PROOF OF THE CONTINUED FRACTION CONJECTURE FOR $(a,b)=(z^3+z^2+z+1, z^4+z^3+z^2+z+1)$

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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 $(a,b)=(z^3+z^2+z+1, z^4+z^3+z^2+z+1)$.

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* $(a,b)=(z^3+z^2+z+1, z^4+z^3+z^2+z+1)$, *the two power series* $\mathrm{CF}(a,b)$ *and* $\mathrm{CF}(b,a)$ *are algebraic over* $\mathbb{F}_2(z)$, *with minimal polynomials of the form*

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

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

$$\begin{aligned}
p_0(z) &= z^{21}+z^{19}+z^{17}+z^{13}+z^{11}+z^{10}+z^9+z^7+z^6+z^5+z^4+z^2+1,\\
p_1(z) &= z^{25}+z^{23}+z^{21}+z^{20}+z^{18}+z^{17}+z^{16}+z^{15}+z^{13}+z^{12}+z^{11}+z^{10}\\
&\quad +z^9+z^8+z^6+z^4,\\
p_2(z) &= z^{28}+z^{22}+z^{20}+z^{18}+z^{12}+1,\\
p_3(z) &= z^{25}+z^{23}+z^{21}+z^{20}+z^{18}+z^{17}+z^{16}+z^{15}+z^{13}+z^{12}+z^{11}+z^{10}\\
&\quad +z^9+z^8+z^6+z^4,\\
p_4(z) &= z^{22}+z^{21}+z^{19}+z^{18}+z^{17}+z^{16}+z^{13}+z^{12}+z^{11}+z^{10}+z^9+z^8+z^7\\
&\quad +z^6+z^5+z^4+z^2+1,
\end{aligned}$$

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

$$\begin{aligned}
p_0(z) &= z^{21}+z^{19}+z^{17}+z^{16}+z^{13}+z^{11}+z^{10}+z^9+z^7+z^6+z^5+z^4+z^2+1\\
&\quad ,\\
p_1(z) &= z^{25}+z^{23}+z^{21}+z^{20}+z^{18}+z^{17}+z^{16}+z^{15}+z^{13}+z^{12}+z^{11}+z^{10}\\
&\quad +z^9+z^8+z^6+z^4,\\
p_2(z) &= z^{28}+z^{22}+z^{20}+z^{18}+z^{12}+1,\\
p_3(z) &= z^{25}+z^{23}+z^{21}+z^{20}+z^{18}+z^{17}+z^{16}+z^{15}+z^{13}+z^{12}+z^{11}+z^{10}\\
&\quad +z^9+z^8+z^6+z^4,\\
p_4(z) &= z^{22}+z^{21}+z^{19}+z^{18}+z^{17}+z^{13}+z^{12}+z^{11}+z^{10}+z^9+z^8+z^7+z^6\\
&\quad +z^5+z^4+z^2+1.
\end{aligned}$$

2. Proof

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

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

By the basic properties of continued fractions, we have

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

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

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

$$W_n(x) = x^{\deg(\bar{t}_{2^n-1})}\begin{pmatrix}\bar{t}_{2^n-1}(1/x) & 1\\ 1 & 0\end{pmatrix} \times x^{\deg(\bar{t}_{2^n-2})}\begin{pmatrix}\bar{t}_{2^n-2}(1/x) & 1\\ 1 & 0\end{pmatrix} \times \cdots \times x^{\deg(\bar{t}_0)}\begin{pmatrix}\bar{t}_0(1/x) & 1\\ 1 & 0\end{pmatrix},$$

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

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

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

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

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

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

for some positive integer d_n. Hence,

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

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

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

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

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

of the vector

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

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

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

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

Lemma 2.1. *We have*

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

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

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

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

Proof. We give the proof of the identity

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

the proofs of the others being similar.

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

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

is an annihilating polynomial of $W^o_{0,0} M^o_{0,0}$. We use Padé-Hermite approximation to find a candidate for the minimal polynomial of $W^o_{0,0} M^o_{0,0}$, that will be called $\phi_0(x,y)$. To prove that $\phi_0(x,y)$ is indeed the minimal polynomial, it suffices to prove that it is an irreducible factor of $P(x,y)$ of multiplicity m and that $Q(x,y) := P(x,y)/\phi_0(x,y)^m$ is not an annihilating polynomial of $W^o_{0,0} M^o_{0,0}$. We verify the first point directly. For the second point, we truncate $W^o_{0,0} M^o_{0,0}$ to order 630 and substitute it for y in $Q(x,y)$. We get a series of valuation less than 630, which proves that $Q(x,y)$ is not an annihilating polynomial of $W^o_{0,0} M^o_{0,0}$. We find the minimal polynomial $\phi_1(x,y)$ of $W^o_{0,1} M^o_{1,0}$ in a similar way.

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

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

is an annihilating of $W^o_{0,0} M^o_{0,0} + W^o_{0,1} M^o_{1,0}$. We verify that $\phi(M^e, 0, 0)$ is an irreducible factor of $S(x,y)$ of multiplicity μ, and that $Q(x,y) := S(x,y)/\phi(M^e, 0, 0)^\mu$ is not an annihilating polynomial of $W^o_{0,0} M^o_{0,0} + W^o_{0,1} M^o_{1,0}$. To see the last point, we truncate $W^o_{0,0} M^o_{0,0} + W^o_{0,1} M^o_{1,0}$ to order 770 and substitute it for y in $Q(x,y)$. We get a series of valuation less than 770, and therefore $Q(x,y)$ is not an annihilating polynomial of $W^o_{0,0} M^o_{0,0} + W^o_{0,1} M^o_{1,0}$.

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

Define

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

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

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

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

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

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

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

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

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

which can be rewritten as

$$0 = T[[w]_2] + T[[1w]_2] + T[[10w]_2] + T[[101w]_2] + T[[111w]_2], \tag{2.7}$$

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

$$0 = T[[w]_2] + T[[11w]_2] + T[[100w]_2] + T[[101w]_2] + T[[1001w]_2], \tag{2.9}$$

$$0 = T[[1w]_2] + T[[100w]_2] + T[[101w]_2] + T[[110w]_2] + T[[1010w]_2], \tag{2.10}$$

$$0 = T[[1w]_2] + T[[110w]_2] + T[[1011w]_2], \tag{2.11}$$

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

$$0 = T[[w]_2] + T[[1w]_2] + T[[10w]_2] + T[[110w]_2] + T[[1101w]_2], \tag{2.13}$$

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

$$1 = T[[w]_2] + T[[1w]_2] + T[[10w]_2] + T[[101w]_2] + T[[111w]_2], \tag{2.14}$$

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

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

$$0 = T[[1w]_2] + T[[100w]_2] + T[[101w]_2] + T[[110w]_2] + T[[1010w]_2], \tag{2.17}$$

$$1 = T[[1w]_2] + T[[110w]_2] + T[[1011w]_2], \tag{2.18}$$

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

$$0 = T[[w]_2] + T[[1w]_2] + T[[10w]_2] + T[[110w]_2] + T[[1101w]_2], \tag{2.20}$$

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

First we calculate an 2-automaton that generates T from its minimal polynomial and its first terms. This automaton has 4178 states; its transition function and output function can be found in the annex. Let $A(s, w)$ denote the state reached after reading w from right to left starting from the state s, and τ the output function. Define

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

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

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

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

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

for $s = A(i, 0^{2k})$. We find that $(A(i, 0^{30}), E_{30}) = (A(i, 0^{18}), E_{18})$, so that we only have to verify that identities (2.21) through (2.34) hold for $2 \le k \le 15$, 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 $u = 2^{2k-1}$,*

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

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

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

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

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

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

We give the proof of

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Define

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

where

$$\begin{aligned}
q_0(x) &= x^{28} + x^{26} + x^{24} + x^{23} + x^{22} + x^{21} + x^{19} + x^{18} + x^{17} + x^{15} + x^{11} + x^9 \\
&\quad + x^7, \\
q_1(x) &= x^{24} + x^{22} + x^{20} + x^{19} + x^{18} + x^{17} + x^{16} + x^{15} + x^{13} + x^{12} + x^{11} + x^{10} \\
&\quad + x^8 + x^7 + x^5 + x^3, \\
q_2(x) &= x^{28} + x^{16} + x^{10} + x^8 + x^6 + 1, \\
q_3(x) &= x^{24} + x^{22} + x^{20} + x^{19} + x^{18} + x^{17} + x^{16} + x^{15} + x^{13} + x^{12} + x^{11} + x^{10} \\
&\quad + x^8 + x^7 + x^5 + x^3, \\
q_4(x) &= x^{28} + x^{26} + x^{24} + x^{23} + x^{22} + x^{21} + x^{20} + x^{19} + x^{18} + x^{17} + x^{16} + x^{15} \\
&\quad + x^{12} + x^{11} + x^{10} + x^9 + x^7 + x^6.
\end{aligned}$$

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

3. Annexe

All 16 polynomials are of the form

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

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

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

$$\begin{aligned}
p_0(x) &= x^{150} + x^{148} + x^{140} + x^{138} + x^{130} + x^{128} + x^{122} + x^{120} + x^{116} + x^{114} \\
&\quad + x^{110} + x^{102} + x^{100} + x^{98} + x^{96} + x^{92} + x^{90} + x^{88} + x^{84} + x^{82} + x^{80} \\
&\quad + x^{76} + x^{74} + x^{72} + x^{70} + x^{64} + x^{60} + x^{58} + x^{50} + x^{48} + x^{42} + x^{40} \\
&\quad + x^{36}, \\
p_3(x) &= x^{142} + x^{140} + x^{138} + x^{136} + x^{126} + x^{124} + x^{118} + x^{114} + x^{112} + x^{108}
\end{aligned}$$

$$
\begin{aligned}
&+ x^{106} + x^{104} + x^{100} + x^{98} + x^{92} + x^{90} + x^{86} + x^{80} + x^{74} + x^{68} + x^{66}\\
&+ x^{62} + x^{58} + x^{56} + x^{54} + x^{48} + x^{42} + x^{34} + x^{30} + x^{28} + x^{22} + x^{20},\\
p_6(x) = {}& x^{146} + x^{144} + x^{140} + x^{138} + x^{130} + x^{128} + x^{126} + x^{104} + x^{102} + x^{96}\\
&+ x^{94} + x^{88} + x^{84} + x^{82} + x^{74} + x^{72} + x^{70} + x^{66} + x^{64} + x^{58} + x^{52}\\
&+ x^{50} + x^{48} + x^{46} + x^{44} + x^{42} + x^{38} + x^{28} + x^{18} + x^{16} + x^{10} + x^{4}\\
&+ x^{2} + 1,\\
p_9(x) = {}& x^{142} + x^{140} + x^{132} + x^{128} + x^{124} + x^{120} + x^{118} + x^{116} + x^{112} + x^{110}\\
&+ x^{108} + x^{106} + x^{104} + x^{102} + x^{98} + x^{94} + x^{92} + x^{78} + x^{74} + x^{70}\\
&+ x^{66} + x^{64} + x^{60} + x^{58} + x^{50} + x^{48} + x^{42} + x^{38} + x^{30} + x^{26} + x^{24}\\
&+ x^{22} + x^{20} + x^{18} + x^{16} + x^{12} + x^{8} + x^{6},\\
p_{12}(x) = {}& x^{150} + x^{148} + x^{146} + x^{144} + x^{142} + x^{140} + x^{138} + x^{136} + x^{134} + x^{132}\\
&+ x^{130} + x^{128} + x^{126} + x^{124} + x^{122} + x^{120} + x^{110} + x^{108} + x^{106}\\
&+ x^{104} + x^{102} + x^{100} + x^{98} + x^{96} + x^{94} + x^{92} + x^{90} + x^{88} + x^{78} + x^{76}\\
&+ x^{74} + x^{72} + x^{46} + x^{44} + x^{42} + x^{40} + x^{30} + x^{28} + x^{26} + x^{24} + x^{22}\\
&+ x^{20} + x^{18} + x^{16} + x^{14} + x^{12} + x^{10} + x^{8} + x^{6} + x^{4} + x^{2} + 1,
\end{aligned}
$$

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

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

$$
\begin{aligned}
p_0(x) = {}& x^{147} + x^{145} + x^{143} + x^{142} + x^{141} + x^{140} + x^{138} + x^{136} + x^{135} + x^{134}\\
&+ x^{131} + x^{127} + x^{124} + x^{123} + x^{121} + x^{120} + x^{117} + x^{114} + x^{113}\\
&+ x^{110} + x^{109} + x^{108} + x^{105} + x^{102} + x^{100} + x^{98} + x^{97} + x^{95} + x^{89}\\
&+ x^{86} + x^{83} + x^{81} + x^{78} + x^{75} + x^{72} + x^{71} + x^{70} + x^{67} + x^{66} + x^{64}\\
&+ x^{59} + x^{56} + x^{52} + x^{47} + x^{41} + x^{40} + x^{39},\\
p_3(x) = {}& x^{111} + x^{99} + x^{95} + x^{93} + x^{91} + x^{89} + x^{79} + x^{77} + x^{75} + x^{73} + x^{71}\\
&+ x^{61} + x^{57} + x^{55} + x^{53} + x^{49} + x^{37} + x^{35} + x^{33} + x^{27},\\
p_6(x) = {}& x^{123} + x^{121} + x^{119} + x^{118} + x^{117} + x^{116} + x^{115} + x^{114} + x^{112} + x^{110}\\
&+ x^{107} + x^{105} + x^{102} + x^{100} + x^{99} + x^{94} + x^{93} + x^{89} + x^{88} + x^{87}\\
&+ x^{85} + x^{84} + x^{83} + x^{82} + x^{80} + x^{78} + x^{63} + x^{61} + x^{58} + x^{56} + x^{55}\\
&+ x^{50} + x^{49} + x^{47} + x^{44} + x^{43} + x^{42} + x^{41} + x^{39} + x^{38} + x^{37} + x^{36}\\
&+ x^{35} + x^{34} + x^{32} + x^{31} + x^{30} + x^{29} + x^{27} + x^{26} + x^{25} + x^{24} + x^{23}\\
&+ x^{22} + x^{20} + x^{18},\\
p_9(x) = {}& x^{135} + x^{131} + x^{127} + x^{125} + x^{121} + x^{119} + x^{115} + x^{109} + x^{107} + x^{105}\\
&+ x^{101} + x^{97} + x^{95} + x^{93} + x^{91} + x^{79} + x^{77} + x^{73} + x^{69} + x^{67} + x^{65}\\
&+ x^{59} + x^{53} + x^{51} + x^{43} + x^{41} + x^{31} + x^{29} + x^{27} + x^{25} + x^{23} + x^{21}\\
&+ x^{19} + x^{15} + x^{13} + x^{9},\\
p_{12}(x) = {}& x^{147} + x^{145} + x^{142} + x^{140} + x^{139} + x^{137} + x^{134} + x^{132} + x^{127} + x^{125}
\end{aligned}
$$

$$\begin{aligned}
&+ x^{122} + x^{120} + x^{119} + x^{117} + x^{115} + x^{114} + x^{113} + x^{112} + x^{110} \\
&+ x^{108} + x^{107} + x^{105} + x^{102} + x^{100} + x^{95} + x^{93} + x^{90} + x^{88} + x^{87} \\
&+ x^{85} + x^{83} + x^{82} + x^{81} + x^{80} + x^{78} + x^{76} + x^{75} + x^{73} + x^{70} + x^{68} \\
&+ x^{67} + x^{65} + x^{63} + x^{62} + x^{61} + x^{60} + x^{59} + x^{58} + x^{57} + x^{56} + x^{55} \\
&+ x^{54} + x^{53} + x^{52} + x^{50} + x^{48} + x^{47} + x^{45} + x^{42} + x^{40} + x^{39} + x^{37} \\
&+ x^{35} + x^{34} + x^{33} + x^{32} + x^{30} + x^{28} + x^{27} + x^{25} + x^{22} + x^{20} + x^{15} \\
&+ x^{13} + x^{10} + x^{8} + x^{7} + x^{5} + x^{2} + 1,
\end{aligned}$$

