, 2797]	3618	[3829, 2402]
592	[1046, 444]	1601	[2297, 261]	2610	[3156, 2712]	3619	[2280, 2085]
593	[1047, 1048]	1602	[2181, 1352]	2611	[3157, 51]	3620	[305, 405]
594	[1049, 1050]	1603	[864, 2298]	2612	[3158, 1664]	3621	[3830, 924]
595	[1051, 1052]	1604	[284, 2299]	2613	[3159, 134]	3622	[3831, 1235]
596	[1053, 1014]	1605	[2211, 1204]	2614	[3160, 3161]	3623	[3832, 2102]
597	[1054, 1055]	1606	[2300, 418]	2615	[1931, 1517]	3624	[3833, 2453]
598	[1056, 1057]	1607	[2301, 2302]	2616	[3162, 3163]	3625	[3834, 986]
599	[1058, 1059]	1608	[2303, 1238]	2617	[3164, 3165]	3626	[1159, 2467]
600	[1060, 453]	1609	[1096, 2073]	2618	[3166, 3167]	3627	[3835, 2164]
601	[1061, 1062]	1610	[1063, 2304]	2619	[801, 1840]	3628	[3495, 2475]
602	[964, 1063]	1611	[392, 2276]	2620	[3168, 1452]	3629	[3487, 3477]
603	[1064, 985]	1612	[1157, 437]	2621	[3066, 3109]	3630	[1232, 1105]
604	[1065, 995]	1613	[2305, 2306]	2622	[2801, 2830]	3631	[2184, 1311]
605	[1066, 322]	1614	[2307, 1204]	2623	[3169, 2833]	3632	[3324, 1325]
606	[390, 1067]	1615	[2308, 2309]	2624	[2841, 1931]	3633	[3836, 2273]
607	[1068, 1069]	1616	[909, 2135]	2625	[3170, 1754]	3634	[2551, 1174]
608	[977, 1070]	1617	[2310, 2308]	2626	[3152, 1409]	3635	[3268, 2087]
609	[1071, 1072]	1618	[2311, 1055]	2627	[3171, 3172]	3636	[3837, 1259]
610	[1073, 1074]	1619	[2312, 908]	2628	[3173, 3174]	3637	[3838, 2482]
611	[1075, 1076]	1620	[2313, 346]	2629	[1484, 2000]	3638	[1048, 1004]
612	[1077, 1072]	1621	[956, 2314]	2630	[3175, 1855]	3639	[2406, 2379]
613	[1078, 330]	1622	[2236, 342]	2631	[3004, 3176]	3640	[3245, 1254]
614	[1079, 1080]	1623	[2293, 2315]	2632	[3008, 3177]	3641	[2577, 1000]
615	[1081, 1082]	1624	[2316, 2202]	2633	[3178, 2837]	3642	[2484, 390]
616	[1083, 1076]	1625	[2317, 1310]	2634	[3179, 1922]	3643	[2545, 2353]
617	[1084, 1007]	1626	[1082, 1228]	2635	[3180, 1728]	3644	[3839, 2056]
618	[1017, 1085]	1627	[2318, 2169]	2636	[1637, 587]	3645	[3840, 2119]
619	[1086, 951]	1628	[2319, 2320]	2637	[585, 659]	3646	[2432, 1142]
620	[1076, 1087]	1629	[995, 2321]	2638	[3165, 770]	3647	[2315, 2532]
621	[1072, 1088]	1630	[2322, 1339]	2639	[3181, 737]	3648	[2675, 3529]
622	[1074, 1089]	1631	[2323, 2118]	2640	[2039, 167]	3649	[2243, 854]
623	[1090, 1091]	1632	[2324, 326]	2641	[3182, 657]	3650	[3841, 906]
624	[1092, 1093]	1633	[2325, 422]	2642	[3183, 198]	3651	[3842, 3415]
625	[1094, 1095]	1634	[2326, 2327]	2643	[3184, 38]	3652	[452, 76]
626	[993, 1096]	1635	[1225, 2328]	2644	[3185, 2893]	3653	[2605, 3295]
627	[1097, 304]	1636	[2329, 409]	2645	[3042, 2893]	3654	[1126, 2091]
628	[1098, 1099]	1637	[2330, 2331]	2646	[3186, 3177]	3655	[3843, 411]
629	[1100, 1101]	1638	[2332, 1307]	2647	[2839, 2838]	3656	[3844, 993]
630	[1102, 1103]	1639	[2333, 2334]	2648	[1792, 3187]	3657	[3845, 1079]

631	[1104, 1105]	1640	[2335, 2336]	2649	[3188, 3189]	3658	[2476, 3846]
632	[1106, 1107]	1641	[1039, 2148]	2650	[3190, 2726]	3659	[3580, 3293]
633	[1108, 437]	1642	[2337, 2338]	2651	[3191, 3002]	3660	[1038, 1113]
634	[1109, 1110]	1643	[1283, 2339]	2652	[1521, 525]	3661	[2241, 2608]
635	[1080, 1109]	1644	[2340, 1179]	2653	[1517, 1519]	3662	[3847, 868]
636	[255, 1111]	1645	[2341, 989]	2654	[3192, 1759]	3663	[3848, 353]
637	[1112, 1113]	1646	[2342, 2343]	2655	[3193, 3194]	3664	[3849, 2612]
638	[448, 1114]	1647	[415, 2344]	2656	[3195, 1546]	3665	[3850, 2177]
639	[1115, 1116]	1648	[2345, 2346]	2657	[1700, 3196]	3666	[2218, 2343]
640	[1117, 300]	1649	[2347, 387]	2658	[38, 581]	3667	[3851, 3499]
641	[1118, 1119]	1650	[2348, 917]	2659	[1665, 2947]	3668	[2273, 3442]
642	[116, 1120]	1651	[2349, 1131]	2660	[3197, 1452]	3669	[369, 1376]
643	[118, 1121]	1652	[2350, 1103]	2661	[3050, 692]	3670	[3852, 2568]
644	[1122, 1123]	1653	[2351, 921]	2662	[3198, 1412]	3671	[3853, 2324]
645	[18, 1124]	1654	[1358, 2352]	2663	[2806, 1592]	3672	[3854, 122]
646	[1125, 1126]	1655	[2353, 1161]	2664	[3199, 2766]	3673	[2115, 2581]
647	[1127, 1128]	1656	[266, 2354]	2665	[3200, 48]	3674	[3855, 2577]
648	[1129, 1111]	1657	[94, 2355]	2666	[3174, 3201]	3675	[3856, 2184]
649	[1111, 1130]	1658	[2356, 125]	2667	[1777, 3202]	3676	[3857, 334]
650	[1055, 1131]	1659	[2357, 2358]	2668	[3203, 1990]	3677	[3858, 2607]
651	[1132, 1133]	1660	[860, 950]	2669	[3204, 142]	3678	[3859, 363]
652	[1134, 1135]	1661	[2359, 2360]	2670	[545, 1754]	3679	[3860, 2369]
653	[353, 1136]	1662	[2361, 2362]	2671	[3205, 770]	3680	[1191, 429]
654	[1137, 1138]	1663	[2363, 2364]	2672	[3206, 2045]	3681	[2630, 1095]
655	[1139, 1140]	1664	[1095, 2365]	2673	[1749, 3197]	3682	[3861, 2263]