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

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

$$\begin{aligned}
p_0(x) = {}& x^{147} + x^{145} + x^{143} + x^{142} + x^{141} + x^{140} + x^{138} + x^{136} + x^{135} + x^{134} \\
&+ x^{131} + x^{127} + x^{124} + x^{123} + x^{121} + x^{120} + x^{117} + x^{114} + x^{113} \\
&+ x^{110} + x^{109} + x^{108} + x^{105} + x^{102} + x^{100} + x^{98} + x^{97} + x^{95} + x^{89} \\
&+ x^{86} + x^{83} + x^{81} + x^{78} + x^{75} + x^{72} + x^{71} + x^{70} + x^{67} + x^{66} + x^{64} \\
&+ x^{59} + x^{56} + x^{52} + x^{47} + x^{41} + x^{40} + x^{39}, \\
p_3(x) = {}& x^{111} + x^{99} + x^{95} + x^{93} + x^{91} + x^{89} + x^{79} + x^{77} + x^{75} + x^{73} + x^{71} \\
&+ x^{61} + x^{57} + x^{55} + x^{53} + x^{49} + x^{37} + x^{35} + x^{33} + x^{27}, \\
p_6(x) = {}& x^{123} + x^{121} + x^{119} + x^{118} + x^{117} + x^{116} + x^{115} + x^{114} + x^{112} + x^{110} \\
&+ x^{107} + x^{105} + x^{102} + x^{100} + x^{99} + x^{94} + x^{93} + x^{89} + x^{88} + x^{87} \\
&+ x^{85} + x^{84} + x^{83} + x^{82} + x^{80} + x^{78} + x^{63} + x^{61} + x^{58} + x^{56} + x^{55} \\
&+ x^{50} + x^{49} + x^{47} + x^{44} + x^{43} + x^{42} + x^{41} + x^{39} + x^{38} + x^{37} + x^{36} \\
&+ x^{35} + x^{34} + x^{32} + x^{31} + x^{30} + x^{29} + x^{27} + x^{26} + x^{25} + x^{24} + x^{23} \\
&+ x^{22} + x^{20} + x^{18}, \\
p_9(x) = {}& x^{135} + x^{131} + x^{127} + x^{125} + x^{121} + x^{119} + x^{115} + x^{109} + x^{107} + x^{105} \\
&+ x^{101} + x^{97} + x^{95} + x^{93} + x^{91} + x^{79} + x^{77} + x^{73} + x^{69} + x^{67} + x^{65} \\
&+ x^{59} + x^{53} + x^{51} + x^{43} + x^{41} + x^{31} + x^{29} + x^{27} + x^{25} + x^{23} + x^{21} \\
&+ x^{19} + x^{15} + x^{13} + x^{9}, \\
p_{12}(x) = {}& x^{147} + x^{145} + x^{142} + x^{140} + x^{139} + x^{137} + x^{134} + x^{132} + x^{127} + x^{125} \\
&+ x^{122} + x^{120} + x^{119} + x^{117} + x^{115} + x^{114} + x^{113} + x^{112} + x^{110} \\
&+ x^{108} + x^{107} + x^{105} + x^{102} + x^{100} + x^{95} + x^{93} + x^{90} + x^{88} + x^{87} \\
&+ x^{85} + x^{83} + x^{82} + x^{81} + x^{80} + x^{78} + x^{76} + x^{75} + x^{73} + x^{70} + x^{68} \\
&+ x^{67} + x^{65} + x^{63} + x^{62} + x^{61} + x^{60} + x^{59} + x^{58} + x^{57} + x^{56} + x^{55} \\
&+ x^{54} + x^{53} + x^{52} + x^{50} + x^{48} + x^{47} + x^{45} + x^{42} + x^{40} + x^{39} + x^{37} \\
&+ x^{35} + x^{34} + x^{33} + x^{32} + x^{30} + x^{28} + x^{27} + x^{25} + x^{22} + x^{20} + x^{15} \\
&+ x^{13} + x^{10} + x^{8} + x^{7} + x^{5} + x^{2} + 1,
\end{aligned}$$

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

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

$$\begin{aligned}
p_0(x) = {} & x^{144} + x^{142} + x^{136} + x^{134} + x^{124} + x^{122} + x^{120} + x^{114} + x^{110} + x^{108} \\
& + x^{104} + x^{100} + x^{96} + x^{92} + x^{88} + x^{86} + x^{84} + x^{82} + x^{80} + x^{76} + x^{66} \\
& + x^{64} + x^{60} + x^{56} + x^{50} + x^{44} + x^{42}, \\
p_3(x) = {} & x^{136} + x^{134} + x^{132} + x^{130} + x^{128} + x^{112} + x^{110} + x^{106} + x^{100} + x^{98} \\
& + x^{96} + x^{92} + x^{86} + x^{84} + x^{82} + x^{80} + x^{72} + x^{70} + x^{66} + x^{58} + x^{56} \\
& + x^{54} + x^{52} + x^{46} + x^{42} + x^{40} + x^{38} + x^{34} + x^{28} + x^{26} + x^{22} + x^{18}, \\
p_6(x) = {} & x^{140} + x^{138} + x^{134} + x^{124} + x^{122} + x^{114} + x^{110} + x^{106} + x^{98} + x^{90} \\
& + x^{88} + x^{86} + x^{80} + x^{74} + x^{72} + x^{70} + x^{68} + x^{66} + x^{60} + x^{58} + x^{54} \\
& + x^{52} + x^{50} + x^{48} + x^{46} + x^{38} + x^{34} + x^{26} + x^{24} + x^{22} + x^{20} + x^{16} \\
& + x^{12} + x^{10} + x^{8} + x^{4} + x^{2} + 1, \\
p_9(x) = {} & x^{136} + x^{134} + x^{128} + x^{126} + x^{124} + x^{122} + x^{120} + x^{112} + x^{110} + x^{108} \\
& + x^{106} + x^{100} + x^{96} + x^{88} + x^{86} + x^{82} + x^{80} + x^{76} + x^{74} + x^{70} + x^{68} \\
& + x^{66} + x^{58} + x^{56} + x^{50} + x^{44} + x^{40} + x^{38} + x^{34} + x^{32} + x^{30} + x^{28} \\
& + x^{22} + x^{16} + x^{14} + x^{12} + x^{8} + x^{6}, \\
p_{12}(x) = {} & x^{144} + x^{142} + x^{140} + x^{138} + x^{134} + x^{132} + x^{130} + x^{126} + x^{124} + x^{122} \\
& + x^{118} + x^{116} + x^{114} + x^{110} + x^{108} + x^{106} + x^{102} + x^{100} + x^{98} + x^{94} \\
& + x^{92} + x^{90} + x^{86} + x^{84} + x^{82} + x^{78} + x^{76} + x^{74} + x^{70} + x^{68} + x^{66} \\
& + x^{64} + x^{48} + x^{46} + x^{44} + x^{42} + x^{38} + x^{36} + x^{34} + x^{30} + x^{28} + x^{26} \\
& + x^{22} + x^{20} + x^{18} + x^{14} + x^{12} + x^{10} + x^{6} + x^{4} + x^{2} + 1,
\end{aligned}$$

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

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

$$\begin{aligned}
p_0(x) = {} & x^{144} + x^{142} + x^{136} + x^{134} + x^{128} + x^{126} + x^{120} + x^{118} + x^{116} + x^{108} \\
& + x^{104} + x^{100} + x^{96} + x^{92} + x^{86} + x^{82} + x^{78} + x^{76} + x^{72} + x^{66} + x^{64} \\
& + x^{60} + x^{58} + x^{56} + x^{54} + x^{48} + x^{46} + x^{44} + x^{42} + x^{40} + x^{36}, \\
p_3(x) = {} & x^{136} + x^{134} + x^{132} + x^{130} + x^{128} + x^{120} + x^{118} + x^{106} + x^{96} + x^{90} \\
& + x^{86} + x^{84} + x^{82} + x^{78} + x^{72} + x^{70} + x^{66} + x^{64} + x^{62} + x^{60} + x^{56} \\
& + x^{54} + x^{52} + x^{48} + x^{44} + x^{34} + x^{22} + x^{20}, \\
p_6(x) = {} & x^{140} + x^{138} + x^{134} + x^{128} + x^{126} + x^{118} + x^{114} + x^{110} + x^{106} + x^{102} \\
& + x^{90} + x^{88} + x^{86} + x^{82} + x^{76} + x^{72} + x^{68} + x^{66} + x^{62} + x^{60} + x^{56} \\
& + x^{54} + x^{50} + x^{46} + x^{44} + x^{40} + x^{36} + x^{34} + x^{30} + x^{24} + x^{22} + x^{20} \\
& + x^{14} + x^{10} + x^{8} + x^{4} + x^{2} + 1, \\
p_9(x) = {} & x^{136} + x^{134} + x^{128} + x^{126} + x^{124} + x^{122} + x^{120} + x^{112} + x^{110} + x^{108} \\
& + x^{106} + x^{100} + x^{96} + x^{88} + x^{86} + x^{82} + x^{80} + x^{76} + x^{74} + x^{70} + x^{68} \\
& + x^{66} + x^{58} + x^{56} + x^{50} + x^{44} + x^{40} + x^{38} + x^{34} + x^{32} + x^{30} + x^{28}
\end{aligned}$$

$$
\begin{aligned}
&+ x^{22} + x^{16} + x^{14} + x^{12} + x^{8} + x^{6},\\
p_{12}(x) &= x^{144} + x^{142} + x^{140} + x^{138} + x^{134} + x^{132} + x^{130} + x^{126} + x^{124} + x^{122}\\
&+ x^{118} + x^{116} + x^{114} + x^{110} + x^{108} + x^{106} + x^{102} + x^{100} + x^{98} + x^{94}\\
&+ x^{92} + x^{90} + x^{86} + x^{84} + x^{82} + x^{78} + x^{76} + x^{74} + x^{70} + x^{68} + x^{66}\\
&+ x^{64} + x^{48} + x^{46} + x^{44} + x^{42} + x^{38} + x^{36} + x^{34} + x^{30} + x^{28} + x^{26}\\
&+ x^{22} + x^{20} + x^{18} + x^{14} + x^{12} + x^{10} + x^{6} + x^{4} + x^{2} + 1,
\end{aligned}
$$

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

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

$$
\begin{aligned}
p_0(x) &= x^{147} + x^{145} + x^{143} + x^{142} + x^{141} + x^{140} + x^{138} + x^{136} + x^{135} + x^{134}\\
&+ x^{131} + x^{127} + x^{124} + x^{120} + x^{119} + x^{118} + x^{116} + x^{112} + x^{111}\\
&+ x^{110} + x^{107} + x^{106} + x^{105} + x^{104} + x^{103} + x^{101} + x^{100} + x^{99} + x^{97}\\
&+ x^{96} + x^{95} + x^{94} + x^{91} + x^{89} + x^{87} + x^{86} + x^{83} + x^{81} + x^{76} + x^{74}\\
&+ x^{73} + x^{71} + x^{70} + x^{67} + x^{66} + x^{63} + x^{62} + x^{60} + x^{57} + x^{56} + x^{52}\\
&+ x^{48} + x^{47} + x^{44} + x^{41} + x^{40} + x^{39},\\
p_3(x) &= x^{111} + x^{99} + x^{95} + x^{93} + x^{91} + x^{89} + x^{79} + x^{77} + x^{75} + x^{73} + x^{71}\\
&+ x^{61} + x^{57} + x^{55} + x^{53} + x^{49} + x^{37} + x^{35} + x^{33} + x^{27},\\
p_6(x) &= x^{123} + x^{121} + x^{119} + x^{118} + x^{117} + x^{116} + x^{115} + x^{114} + x^{112} + x^{110}\\
&+ x^{107} + x^{105} + x^{102} + x^{100} + x^{99} + x^{94} + x^{93} + x^{89} + x^{88} + x^{87}\\
&+ x^{85} + x^{84} + x^{83} + x^{82} + x^{80} + x^{78} + x^{63} + x^{61} + x^{58} + x^{56} + x^{55}\\
&+ x^{50} + x^{49} + x^{47} + x^{44} + x^{43} + x^{42} + x^{41} + x^{39} + x^{38} + x^{37} + x^{36}\\
&+ x^{35} + x^{34} + x^{32} + x^{31} + x^{30} + x^{29} + x^{27} + x^{26} + x^{25} + x^{24} + x^{23}\\
&+ x^{22} + x^{20} + x^{18},\\
p_9(x) &= x^{135} + x^{131} + x^{127} + x^{125} + x^{121} + x^{119} + x^{115} + x^{109} + x^{107} + x^{105}\\
&+ x^{101} + x^{97} + x^{95} + x^{93} + x^{91} + x^{79} + x^{77} + x^{73} + x^{69} + x^{67} + x^{65}\\
&+ x^{59} + x^{53} + x^{51} + x^{43} + x^{41} + x^{31} + x^{29} + x^{27} + x^{25} + x^{23} + x^{21}\\
&+ x^{19} + x^{15} + x^{13} + x^{9},\\
p_{12}(x) &= x^{147} + x^{145} + x^{142} + x^{140} + x^{139} + x^{137} + x^{134} + x^{132} + x^{127} + x^{125}\\
&+ x^{122} + x^{120} + x^{119} + x^{117} + x^{115} + x^{114} + x^{113} + x^{112} + x^{110}\\
&+ x^{108} + x^{107} + x^{105} + x^{102} + x^{100} + x^{95} + x^{93} + x^{90} + x^{88} + x^{87}\\
&+ x^{85} + x^{83} + x^{82} + x^{81} + x^{80} + x^{78} + x^{76} + x^{75} + x^{73} + x^{70} + x^{68}\\
&+ x^{67} + x^{65} + x^{63} + x^{62} + x^{61} + x^{60} + x^{59} + x^{58} + x^{57} + x^{56} + x^{55}\\
&+ x^{54} + x^{53} + x^{52} + x^{50} + x^{48} + x^{47} + x^{45} + x^{42} + x^{40} + x^{39} + x^{37}\\
&+ x^{35} + x^{34} + x^{33} + x^{32} + x^{30} + x^{28} + x^{27} + x^{25} + x^{22} + x^{20} + x^{15}\\
&+ x^{13} + x^{10} + x^{8} + x^{7} + x^{5} + x^{2} + 1,
\end{aligned}
$$

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

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

$$\begin{aligned}
p_0(x) = {} & x^{147} + x^{145} + x^{143} + x^{142} + x^{141} + x^{140} + x^{138} + x^{136} + x^{135} + x^{134} \\
& + x^{131} + x^{127} + x^{124} + x^{120} + x^{119} + x^{118} + x^{116} + x^{112} + x^{111} \\
& + x^{110} + x^{107} + x^{106} + x^{105} + x^{104} + x^{103} + x^{101} + x^{100} + x^{99} + x^{97} \\
& + x^{96} + x^{95} + x^{94} + x^{91} + x^{89} + x^{87} + x^{86} + x^{83} + x^{81} + x^{76} + x^{74} \\
& + x^{73} + x^{71} + x^{70} + x^{67} + x^{66} + x^{63} + x^{62} + x^{60} + x^{57} + x^{56} + x^{52} \\
& + x^{48} + x^{47} + x^{44} + x^{41} + x^{40} + x^{39}, \\
p_3(x) = {} & x^{111} + x^{99} + x^{95} + x^{93} + x^{91} + x^{89} + x^{79} + x^{77} + x^{75} + x^{73} + x^{71} \\
& + x^{61} + x^{57} + x^{55} + x^{53} + x^{49} + x^{37} + x^{35} + x^{33} + x^{27}, \\
p_6(x) = {} & x^{123} + x^{121} + x^{119} + x^{118} + x^{117} + x^{116} + x^{115} + x^{114} + x^{112} + x^{110} \\
& + x^{107} + x^{105} + x^{102} + x^{100} + x^{99} + x^{94} + x^{93} + x^{89} + x^{88} + x^{87} \\
& + x^{85} + x^{84} + x^{83} + x^{82} + x^{80} + x^{78} + x^{63} + x^{61} + x^{58} + x^{56} + x^{55} \\
& + x^{50} + x^{49} + x^{47} + x^{44} + x^{43} + x^{42} + x^{41} + x^{39} + x^{38} + x^{37} + x^{36} \\
& + x^{35} + x^{34} + x^{32} + x^{31} + x^{30} + x^{29} + x^{27} + x^{26} + x^{25} + x^{24} + x^{23} \\
& + x^{22} + x^{20} + x^{18}, \\
p_9(x) = {} & x^{135} + x^{131} + x^{127} + x^{125} + x^{121} + x^{119} + x^{115} + x^{109} + x^{107} + x^{105} \\
& + x^{101} + x^{97} + x^{95} + x^{93} + x^{91} + x^{79} + x^{77} + x^{73} + x^{69} + x^{67} + x^{65} \\
& + x^{59} + x^{53} + x^{51} + x^{43} + x^{41} + x^{31} + x^{29} + x^{27} + x^{25} + x^{23} + x^{21} \\
& + x^{19} + x^{15} + x^{13} + x^{9}, \\
p_{12}(x) = {} & x^{147} + x^{145} + x^{142} + x^{140} + x^{139} + x^{137} + x^{134} + x^{132} + x^{127} + x^{125} \\
& + x^{122} + x^{120} + x^{119} + x^{117} + x^{115} + x^{114} + x^{113} + x^{112} + x^{110} \\
& + x^{108} + x^{107} + x^{105} + x^{102} + x^{100} + x^{95} + x^{93} + x^{90} + x^{88} + x^{87} \\
& + x^{85} + x^{83} + x^{82} + x^{81} + x^{80} + x^{78} + x^{76} + x^{75} + x^{73} + x^{70} + x^{68} \\
& + x^{67} + x^{65} + x^{63} + x^{62} + x^{61} + x^{60} + x^{59} + x^{58} + x^{57} + x^{56} + x^{55} \\
& + x^{54} + x^{53} + x^{52} + x^{50} + x^{48} + x^{47} + x^{45} + x^{42} + x^{40} + x^{39} + x^{37} \\
& + x^{35} + x^{34} + x^{33} + x^{32} + x^{30} + x^{28} + x^{27} + x^{25} + x^{22} + x^{20} + x^{15} \\
& + x^{13} + x^{10} + x^{8} + x^{7} + x^{5} + x^{2} + 1,
\end{aligned}$$

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

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

$$\begin{aligned}
p_0(x) = {} & x^{150} + x^{148} + x^{140} + x^{138} + x^{134} + x^{132} + x^{126} + x^{124} + x^{118} + x^{114} \\
& + x^{106} + x^{100} + x^{96} + x^{94} + x^{92} + x^{90} + x^{88} + x^{80} + x^{78} + x^{76} + x^{74} \\
& + x^{72} + x^{62} + x^{60} + x^{52} + x^{44} + x^{42}, \\
p_3(x) = {} & x^{142} + x^{140} + x^{138} + x^{136} + x^{118} + x^{116} + x^{112} + x^{110} + x^{106} + x^{104} \\
& + x^{94} + x^{90} + x^{86} + x^{84} + x^{82} + x^{80} + x^{74} + x^{68} + x^{66} + x^{62} + x^{58} \\
& + x^{56} + x^{52} + x^{48} + x^{46} + x^{36} + x^{22} + x^{18},
\end{aligned}$$

$$\begin{aligned}
p_6(x) = {} & x^{146} + x^{144} + x^{140} + x^{138} + x^{134} + x^{132} + x^{124} + x^{118} + x^{114} + x^{104} \\
& + x^{98} + x^{96} + x^{94} + x^{88} + x^{82} + x^{80} + x^{78} + x^{76} + x^{74} + x^{72} + x^{70} \\
& + x^{66} + x^{64} + x^{62} + x^{60} + x^{56} + x^{52} + x^{44} + x^{42} + x^{40} + x^{38} + x^{36} \\
& + x^{34} + x^{28} + x^{20} + x^{18} + x^{14} + x^{12} + x^{10} + x^{4} + x^{2} + 1, \\
p_9(x) = {} & x^{142} + x^{140} + x^{132} + x^{128} + x^{124} + x^{120} + x^{118} + x^{116} + x^{112} + x^{110} \\
& + x^{108} + x^{106} + x^{104} + x^{102} + x^{98} + x^{94} + x^{92} + x^{78} + x^{74} + x^{70} \\
& + x^{66} + x^{64} + x^{60} + x^{58} + x^{50} + x^{48} + x^{42} + x^{38} + x^{30} + x^{26} + x^{24} \\
& + x^{22} + x^{20} + x^{18} + x^{16} + x^{12} + x^{8} + x^{6}, \\
p_{12}(x) = {} & x^{150} + x^{148} + x^{146} + x^{144} + x^{142} + x^{140} + x^{138} + x^{136} + x^{134} + x^{132} \\
& + x^{130} + x^{128} + x^{126} + x^{124} + x^{122} + x^{120} + x^{110} + x^{108} + x^{106} \\
& + x^{104} + x^{102} + x^{100} + x^{98} + x^{96} + x^{94} + x^{92} + x^{90} + x^{88} + x^{78} + x^{76} \\
& + x^{74} + x^{72} + x^{46} + x^{44} + x^{42} + x^{40} + x^{30} + x^{28} + x^{26} + x^{24} + x^{22} \\
& + x^{20} + x^{18} + x^{16} + x^{14} + x^{12} + x^{10} + x^{8} + x^{6} + x^{4} + x^{2} + 1,
\end{aligned}$$

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

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

$$\begin{aligned}
p_0(x) = {} & x^{147} + x^{145} + x^{143} + x^{142} + x^{141} + x^{140} + x^{139} + x^{138} + x^{136} + x^{134} \\
& + x^{129} + x^{127} + x^{126} + x^{125} + x^{124} + x^{123} + x^{122} + x^{121} + x^{120} \\
& + x^{119} + x^{118} + x^{117} + x^{116} + x^{115} + x^{112} + x^{111} + x^{109} + x^{108} \\
& + x^{107} + x^{102} + x^{93} + x^{92} + x^{89} + x^{85} + x^{82} + x^{81} + x^{78} + x^{77} + x^{76} \\
& + x^{75} + x^{73} + x^{72} + x^{71} + x^{67} + x^{65} + x^{62} + x^{61} + x^{60} + x^{59} + x^{58} \\
& + x^{57} + x^{54} + x^{51} + x^{47} + x^{46} + x^{44} + x^{43} + x^{41} + x^{36}, \\
p_3(x) = {} & x^{131} + x^{129} + x^{127} + x^{126} + x^{125} + x^{124} + x^{123} + x^{122} + x^{120} + x^{118} \\
& + x^{113} + x^{111} + x^{110} + x^{109} + x^{108} + x^{107} + x^{106} + x^{105} + x^{104} \\
& + x^{103} + x^{102} + x^{101} + x^{100} + x^{99} + x^{96} + x^{95} + x^{93} + x^{92} + x^{89} \\
& + x^{87} + x^{85} + x^{84} + x^{83} + x^{82} + x^{81} + x^{80} + x^{74} + x^{73} + x^{72} + x^{71} \\
& + x^{70} + x^{69} + x^{68} + x^{66} + x^{64} + x^{63} + x^{61} + x^{60} + x^{58} + x^{55} + x^{54} \\
& + x^{53} + x^{52} + x^{50} + x^{43} + x^{41} + x^{38} + x^{34} + x^{33} + x^{32} + x^{31} + x^{29} \\
& + x^{28} + x^{24}, \\
p_6(x) = {} & x^{143} + x^{141} + x^{139} + x^{138} + x^{136} + x^{135} + x^{134} + x^{133} + x^{130} + x^{128} \\
& + x^{126} + x^{123} + x^{121} + x^{119} + x^{116} + x^{108} + x^{106} + x^{104} + x^{102} \\
& + x^{101} + x^{100} + x^{98} + x^{95} + x^{94} + x^{91} + x^{89} + x^{88} + x^{86} + x^{84} + x^{81} \\
& + x^{79} + x^{78} + x^{74} + x^{73} + x^{72} + x^{70} + x^{69} + x^{63} + x^{60} + x^{56} + x^{54} \\
& + x^{52} + x^{51} + x^{46} + x^{44} + x^{42} + x^{41} + x^{39} + x^{37} + x^{36} + x^{35} + x^{34} \\
& + x^{32} + x^{29} + x^{28} + x^{26} + x^{21} + x^{20} + x^{19} + x^{17} + x^{16} + x^{15} + x^{13} \\
& + x^{12} + x^{10} + x^{8} + x^{7} + x^{5} + x^{2} + 1,
\end{aligned}$$

$$\begin{aligned}
p_9(x) &= x^{131} + x^{129} + x^{126} + x^{124} + x^{99} + x^{97} + x^{94} + x^{92} + x^{67} + x^{65} + x^{62} \\
&\quad + x^{60} + x^{51} + x^{49} + x^{46} + x^{44} + x^{19} + x^{17} + x^{14} + x^{12}, \\
p_{12}(x) &= x^{147} + x^{145} + x^{142} + x^{140} + x^{139} + x^{137} + x^{134} + x^{132} + x^{131} + x^{129} \\
&\quad + x^{127} + x^{126} + x^{125} + x^{124} + x^{122} + x^{120} + x^{119} + x^{117} + x^{115} \\
&\quad + x^{114} + x^{113} + x^{112} + x^{110} + x^{108} + x^{107} + x^{105} + x^{102} + x^{100} \\
&\quad + x^{99} + x^{97} + x^{95} + x^{94} + x^{93} + x^{92} + x^{90} + x^{88} + x^{87} + x^{85} + x^{83} \\
&\quad + x^{82} + x^{81} + x^{80} + x^{78} + x^{76} + x^{75} + x^{73} + x^{70} + x^{68} + x^{63} + x^{61} \\
&\quad + x^{59} + x^{58} + x^{57} + x^{56} + x^{55} + x^{54} + x^{53} + x^{52} + x^{51} + x^{50} + x^{49} \\
&\quad + x^{48} + x^{47} + x^{46} + x^{45} + x^{44} + x^{42} + x^{40} + x^{39} + x^{37} + x^{35} + x^{34} \\
&\quad + x^{33} + x^{32} + x^{30} + x^{28} + x^{27} + x^{25} + x^{22} + x^{20} + x^{19} + x^{17} + x^{15} \\
&\quad + x^{14} + x^{13} + x^{12} + x^{10} + x^{8} + x^{7} + x^{5} + x^{2} + 1,
\end{aligned}$$

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

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

$$\begin{aligned}
p_0(x) &= x^{152} + x^{140} + x^{139} + x^{138} + x^{137} + x^{136} + x^{135} + x^{134} + x^{133} + x^{132} \\
&\quad + x^{131} + x^{130} + x^{129} + x^{128} + x^{123} + x^{122} + x^{118} + x^{117} + x^{113} \\
&\quad + x^{112} + x^{110} + x^{109} + x^{100} + x^{98} + x^{97} + x^{96} + x^{95} + x^{94} + x^{91} \\
&\quad + x^{90} + x^{88} + x^{87} + x^{86} + x^{85} + x^{83} + x^{82} + x^{78} + x^{74} + x^{73} + x^{71} \\
&\quad + x^{70} + x^{69} + x^{68} + x^{67} + x^{65} + x^{61} + x^{59} + x^{54} + x^{52} + x^{47} + x^{44} \\
&\quad + x^{43} + x^{42} + x^{40} + x^{39}, \\
p_3(x) &= x^{116} + x^{114} + x^{111} + x^{109} + x^{106} + x^{104} + x^{101} + x^{99} + x^{76} + x^{74} \\
&\quad + x^{71} + x^{69} + x^{68} + x^{64} + x^{63} + x^{59} + x^{58} + x^{56} + x^{53} + x^{51} + x^{44} \\
&\quad + x^{42} + x^{39} + x^{37} + x^{34} + x^{32} + x^{29} + x^{27}, \\
p_6(x) &= x^{128} + x^{120} + x^{118} + x^{112} + x^{110} + x^{108} + x^{102} + x^{100} + x^{98} + x^{90} \\
&\quad + x^{88} + x^{78} + x^{68} + x^{64} + x^{58} + x^{56} + x^{54} + x^{52} + x^{48} + x^{46} + x^{42} \\
&\quad + x^{40} + x^{38} + x^{36} + x^{30} + x^{28} + x^{26} + x^{18}, \\
p_9(x) &= x^{140} + x^{138} + x^{136} + x^{135} + x^{134} + x^{133} + x^{132} + x^{131} + x^{130} + x^{129} \\
&\quad + x^{128} + x^{127} + x^{126} + x^{125} + x^{123} + x^{121} + x^{108} + x^{106} + x^{104} \\
&\quad + x^{103} + x^{102} + x^{101} + x^{100} + x^{99} + x^{98} + x^{97} + x^{96} + x^{95} + x^{94} \\
&\quad + x^{93} + x^{91} + x^{89} + x^{76} + x^{74} + x^{72} + x^{71} + x^{70} + x^{69} + x^{68} + x^{67} \\
&\quad + x^{66} + x^{65} + x^{64} + x^{63} + x^{62} + x^{61} + x^{60} + x^{59} + x^{58} + x^{57} + x^{56} \\
&\quad + x^{55} + x^{54} + x^{53} + x^{52} + x^{51} + x^{50} + x^{49} + x^{48} + x^{47} + x^{46} + x^{45} \\
&\quad + x^{43} + x^{41} + x^{28} + x^{26} + x^{24} + x^{23} + x^{22} + x^{21} + x^{20} + x^{19} + x^{18} \\
&\quad + x^{17} + x^{16} + x^{15} + x^{14} + x^{13} + x^{11} + x^{9}, \\
p_{12}(x) &= x^{152} + x^{148} + x^{132} + x^{124} + x^{120} + x^{112} + x^{100} + x^{92} + x^{88} + x^{80} \\
&\quad + x^{72} + x^{60} + x^{48} + x^{44} + x^{40} + x^{32} + x^{20} + x^{12} + x^{4} + 1,
\end{aligned}$$

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

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

$$\begin{aligned}
p_0(x) = {} & x^{156} + x^{144} + x^{143} + x^{142} + x^{141} + x^{139} + x^{138} + x^{137} + x^{135} + x^{134} \\
& + x^{133} + x^{128} + x^{125} + x^{121} + x^{117} + x^{115} + x^{112} + x^{109} + x^{107} \\
& + x^{106} + x^{105} + x^{102} + x^{101} + x^{97} + x^{96} + x^{94} + x^{93} + x^{92} + x^{91} \\
& + x^{89} + x^{88} + x^{82} + x^{79} + x^{78} + x^{77} + x^{71} + x^{69} + x^{67} + x^{66} + x^{65} \\
& + x^{64} + x^{63} + x^{59} + x^{57} + x^{56} + x^{55} + x^{54} + x^{53} + x^{52} + x^{51} + x^{49} \\
& + x^{48} + x^{47} + x^{46} + x^{43} + x^{42} + x^{40} + x^{39}, \\
p_3(x) = {} & x^{120} + x^{118} + x^{115} + x^{113} + x^{110} + x^{108} + x^{105} + x^{104} + x^{103} + x^{102} \\
& + x^{100} + x^{99} + x^{98} + x^{97} + x^{95} + x^{94} + x^{93} + x^{92} + x^{90} + x^{89} + x^{87} \\
& + x^{86} + x^{85} + x^{84} + x^{82} + x^{81} + x^{80} + x^{79} + x^{77} + x^{76} + x^{75} + x^{74} \\
& + x^{72} + x^{71} + x^{70} + x^{69} + x^{67} + x^{66} + x^{65} + x^{64} + x^{62} + x^{61} + x^{60} \\
& + x^{59} + x^{57} + x^{56} + x^{55} + x^{54} + x^{52} + x^{51} + x^{50} + x^{49} + x^{48} + x^{47} \\
& + x^{45} + x^{44} + x^{43} + x^{42} + x^{39} + x^{37} + x^{34} + x^{32} + x^{29} + x^{27}, \\
p_6(x) = {} & x^{132} + x^{124} + x^{122} + x^{114} + x^{108} + x^{98} + x^{96} + x^{92} + x^{86} + x^{84} + x^{82} \\
& + x^{80} + x^{76} + x^{74} + x^{70} + x^{66} + x^{64} + x^{56} + x^{54} + x^{46} + x^{44} + x^{40} \\
& + x^{36} + x^{34} + x^{30} + x^{28} + x^{26} + x^{18}, \\
p_9(x) = {} & x^{144} + x^{142} + x^{140} + x^{139} + x^{138} + x^{137} + x^{136} + x^{135} + x^{134} + x^{133} \\
& + x^{132} + x^{131} + x^{130} + x^{129} + x^{128} + x^{127} + x^{126} + x^{125} + x^{123} \\
& + x^{121} + x^{112} + x^{110} + x^{108} + x^{107} + x^{106} + x^{105} + x^{104} + x^{103} \\
& + x^{102} + x^{101} + x^{100} + x^{99} + x^{98} + x^{97} + x^{96} + x^{95} + x^{94} + x^{93} + x^{91} \\
& + x^{89} + x^{80} + x^{78} + x^{76} + x^{75} + x^{74} + x^{73} + x^{72} + x^{71} + x^{70} + x^{69} \\
& + x^{68} + x^{67} + x^{66} + x^{65} + x^{63} + x^{61} + x^{60} + x^{58} + x^{56} + x^{55} + x^{54} \\
& + x^{53} + x^{52} + x^{51} + x^{50} + x^{49} + x^{48} + x^{47} + x^{46} + x^{45} + x^{43} + x^{41} \\
& + x^{32} + x^{30} + x^{28} + x^{27} + x^{26} + x^{25} + x^{24} + x^{23} + x^{22} + x^{21} + x^{20} \\
& + x^{19} + x^{18} + x^{17} + x^{16} + x^{15} + x^{14} + x^{13} + x^{11} + x^{9}, \\
p_{12}(x) = {} & x^{156} + x^{152} + x^{140} + x^{136} + x^{132} + x^{128} + x^{120} + x^{116} + x^{112} + x^{108} \\
& + x^{104} + x^{100} + x^{96} + x^{88} + x^{84} + x^{80} + x^{68} + x^{64} + x^{56} + x^{40} + x^{36} \\
& + x^{32} + x^{28} + x^{24} + x^{20} + x^{16} + x^{12} + x^{4} + 1,
\end{aligned}$$