656	[1141, 1142]	1665	[2186, 2366]	2674	[1905, 718]	3683	[2455, 2605]
657	[257, 1143]	1666	[2367, 290]	2675	[2767, 1461]	3684	[2553, 972]
658	[1144, 1145]	1667	[2368, 1195]	2676	[3207, 560]	3685	[3862, 881]
659	[1146, 922]	1668	[2369, 2370]	2677	[3208, 738]	3686	[3415, 990]
660	[1147, 903]	1669	[1321, 2371]	2678	[1685, 1915]	3687	[3863, 391]
661	[4, 1148]	1670	[2372, 2373]	2679	[3209, 1575]	3688	[3864, 2522]
662	[1091, 1149]	1671	[1393, 2374]	2680	[3210, 1991]	3689	[3865, 1258]
663	[1150, 1151]	1672	[2375, 1200]	2681	[3211, 1595]	3690	[3866, 1201]
664	[1152, 923]	1673	[2373, 2376]	2682	[3212, 206]	3691	[2306, 3455]
665	[1153, 1154]	1674	[2377, 1250]	2683	[1568, 3213]	3692	[2458, 3340]
666	[1155, 1033]	1675	[2378, 2379]	2684	[3214, 1806]	3693	[2058, 446]
667	[1156, 1157]	1676	[2380, 2127]	2685	[3215, 3216]	3694	[3867, 852]
668	[1158, 332]	1677	[2381, 968]	2686	[3217, 179]	3695	[3868, 126]
669	[969, 1159]	1678	[348, 2251]	2687	[3218, 2936]	3696	[3869, 2265]
670	[1160, 1161]	1679	[2382, 2383]	2688	[189, 1970]	3697	[2063, 887]
671	[1162, 886]	1680	[2384, 407]	2689	[1851, 1541]	3698	[2489, 2364]
672	[1163, 1164]	1681	[2385, 1191]	2690	[1586, 1699]	3699	[1318, 2570]
673	[102, 1066]	1682	[468, 2386]	2691	[3219, 776]	3700	[2076, 288]
674	[1165, 1166]	1683	[2387, 2344]	2692	[3220, 1628]	3701	[3870, 110]

675	[1167, 365]	1684	[1291, 2388]	2693	[1660, 147]	3702	[3871, 3326]
676	[1168, 1169]	1685	[930, 259]	2694	[3221, 550]	3703	[3872, 2624]
677	[1170, 1171]	1686	[2389, 2390]	2695	[3222, 1486]	3704	[3873, 1134]
678	[1008, 1172]	1687	[2391, 2392]	2696	[1900, 550]	3705	[3874, 1114]
679	[1173, 376]	1688	[444, 370]	2697	[3223, 615]	3706	[2452, 2630]
680	[1174, 1144]	1689	[2268, 2393]	2698	[509, 1508]	3707	[2550, 2588]
681	[1175, 905]	1690	[2394, 971]	2699	[1699, 1662]	3708	[3875, 377]
682	[1176, 357]	1691	[1099, 1009]	2700	[1877, 654]	3709	[3382, 2102]
683	[1177, 85]	1692	[2395, 2396]	2701	[3224, 37]	3710	[3876, 1041]
684	[1025, 395]	1693	[2397, 1126]	2702	[1852, 511]	3711	[341, 1322]
685	[1178, 1179]	1694	[335, 2398]	2703	[3225, 838]	3712	[24, 1021]
686	[1027, 1180]	1695	[377, 267]	2704	[3226, 3227]	3713	[429, 1116]
687	[1181, 1182]	1696	[2302, 280]	2705	[1607, 2939]	3714	[2331, 2243]
688	[1183, 1184]	1697	[2399, 1390]	2706	[3228, 249]	3715	[973, 1183]
689	[1185, 1005]	1698	[2400, 399]	2707	[3229, 135]	3716	[3877, 323]
690	[1186, 1187]	1699	[2401, 2170]	2708	[1552, 1859]	3717	[3878, 1136]
691	[1069, 1188]	1700	[386, 2402]	2709	[3230, 1292]	3718	[3879, 880]
692	[1189, 1190]	1701	[2403, 2181]	2710	[3231, 339]	3719	[3880, 16]
693	[1041, 1191]	1702	[2404, 2271]	2711	[3232, 1087]	3720	[3881, 440]
694	[1192, 1193]	1703	[2405, 2406]	2712	[3233, 933]	3721	[2091, 2185]
695	[100, 1194]	1704	[2407, 2408]	2713	[3234, 103]	3722	[3882, 1149]
696	[1195, 17]	1705	[2409, 2353]	2714	[2133, 82]	3723	[3883, 2434]
697	[1196, 1197]	1706	[2410, 99]	2715	[3235, 1297]	3724	[3884, 2251]
698	[1198, 1199]	1707	[2411, 2412]	2716	[2338, 942]	3725	[2154, 2490]
699	[1200, 1201]	1708	[2314, 2055]	2717	[3236, 17]	3726	[2339, 2554]
700	[1202, 1203]	1709	[2413, 967]	2718	[1184, 2419]	3727	[3885, 2393]
701	[1204, 1205]	1710	[2414, 397]	2719	[3237, 2339]	3728	[1270, 1236]
702	[1206, 1207]	1711	[2117, 1304]	2720	[470, 2400]	3729	[3886, 2635]
703	[1208, 1209]	1712	[2415, 1243]	2721	[3238, 1125]	3730	[3887, 2115]
704	[1210, 1211]	1713	[2416, 1316]	2722	[3239, 262]	3731	[2667, 3341]
705	[1212, 1213]	1714	[1274, 1262]	2723	[3240, 1366]	3732	[3888, 1037]
706	[1214, 1215]	1715	[2417, 1184]	2724	[3241, 3242]	3733	[307, 2338]
707	[1216, 1217]	1716	[2418, 1323]	2725	[2225, 3243]	3734	[3889, 1365]
708	[1218, 345]	1717	[2419, 2420]	2726	[3244, 3245]	3735	[3890, 3310]
709	[1219, 1220]	1718	[2421, 318]	2727	[3246, 1025]	3736	[3891, 963]
710	[1221, 1222]	1719	[2422, 2423]	2728	[3247, 2279]	3737	[3892, 3265]
711	[1085, 426]	1720	[2424, 1194]	2729	[2456, 2238]	3738	[2522, 434]
712	[1223, 30]	1721	[2396, 1309]	2730	[3248, 874]	3739	[2408, 922]
713	[1224, 1225]	1722	[1120, 113]	2731	[2379, 306]	3740	[104, 1394]
714	[259, 1226]	1723	[2152, 988]	2732	[2156, 2250]	3741	[3242, 2502]
715	[1227, 1228]	1724	[2425, 1309]	2733	[3249, 2226]	3742	[1045, 2442]
716	[1229, 1230]	1725	[2426, 117]	2734	[3250, 2427]	3743	[3893, 454]
717	[1231, 1232]	1726	[2169, 2427]	2735	[2682, 1249]	3744	[3894, 2081]
718	[1233, 963]	1727	[967, 1255]	2736	[3251, 439]	3745	[3895, 1086]

719	[1234, 1235]	1728	[112, 1332]	2737	[3252, 918]	3746	[3896, 253]
720	[1236, 256]	1729	[2428, 2118]	2738	[2139, 2433]	3747	[3330, 3283]
721	[1237, 350]	1730	[2429, 2430]	2739	[1213, 2212]	3748	[3897, 2469]
722	[1238, 1239]	1731	[2431, 2432]	2740	[1252, 2412]	3749	[2464, 3321]
723	[1240, 1241]	1732	[2360, 27]	2741	[3253, 2301]	3750	[1154, 2105]
724	[868, 1242]	1733	[2433, 2434]	2742	[3254, 1150]	3751	[3275, 294]
725	[1243, 285]	1734	[2435, 2436]	2743	[3255, 3256]	3752	[3898, 1030]
726	[1179, 1244]	1735	[2437, 1371]	2744	[3257, 352]	3753	[1308, 2452]
727	[1245, 1246]	1736	[2438, 2137]	2745	[3258, 2212]	3754	[2191, 1190]
728	[890, 1247]	1737	[2439, 1336]	2746	[2402, 2449]	3755	[3899, 2234]
729	[1248, 1249]	1738	[355, 1338]	2747	[3259, 1038]	3756	[3900, 2080]
730	[1250, 1118]	1739	[2440, 1021]	2748	[3260, 87]	3757	[3901, 18]
731	[1251, 1252]	1740	[2441, 2442]	2749	[3261, 946]	3758	[3902, 1033]
732	[1089, 849]	1741	[454, 1132]	2750	[408, 325]	3759	[1310, 1209]
733	[1253, 1254]	1742	[1087, 1037]	2751	[3262, 1233]	3760	[2158, 2308]
734	[458, 955]	1743	[2443, 2302]	2752	[282, 1074]	3761	[3903, 285]
735	[1255, 1256]	1744	[1022, 2057]	2753	[3263, 2198]	3762	[3265, 1220]
736	[1257, 1258]	1745	[2444, 1154]	2754	[3264, 102]	3763	[3904, 2116]
737	[1259, 1260]	1746	[2445, 1283]	2755	[852, 3265]	3764	[3905, 2666]
738	[1261, 1262]	1747	[2446, 1363]	2756	[2568, 401]	3765	[2562, 1050]
739	[1263, 1264]	1748	[2447, 1186]	2757	[3266, 340]	3766	[3906, 1360]
740	[1265, 1266]	1749	[16, 866]	2758	[2270, 1221]	3767	[3907, 1364]
741	[26, 1251]	1750	[2448, 2449]	2759	[3267, 3268]	3768	[3908, 1244]
742	[1267, 74]	1751	[2450, 306]	2760	[3269, 91]	3769	[3909, 2276]
743	[1268, 980]	1752	[2451, 2452]	2761	[3270, 3243]	3770	[2436, 332]
744	[870, 1212]	1753	[1323, 2453]	2762	[3271, 268]	3771	[1133, 374]
745	[1269, 1270]	1754	[2454, 2455]	2763	[1105, 2479]	3772	[914, 1053]
746	[1271, 1225]	1755	[2423, 2456]	2764	[3272, 2706]	3773	[3910, 897]
747	[1215, 1155]	1756	[2457, 2458]	2765	[899, 3273]	3774	[3911, 297]
748	[1272, 885]	1757	[2459, 309]	2766	[3274, 3275]	3775	[2532, 2078]
749	[106, 24]	1758	[1387, 2460]	2767	[3276, 1125]	3776	[2295, 2225]
750	[1273, 1274]	1759	[2461, 399]	2768	[3277, 78]	3777	[3912, 85]
751	[1275, 1276]	1760	[2180, 2324]	2769	[2250, 293]	3778	[3913, 398]
752	[1277, 1278]	1761	[2462, 979]	2770	[2100, 1384]	3779	[2056, 1230]
753	[1171, 1279]	1762	[1340, 320]	2771	[3278, 1354]	3780	[3914, 90]
754	[1280, 1281]	1763	[2463, 1363]	2772	[2487, 992]	3781	[1339, 3376]
755	[1262, 362]	1764	[286, 2241]	2773	[3279, 307]	3782	[1378, 2530]
756	[1282, 1283]	1765	[1288, 2272]	2774	[3280, 380]	3783	[3915, 2420]
757	[1284, 1285]	1766	[2365, 2464]	2775	[3281, 1308]	3784	[3916, 2314]
758	[114, 1231]	1767	[28, 2369]	2776	[3282, 3283]	3785	[3917, 3486]
759	[1145, 299]	1768	[438, 874]	2777	[2691, 2444]	3786	[1123, 337]
760	[1286, 1100]	1769	[2465, 2332]	2778	[2213, 1274]	3787	[3846, 2306]
761	[1287, 1288]	1770	[2466, 2467]	2779	[1107, 1371]	3788	[3918, 441]
762	[264, 1289]	1771	[2468, 901]	2780	[3284, 1391]	3789	[3919, 1213]

763	[1290, 1291]	1772	[2327, 2469]	2781	[3285, 2260]	3790	[3920, 1226]
764	[920, 1292]	1773	[2392, 3]	2782	[3286, 1067]	3791	[2482, 2380]
765	[1293, 1294]	1774	[2470, 2471]	2783	[3287, 1276]	3792	[80, 283]
766	[1295, 321]	1775	[2472, 1063]	2784	[3288, 2228]	3793	[1035, 2447]
767	[1296, 370]	1776	[2473, 2474]	2785	[3289, 104]	3794	[1093, 3242]
768	[1131, 1207]	1777	[2475, 2476]	2786	[3290, 2205]	3795	[3921, 1083]
769	[1297, 383]	1778	[866, 2234]	2787	[3291, 1260]	3796	[3922, 3273]
770	[1298, 289]	1779	[2477, 1066]	2788	[2105, 1393]	3797	[3923, 3487]
771	[1299, 410]	1780	[1000, 2438]	2789	[1130, 93]	3798	[2298, 106]
772	[1300, 1301]	1781	[2478, 2479]	2790	[3292, 3293]	3799	[3924, 118]
773	[1302, 1303]	1782	[2480, 1167]	2791	[3294, 3295]	3800	[2386, 2114]
774	[1304, 1043]	1783	[901, 368]	2792	[3296, 1199]	3801	[2549, 275]
775	[1305, 1306]	1784	[2469, 1319]	2793	[1143, 2196]	3802	[363, 1275]
776	[1307, 1308]	1785	[2481, 2123]	2794	[3297, 3298]	3803	[2511, 870]
777	[1309, 1310]	1786	[2216, 2482]	2795	[3299, 291]	3804	[3925, 1135]
778	[1311, 361]	1787	[2483, 896]	2796	[2656, 462]	3805	[2119, 2188]
779	[1312, 1313]	1788	[960, 2484]	2797	[3300, 3296]	3806	[3926, 94]
780	[1314, 855]	1789	[1199, 2485]	2798	[3301, 977]	3807	[2343, 916]
781	[367, 1315]	1790	[975, 2312]	2799	[3302, 2064]	3808	[3442, 1203]
782	[436, 1316]	1791	[2486, 2487]	2800	[3303, 1352]	3809	[3927, 879]
783	[1317, 1318]	1792	[2488, 2489]	2801	[3304, 2463]	3810	[1230, 912]
784	[1319, 382]	1793	[2490, 2491]	2802	[2607, 2606]	3811	[3928, 1545]
785	[1320, 311]	1794	[2492, 2376]	2803	[3305, 2200]	3812	[697, 3229]