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

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

$$\begin{aligned}
p_0(x) = {} & x^{147} + x^{145} + x^{143} + x^{142} + x^{141} + x^{140} + x^{139} + x^{138} + x^{136} + x^{134} \\
& + x^{131} + x^{127} + x^{125} + x^{123} + x^{122} + x^{121} + x^{120} + x^{118} + x^{116} \\
& + x^{115} + x^{114} + x^{113} + x^{106} + x^{105} + x^{104} + x^{103} + x^{101} + x^{100} \\
& + x^{98} + x^{97} + x^{96} + x^{95} + x^{94} + x^{91} + x^{90} + x^{89} + x^{88} + x^{83} + x^{80}
\end{aligned}$$

$$
\begin{aligned}
&+ x^{79} + x^{78} + x^{76} + x^{75} + x^{72} + x^{71} + x^{69} + x^{65} + x^{63} + x^{62} + x^{61}\\
&+ x^{59} + x^{57} + x^{54} + x^{52} + x^{51} + x^{50} + x^{49} + x^{48} + x^{46} + x^{44} + x^{42},\\
p_3(x) &= x^{131} + x^{129} + x^{127} + x^{126} + x^{125} + x^{124} + x^{123} + x^{122} + x^{120} + x^{118}\\
&+ x^{115} + x^{111} + x^{109} + x^{107} + x^{106} + x^{105} + x^{104} + x^{102} + x^{100}\\
&+ x^{98} + x^{95} + x^{94} + x^{93} + x^{92} + x^{91} + x^{89} + x^{87} + x^{86} + x^{85} + x^{84}\\
&+ x^{82} + x^{81} + x^{80} + x^{78} + x^{74} + x^{72} + x^{71} + x^{70} + x^{69} + x^{66} + x^{65}\\
&+ x^{64} + x^{56} + x^{54} + x^{52} + x^{51} + x^{48} + x^{46} + x^{43} + x^{38} + x^{36} + x^{35}\\
&+ x^{34} + x^{33} + x^{32} + x^{30} + x^{28} + x^{26},\\
p_6(x) &= x^{143} + x^{141} + x^{139} + x^{138} + x^{136} + x^{135} + x^{134} + x^{133} + x^{131} + x^{130}\\
&+ x^{129} + x^{128} + x^{124} + x^{118} + x^{117} + x^{114} + x^{113} + x^{112} + x^{106}\\
&+ x^{104} + x^{102} + x^{101} + x^{100} + x^{98} + x^{97} + x^{94} + x^{92} + x^{90} + x^{89}\\
&+ x^{88} + x^{84} + x^{83} + x^{81} + x^{77} + x^{73} + x^{71} + x^{70} + x^{67} + x^{66} + x^{65}\\
&+ x^{64} + x^{63} + x^{62} + x^{56} + x^{55} + x^{54} + x^{52} + x^{51} + x^{50} + x^{49} + x^{46}\\
&+ x^{45} + x^{42} + x^{41} + x^{40} + x^{39} + x^{37} + x^{36} + x^{34} + x^{32} + x^{30} + x^{29}\\
&+ x^{28} + x^{27} + x^{26} + x^{25} + x^{23} + x^{22} + x^{21} + x^{18} + x^{16} + x^{15} + x^{14}\\
&+ x^{13} + x^{10} + x^{8} + x^{7} + x^{5} + x^{2} + 1,\\
p_9(x) &= x^{131} + x^{129} + x^{126} + x^{124} + x^{99} + x^{97} + x^{94} + x^{92} + x^{67} + x^{65} + x^{62}\\
&+ x^{60} + x^{51} + x^{49} + x^{46} + x^{44} + x^{19} + x^{17} + x^{14} + x^{12},\\
p_{12}(x) &= x^{147} + x^{145} + x^{142} + x^{140} + x^{139} + x^{137} + x^{134} + x^{132} + x^{131} + x^{129}\\
&+ x^{127} + x^{126} + x^{125} + x^{124} + x^{122} + x^{120} + x^{119} + x^{117} + x^{115}\\
&+ x^{114} + x^{113} + x^{112} + x^{110} + x^{108} + x^{107} + x^{105} + x^{102} + x^{100}\\
&+ x^{99} + x^{97} + x^{95} + x^{94} + x^{93} + x^{92} + x^{90} + x^{88} + x^{87} + x^{85} + x^{83}\\
&+ x^{82} + x^{81} + x^{80} + x^{78} + x^{76} + x^{75} + x^{73} + x^{70} + x^{68} + x^{63} + x^{61}\\
&+ x^{59} + x^{58} + x^{57} + x^{56} + x^{55} + x^{54} + x^{53} + x^{52} + x^{51} + x^{50} + x^{49}\\
&+ x^{48} + x^{47} + x^{46} + x^{45} + x^{44} + x^{42} + x^{40} + x^{39} + x^{37} + x^{35} + x^{34}\\
&+ x^{33} + x^{32} + x^{30} + x^{28} + x^{27} + x^{25} + x^{22} + x^{20} + x^{19} + x^{17} + x^{15}\\
&+ x^{14} + x^{13} + x^{12} + x^{10} + x^{8} + x^{7} + x^{5} + x^{2} + 1,
\end{aligned}
$$

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

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

$$
\begin{aligned}
p_0(x) &= x^{147} + x^{145} + x^{143} + x^{142} + x^{141} + x^{140} + x^{139} + x^{138} + x^{136} + x^{134}\\
&+ x^{129} + x^{127} + x^{126} + x^{125} + x^{124} + x^{123} + x^{122} + x^{121} + x^{120}\\
&+ x^{119} + x^{118} + x^{117} + x^{116} + x^{115} + x^{112} + x^{111} + x^{109} + x^{108}\\
&+ x^{107} + x^{102} + x^{93} + x^{92} + x^{89} + x^{85} + x^{82} + x^{81} + x^{78} + x^{77} + x^{76}\\
&+ x^{75} + x^{73} + x^{72} + x^{71} + x^{67} + x^{65} + x^{62} + x^{61} + x^{60} + x^{59} + x^{58}\\
&+ x^{57} + x^{54} + x^{51} + x^{47} + x^{46} + x^{44} + x^{43} + x^{41} + x^{36},
\end{aligned}
$$

$$
\begin{aligned}
p_3(x) = {} & x^{131} + x^{129} + x^{127} + x^{126} + x^{125} + x^{124} + x^{123} + x^{122} + x^{120} + x^{118} \\
& + x^{113} + x^{111} + x^{110} + x^{109} + x^{108} + x^{107} + x^{106} + x^{105} + x^{104} \\
& + x^{103} + x^{102} + x^{101} + x^{100} + x^{99} + x^{96} + x^{95} + x^{93} + x^{92} + x^{89} \\
& + x^{87} + x^{85} + x^{84} + x^{83} + x^{82} + x^{81} + x^{80} + x^{74} + x^{73} + x^{72} + x^{71} \\
& + x^{70} + x^{69} + x^{68} + x^{66} + x^{64} + x^{63} + x^{61} + x^{60} + x^{58} + x^{55} + x^{54} \\
& + x^{53} + x^{52} + x^{50} + x^{43} + x^{41} + x^{38} + x^{34} + x^{33} + x^{32} + x^{31} + x^{29} \\
& + x^{28} + x^{24}, \\
p_6(x) = {} & x^{143} + x^{141} + x^{139} + x^{138} + x^{136} + x^{135} + x^{134} + x^{133} + x^{130} + x^{128} \\
& + x^{126} + x^{123} + x^{121} + x^{119} + x^{116} + x^{108} + x^{106} + x^{104} + x^{102} \\
& + x^{101} + x^{100} + x^{98} + x^{95} + x^{94} + x^{91} + x^{89} + x^{88} + x^{86} + x^{84} + x^{81} \\
& + x^{79} + x^{78} + x^{74} + x^{73} + x^{72} + x^{70} + x^{69} + x^{63} + x^{60} + x^{56} + x^{54} \\
& + x^{52} + x^{51} + x^{46} + x^{44} + x^{42} + x^{41} + x^{39} + x^{37} + x^{36} + x^{35} + x^{34} \\
& + x^{32} + x^{29} + x^{28} + x^{26} + x^{21} + x^{20} + x^{19} + x^{17} + x^{16} + x^{15} + x^{13} \\
& + x^{12} + x^{10} + x^{8} + x^{7} + x^{5} + x^{2} + 1, \\
p_9(x) = {} & x^{131} + x^{129} + x^{126} + x^{124} + x^{99} + x^{97} + x^{94} + x^{92} + x^{67} + x^{65} + x^{62} \\
& + x^{60} + x^{51} + x^{49} + x^{46} + x^{44} + x^{19} + x^{17} + x^{14} + x^{12}, \\
p_{12}(x) = {} & x^{147} + x^{145} + x^{142} + x^{140} + x^{139} + x^{137} + x^{134} + x^{132} + x^{131} + x^{129} \\
& + x^{127} + x^{126} + x^{125} + x^{124} + x^{122} + x^{120} + x^{119} + x^{117} + x^{115} \\
& + x^{114} + x^{113} + x^{112} + x^{110} + x^{108} + x^{107} + x^{105} + x^{102} + x^{100} \\
& + x^{99} + x^{97} + x^{95} + x^{94} + x^{93} + x^{92} + x^{90} + x^{88} + x^{87} + x^{85} + x^{83} \\
& + x^{82} + x^{81} + x^{80} + x^{78} + x^{76} + x^{75} + x^{73} + x^{70} + x^{68} + x^{63} + x^{61} \\
& + x^{59} + x^{58} + x^{57} + x^{56} + x^{55} + x^{54} + x^{53} + x^{52} + x^{51} + x^{50} + x^{49} \\
& + x^{48} + x^{47} + x^{46} + x^{45} + x^{44} + x^{42} + x^{40} + x^{39} + x^{37} + x^{35} + x^{34} \\
& + x^{33} + x^{32} + x^{30} + x^{28} + x^{27} + x^{25} + x^{22} + x^{20} + x^{19} + x^{17} + x^{15} \\
& + x^{14} + x^{13} + x^{12} + x^{10} + x^{8} + x^{7} + x^{5} + x^{2} + 1,
\end{aligned}
$$

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

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

$$
\begin{aligned}
p_0(x) = {} & x^{156} + x^{144} + x^{143} + x^{142} + x^{141} + x^{139} + x^{138} + x^{137} + x^{135} + x^{134} \\
& + x^{133} + x^{128} + x^{125} + x^{121} + x^{117} + x^{115} + x^{112} + x^{109} + x^{107} \\
& + x^{106} + x^{105} + x^{102} + x^{101} + x^{97} + x^{96} + x^{94} + x^{93} + x^{92} + x^{91} \\
& + x^{89} + x^{88} + x^{82} + x^{79} + x^{78} + x^{77} + x^{71} + x^{69} + x^{67} + x^{66} + x^{65} \\
& + x^{64} + x^{63} + x^{59} + x^{57} + x^{56} + x^{55} + x^{54} + x^{53} + x^{52} + x^{51} + x^{49} \\
& + x^{48} + x^{47} + x^{46} + x^{43} + x^{42} + x^{40} + x^{39}, \\
p_3(x) = {} & x^{120} + x^{118} + x^{115} + x^{113} + x^{110} + x^{108} + x^{105} + x^{104} + x^{103} + x^{102} \\
& + x^{100} + x^{99} + x^{98} + x^{97} + x^{95} + x^{94} + x^{93} + x^{92} + x^{90} + x^{89} + x^{87}
\end{aligned}
$$

$$
\begin{aligned}
&+ x^{86} + x^{85} + x^{84} + x^{82} + x^{81} + x^{80} + x^{79} + x^{77} + x^{76} + x^{75} + x^{74}\\
&+ x^{72} + x^{71} + x^{70} + x^{69} + x^{67} + x^{66} + x^{65} + x^{64} + x^{62} + x^{61} + x^{60}\\
&+ x^{59} + x^{57} + x^{56} + x^{55} + x^{54} + x^{52} + x^{51} + x^{50} + x^{49} + x^{48} + x^{47}\\
&+ x^{45} + x^{44} + x^{43} + x^{42} + x^{39} + x^{37} + x^{34} + x^{32} + x^{29} + x^{27},\\
p_6(x) = {}& x^{132} + x^{124} + x^{122} + x^{114} + x^{108} + x^{98} + x^{96} + x^{92} + x^{86} + x^{84} + x^{82}\\
&+ x^{80} + x^{76} + x^{74} + x^{70} + x^{66} + x^{64} + x^{56} + x^{54} + x^{46} + x^{44} + x^{40}\\
&+ x^{36} + x^{34} + x^{30} + x^{28} + x^{26} + x^{18},\\
p_9(x) = {}& x^{144} + x^{142} + x^{140} + x^{139} + x^{138} + x^{137} + x^{136} + x^{135} + x^{134} + x^{133}\\
&+ x^{132} + x^{131} + x^{130} + x^{129} + x^{128} + x^{127} + x^{126} + x^{125} + x^{123}\\
&+ x^{121} + x^{112} + x^{110} + x^{108} + x^{107} + x^{106} + x^{105} + x^{104} + x^{103}\\
&+ x^{102} + x^{101} + x^{100} + x^{99} + x^{98} + x^{97} + x^{96} + x^{95} + x^{94} + x^{93} + x^{91}\\
&+ x^{89} + x^{80} + x^{78} + x^{76} + x^{75} + x^{74} + x^{73} + x^{72} + x^{71} + x^{70} + x^{69}\\
&+ x^{68} + x^{67} + x^{66} + x^{65} + x^{63} + x^{61} + x^{60} + x^{58} + x^{56} + x^{55} + x^{54}\\
&+ x^{53} + x^{52} + x^{51} + x^{50} + x^{49} + x^{48} + x^{47} + x^{46} + x^{45} + x^{43} + x^{41}\\
&+ x^{32} + x^{30} + x^{28} + x^{27} + x^{26} + x^{25} + x^{24} + x^{23} + x^{22} + x^{21} + x^{20}\\
&+ x^{19} + x^{18} + x^{17} + x^{16} + x^{15} + x^{14} + x^{13} + x^{11} + x^{9},\\
p_{12}(x) = {}& x^{156} + x^{152} + x^{140} + x^{136} + x^{132} + x^{128} + x^{120} + x^{116} + x^{112} + x^{108}\\
&+ x^{104} + x^{100} + x^{96} + x^{88} + x^{84} + x^{80} + x^{68} + x^{64} + x^{56} + x^{40} + x^{36}\\
&+ x^{32} + x^{28} + x^{24} + x^{20} + x^{16} + x^{12} + x^{4} + 1,
\end{aligned}
$$