786	[892, 1321]	1795	[938, 1061]	2804	[898, 2331]	3813	[3929, 3034]
787	[1322, 1323]	1796	[92, 2061]	2805	[3306, 1102]	3814	[3651, 3009]
788	[1002, 1017]	1797	[1382, 1058]	2806	[120, 1336]	3815	[3930, 173]
789	[1324, 1325]	1798	[465, 1200]	2807	[3307, 1205]	3816	[3674, 838]
790	[1326, 412]	1799	[2289, 65]	2808	[3308, 1006]	3817	[3067, 243]
791	[1327, 1328]	1800	[2493, 2183]	2809	[2080, 1011]	3818	[3737, 1597]
792	[1329, 1145]	1801	[2494, 1311]	2810	[3309, 462]	3819	[237, 1857]
793	[446, 1330]	1802	[2495, 972]	2811	[3310, 2259]	3820	[3931, 766]
794	[290, 1331]	1803	[2208, 873]	2812	[2600, 26]	3821	[3932, 1457]
795	[1332, 449]	1804	[380, 2496]	2813	[2259, 2504]	3822	[3933, 733]
796	[1333, 1334]	1805	[2497, 1024]	2814	[288, 1168]	3823	[3934, 1794]
797	[1228, 1048]	1806	[2498, 2499]	2815	[3311, 1053]	3824	[3935, 3936]
798	[1335, 314]	1807	[2500, 2470]	2816	[3312, 256]	3825	[3161, 3763]
799	[1336, 1337]	1808	[70, 21]	2817	[2355, 2284]	3826	[3936, 703]
800	[1338, 1339]	1809	[2501, 2502]	2818	[3313, 2185]	3827	[3937, 674]
801	[410, 1340]	1810	[1070, 2392]	2819	[1119, 2595]	3828	[3938, 1483]
802	[1341, 1168]	1811	[2503, 2504]	2820	[2641, 3275]	3829	[3187, 1719]
803	[272, 419]	1812	[2505, 893]	2821	[461, 2334]	3830	[561, 3036]
804	[1342, 1343]	1813	[2506, 1052]	2822	[365, 1029]	3831	[3939, 3763]
805	[1344, 304]	1814	[2507, 871]	2823	[3314, 1214]	3832	[2967, 3936]
806	[1345, 1346]	1815	[978, 1334]	2824	[2427, 1100]	3833	[3940, 1915]

807	[1347, 409]	1816	[2508, 1133]	2825	[3315, 1014]	3834	[3941, 1952]
808	[1201, 1348]	1817	[1190, 2509]	2826	[3316, 1348]	3835	[1715, 2955]
809	[1349, 1350]	1818	[2510, 2511]	2827	[3317, 1221]	3836	[3942, 1558]
810	[261, 1351]	1819	[2512, 100]	2828	[2362, 303]	3837	[2753, 2859]
811	[1352, 1353]	1820	[1239, 2513]	2829	[3318, 1338]	3838	[3113, 1515]
812	[1354, 1355]	1821	[2514, 994]	2830	[3319, 1288]	3839	[1438, 1990]
813	[1356, 1252]	1822	[2515, 458]	2831	[3320, 2423]	3840	[804, 3029]
814	[1357, 1358]	1823	[2516, 2517]	2832	[3321, 3322]	3841	[3943, 2853]
815	[1359, 1247]	1824	[2188, 334]	2833	[2199, 2615]	3842	[3944, 3756]
816	[1360, 1361]	1825	[1015, 940]	2834	[3298, 2623]	3843	[3945, 752]
817	[871, 1362]	1826	[2518, 1376]	2835	[3323, 2647]	3844	[1641, 2719]
818	[1363, 1327]	1827	[940, 1216]	2836	[2647, 3305]	3845	[14, 1674]
819	[1279, 1364]	1828	[1067, 470]	2837	[278, 2203]	3846	[3064, 3216]
820	[1365, 1366]	1829	[2519, 2233]	2838	[2615, 3324]	3847	[3946, 1892]
821	[1337, 891]	1830	[2520, 87]	2839	[2201, 3323]	3848	[3947, 1785]
822	[1367, 1340]	1831	[2496, 2149]	2840	[2653, 2167]	3849	[1859, 771]
823	[881, 1368]	1832	[2521, 1097]	2841	[936, 2652]	3850	[3213, 129]
824	[1369, 1370]	1833	[1328, 2522]	2842	[3325, 2073]	3851	[3948, 1443]
825	[958, 948]	1834	[2523, 1234]	2843	[2083, 3326]	3852	[3949, 3197]
826	[1371, 455]	1835	[2524, 2227]	2844	[3327, 2257]	3853	[3950, 1890]
827	[1372, 457]	1836	[2525, 976]	2845	[2164, 937]	3854	[3951, 248]
828	[1373, 883]	1837	[2502, 864]	2846	[2140, 2064]	3855	[3952, 1598]
829	[1374, 1147]	1838	[2526, 2527]	2847	[3328, 2125]	3856	[220, 3737]
830	[1375, 1319]	1839	[2528, 1061]	2848	[3329, 884]	3857	[3676, 3016]
831	[1376, 862]	1840	[2529, 2530]	2849	[343, 3330]	3858	[2764, 523]
832	[1377, 1378]	1841	[2434, 1064]	2850	[3331, 2438]	3859	[3953, 2713]
833	[1379, 67]	1842	[2531, 2532]	2851	[427, 2248]	3860	[1406, 1613]
834	[1380, 1101]	1843	[2060, 2183]	2852	[22, 2545]	3861	[707, 1939]
835	[1209, 1381]	1844	[2533, 2087]	2853	[3332, 2428]	3862	[3954, 2024]
836	[904, 407]	1845	[2232, 954]	2854	[3333, 2137]	3863	[3955, 721]
837	[1247, 1382]	1846	[1361, 435]	2855	[3334, 3335]	3864	[1723, 1645]
838	[1383, 1384]	1847	[2534, 1331]	2856	[2540, 3336]	3865	[1830, 1770]
839	[1169, 1385]	1848	[2535, 1140]	2857	[3337, 2674]	3866	[3956, 3206]
840	[1381, 346]	1849	[2536, 2256]	2858	[1020, 1046]	3867	[732, 1868]
841	[262, 1024]	1850	[2537, 1143]	2859	[3338, 1257]	3868	[785, 1849]
842	[1386, 1387]	1851	[1384, 2226]	2860	[3339, 2444]	3869	[2794, 3146]
843	[1388, 1389]	1852	[2538, 917]	2861	[3340, 2430]	3870	[629, 1412]
844	[1136, 1390]	1853	[2539, 2540]	2862	[3341, 3342]	3871	[3957, 1575]
845	[96, 1391]	1854	[2541, 2315]	2863	[966, 2190]	3872	[3664, 3611]
846	[1392, 1393]	1855	[2125, 2542]	2864	[3343, 3344]	3873	[3958, 1908]
847	[1394, 1197]	1856	[325, 2111]	2865	[3345, 276]	3874	[3784, 1631]
848	[1285, 1395]	1857	[2543, 1347]	2866	[2542, 2301]	3875	[3959, 2052]
849	[46, 1396]	1858	[2135, 2320]	2867	[3346, 415]	3876	[3960, 1840]
850	[1397, 777]	1859	[2544, 2545]	2868	[3347, 2280]	3877	[3961, 1847]

851	[1398, 1399]	1860	[916, 2351]	2869	[3348, 331]	3878	[3962, 2050]
852	[1400, 1401]	1861	[2546, 2547]	2870	[3295, 2214]	3879	[3963, 3009]
853	[745, 1402]	1862	[2548, 2549]	2871	[3349, 438]	3880	[3964, 1807]
854	[1403, 685]	1863	[280, 2550]	2872	[3350, 3351]	3881	[197, 1913]
855	[1404, 588]	1864	[2253, 2551]	2873	[3352, 327]	3882	[3965, 806]
856	[1405, 1406]	1865	[2552, 2553]	2874	[3353, 1304]	3883	[2864, 1642]
857	[243, 1407]	1866	[2554, 318]	2875	[2371, 73]	3884	[1494, 1725]
858	[1408, 1409]	1867	[2555, 2096]	2876	[3354, 1186]	3885	[1861, 1974]
859	[1410, 1411]	1868	[2556, 1064]	2877	[3355, 938]	3886	[3966, 3943]
860	[1412, 1413]	1869	[2509, 2557]	2878	[2070, 439]	3887	[3967, 1916]
861	[730, 1414]	1870	[2460, 945]	2879	[2442, 1083]	3888	[3968, 1661]
862	[680, 195]	1871	[2558, 2111]	2880	[3356, 2208]	3889	[595, 3943]
863	[1415, 809]	1872	[1316, 2131]	2881	[3357, 2066]	3890	[3796, 2971]
864	[1416, 1417]	1873	[2559, 964]	2882	[3358, 1022]	3891	[3969, 3729]
865	[1418, 1419]	1874	[2075, 878]	2883	[3359, 1256]	3892	[3970, 1818]
866	[32, 1420]	1875	[375, 900]	2884	[3360, 2061]	3893	[1426, 1954]
867	[1421, 1422]	1876	[1222, 923]	2885	[3361, 2346]	3894	[2992, 2936]
868	[1423, 8]	1877	[2560, 1139]	2886	[2453, 2287]	3895	[3196, 3030]
869	[787, 1424]	1878	[2561, 1212]	2887	[3362, 2582]	3896	[1624, 1938]
870	[1425, 1426]	1879	[2190, 2562]	2888	[3363, 973]	3897	[2926, 12]
871	[1427, 1428]	1880	[2563, 2173]	2889	[3364, 1211]	3898	[3971, 52]
872	[1429, 496]	1881	[2564, 1394]	2890	[3365, 2214]	3899	[3972, 1809]
873	[1430, 1431]	1882	[2565, 1054]	2891	[2364, 2325]	3900	[2902, 1513]
874	[795, 1432]	1883	[425, 441]	2892	[398, 2348]	3901	[3973, 1771]
875	[797, 1433]	1884	[2566, 426]	2893	[3366, 3255]	3902	[3974, 193]
876	[1434, 826]	1885	[2567, 1155]	2894	[1187, 289]	3903	[3975, 3152]
877	[1435, 1436]	1886	[1366, 101]	2895	[3367, 2295]	3904	[3976, 1539]
878	[1437, 1438]	1887	[1113, 98]	2896	[1276, 3361]	3905	[1938, 188]
879	[1439, 567]	1888	[1032, 1259]	2897	[3368, 67]	3906	[3977, 2016]
880	[52, 1440]	1889	[2081, 2568]	2898	[2370, 344]	3907	[1956, 1995]
881	[1441, 1442]	1890	[2569, 2570]	2899	[3369, 3321]	3908	[3978, 162]
882	[1443, 1444]	1891	[2287, 1287]	2900	[3370, 2606]	3909	[3979, 1739]
883	[1445, 642]	1892	[2571, 271]	2901	[3371, 1010]	3910	[3980, 3142]
884	[1446, 1447]	1893	[1193, 1233]	2902	[3372, 3336]	3911	[3981, 2767]
885	[1448, 569]	1894	[2499, 2572]	2903	[3373, 1020]	3912	[760, 3667]
886	[1449, 547]	1895	[2573, 2485]	2904	[3374, 2088]	3913	[649, 2899]
887	[1450, 1451]	1896	[855, 311]	2905	[3375, 3376]	3914	[3982, 496]
888	[1452, 1453]	1897	[2574, 1092]	2906	[3377, 1164]	3915	[1929, 1658]
889	[1454, 1455]	1898	[2575, 2365]	2907	[3378, 351]	3916	[3983, 183]
890	[1456, 576]	1899	[2576, 450]	2908	[3379, 927]	3917	[1847, 2926]
891	[1457, 1458]	1900	[76, 2540]	2909	[1182, 2520]	3918	[3984, 802]
892	[1459, 51]	1901	[908, 2577]	2910	[3380, 2055]	3919	[3985, 1590]
893	[1460, 1461]	1902	[2578, 2474]	2911	[859, 1250]	3920	[3986, 2963]
894	[1462, 181]	1903	[2579, 1387]	2912	[3381, 2398]	3921	[3795, 3957]

895	[1463, 1464]	1904	[2580, 2581]	2913	[2572, 2408]	3922	[3987, 2854]
896	[1465, 1466]	1905	[2582, 961]	2914	[1211, 3382]	3923	[3988, 3795]
897	[1467, 835]	1906	[2583, 1377]	2915	[3383, 68]	3924	[3719, 2854]
898	[1468, 1469]	1907	[417, 358]	2916	[3384, 264]	3925	[657, 1527]
899	[663, 232]	1908	[2584, 955]	2917	[3385, 343]	3926	[3127, 1928]
900	[42, 1470]	1909	[2585, 1172]	2918	[3386, 101]	3927	[3989, 3104]
901	[1471, 1472]	1910	[345, 984]	2919	[3387, 1289]	3928	[1043, 2110]
902	[1473, 1474]	1911	[2586, 320]	2920	[1395, 2121]	3929	[3990, 2222]
903	[1475, 1476]	1912	[2587, 2588]	2921	[3388, 1322]	3930	[2412, 2549]
904	[1477, 182]	1913	[2589, 876]	2922	[2275, 2289]	3931	[3991, 2199]
905	[1478, 1435]	1914	[2590, 2388]	2923	[1180, 1082]	3932	[1306, 2128]
906	[1479, 1480]	1915	[2591, 992]	2924	[3389, 920]	3933	[3992, 1148]
907	[1481, 1482]	1916	[2592, 3]	2925	[3390, 2542]	3934	[952, 1224]
908	[1483, 1484]	1917	[2593, 2146]	2926	[3391, 850]	3935	[3993, 465]
909	[587, 14]	1918	[2170, 2098]	2927	[2430, 3392]	3936	[3994, 369]
910	[1485, 1486]	1919	[1088, 998]	2928	[1128, 2666]	3937	[2376, 1002]
911	[1487, 1488]	1920	[2594, 2595]	2929	[3393, 435]	3938	[3995, 1353]
912	[1489, 1490]	1921	[2596, 2374]	2930	[3394, 22]	3939	[3996, 263]
913	[735, 508]	1922	[2597, 2598]	2931	[2255, 255]	3940	[406, 2455]
914	[1491, 749]	1923	[2599, 2600]	2932	[3395, 2147]	3941	[2517, 3238]
915	[641, 1492]	1924	[2601, 1139]	2933	[3396, 3323]	3942	[1164, 2600]