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

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

$$
\begin{aligned}
p_0(x) = {}& x^{152} + x^{140} + x^{139} + x^{138} + x^{137} + x^{136} + x^{135} + x^{134} + x^{133} + x^{132}\\
&+ x^{131} + x^{130} + x^{129} + x^{128} + x^{123} + x^{122} + x^{118} + x^{117} + x^{113}\\
&+ x^{112} + x^{110} + x^{109} + x^{100} + x^{98} + x^{97} + x^{96} + x^{95} + x^{94} + x^{91}\\
&+ x^{90} + x^{88} + x^{87} + x^{86} + x^{85} + x^{83} + x^{82} + x^{78} + x^{74} + x^{73} + x^{71}\\
&+ x^{70} + x^{69} + x^{68} + x^{67} + x^{65} + x^{61} + x^{59} + x^{54} + x^{52} + x^{47} + x^{44}\\
&+ x^{43} + x^{42} + x^{40} + x^{39},\\
p_3(x) = {}& x^{116} + x^{114} + x^{111} + x^{109} + x^{106} + x^{104} + x^{101} + x^{99} + x^{76} + x^{74}\\
&+ x^{71} + x^{69} + x^{68} + x^{64} + x^{63} + x^{59} + x^{58} + x^{56} + x^{53} + x^{51} + x^{44}\\
&+ x^{42} + x^{39} + x^{37} + x^{34} + x^{32} + x^{29} + x^{27},\\
p_6(x) = {}& x^{128} + x^{120} + x^{118} + x^{112} + x^{110} + x^{108} + x^{102} + x^{100} + x^{98} + x^{90}\\
&+ x^{88} + x^{78} + x^{68} + x^{64} + x^{58} + x^{56} + x^{54} + x^{52} + x^{48} + x^{46} + x^{42}\\
&+ x^{40} + x^{38} + x^{36} + x^{30} + x^{28} + x^{26} + x^{18},\\
p_9(x) = {}& x^{140} + x^{138} + x^{136} + x^{135} + x^{134} + x^{133} + x^{132} + x^{131} + x^{130} + x^{129}\\
&+ x^{128} + x^{127} + x^{126} + x^{125} + x^{123} + x^{121} + x^{108} + x^{106} + x^{104}
\end{aligned}
$$

$$
\begin{aligned}
&+ x^{103} + x^{102} + x^{101} + x^{100} + x^{99} + x^{98} + x^{97} + x^{96} + x^{95} + x^{94} \\
&+ x^{93} + x^{91} + x^{89} + x^{76} + x^{74} + x^{72} + x^{71} + x^{70} + x^{69} + x^{68} + x^{67} \\
&+ x^{66} + x^{65} + x^{64} + x^{63} + x^{62} + x^{61} + x^{60} + x^{59} + x^{58} + x^{57} + x^{56} \\
&+ x^{55} + x^{54} + x^{53} + x^{52} + x^{51} + x^{50} + x^{49} + x^{48} + x^{47} + x^{46} + x^{45} \\
&+ x^{43} + x^{41} + x^{28} + x^{26} + x^{24} + x^{23} + x^{22} + x^{21} + x^{20} + x^{19} + x^{18} \\
&+ x^{17} + x^{16} + x^{15} + x^{14} + x^{13} + x^{11} + x^{9}, \\
p_{12}(x) &= x^{152} + x^{148} + x^{132} + x^{124} + x^{120} + x^{112} + x^{100} + x^{92} + x^{88} + x^{80} \\
&+ x^{72} + x^{60} + x^{48} + x^{44} + x^{40} + x^{32} + x^{20} + x^{12} + x^{4} + 1,
\end{aligned}
$$

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

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

$$
\begin{aligned}
p_0(x) &= x^{147} + x^{145} + x^{143} + x^{142} + x^{141} + x^{140} + x^{139} + x^{138} + x^{136} + x^{134} \\
&+ x^{131} + x^{127} + x^{125} + x^{123} + x^{122} + x^{121} + x^{120} + x^{118} + x^{116} \\
&+ x^{115} + x^{114} + x^{113} + x^{106} + x^{105} + x^{104} + x^{103} + x^{101} + x^{100} \\
&+ x^{98} + x^{97} + x^{96} + x^{95} + x^{94} + x^{91} + x^{90} + x^{89} + x^{88} + x^{83} + x^{80} \\
&+ x^{79} + x^{78} + x^{76} + x^{75} + x^{72} + x^{71} + x^{69} + x^{65} + x^{63} + x^{62} + x^{61} \\
&+ x^{59} + x^{57} + x^{54} + x^{52} + x^{51} + x^{50} + x^{49} + x^{48} + x^{46} + x^{44} + x^{42}, \\
p_3(x) &= x^{131} + x^{129} + x^{127} + x^{126} + x^{125} + x^{124} + x^{123} + x^{122} + x^{120} + x^{118} \\
&+ x^{115} + x^{111} + x^{109} + x^{107} + x^{106} + x^{105} + x^{104} + x^{102} + x^{100} \\
&+ x^{98} + x^{95} + x^{94} + x^{93} + x^{92} + x^{91} + x^{89} + x^{87} + x^{86} + x^{85} + x^{84} \\
&+ x^{82} + x^{81} + x^{80} + x^{78} + x^{74} + x^{72} + x^{71} + x^{70} + x^{69} + x^{66} + x^{65} \\
&+ x^{64} + x^{56} + x^{54} + x^{52} + x^{51} + x^{48} + x^{46} + x^{43} + x^{38} + x^{36} + x^{35} \\
&+ x^{34} + x^{33} + x^{32} + x^{30} + x^{28} + x^{26}, \\
p_6(x) &= x^{143} + x^{141} + x^{139} + x^{138} + x^{136} + x^{135} + x^{134} + x^{133} + x^{131} + x^{130} \\
&+ x^{129} + x^{128} + x^{124} + x^{118} + x^{117} + x^{114} + x^{113} + x^{112} + x^{106} \\
&+ x^{104} + x^{102} + x^{101} + x^{100} + x^{98} + x^{97} + x^{94} + x^{92} + x^{90} + x^{89} \\
&+ x^{88} + x^{84} + x^{83} + x^{81} + x^{77} + x^{73} + x^{71} + x^{70} + x^{67} + x^{66} + x^{65} \\
&+ x^{64} + x^{63} + x^{62} + x^{56} + x^{55} + x^{54} + x^{52} + x^{51} + x^{50} + x^{49} + x^{46} \\
&+ x^{45} + x^{42} + x^{41} + x^{40} + x^{39} + x^{37} + x^{36} + x^{34} + x^{32} + x^{30} + x^{29} \\
&+ x^{28} + x^{27} + x^{26} + x^{25} + x^{23} + x^{22} + x^{21} + x^{18} + x^{16} + x^{15} + x^{14} \\
&+ x^{13} + x^{10} + x^{8} + x^{7} + x^{5} + x^{2} + 1, \\
p_9(x) &= x^{131} + x^{129} + x^{126} + x^{124} + x^{99} + x^{97} + x^{94} + x^{92} + x^{67} + x^{65} + x^{62} \\
&+ x^{60} + x^{51} + x^{49} + x^{46} + x^{44} + x^{19} + x^{17} + x^{14} + x^{12}, \\
p_{12}(x) &= x^{147} + x^{145} + x^{142} + x^{140} + x^{139} + x^{137} + x^{134} + x^{132} + x^{131} + x^{129} \\
&+ x^{127} + x^{126} + x^{125} + x^{124} + x^{122} + x^{120} + x^{119} + x^{117} + x^{115} \\
&+ x^{114} + x^{113} + x^{112} + x^{110} + x^{108} + x^{107} + x^{105} + x^{102} + x^{100}
\end{aligned}
$$

$$+ x^{99} + x^{97} + x^{95} + x^{94} + x^{93} + x^{92} + x^{90} + x^{88} + x^{87} + x^{85} + x^{83}$$
$$+ x^{82} + x^{81} + x^{80} + x^{78} + x^{76} + x^{75} + x^{73} + x^{70} + x^{68} + x^{63} + x^{61}$$
$$+ x^{59} + x^{58} + x^{57} + x^{56} + x^{55} + x^{54} + x^{53} + x^{52} + x^{51} + x^{50} + x^{49}$$
$$+ x^{48} + x^{47} + x^{46} + x^{45} + x^{44} + x^{42} + x^{40} + x^{39} + x^{37} + x^{35} + x^{34}$$
$$+ x^{33} + x^{32} + x^{30} + x^{28} + x^{27} + x^{25} + x^{22} + x^{20} + x^{19} + x^{17} + x^{15}$$
$$+ x^{14} + x^{13} + x^{12} + x^{10} + x^{8} + x^{7} + x^{5} + x^{2} + 1,$$

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

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

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

n	$\Lambda(n)$	n	$\Lambda(n)$	n	$\Lambda(n)$	n	$\Lambda(n)$
0	[1, 2]	1045	[1509, 1735]	2090	[2915, 566]	3135	[3712, 291]
1	[3, 4]	1046	[1736, 1583]	2091	[436, 2916]	3136	[3713, 330]
2	[5, 6]	1047	[716, 1470]	2092	[2917, 2918]	3137	[2481, 2783]
3	[7, 8]	1048	[1737, 1578]	2093	[1505, 2919]	3138	[1318, 3714]
4	[9, 10]	1049	[590, 1738]	2094	[2920, 2921]	3139	[1304, 2814]
5	[11, 12]	1050	[1739, 1740]	2095	[1855, 1886]	3140	[3715, 2688]
6	[13, 14]	1051	[461, 1741]	2096	[2922, 1465]	3141	[3716, 3717]
7	[15, 16]	1052	[1742, 678]	2097	[2923, 2924]	3142	[1175, 3718]
8	[17, 18]	1053	[1743, 1744]	2098	[2925, 2926]	3143	[2255, 819]
9	[19, 20]	1054	[1745, 1746]	2099	[2927, 2928]	3144	[348, 2372]
10	[21, 22]	1055	[1747, 1748]	2100	[532, 2929]	3145	[2733, 1001]
11	[23, 24]	1056	[1720, 1475]	2101	[2930, 1869]	3146	[966, 2676]
12	[25, 26]	1057	[1443, 562]	2102	[1383, 2931]	3147	[3708, 909]
13	[27, 28]	1058	[1749, 1750]	2103	[2932, 1749]	3148	[2626, 2393]
14	[29, 30]	1059	[1751, 1752]	2104	[1825, 1934]	3149	[3719, 3720]
15	[31, 32]	1060	[1753, 1754]	2105	[1475, 2933]	3150	[2827, 278]
16	[33, 34]	1061	[1755, 1756]	2106	[2934, 2935]	3151	[2692, 3609]
17	[35, 36]	1062	[1757, 1732]	2107	[1546, 1574]	3152	[233, 3721]
18	[37, 38]	1063	[1758, 1759]	2108	[2936, 2937]	3153	[2520, 2802]
19	[39, 40]	1064	[1715, 1760]	2109	[630, 2938]	3154	[1309, 3722]
20	[41, 42]	1065	[1761, 1762]	2110	[2939, 2940]	3155	[3723, 1058]
21	[43, 44]	1066	[482, 168]	2111	[2941, 2942]	3156	[3724, 3725]
22	[45, 46]	1067	[1663, 1763]	2112	[2943, 1332]	3157	[3726, 3625]
23	[47, 48]	1068	[1764, 1765]	2113	[1385, 747]	3158	[3568, 2577]
24	[49, 46]	1069	[1766, 1767]	2114	[2944, 1519]	3159	[99, 3609]
25	[50, 51]	1070	[567, 1768]	2115	[2945, 2946]	3160	[2785, 3727]
26	[52, 53]	1071	[1769, 1770]	2116	[2947, 1826]	3161	[3728, 3729]
27	[33, 54]	1072	[1771, 514]	2117	[1526, 2025]	3162	[3644, 3730]
28	[55, 56]	1073	[1772, 1703]	2118	[2948, 2949]	3163	[2476, 3731]
29	[57, 58]	1074	[1773, 1774]	2119	[2950, 2951]	3164	[3732, 75]
30	[59, 60]	1075	[1540, 1775]	2120	[1945, 470]	3165	[2764, 3733]

31	[61, 62]	1076	[1677, 1776]	2121	[1875, 2952]	3166	[927, 235]
32	[63, 64]	1077	[704, 194]	2122	[2953, 2954]	3167	[92, 279]
33	[65, 66]	1078	[1777, 1778]	2123	[2955, 2956]	3168	[2185, 849]
34	[67, 68]	1079	[1779, 728]	2124	[2957, 2958]	3169	[862, 2908]
35	[69, 70]	1080	[193, 705]	2125	[1375, 1402]	3170	[3734, 1254]
36	[71, 72]	1081	[185, 1780]	2126	[1984, 2931]	3171	[2496, 3735]
37	[73, 74]	1082	[1781, 1782]	2127	[2959, 2960]	3172	[1116, 2298]
38	[75, 76]	1083	[1783, 1784]	2128	[2961, 451]	3173	[3736, 3737]
39	[77, 78]	1084	[1785, 1786]	2129	[580, 1822]	3174	[2387, 3738]
40	[79, 80]	1085	[1787, 1788]	2130	[1709, 453]	3175	[400, 88]
41	[81, 82]	1086	[1789, 1790]	2131	[444, 1448]	3176	[3554, 3739]
42	[83, 84]	1087	[1791, 1792]	2132	[1704, 2962]	3177	[3740, 2673]
43	[85, 86]	1088	[1431, 1793]	2133	[453, 2963]	3178	[2254, 116]
44	[87, 88]	1089	[1794, 1401]	2134	[2964, 2073]	3179	[3540, 3741]
45	[89, 90]	1090	[1795, 1472]	2135	[1894, 2965]	3180	[1063, 3742]
46	[91, 92]	1091	[1796, 1797]	2136	[1414, 720]	3181	[2560, 3729]
47	[93, 94]	1092	[1798, 625]	2137	[1467, 2002]	3182	[3530, 353]
48	[95, 96]	1093	[1799, 1800]	2138	[2966, 2967]	3183	[3743, 3744]
49	[97, 98]	1094	[495, 1801]	2139	[695, 726]	3184	[3745, 3746]
50	[99, 100]	1095	[1802, 1803]	2140	[2968, 1364]	3185	[1189, 2310]
51	[29, 101]	1096	[1804, 1805]	2141	[1357, 2969]	3186	[3570, 1316]
52	[102, 103]	1097	[1806, 56]	2142	[1371, 1717]	3187	[361, 2889]
53	[104, 26]	1098	[669, 1807]	2143	[2970, 1852]	3188	[247, 3747]
54	[105, 106]	1099	[1408, 1808]	2144	[476, 2971]	3189	[21, 1039]
55	[107, 108]	1100	[1809, 1810]	2145	[2972, 504]	3190	[3748, 2699]
56	[109, 110]	1101	[1811, 1812]	2146	[1888, 1975]	3191	[3749, 817]
57	[111, 112]	1102	[1813, 1814]	2147	[2973, 2974]	3192	[2598, 787]
58	[113, 114]	1103	[1815, 1816]	2148	[2975, 2976]	3193	[3743, 3750]
59	[115, 116]	1104	[1817, 1818]	2149	[2977, 2978]	3194	[3751, 2144]
60	[117, 118]	1105	[1819, 1820]	2150	[2979, 2060]	3195	[2560, 3752]
61	[119, 120]	1106	[1821, 1822]	2151	[157, 2980]	3196	[2728, 3753]
62	[121, 122]	1107	[1823, 1824]	2152	[493, 2976]	3197	[309, 285]
63	[123, 124]	1108	[1825, 750]	2153	[633, 1778]	3198	[3754, 2832]
64	[125, 126]	1109	[1826, 1827]	2154	[2979, 1413]	3199	[3755, 417]
65	[127, 128]	1110	[524, 1828]	2155	[442, 1365]	3200	[3756, 2866]
66	[129, 130]	1111	[1829, 1830]	2156	[1581, 8]	3201	[2171, 2863]
67	[131, 132]	1112	[1831, 618]	2157	[198, 1971]	3202	[3757, 933]
68	[133, 134]	1113	[1832, 1807]	2158	[1993, 2966]	3203	[2602, 3758]
69	[135, 136]	1114	[1833, 749]	2159	[2981, 2982]	3204	[3759, 2729]
70	[137, 138]	1115	[1632, 549]	2160	[2983, 2919]	3205	[800, 2244]
71	[139, 140]	1116	[1415, 1834]	2161	[2984, 2985]	3206	[997, 3760]
72	[141, 142]	1117	[1835, 1836]	2162	[2986, 2987]	3207	[1011, 3761]
73	[143, 144]	1118	[1418, 1837]	2163	[2988, 496]	3208	[3762, 1197]
74	[145, 146]	1119	[1838, 1839]	2164	[2989, 124]	3209	[2407, 3583]