916	[1493, 1494]	1925	[2602, 1188]	2934	[980, 2260]	3943	[3997, 3540]
917	[1495, 745]	1926	[98, 1257]	2935	[2196, 2706]	3944	[3998, 3580]
918	[1496, 1497]	1927	[88, 2335]	2936	[3397, 2335]	3945	[3999, 395]
919	[1498, 495]	1928	[2603, 2117]	2937	[3398, 467]	3946	[412, 1193]
920	[1499, 1407]	1929	[2604, 2605]	2938	[310, 2373]	3947	[1351, 2216]
921	[1500, 1501]	1930	[2606, 1281]	2939	[3399, 2150]	3948	[918, 1318]
922	[1502, 678]	1931	[1325, 2607]	2940	[1029, 1379]	3949	[1161, 3296]
923	[1503, 1504]	1932	[2608, 2390]	2941	[3400, 379]	3950	[4000, 1266]
924	[1505, 1506]	1933	[888, 1377]	2942	[3401, 948]	3951	[1203, 2428]
925	[1461, 59]	1934	[2609, 66]	2943	[3402, 2100]	3952	[2393, 3335]
926	[543, 668]	1935	[2610, 2611]	2944	[3403, 2262]	3953	[1103, 3351]
927	[1507, 176]	1936	[2612, 2613]	2945	[2142, 3320]	3954	[2263, 2611]
928	[1508, 1406]	1937	[2614, 2615]	2946	[456, 386]	3955	[309, 1238]
929	[1509, 490]	1938	[2616, 1046]	2947	[3404, 2554]	3956	[4001, 975]
930	[1510, 1511]	1939	[2617, 371]	2948	[2228, 313]	3957	[4002, 2496]
931	[1512, 1513]	1940	[1246, 79]	2949	[3405, 1362]	3958	[4003, 1039]
932	[1514, 1515]	1941	[2618, 1077]	2950	[3406, 1270]	3959	[3417, 2691]
933	[1516, 1517]	1942	[440, 2394]	2951	[3407, 2148]	3960	[986, 1077]
934	[1518, 1519]	1943	[2619, 2613]	2952	[3376, 2279]	3961	[4004, 2201]
935	[1520, 1521]	1944	[2620, 1132]	2953	[3408, 70]	3962	[984, 371]
936	[1522, 1522]	1945	[2621, 2371]	2954	[3409, 114]	3963	[4005, 64]
937	[1523, 1442]	1946	[2622, 991]	2955	[3410, 2520]	3964	[4006, 301]
938	[1524, 1525]	1947	[2547, 2547]	2956	[1140, 452]	3965	[337, 1171]

939	[1526, 1527]	1948	[2623, 2624]	2957	[3411, 1327]	3966	[4007, 857]
940	[1528, 1529]	1949	[2625, 1109]	2958	[3412, 252]	3967	[4008, 1144]
941	[40, 1530]	1950	[2626, 1216]	2959	[2398, 1182]	3968	[1364, 1346]
942	[1531, 1532]	1951	[2627, 2628]	2960	[1062, 2264]	3969	[4009, 2203]
943	[1533, 1534]	1952	[2629, 2630]	2961	[3413, 969]	3970	[74, 2511]
944	[1535, 1536]	1953	[2581, 1347]	2962	[421, 974]	3971	[1249, 432]
945	[1537, 245]	1954	[2631, 1085]	2963	[3414, 295]	3972	[4010, 1070]
946	[1538, 755]	1955	[2085, 125]	2964	[1292, 1282]	3973	[2265, 2327]
947	[1539, 1540]	1956	[2632, 2633]	2965	[2177, 3415]	3974	[1010, 266]
948	[1541, 1542]	1957	[2634, 338]	2966	[2530, 2075]	3975	[4011, 1027]
949	[1543, 1544]	1958	[2173, 2635]	2967	[3416, 3417]	3976	[2334, 1157]
950	[1545, 1546]	1959	[2328, 2636]	2968	[3283, 1177]	3977	[896, 1370]
951	[1547, 616]	1960	[2637, 2112]	2969	[3418, 442]	3978	[2352, 355]
952	[1548, 1549]	1961	[1370, 1107]	2970	[3419, 892]	3979	[442, 1019]
953	[1550, 1551]	1962	[2638, 2639]	2971	[3420, 2491]	3980	[4012, 84]
954	[831, 1552]	1963	[2640, 83]	2972	[3421, 3422]	3981	[4013, 2068]
955	[1553, 1538]	1964	[400, 2641]	2973	[3423, 419]	3982	[4014, 891]
956	[1554, 144]	1965	[1235, 296]	2974	[2588, 1297]	3983	[1256, 1389]
957	[1555, 1556]	1966	[1385, 348]	2975	[3424, 1174]	3984	[359, 271]
958	[1557, 719]	1967	[2127, 957]	2976	[3425, 2221]	3985	[4015, 2476]
959	[1558, 666]	1968	[875, 2406]	2977	[3426, 88]	3986	[4016, 2325]
960	[1559, 1560]	1969	[2642, 2643]	2978	[3427, 2366]	3987	[4017, 2089]
961	[1561, 1562]	1970	[2644, 2264]	2979	[991, 2236]	3988	[4018, 2220]
962	[833, 1529]	1971	[2103, 2553]	2980	[3428, 1239]	3989	[4019, 936]
963	[1563, 1564]	1972	[2645, 1381]	2981	[3429, 2386]	3990	[1946, 2004]
964	[1417, 1565]	1973	[2646, 2647]	2982	[3430, 882]	3991	[3029, 3100]
965	[1566, 1567]	1974	[2648, 1251]	2983	[1034, 1102]	3992	[497, 1759]
966	[247, 1568]	1975	[2112, 2463]	2984	[3431, 65]	3993	[1492, 3087]
967	[1569, 1570]	1976	[1242, 1092]	2985	[3432, 961]	3994	[4020, 700]
968	[1571, 1572]	1977	[903, 15]	2986	[3433, 2383]	3995	[4021, 2795]
969	[1573, 177]	1978	[2649, 2490]	2987	[3434, 1187]	3996	[3100, 3034]
970	[512, 1574]	1979	[2650, 396]	2988	[3435, 2270]	3997	[4022, 600]
971	[1575, 1576]	1980	[2651, 2186]	2989	[1313, 895]	3998	[1974, 3719]
972	[1577, 1576]	1981	[2652, 933]	2990	[3436, 423]	3999	[4023, 727]
973	[1578, 1426]	1982	[934, 2653]	2991	[2309, 2271]	4000	[214, 1554]
974	[1579, 1580]	1983	[962, 859]	2992	[3437, 2475]	4001	[1775, 671]
975	[768, 191]	1984	[2654, 448]	2993	[3438, 3238]	4002	[4024, 1705]
976	[1581, 1582]	1985	[2655, 2656]	2994	[3439, 1121]	4003	[4025, 3008]
977	[1583, 1584]	1986	[2657, 2309]	2995	[2504, 1214]	4004	[3227, 1946]
978	[1585, 1586]	1987	[2658, 1005]	2996	[2358, 2268]	4005	[1756, 3227]
979	[1587, 1588]	1988	[2659, 899]	2997	[2449, 3364]	4006	[4026, 189]
980	[245, 1589]	1989	[2660, 887]	2998	[3440, 2675]	4007	[3189, 3052]
981	[1590, 1591]	1990	[2661, 2572]	2999	[3441, 3442]	4008	[3735, 828]
982	[1592, 1593]	1991	[2662, 2057]	3000	[3443, 310]	4009	[2736, 3592]

983	[1594, 1595]	1992	[2663, 2176]	3001	[3444, 1080]	4010	[4027, 2993]
984	[1596, 684]	1993	[2299, 2060]	3002	[3445, 904]	4011	[2781, 2881]
985	[1597, 747]	1994	[2344, 471]	3003	[3446, 80]	4012	[2023, 3756]
986	[1598, 507]	1995	[2664, 1232]	3004	[3447, 2623]	4013	[4028, 238]
987	[1599, 517]	1996	[2665, 375]	3005	[3448, 959]	4014	[4029, 1459]
988	[1600, 816]	1997	[1343, 2473]	3006	[2613, 2211]	4015	[3704, 3172]
989	[1601, 1602]	1998	[2666, 2667]	3007	[3449, 3450]	4016	[523, 3784]
990	[1603, 1432]	1999	[2336, 461]	3008	[3451, 3361]	4017	[3020, 2887]
991	[1604, 1605]	2000	[2668, 978]	3009	[3452, 3364]	4018	[1761, 2766]
992	[1606, 1607]	2001	[2222, 905]	3010	[3453, 260]	4019	[2984, 3676]
993	[1608, 1609]	2002	[357, 2489]	3011	[2354, 3417]	4020	[2159, 2432]
994	[603, 1610]	2003	[2669, 2245]	3012	[2467, 2133]	4021	[2374, 2656]
995	[606, 1611]	2004	[2670, 2351]	3013	[268, 2470]	4022	[1368, 2095]
996	[1612, 1613]	2005	[2671, 422]	3014	[1389, 1305]	4023	[971, 890]
997	[1614, 1615]	2006	[2672, 1386]	3015	[3454, 3455]	4024	[1217, 2156]
998	[54, 1616]	2007	[2673, 2419]	3016	[3456, 1177]	4025	[4030, 3433]
999	[538, 1617]	2008	[2233, 2674]	3017	[3457, 957]	4026	[4031, 272]
1000	[1618, 832]	2009	[297, 2675]	3018	[997, 886]	4027	[3326, 1291]
1001	[1619, 1620]	2010	[270, 2643]	3019	[3458, 1315]	4028	[2479, 453]
1002	[1621, 1622]	2011	[2676, 296]	3020	[3459, 108]	4029	[1114, 103]
1003	[1623, 1624]	2012	[2677, 468]	3021	[3392, 1343]	4030	[3176, 3020]
1004	[1625, 1542]	2013	[2678, 1265]	3022	[3022, 3022]	4031	[1996, 1916]
1005	[1626, 686]	2014	[2679, 2394]	3023	[2346, 2517]		
1006	[557, 1586]	2015	[2123, 2218]	3024	[3460, 2328]		
1007	[1627, 1401]	2016	[2680, 2128]	3025	[2643, 3245]		
1008	[1628, 1629]	2017	[2635, 2598]	3026	[3461, 898]		

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	673	0	1346	1	2019	0	2692	1	3365	0
1	0	674	1	1347	1	2020	0	2693	1	3366	0
2	1	675	1	1348	1	2021	0	2694	0	3367	1
3	0	676	0	1349	1	2022	1	2695	0	3368	1
4	1	677	1	1350	0	2023	0	2696	1	3369	1
5	1	678	0	1351	0	2024	1	2697	0	3370	1
6	0	679	0	1352	0	2025	1	2698	0	3371	1
7	0	680	1	1353	1	2026	0	2699	1	3372	1
8	0	681	0	1354	1	2027	1	2700	0	3373	1
9	1	682	1	1355	0	2028	1	2701	1	3374	1
10	1	683	0	1356	1	2029	0	2702	0	3375	1
11	1	684	0	1357	0	2030	0	2703	0	3376	0
12	1	685	0	1358	1	2031	0	2704	1	3377	1
13	0	686	1	1359	0	2032	0	2705	0	3378	1
14	0	687	1	1360	1	2033	1	2706	0	3379	0

15	0	688	1	1361	0	2034	1	2707	0	3380	0
16	0	689	0	1362	0	2035	1	2708	1	3381	1
17	0	690	1	1363	1	2036	0	2709	1	3382	1
18	0	691	1	1364	0	2037	0	2710	1	3383	0
19	1	692	1	1365	0	2038	1	2711	0	3384	0
20	0	693	1	1366	0	2039	0	2712	1	3385	1
21	1	694	0	1367	1	2040	0	2713	0	3386	0
22	1	695	0	1368	1	2041	1	2714	1	3387	1
23	1	696	0	1369	0	2042	0	2715	0	3388	0
24	0	697	1	1370	1	2043	1	2716	0	3389	0
25	1	698	1	1371	0	2044	0	2717	0	3390	1
26	1	699	0	1372	0	2045	0	2718	0	3391	0
27	0	700	1	1373	0	2046	1	2719	1	3392	1
28	0	701	1	1374	1	2047	1	2720	1	3393	0
29	0	702	0	1375	1	2048	0	2721	1	3394	1
30	0	703	0	1376	0	2049	1	2722	1	3395	1
31	0	704	1	1377	1	2050	0	2723	0	3396	0
32	0	705	0	1378	1	2051	0	2724	1	3397	1
33	0	706	0	1379	1	2052	0	2725	1	3398	0
34	0	707	1	1380	0	2053	1	2726	1	3399	1
35	0	708	0	1381	0	2054	1	2727	0	3400	0
36	1	709	1	1382	0	2055	1	2728	0	3401	0
37	0	710	1	1383	0	2056	1	2729	1	3402	1
38	0	711	0	1384	0	2057	1	2730	0	3403	0
39	1	712	0	1385	1	2058	0	2731	1	3404	0
40	1	713	0	1386	0	2059	1	2732	1	3405	1
41	0	714	0	1387	0	2060	0	2733	0	3406	1
42	0	715	0	1388	1	2061	1	2734	1	3407	1
43	1	716	1	1389	0	2062	1	2735	1	3408	0
44	0	717	1	1390	0	2063	0	2736	0	3409	0
45	1	718	0	1391	0	2064	0	2737	1	3410	0
46	0	719	0	1392	0	2065	0	2738	0	3411	1
47	1	720	0	1393	1	2066	1	2739	1	3412	0
48	1	721	0	1394	1	2067	0	2740	1	3413	0
49	0	722	1	1395	0	2068	0	2741	0	3414	1
50	0	723	1	1396	1	2069	1	2742	0	3415	1
51	1	724	1	1397	1	2070	0	2743	1	3416	1
52	0	725	0	1398	1	2071	1	2744	0	3417	1
53	1	726	0	1399	1	2072	0	2745	1	3418	1
54	0	727	1	1400	1	2073	1	2746	1	3419	1
55	0	728	0	1401	0	2074	1	2747	1	3420	1
56	0	729	1	1402	0	2075	0	2748	0	3421	1
57	0	730	0	1403	1	2076	1	2749	0	3422	1
58	0	731	1	1404	0	2077	1	2750	0	3423	0

59	0	732	1	1405	0	2078	1	2751	0	3424	0
60	1	733	1	1406	0	2079	1	2752	0	3425	0
61	0	734	0	1407	0	2080	0	2753	0	3426	1
62	0	735	1	1408	1	2081	1	2754	0	3427	1
63	0	736	0	1409	1	2082	0	2755	1	3428	1
64	0	737	1	1410	0	2083	1	2756	0	3429	1
65	0	738	0	1411	1	2084	1	2757	0	3430	1
66	1	739	1	1412	1	2085	0	2758	1	3431	0