75	[147, 148]	1120	[642, 1840]	2165	[1382, 1420]	3210	[3763, 3764]
76	[149, 150]	1121	[1841, 1842]	2166	[1386, 2990]	3211	[3765, 3766]
77	[151, 152]	1122	[1432, 1843]	2167	[1831, 2991]	3212	[2779, 2909]
78	[153, 52]	1123	[204, 1844]	2168	[733, 2992]	3213	[3767, 3768]
79	[154, 40]	1124	[1845, 1846]	2169	[2993, 2994]	3214	[1008, 3769]
80	[155, 156]	1125	[1847, 1848]	2170	[579, 697]	3215	[2417, 3770]
81	[157, 158]	1126	[1849, 1850]	2171	[694, 445]	3216	[2704, 3771]
82	[159, 160]	1127	[1851, 1852]	2172	[699, 2995]	3217	[3772, 1026]
83	[161, 162]	1128	[1853, 1854]	2173	[50, 1965]	3218	[2242, 787]
84	[163, 164]	1129	[1855, 1856]	2174	[1565, 481]	3219	[3704, 3596]
85	[165, 166]	1130	[1857, 1858]	2175	[2958, 1738]	3220	[969, 3773]
86	[167, 168]	1131	[1589, 688]	2176	[1567, 2996]	3221	[3774, 2830]
87	[169, 170]	1132	[1859, 1856]	2177	[507, 2997]	3222	[2267, 339]
88	[171, 172]	1133	[471, 1860]	2178	[2998, 457]	3223	[3775, 3634]
89	[173, 174]	1134	[1861, 1862]	2179	[764, 2999]	3224	[3661, 409]
90	[175, 176]	1135	[1863, 1864]	2180	[3000, 1422]	3225	[1175, 3776]
91	[177, 178]	1136	[677, 1865]	2181	[3001, 508]	3226	[952, 1011]
92	[179, 180]	1137	[1400, 1866]	2182	[3002, 3003]	3227	[1134, 3777]
93	[181, 182]	1138	[1867, 1868]	2183	[3004, 1339]	3228	[2582, 3778]
94	[183, 184]	1139	[1869, 1870]	2184	[3005, 1842]	3229	[2096, 3779]
95	[185, 186]	1140	[1404, 213]	2185	[1606, 1446]	3230	[2647, 3780]
96	[187, 188]	1141	[1871, 1872]	2186	[3006, 1621]	3231	[782, 3578]
97	[189, 190]	1142	[1873, 1874]	2187	[214, 1996]	3232	[3781, 2396]
98	[191, 192]	1143	[1875, 1876]	2188	[2003, 3007]	3233	[1066, 2294]
99	[193, 194]	1144	[1877, 1826]	2189	[3008, 1360]	3234	[3782, 2366]
100	[195, 196]	1145	[1878, 1680]	2190	[3009, 1416]	3235	[3783, 905]
101	[197, 198]	1146	[1879, 1880]	2191	[1419, 3010]	3236	[3784, 3785]
102	[199, 200]	1147	[1881, 464]	2192	[2019, 3011]	3237	[3786, 3546]
103	[201, 201]	1148	[1882, 1883]	2193	[2943, 3012]	3238	[2878, 2089]
104	[202, 203]	1149	[1884, 1885]	2194	[3013, 3014]	3239	[2658, 3787]
105	[204, 205]	1150	[1859, 1886]	2195	[3015, 3016]	3240	[3655, 1151]
106	[206, 207]	1151	[1631, 465]	2196	[1950, 3017]	3241	[3788, 1040]
107	[208, 209]	1152	[1887, 1551]	2197	[569, 597]	3242	[2552, 2260]
108	[210, 211]	1153	[1888, 1889]	2198	[3018, 3019]	3243	[3705, 3789]
109	[212, 213]	1154	[1492, 1890]	2199	[1668, 1868]	3244	[3757, 3555]
110	[214, 60]	1155	[1891, 11]	2200	[3002, 1340]	3245	[2649, 2367]
111	[215, 216]	1156	[655, 1892]	2201	[3020, 3021]	3246	[242, 3790]
112	[145, 217]	1157	[454, 1415]	2202	[576, 3022]	3247	[2292, 2532]
113	[218, 219]	1158	[1893, 1894]	2203	[719, 3023]	3248	[828, 1155]
114	[220, 221]	1159	[1795, 1895]	2204	[1952, 3024]	3249	[347, 2764]
115	[222, 223]	1160	[1896, 1897]	2205	[2001, 3025]	3250	[1205, 3791]
116	[224, 225]	1161	[1898, 1899]	2206	[1745, 3026]	3251	[3792, 2643]
117	[226, 205]	1162	[1900, 1889]	2207	[3027, 3028]	3252	[2737, 3787]
118	[227, 228]	1163	[1901, 158]	2208	[3029, 3030]	3253	[3555, 2490]

119	[229, 230]	1164	[161, 1902]	2209	[3031, 3032]	3254	[1108, 2230]
120	[231, 232]	1165	[1903, 695]	2210	[3012, 3033]	3255	[2870, 3793]
121	[233, 234]	1166	[1904, 1905]	2211	[1414, 3023]	3256	[1022, 3794]
122	[235, 236]	1167	[1906, 1907]	2212	[3034, 3035]	3257	[369, 3795]
123	[237, 238]	1168	[1908, 1909]	2213	[3036, 3037]	3258	[3796, 3797]
124	[239, 240]	1169	[1910, 577]	2214	[1503, 2019]	3259	[2784, 2514]
125	[241, 242]	1170	[1911, 1786]	2215	[1998, 1968]	3260	[3798, 1153]
126	[243, 244]	1171	[1757, 1692]	2216	[3038, 3039]	3261	[3799, 2455]
127	[245, 246]	1172	[1912, 1913]	2217	[3040, 736]	3262	[1121, 3800]
128	[247, 248]	1173	[605, 477]	2218	[3041, 3042]	3263	[3801, 289]
129	[249, 250]	1174	[181, 1914]	2219	[1802, 1337]	3264	[3638, 3802]
130	[251, 252]	1175	[1915, 584]	2220	[1887, 1480]	3265	[3715, 3803]
131	[253, 254]	1176	[1916, 1917]	2221	[3043, 1860]	3266	[2260, 1078]
132	[255, 256]	1177	[1918, 1659]	2222	[1598, 176]	3267	[2297, 3804]
133	[257, 258]	1178	[1919, 1920]	2223	[1829, 48]	3268	[3598, 2318]
134	[4, 259]	1179	[534, 1885]	2224	[3044, 1485]	3269	[3805, 2277]
135	[260, 261]	1180	[1921, 1922]	2225	[2071, 2956]	3270	[3806, 2342]
136	[262, 263]	1181	[8, 1923]	2226	[2006, 1614]	3271	[3690, 3807]
137	[264, 265]	1182	[1924, 1925]	2227	[3045, 3046]	3272	[2293, 3808]
138	[86, 111]	1183	[1926, 1927]	2228	[3047, 178]	3273	[3809, 915]
139	[266, 267]	1184	[1928, 1911]	2229	[3048, 547]	3274	[2650, 2758]
140	[268, 269]	1185	[1929, 1930]	2230	[544, 755]	3275	[2258, 3810]
141	[270, 271]	1186	[1931, 1932]	2231	[750, 3049]	3276	[3811, 3812]
142	[272, 273]	1187	[562, 1933]	2232	[452, 1383]	3277	[2528, 413]
143	[274, 275]	1188	[1465, 1934]	2233	[3050, 34]	3278	[2757, 2507]
144	[276, 277]	1189	[1935, 1936]	2234	[183, 1933]	3279	[2287, 3813]
145	[278, 279]	1190	[1937, 1938]	2235	[3051, 672]	3280	[3814, 3641]
146	[280, 281]	1191	[499, 1939]	2236	[3052, 3053]	3281	[2761, 3815]
147	[282, 283]	1192	[1349, 1940]	2237	[3054, 3055]	3282	[1295, 255]
148	[284, 285]	1193	[1477, 1941]	2238	[668, 3056]	3283	[3816, 2410]
149	[286, 287]	1194	[208, 1942]	2239	[3057, 1523]	3284	[2180, 823]
150	[288, 289]	1195	[760, 516]	2240	[1613, 3058]	3285	[3798, 2484]
151	[290, 291]	1196	[217, 737]	2241	[3026, 3059]	3286	[3748, 3817]
152	[292, 293]	1197	[645, 1943]	2242	[165, 1619]	3287	[2158, 1195]
153	[294, 295]	1198	[740, 1944]	2243	[3060, 1441]	3288	[3666, 890]
154	[296, 297]	1199	[1945, 1946]	2244	[1908, 3061]	3289	[901, 2521]
155	[298, 292]	1200	[1912, 1947]	2245	[3062, 3063]	3290	[3747, 97]
156	[78, 299]	1201	[1948, 1949]	2246	[3064, 3065]	3291	[2826, 91]
157	[300, 301]	1202	[1950, 773]	2247	[3066, 3067]	3292	[2458, 2421]
158	[302, 303]	1203	[1951, 1952]	2248	[3068, 128]	3293	[1228, 3818]
159	[304, 305]	1204	[707, 1953]	2249	[570, 3069]	3294	[327, 3561]
160	[117, 306]	1205	[1841, 1954]	2250	[3070, 573]	3295	[3819, 343]
161	[307, 308]	1206	[1955, 1956]	2251	[1464, 1825]	3296	[2544, 3820]
162	[309, 310]	1207	[1957, 603]	2252	[3071, 3072]	3297	[3821, 3822]

163	[311, 312]	1208	[1958, 1367]	2253	[3073, 3074]	3298	[2173, 104]
164	[313, 314]	1209	[1929, 1959]	2254	[3075, 3071]	3299	[990, 3823]
165	[315, 316]	1210	[1515, 575]	2255	[3076, 3073]	3300	[2408, 336]
166	[317, 318]	1211	[1381, 1419]	2256	[1896, 3077]	3301	[276, 1291]
167	[319, 320]	1212	[1806, 1960]	2257	[505, 3078]	3302	[2616, 956]
168	[321, 322]	1213	[1961, 1948]	2258	[3079, 3052]	3303	[1271, 3824]
169	[323, 324]	1214	[1962, 1963]	2259	[3080, 3081]	3304	[2601, 1061]
170	[325, 326]	1215	[1964, 1965]	2260	[1399, 3082]	3305	[3825, 2868]
171	[327, 328]	1216	[1655, 200]	2261	[3083, 2064]	3306	[3826, 3827]
172	[329, 330]	1217	[155, 151]	2262	[741, 3084]	3307	[3623, 3828]
173	[331, 332]	1218	[700, 202]	2263	[2065, 3085]	3308	[3682, 3829]
174	[333, 334]	1219	[200, 556]	2264	[3086, 1533]	3309	[3830, 2607]
175	[335, 336]	1220	[1966, 1461]	2265	[1360, 3087]	3310	[2385, 3831]
176	[337, 338]	1221	[1967, 1968]	2266	[1718, 42]	3311	[3832, 3833]
177	[339, 340]	1222	[1969, 466]	2267	[1484, 3088]	3312	[911, 63]
178	[341, 342]	1223	[1970, 542]	2268	[3089, 3090]	3313	[2460, 1173]
179	[343, 344]	1224	[1566, 1971]	2269	[771, 3064]	3314	[3834, 877]
180	[255, 345]	1225	[458, 1652]	2270	[3091, 3092]	3315	[3835, 2520]
181	[346, 347]	1226	[1588, 612]	2271	[3093, 3094]	3316	[2818, 87]
182	[348, 349]	1227	[1972, 1973]	2272	[3095, 642]	3317	[3836, 415]
183	[350, 351]	1228	[1974, 1528]	2273	[1580, 3096]	3318	[2873, 3582]
184	[352, 353]	1229	[1900, 1975]	2274	[3097, 1858]	3319	[2118, 958]
185	[354, 316]	1230	[1796, 611]	2275	[3098, 3099]	3320	[1104, 403]
186	[230, 355]	1231	[1976, 1977]	2276	[3100, 2913]	3321	[3608, 3837]
187	[356, 357]	1232	[1978, 1979]	2277	[1710, 2963]	3322	[1160, 2592]
188	[358, 359]	1233	[557, 1980]	2278	[1871, 3101]	3323	[3797, 2648]
189	[360, 361]	1234	[1981, 1982]	2279	[2051, 1942]	3324	[2679, 2273]
190	[362, 363]	1235	[616, 1983]	2280	[448, 3102]	3325	[861, 3838]
191	[364, 365]	1236	[1984, 1384]	2281	[1365, 1706]	3326	[3839, 2356]
192	[366, 367]	1237	[697, 126]	2282	[120, 3101]	3327	[3840, 3615]
193	[368, 369]	1238	[1985, 1986]	2283	[3103, 1537]	3328	[1157, 3622]
194	[370, 371]	1239	[1987, 1988]	2284	[3104, 1938]	3329	[3841, 3842]
195	[372, 373]	1240	[1989, 1990]	2285	[1538, 528]	3330	[3843, 2405]
196	[374, 375]	1241	[1835, 1991]	2286	[3105, 605]	3331	[3844, 3671]
197	[376, 377]	1242	[1770, 1992]	2287	[3106, 3107]	3332	[2687, 3803]
198	[378, 379]	1243	[1993, 1994]	2288	[524, 3108]	3333	[1026, 2879]
199	[380, 381]	1244	[131, 1608]	2289	[3109, 3110]	3334	[280, 3845]
200	[382, 383]	1245	[1504, 1995]	2290	[3080, 1458]	3335	[892, 3846]
201	[384, 385]	1246	[59, 1996]	2291	[3110, 3111]	3336	[845, 3847]
202	[386, 104]	1247	[1997, 8]	2292	[1814, 1657]	3337	[103, 3848]
203	[387, 388]	1248	[1998, 1999]	2293	[3112, 3113]	3338	[2223, 365]
204	[389, 390]	1249	[1387, 1365]	2294	[1510, 3114]	3339	[3749, 839]
205	[391, 392]	1250	[2000, 730]	2295	[2077, 3115]	3340	[3849, 3586]
206	[300, 393]	1251	[1958, 2001]	2296	[3116, 500]	3341	[2817, 1230]

207	[394, 395]	1252	[722, 2002]	2297	[3117, 1780]	3342	[2141, 3850]
208	[396, 397]	1253	[2003, 1391]	2298	[3118, 3016]	3343	[3851, 3852]
209	[398, 399]	1254	[2004, 2005]	2299	[3119, 1413]	3344	[3853, 3854]
210	[400, 401]	1255	[1710, 454]	2300	[3120, 3108]	3345	[3855, 1008]
211	[402, 403]	1256	[1708, 1837]	2301	[3121, 3122]	3346	[1200, 2402]
212	[404, 405]	1257	[2006, 2007]	2302	[3123, 3124]	3347	[3856, 2113]
213	[406, 407]	1258	[2008, 2009]	2303	[3125, 3126]	3348	[861, 850]
214	[408, 409]	1259	[1775, 1769]	2304	[1585, 3127]	3349	[3857, 3858]
215	[410, 411]	1260	[2010, 765]	2305	[1665, 754]	3350	[2864, 943]
216	[412, 413]	1261	[768, 2011]	2306	[3118, 3128]	3351	[3796, 2647]
217	[414, 415]	1262	[517, 2012]	2307	[3129, 3130]	3352	[413, 2902]
218	[416, 417]	1263	[1344, 2013]	2308	[3131, 639]	3353	[3658, 3859]
219	[370, 418]	1264	[1771, 2014]	2309	[635, 3063]	3354	[3860, 1245]
220	[419, 420]	1265	[2015, 1340]	2310	[1488, 1936]	3355	[1035, 959]
221	[308, 421]	1266	[2016, 1627]	2311	[1937, 3132]	3356	[1289, 2397]
222	[422, 280]	1267	[1644, 1937]	2312	[1491, 3133]	3357	[3592, 3550]
223	[423, 424]	1268	[1469, 717]	2313	[610, 1797]	3358	[941, 3747]
224	[425, 426]	1269	[2017, 643]	2314	[1799, 675]	3359	[102, 2841]
225	[427, 428]	1270	[2018, 2019]	2315	[1798, 1926]	3360	[2689, 3861]
226	[429, 378]	1271	[2020, 1445]	2316	[1576, 3134]	3361	[391, 869]
227	[430, 431]	1272	[665, 1698]	2317	[3135, 1512]	3362	[412, 2529]
228	[432, 433]	1273	[2021, 2022]	2318	[712, 1497]	3363	[3862, 3863]
229	[434, 435]	1274	[2023, 1793]	2319	[3136, 3137]	3364	[3736, 3864]
230	[436, 437]	1275	[2024, 2025]	2320	[3138, 656]	3365	[1279, 3532]
231	[438, 439]	1276	[1551, 2026]	2321	[3139, 2991]	3366	[3730, 3753]
232	[440, 441]	1277	[2027, 1554]	2322	[3051, 3140]	3367	[2840, 103]
233	[442, 443]	1278	[2028, 2029]	2323	[3141, 3142]	3368	[2792, 2331]
234	[444, 445]	1279	[2030, 2031]	2324	[3143, 3144]	3369	[2636, 370]
235	[446, 447]	1280	[2032, 2033]	2325	[3145, 2039]	3370	[3865, 3536]
236	[448, 449]	1281	[222, 2034]	2326	[3146, 55]	3371	[2515, 3866]
237	[123, 450]	1282	[2035, 1724]	2327	[1350, 3147]	3372	[94, 3867]
238	[451, 452]	1283	[2036, 1425]	2328	[3148, 1625]	3373	[3868, 246]
239	[453, 454]	1284	[2037, 2038]	2329	[3149, 3150]	3374	[381, 2683]
240	[455, 456]	1285	[1680, 2039]	2330	[3151, 3152]	3375	[2575, 2429]
241	[457, 210]	1286	[1934, 751]	2331	[1441, 1722]	3376	[3869, 2599]
242	[458, 459]	1287	[2040, 2041]	2332	[1465, 750]	3377	[2798, 323]
243	[460, 461]	1288	[752, 2042]	2333	[1454, 3153]	3378	[1174, 3870]
244	[462, 463]	1289	[2043, 2044]	2334	[561, 183]	3379	[2758, 2615]
245	[464, 465]	1290	[1862, 2045]	2335	[2055, 3154]	3380	[3786, 3831]
246	[466, 467]	1291	[1563, 1598]	2336	[3155, 595]	3381	[3840, 3871]
247	[468, 189]	1292	[754, 2046]	2337	[729, 3156]	3382	[3872, 1139]
248	[469, 470]	1293	[2047, 2048]	2338	[3157, 3158]	3383	[2125, 2670]
249	[471, 472]	1294	[1746, 2049]	2339	[3159, 3160]	3384	[3542, 2787]
250	[177, 473]	1295	[2050, 639]	2340	[3161, 453]	3385	[3873, 362]