67	0	740	1	1413	1	2086	0	2759	1	3432	0
68	1	741	1	1414	1	2087	1	2760	0	3433	0
69	0	742	1	1415	1	2088	0	2761	1	3434	1
70	0	743	1	1416	1	2089	1	2762	1	3435	1
71	0	744	0	1417	0	2090	1	2763	1	3436	0
72	0	745	1	1418	0	2091	1	2764	1	3437	0
73	1	746	0	1419	1	2092	0	2765	1	3438	1
74	1	747	0	1420	0	2093	0	2766	1	3439	1
75	0	748	1	1421	0	2094	1	2767	1	3440	1
76	1	749	1	1422	1	2095	0	2768	0	3441	1
77	0	750	1	1423	1	2096	0	2769	0	3442	1
78	0	751	1	1424	1	2097	1	2770	0	3443	1
79	1	752	0	1425	0	2098	0	2771	1	3444	0
80	1	753	0	1426	0	2099	0	2772	0	3445	1
81	1	754	0	1427	1	2100	0	2773	1	3446	1
82	0	755	0	1428	0	2101	0	2774	1	3447	0
83	0	756	1	1429	1	2102	1	2775	1	3448	0
84	0	757	0	1430	0	2103	1	2776	1	3449	1
85	0	758	1	1431	1	2104	1	2777	0	3450	0
86	0	759	0	1432	1	2105	0	2778	1	3451	1
87	1	760	0	1433	1	2106	1	2779	0	3452	0
88	1	761	0	1434	1	2107	0	2780	1	3453	0
89	0	762	1	1435	0	2108	1	2781	0	3454	1
90	1	763	0	1436	1	2109	0	2782	1	3455	0
91	1	764	1	1437	1	2110	0	2783	1	3456	0
92	0	765	1	1438	1	2111	0	2784	1	3457	0
93	0	766	0	1439	0	2112	1	2785	1	3458	1
94	1	767	0	1440	0	2113	0	2786	1	3459	1
95	1	768	0	1441	1	2114	0	2787	1	3460	0
96	1	769	0	1442	0	2115	1	2788	0	3461	1
97	1	770	0	1443	0	2116	0	2789	0	3462	0
98	0	771	0	1444	0	2117	0	2790	1	3463	0
99	0	772	1	1445	1	2118	1	2791	1	3464	0
100	0	773	0	1446	1	2119	1	2792	1	3465	0
101	0	774	1	1447	1	2120	0	2793	1	3466	0
102	0	775	1	1448	0	2121	1	2794	1	3467	1

103	1	776	1	1449	1	2122	0	2795	0	3468	0
104	1	777	1	1450	0	2123	1	2796	1	3469	1
105	0	778	1	1451	1	2124	1	2797	1	3470	0
106	1	779	1	1452	0	2125	1	2798	0	3471	1
107	1	780	1	1453	1	2126	1	2799	0	3472	1
108	0	781	1	1454	0	2127	0	2800	0	3473	1
109	0	782	0	1455	1	2128	0	2801	1	3474	0
110	0	783	1	1456	0	2129	0	2802	1	3475	0
111	0	784	0	1457	1	2130	0	2803	1	3476	0
112	0	785	0	1458	0	2131	0	2804	1	3477	1
113	0	786	0	1459	0	2132	1	2805	1	3478	1
114	1	787	0	1460	0	2133	1	2806	0	3479	1
115	0	788	1	1461	0	2134	1	2807	1	3480	0
116	1	789	0	1462	1	2135	0	2808	1	3481	1
117	0	790	1	1463	1	2136	0	2809	0	3482	1
118	1	791	0	1464	0	2137	0	2810	1	3483	0
119	0	792	0	1465	0	2138	1	2811	0	3484	0
120	0	793	0	1466	0	2139	0	2812	1	3485	0
121	1	794	0	1467	1	2140	0	2813	1	3486	0
122	1	795	0	1468	1	2141	1	2814	0	3487	1
123	0	796	0	1469	0	2142	1	2815	0	3488	0
124	1	797	1	1470	0	2143	0	2816	0	3489	1
125	0	798	1	1471	1	2144	1	2817	1	3490	1
126	1	799	0	1472	0	2145	1	2818	1	3491	0
127	0	800	1	1473	0	2146	1	2819	0	3492	1
128	1	801	1	1474	1	2147	1	2820	1	3493	1
129	0	802	0	1475	1	2148	0	2821	1	3494	1
130	0	803	0	1476	1	2149	1	2822	1	3495	0
131	0	804	1	1477	0	2150	0	2823	0	3496	0
132	0	805	0	1478	1	2151	0	2824	0	3497	1
133	1	806	0	1479	0	2152	1	2825	0	3498	1
134	0	807	1	1480	0	2153	1	2826	1	3499	0
135	0	808	1	1481	1	2154	1	2827	1	3500	1
136	1	809	1	1482	1	2155	1	2828	0	3501	1
137	1	810	1	1483	1	2156	1	2829	0	3502	0
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140	0	813	1	1486	1	2159	1	2832	1	3505	0
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150	0	823	1	1496	1	2169	1	2842	0	3515	1
151	1	824	0	1497	1	2170	1	2843	1	3516	1
152	0	825	0	1498	0	2171	1	2844	1	3517	0
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154	0	827	0	1500	0	2173	1	2846	0	3519	1
155	0	828	0	1501	1	2174	1	2847	0	3520	0
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157	1	830	1	1503	0	2176	1	2849	1	3522	0
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161	1	834	0	1507	0	2180	1	2853	1	3526	1
162	1	835	1	1508	1	2181	0	2854	0	3527	0
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167	0	840	0	1513	0	2186	1	2859	0	3532	0
168	0	841	0	1514	0	2187	1	2860	0	3533	0
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171	0	844	0	1517	0	2190	1	2863	0	3536	1
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179	1	852	1	1525	0	2198	0	2871	0	3544	0
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193	1	866	0	1539	1	2212	1	2885	1	3558	1
194	0	867	0	1540	0	2213	1	2886	0	3559	1
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417	0	1090	0	1763	0	2436	0	3109	1	3782	1
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422	0	1095	0	1768	0	2441	1	3114	1	3787	1
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428	1	1101	1	1774	1	2447	1	3120	0	3793	1
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430	0	1103	1	1776	0	2449	0	3122	1	3795	0
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436	0	1109	1	1782	1	2455	1	3128	0	3801	0
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671	0	1344	0	2017	1	2690	1	3363	1		
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