251	[474, 475]	1296	[2023, 1432]	2341	[3038, 1412]	3386	[2427, 1290]
252	[476, 477]	1297	[2051, 209]	2342	[3162, 3163]	3387	[1222, 3874]
253	[478, 479]	1298	[1429, 1623]	2343	[3164, 3165]	3388	[3841, 880]
254	[480, 481]	1299	[2052, 2053]	2344	[511, 3019]	3389	[3875, 3876]
255	[482, 483]	1300	[1599, 526]	2345	[3166, 1739]	3390	[3754, 3877]
256	[484, 485]	1301	[2054, 2021]	2346	[3167, 1756]	3391	[2525, 3599]
257	[486, 487]	1302	[2055, 2056]	2347	[1690, 1548]	3392	[1322, 3878]
258	[488, 489]	1303	[2057, 2058]	2348	[3168, 3043]	3393	[2833, 3879]
259	[490, 491]	1304	[1403, 1383]	2349	[3169, 3170]	3394	[3880, 3881]
260	[492, 458]	1305	[1340, 2059]	2350	[3171, 3172]	3395	[869, 2663]
261	[493, 494]	1306	[2060, 719]	2351	[1830, 1586]	3396	[2285, 3682]
262	[495, 496]	1307	[1423, 1713]	2352	[1810, 3173]	3397	[2741, 3882]
263	[497, 498]	1308	[2061, 2062]	2353	[2932, 584]	3398	[2334, 3883]
264	[499, 500]	1309	[1809, 2063]	2354	[3174, 615]	3399	[3884, 886]
265	[501, 502]	1310	[1557, 2064]	2355	[1504, 3011]	3400	[350, 3885]
266	[503, 504]	1311	[2065, 2066]	2356	[3175, 3176]	3401	[2136, 3886]
267	[505, 506]	1312	[2067, 2068]	2357	[2016, 3177]	3402	[3887, 2400]
268	[507, 508]	1313	[2069, 2070]	2358	[3178, 3179]	3403	[2156, 3714]
269	[509, 510]	1314	[2071, 2072]	2359	[2067, 3180]	3404	[3888, 347]
270	[511, 512]	1315	[2073, 32]	2360	[3181, 3182]	3405	[3889, 1013]
271	[513, 514]	1316	[2074, 1382]	2361	[178, 3183]	3406	[2901, 2305]
272	[515, 516]	1317	[1466, 1835]	2362	[1473, 1670]	3407	[2367, 2758]
273	[517, 518]	1318	[486, 2075]	2363	[2050, 1972]	3408	[371, 3890]
274	[519, 520]	1319	[2076, 1674]	2364	[549, 1943]	3409	[17, 2847]
275	[521, 522]	1320	[2077, 2031]	2365	[2004, 3099]	3410	[3740, 948]
276	[523, 524]	1321	[1607, 132]	2366	[2937, 1657]	3411	[2347, 3891]
277	[525, 526]	1322	[2078, 2079]	2367	[3140, 1636]	3412	[3892, 373]
278	[527, 528]	1323	[2080, 2081]	2368	[43, 1811]	3413	[3615, 2845]
279	[178, 529]	1324	[1616, 1456]	2369	[3100, 1869]	3414	[3586, 3893]
280	[530, 531]	1325	[2082, 687]	2370	[3184, 3185]	3415	[407, 3894]
281	[532, 533]	1326	[1670, 1502]	2371	[3186, 683]	3416	[3895, 1038]
282	[534, 535]	1327	[689, 2083]	2372	[583, 3187]	3417	[3896, 3562]
283	[536, 537]	1328	[697, 718]	2373	[1612, 3188]	3418	[2718, 2392]
284	[538, 539]	1329	[2084, 1986]	2374	[1643, 3189]	3419	[2878, 3707]
285	[540, 541]	1330	[36, 2085]	2375	[523, 3120]	3420	[835, 2555]
286	[542, 543]	1331	[2086, 2087]	2376	[3189, 3104]	3421	[1126, 1217]
287	[544, 545]	1332	[866, 2088]	2377	[3190, 1486]	3422	[386, 25]
288	[546, 547]	1333	[2089, 2090]	2378	[3191, 3182]	3423	[2349, 3897]
289	[548, 549]	1334	[2091, 2092]	2379	[3192, 3193]	3424	[3898, 2625]
290	[550, 154]	1335	[2093, 1281]	2380	[1833, 3194]	3425	[2301, 2510]
291	[39, 155]	1336	[323, 2094]	2381	[3115, 3195]	3426	[812, 2558]
292	[203, 551]	1337	[2095, 2096]	2382	[3196, 3197]	3427	[369, 3899]
293	[552, 550]	1338	[2097, 2098]	2383	[3198, 3199]	3428	[3900, 2705]
294	[553, 154]	1339	[349, 2099]	2384	[3200, 2942]	3429	[2797, 3901]

295	[200, 554]	1340	[798, 2100]	2385	[3201, 3202]	3430	[978, 2573]
296	[154, 155]	1341	[2101, 2102]	2386	[3060, 1633]	3431	[3902, 1038]
297	[555, 556]	1342	[2103, 2104]	2387	[1664, 582]	3432	[2828, 2228]
298	[151, 552]	1343	[2105, 1187]	2388	[539, 3203]	3433	[981, 3903]
299	[152, 550]	1344	[2106, 805]	2389	[620, 3204]	3434	[100, 3610]
300	[557, 558]	1345	[2107, 2108]	2390	[3121, 3205]	3435	[3904, 2609]
301	[559, 560]	1346	[1300, 2109]	2391	[1977, 3206]	3436	[1197, 3680]
302	[561, 562]	1347	[2110, 2111]	2392	[1731, 1576]	3437	[855, 2567]
303	[563, 150]	1348	[2112, 1192]	2393	[1754, 3207]	3438	[3593, 1274]
304	[564, 565]	1349	[1027, 2113]	2394	[3208, 3089]	3439	[3905, 2332]
305	[129, 566]	1350	[2114, 2115]	2395	[2988, 1801]	3440	[3825, 1227]
306	[567, 568]	1351	[1039, 2116]	2396	[171, 1932]	3441	[3906, 1034]
307	[569, 565]	1352	[2117, 945]	2397	[3209, 3210]	3442	[258, 68]
308	[570, 571]	1353	[2118, 2119]	2398	[735, 3211]	3443	[425, 895]
309	[572, 573]	1354	[2120, 2121]	2399	[1534, 3212]	3444	[2718, 2626]
310	[149, 574]	1355	[2122, 2123]	2400	[630, 1529]	3445	[2183, 3678]
311	[575, 576]	1356	[2124, 996]	2401	[3213, 2940]	3446	[3907, 3908]
312	[577, 578]	1357	[2125, 2126]	2402	[1532, 3214]	3447	[3909, 3897]
313	[579, 125]	1358	[877, 2127]	2403	[2030, 3115]	3448	[916, 2750]
314	[580, 581]	1359	[2128, 2129]	2404	[1967, 1999]	3449	[923, 1283]
315	[582, 583]	1360	[2130, 2131]	2405	[224, 3215]	3450	[2597, 1004]
316	[584, 585]	1361	[2132, 2133]	2406	[3216, 2034]	3451	[1080, 927]
317	[586, 587]	1362	[2134, 2135]	2407	[576, 1992]	3452	[20, 2498]
318	[588, 589]	1363	[341, 2136]	2408	[1918, 3217]	3453	[2220, 3675]
319	[590, 591]	1364	[2137, 2138]	2409	[3218, 3191]	3454	[3910, 3878]
320	[592, 593]	1365	[2139, 2140]	2410	[45, 622]	3455	[3755, 3911]
321	[594, 129]	1366	[797, 2141]	2411	[3219, 1728]	3456	[3912, 2280]
322	[595, 596]	1367	[2142, 2143]	2412	[3178, 3220]	3457	[241, 3702]
323	[564, 597]	1368	[1311, 2144]	2413	[3024, 2958]	3458	[2340, 3913]
324	[598, 599]	1369	[2145, 377]	2414	[3109, 1597]	3459	[3914, 3915]
325	[600, 601]	1370	[1136, 2146]	2415	[1639, 3144]	3460	[3844, 3916]
326	[602, 603]	1371	[2147, 2148]	2416	[1715, 3221]	3461	[3680, 1036]
327	[604, 605]	1372	[2149, 2150]	2417	[1577, 3222]	3462	[62, 3917]
328	[606, 607]	1373	[2151, 2152]	2418	[3223, 1614]	3463	[3918, 3919]
329	[608, 609]	1374	[2153, 2154]	2419	[3224, 3179]	3464	[3920, 280]
330	[610, 611]	1375	[2155, 814]	2420	[684, 3225]	3465	[2524, 374]
331	[612, 613]	1376	[2156, 821]	2421	[3226, 3034]	3466	[289, 3590]
332	[614, 615]	1377	[2157, 851]	2422	[3169, 3089]	3467	[3921, 1022]
333	[616, 617]	1378	[2158, 2137]	2423	[1598, 3227]	3468	[3549, 3593]
334	[618, 619]	1379	[2159, 2160]	2424	[1583, 3228]	3469	[3922, 1317]
335	[620, 621]	1380	[2161, 2162]	2425	[3229, 3230]	3470	[86, 3923]
336	[49, 622]	1381	[831, 2163]	2426	[1446, 3231]	3471	[3924, 1063]
337	[623, 624]	1382	[1211, 2164]	2427	[627, 1563]	3472	[2674, 3851]
338	[625, 626]	1383	[813, 2165]	2428	[1336, 1803]	3473	[3925, 3926]

339	[627, 628]	1384	[801, 2166]	2429	[1827, 1979]	3474	[1302, 3722]
340	[629, 630]	1385	[2167, 374]	2430	[3232, 3233]	3475	[2485, 2416]
341	[631, 632]	1386	[2168, 2169]	2431	[3122, 3234]	3476	[959, 862]
342	[633, 634]	1387	[2170, 344]	2432	[2986, 1808]	3477	[3920, 1075]
343	[635, 636]	1388	[2171, 244]	2433	[3235, 3077]	3478	[1316, 3927]
344	[637, 638]	1389	[1237, 2172]	2434	[3236, 3237]	3479	[1205, 1003]
345	[639, 640]	1390	[2173, 25]	2435	[3167, 3238]	3480	[3928, 3929]
346	[641, 642]	1391	[2174, 2175]	2436	[3239, 3240]	3481	[3930, 3931]
347	[643, 545]	1392	[415, 2176]	2437	[3241, 1556]	3482	[2362, 1002]
348	[644, 571]	1393	[2177, 2178]	2438	[1904, 1762]	3483	[2206, 3932]
349	[548, 645]	1394	[2179, 2180]	2439	[3242, 3243]	3484	[3933, 848]
350	[646, 647]	1395	[2181, 2182]	2440	[2914, 3244]	3485	[3934, 3935]
351	[648, 649]	1396	[2183, 1211]	2441	[3235, 1897]	3486	[3936, 3870]
352	[650, 544]	1397	[1197, 2184]	2442	[3245, 1353]	3487	[3937, 3938]
353	[651, 652]	1398	[95, 2175]	2443	[1697, 666]	3488	[3939, 2803]
354	[653, 654]	1399	[2185, 861]	2444	[3174, 3246]	3489	[3940, 2297]
355	[655, 656]	1400	[2186, 802]	2445	[3247, 1644]	3490	[3941, 398]
356	[657, 658]	1401	[2133, 2187]	2446	[3248, 3249]	3491	[2544, 2744]
357	[659, 660]	1402	[2188, 433]	2447	[3250, 3061]	3492	[376, 1044]
358	[661, 662]	1403	[783, 1210]	2448	[3251, 3252]	3493	[2102, 1159]
359	[663, 664]	1404	[2189, 2190]	2449	[1507, 439]	3494	[3942, 3943]
360	[665, 666]	1405	[1073, 2191]	2450	[3253, 1571]	3495	[3944, 1317]
361	[667, 668]	1406	[325, 2192]	2451	[3254, 1433]	3496	[3702, 3608]
362	[669, 670]	1407	[2193, 2194]	2452	[574, 1855]	3497	[3565, 339]
363	[227, 671]	1408	[823, 2195]	2453	[1793, 3255]	3498	[2268, 3945]
364	[672, 673]	1409	[2196, 1305]	2454	[1853, 1672]	3499	[3653, 3921]
365	[674, 675]	1410	[1107, 2197]	2455	[1879, 3256]	3500	[3925, 3915]
366	[676, 677]	1411	[2198, 835]	2456	[1990, 3257]	3501	[3946, 3947]
367	[678, 679]	1412	[2199, 2200]	2457	[1536, 3258]	3502	[3591, 426]
368	[680, 681]	1413	[2101, 1158]	2458	[2936, 1814]	3503	[2776, 855]
369	[682, 683]	1414	[1224, 2201]	2459	[3259, 3212]	3504	[3877, 2836]
370	[667, 684]	1415	[2202, 2203]	2460	[3213, 3260]	3505	[2636, 1324]
371	[685, 595]	1416	[2204, 2205]	2461	[3261, 3180]	3506	[3948, 379]
372	[686, 687]	1417	[2206, 2207]	2462	[2968, 1711]	3507	[3949, 3903]
373	[612, 688]	1418	[2208, 2209]	2463	[3262, 1450]	3508	[3950, 2398]
374	[689, 690]	1419	[1253, 2210]	2464	[1753, 3034]	3509	[3783, 3951]
375	[691, 692]	1420	[2163, 2211]	2465	[1691, 1484]	3510	[3952, 2826]
376	[693, 694]	1421	[1142, 2212]	2466	[3208, 3170]	3511	[2614, 1102]
377	[695, 462]	1422	[1258, 2213]	2467	[3263, 174]	3512	[3953, 1211]
378	[696, 697]	1423	[2214, 2215]	2468	[2922, 1825]	3513	[3954, 2254]
379	[698, 699]	1424	[2216, 2217]	2469	[3171, 3264]	3514	[3745, 1008]
380	[700, 153]	1425	[2218, 2219]	2470	[3265, 1699]	3515	[1198, 2292]
381	[52, 551]	1426	[2220, 838]	2471	[587, 753]	3516	[3536, 1229]
382	[701, 202]	1427	[2221, 2222]	2472	[3266, 3267]	3517	[3955, 3932]

383	[152, 553]	1428	[839, 818]	2473	[3268, 1816]	3518	[2227, 3956]
384	[701, 153]	1429	[1310, 2223]	2474	[3269, 1959]	3519	[2535, 3957]
385	[551, 702]	1430	[2224, 2225]	2475	[3015, 3128]	3520	[2706, 3958]
386	[202, 52]	1431	[2226, 2227]	2476	[3270, 3271]	3521	[3959, 1171]
387	[203, 53]	1432	[1276, 2228]	2477	[1394, 3272]	3522	[2373, 2734]
388	[53, 703]	1433	[2229, 939]	2478	[3097, 540]	3523	[2511, 1015]
389	[704, 705]	1434	[2230, 2231]	2479	[3273, 1367]	3524	[3960, 2556]
390	[706, 502]	1435	[2232, 1178]	2480	[3274, 1593]	3525	[2681, 2785]
391	[707, 708]	1436	[2233, 1158]	2481	[1490, 3123]	3526	[3961, 2808]
392	[215, 709]	1437	[2234, 322]	2482	[3275, 3172]	3527	[3782, 2649]
393	[710, 711]	1438	[2235, 2236]	2483	[631, 3042]	3528	[7, 1582]
394	[712, 713]	1439	[2237, 2238]	2484	[1864, 1629]	3529	[3054, 3962]
395	[714, 715]	1440	[340, 1300]	2485	[3276, 3277]	3530	[3091, 1824]
396	[716, 717]	1441	[335, 2239]	2486	[3278, 3279]	3531	[1764, 3963]
397	[125, 718]	1442	[2240, 2241]	2487	[3157, 3266]	3532	[3964, 3965]
398	[719, 720]	1443	[2242, 2243]	2488	[2925, 138]	3533	[602, 3966]
399	[36, 721]	1444	[382, 2209]	2489	[3280, 3265]	3534	[3967, 1381]
400	[518, 722]	1445	[1111, 1182]	2490	[2035, 190]	3535	[1863, 1628]
401	[723, 724]	1446	[814, 2244]	2491	[1787, 1638]	3536	[3201, 1646]
402	[725, 120]	1447	[2245, 63]	2492	[1801, 3281]	3537	[1648, 2929]
403	[726, 727]	1448	[2246, 2247]	2493	[1549, 1776]	3538	[1619, 147]
404	[728, 726]	1449	[2248, 2249]	2494	[3282, 1486]	3539	[3192, 1440]
405	[729, 730]	1450	[2250, 2251]	2495	[3283, 2954]	3540	[3968, 1721]
406	[731, 188]	1451	[2252, 2253]	2496	[527, 1539]	3541	[141, 441]
407	[722, 732]	1452	[2254, 2255]	2497	[201, 1656]	3542	[3008, 1712]
408	[733, 734]	1453	[2256, 2257]	2498	[40, 156]	3543	[1516, 3082]
409	[735, 736]	1454	[2258, 845]	2499	[169, 196]	3544	[1985, 3969]
410	[146, 737]	1455	[2259, 2260]	2500	[1794, 1866]	3545	[496, 3970]
411	[738, 739]	1456	[1319, 1004]	2501	[1916, 1774]	3546	[1539, 3971]
412	[740, 741]	1457	[2261, 2262]	2502	[3284, 3285]	3547	[2983, 1506]
413	[742, 743]	1458	[2263, 2264]	2503	[2928, 1751]	3548	[3072, 3972]
414	[744, 745]	1459	[2190, 2265]	2504	[1881, 1631]	3549	[3472, 3398]
415	[746, 747]	1460	[2266, 1656]	2505	[3286, 757]	3550	[1854, 3973]
416	[748, 749]	1461	[2267, 2268]	2506	[1714, 3287]	3551	[3521, 674]
417	[750, 751]	1462	[2151, 2269]	2507	[3288, 1880]	3552	[618, 3974]
418	[752, 753]	1463	[2270, 2271]	2508	[1861, 677]	3553	[3975, 3523]
419	[582, 754]	1464	[2272, 2273]	2509	[2953, 3289]	3554	[728, 462]
420	[643, 755]	1465	[2274, 1180]	2510	[3290, 3291]	3555	[3976, 3377]
421	[756, 757]	1466	[864, 2275]	2511	[3292, 1692]	3556	[2052, 3977]
422	[758, 759]	1467	[2276, 28]	2512	[605, 2971]	3557	[3978, 3978]
423	[760, 761]	1468	[2277, 2278]	2513	[1694, 745]	3558	[3302, 49]
424	[762, 763]	1469	[2279, 2280]	2514	[1523, 3293]	3559	[3979, 2013]
425	[764, 765]	1470	[2281, 2282]	2515	[3294, 1633]	3560	[2934, 3980]
426	[766, 767]	1471	[2117, 2283]	2516	[1972, 640]	3561	[3981, 3982]

427	[768, 769]	1472	[2284, 2285]	2517	[3295, 2986]	3562	[2941, 3983]
428	[770, 771]	1473	[2286, 2287]	2518	[3074, 3271]	3563	[3098, 2005]
429	[772, 773]	1474	[2288, 2289]	2519	[3273, 2001]	3564	[1480, 2026]
430	[774, 214]	1475	[2290, 2163]	2520	[1352, 3296]	3565	[3984, 1645]
431	[775, 776]	1476	[2291, 2292]	2521	[625, 1927]	3566	[1826, 1978]
432	[777, 778]	1477	[107, 2293]	2522	[1851, 3297]	3567	[3275, 3264]
433	[779, 780]	1478	[1274, 2294]	2523	[3104, 3132]	3568	[725, 1871]
434	[781, 782]	1479	[2295, 1012]	2524	[3298, 2924]	3569	[1567, 3456]
435	[783, 784]	1480	[971, 318]	2525	[1496, 713]	3570	[3465, 3985]
436	[785, 786]	1481	[2103, 307]	2526	[3299, 3300]	3571	[3324, 1920]
437	[787, 788]	1482	[2296, 2297]	2527	[691, 1846]	3572	[3986, 2978]
438	[789, 790]	1483	[2298, 2299]	2528	[3110, 3301]	3573	[1779, 695]
439	[320, 791]	1484	[2300, 2284]	2529	[1731, 1924]	3574	[2060, 1414]
440	[792, 793]	1485	[2301, 2302]	2530	[3302, 45]	3575	[1467, 732]
441	[794, 795]	1486	[2303, 797]	2531	[1814, 191]	3576	[447, 3987]
442	[796, 797]	1487	[2304, 2305]	2532	[1944, 3303]	3577	[1517, 210]
443	[798, 799]	1488	[264, 2194]	2533	[2948, 3304]	3578	[1332, 3033]
444	[800, 801]	1489	[2306, 2307]	2534	[682, 3305]	3579	[3988, 3516]
445	[802, 803]	1490	[2308, 275]	2535	[1480, 1552]	3580	[1791, 3356]
446	[804, 805]	1491	[2309, 314]	2536	[1596, 3110]	3581	[658, 1792]
447	[806, 807]	1492	[2310, 388]	2537	[1789, 1759]	3582	[1971, 2996]
448	[808, 237]	1493	[2311, 2312]	2538	[3145, 1681]	3583	[578, 1836]
449	[809, 239]	1494	[387, 2313]	2539	[3306, 167]	3584	[3989, 3427]
450	[810, 811]	1495	[923, 2314]	2540	[571, 3307]	3585	[3990, 3991]
451	[812, 813]	1496	[985, 2143]	2541	[1864, 2055]	3586	[3495, 3085]
452	[814, 801]	1497	[2315, 2316]	2542	[3205, 3308]	3587	[653, 3244]
453	[815, 816]	1498	[2317, 2318]	2543	[3309, 3287]	3588	[1498, 207]
454	[817, 818]	1499	[2319, 2320]	2544	[2027, 3310]	3589	[3411, 2921]
455	[819, 820]	1500	[2321, 2098]	2545	[663, 3311]	3590	[3399, 3992]
456	[821, 822]	1501	[2322, 2323]	2546	[3312, 2073]	3591	[575, 1770]
457	[312, 823]	1502	[2324, 2325]	2547	[1708, 3313]	3592	[1513, 482]
458	[824, 825]	1503	[2326, 1167]	2548	[1772, 3314]	3593	[3412, 1510]
459	[826, 827]	1504	[1240, 2306]	2549	[3315, 3145]	3594	[3975, 3425]
460	[828, 829]	1505	[2327, 2328]	2550	[3316, 3311]	3595	[3993, 2930]
461	[830, 231]	1506	[2329, 2330]	2551	[3317, 1391]	3596	[3994, 3995]
462	[831, 832]	1507	[2145, 1044]	2552	[1413, 719]	3597	[3116, 1939]
463	[833, 834]	1508	[2331, 1324]	2553	[3312, 3318]	3598	[1435, 136]
464	[835, 836]	1509	[2332, 324]	2554	[3314, 3319]	3599	[2991, 3974]
465	[837, 838]	1510	[2333, 2334]	2555	[3320, 3321]	3600	[1356, 3996]
466	[839, 840]	1511	[1215, 299]	2556	[3322, 225]	3601	[3997, 506]
467	[841, 842]	1512	[2335, 1101]	2557	[3323, 694]	3602	[509, 3996]
468	[843, 362]	1513	[2336, 321]	2558	[1893, 699]	3603	[1948, 1729]
469	[844, 845]	1514	[2174, 96]	2559	[1761, 1905]	3604	[3976, 743]
470	[352, 846]	1515	[928, 2337]	2560	[3324, 3325]	3605	[3146, 1806]

471	[847, 848]	1516	[2338, 2339]	2561	[3326, 1784]	3606	[3998, 3963]
472	[849, 850]	1517	[2340, 931]	2562	[3004, 3327]	3607	[3284, 520]
473	[851, 852]	1518	[2341, 2342]	2563	[3328, 1566]	3608	[210, 2969]
474	[853, 854]	1519	[2343, 870]	2564	[3329, 3330]	3609	[2012, 1467]
475	[855, 856]	1520	[2344, 2345]	2565	[3331, 3332]	3610	[3999, 447]
476	[406, 857]	1521	[845, 2346]	2566	[3333, 3334]	3611	[1500, 214]
477	[858, 859]	1522	[2347, 2348]	2567	[3335, 684]	3612	[1971, 3456]
478	[860, 861]	1523	[2190, 263]	2568	[1455, 3336]	3613	[2917, 1687]
479	[361, 862]	1524	[947, 2109]	2569	[3337, 3338]	3614	[3164, 4000]
480	[863, 836]	1525	[2349, 2350]	2570	[2031, 3339]	3615	[3155, 651]
481	[864, 865]	1526	[2351, 2352]	2571	[3071, 3162]	3616	[4001, 2935]
482	[866, 867]	1527	[2353, 354]	2572	[3340, 3341]	3617	[4002, 3302]
483	[868, 869]	1528	[1036, 2354]	2573	[1644, 3104]	3618	[4003, 4004]
484	[870, 871]	1529	[1206, 2355]	2574	[1528, 2938]	3619	[1358, 3475]
485	[872, 873]	1530	[1263, 2356]	2575	[3190, 179]	3620	[4005, 4006]
486	[874, 381]	1531	[2357, 948]	2576	[1817, 3342]	3621	[1994, 4007]
487	[875, 876]	1532	[2106, 2358]	2577	[3262, 3343]	3622	[1784, 121]
488	[298, 877]	1533	[251, 2359]	2578	[3344, 1600]	3623	[4008, 3237]
489	[878, 90]	1534	[2360, 2361]	2579	[1539, 1427]	3624	[4009, 3466]
490	[879, 880]	1535	[2362, 1205]	2580	[3345, 3346]	3625	[3989, 3393]
491	[881, 882]	1536	[2363, 2364]	2581	[3048, 3347]	3626	[3467, 4010]
492	[883, 884]	1537	[2297, 2365]	2582	[2047, 3107]	3627	[1783, 3166]
493	[885, 886]	1538	[2366, 2367]	2583	[3259, 1535]	3628	[2975, 494]
494	[821, 887]	1539	[2368, 1062]	2584	[3082, 3348]	3629	[3477, 3429]
495	[888, 301]	1540	[2369, 2370]	2585	[3320, 3210]	3630	[1990, 1988]
496	[889, 890]	1541	[843, 2371]	2586	[3340, 3066]	3631	[1408, 2987]
497	[354, 348]	1542	[819, 2253]	2587	[3349, 3350]	3632	[4011, 4012]
498	[891, 892]	1543	[2372, 1021]	2588	[3266, 3351]	3633	[4013, 3147]
499	[893, 70]	1544	[2327, 404]	2589	[3140, 673]	3634	[3997, 3078]
500	[894, 85]	1545	[2373, 918]	2590	[676, 1862]	3635	[3149, 4014]
501	[895, 896]	1546	[2374, 2375]	2591	[2912, 1363]	3636	[4015, 3100]
502	[897, 898]	1547	[2376, 2300]	2592	[3352, 3353]	3637	[3245, 3296]
503	[899, 900]	1548	[2377, 2289]	2593	[1934, 3049]	3638	[4016, 1705]
504	[901, 902]	1549	[2378, 1136]	2594	[173, 3354]	3639	[4005, 4004]
505	[903, 904]	1550	[321, 2379]	2595	[2037, 3355]	3640	[1390, 4017]
506	[905, 906]	1551	[2380, 1319]	2596	[658, 3356]	3641	[1882, 3230]
507	[907, 908]	1552	[1012, 2381]	2597	[642, 3357]	3642	[1610, 3204]
508	[875, 909]	1553	[792, 1249]	2598	[1631, 3358]	3643	[1924, 3134]
509	[910, 911]	1554	[2291, 1199]	2599	[3359, 3360]	3644	[4018, 3460]
510	[912, 913]	1555	[2382, 2383]	2600	[1436, 3361]	3645	[1730, 1575]
511	[914, 915]	1556	[2240, 2384]	2601	[1523, 3362]	3646	[4019, 471]
512	[916, 917]	1557	[876, 2385]	2602	[3363, 1670]	3647	[3069, 1700]
513	[918, 919]	1558	[2386, 2184]	2603	[484, 3364]	3648	[4020, 435]
514	[920, 921]	1559	[2387, 2388]	2604	[3247, 3189]	3649	[3964, 711]

515	[922, 923]	1560	[2389, 994]	2605	[3365, 1785]	3650	[191, 1658]
516	[924, 925]	1561	[2390, 2391]	2606	[3366, 1451]	3651	[3148, 1734]
517	[926, 927]	1562	[2392, 2393]	2607	[3000, 1647]	3652	[1696, 3473]
518	[928, 929]	1563	[2394, 1134]	2608	[3367, 1890]	3653	[4021, 612]
519	[930, 931]	1564	[2395, 1117]	2609	[3186, 3305]	3654	[3437, 536]
520	[932, 933]	1565	[2130, 809]	2610	[538, 2041]	3655	[3472, 4022]
521	[824, 934]	1566	[897, 2396]	2611	[3368, 3369]	3656	[1957, 3966]
522	[935, 936]	1567	[1029, 2397]	2612	[3370, 3371]	3657	[32, 3401]
523	[937, 258]	1568	[937, 67]	2613	[608, 1963]	3658	[4023, 4024]
524	[938, 939]	1569	[2160, 2398]	2614	[1657, 192]	3659	[3333, 1642]
525	[940, 941]	1570	[2399, 2400]	2615	[1830, 3372]	3660	[4025, 3962]
526	[942, 943]	1571	[2401, 2402]	2616	[3373, 3217]	3661	[4026, 3076]
527	[944, 945]	1572	[2403, 2404]	2617	[674, 1800]	3662	[3271, 3251]
528	[878, 946]	1573	[2405, 2406]	2618	[3374, 3375]	3663	[4027, 4028]
529	[340, 947]	1574	[2407, 2195]	2619	[3376, 568]	3664	[1452, 3072]
530	[948, 949]	1575	[2408, 2239]	2620	[481, 449]	3665	[4018, 4027]
531	[950, 951]	1576	[1038, 22]	2621	[3009, 1834]	3666	[3390, 3978]
532	[952, 953]	1577	[413, 2409]	2622	[1873, 2070]	3667	[3241, 4029]
533	[954, 115]	1578	[2410, 902]	2623	[1944, 3084]	3668	[1563, 175]
534	[955, 956]	1579	[2411, 2412]	2624	[3219, 1948]	3669	[1602, 4024]
535	[957, 958]	1580	[89, 946]	2625	[606, 1848]	3670	[1555, 4029]
536	[360, 959]	1581	[2413, 95]	2626	[742, 3377]	3671	[4030, 4031]
537	[960, 245]	1582	[2113, 1082]	2627	[3378, 2952]	3672	[4032, 1437]
538	[961, 962]	1583	[2221, 2414]	2628	[1593, 3379]	3673	[2063, 4033]
539	[963, 964]	1584	[2415, 2416]	2629	[2955, 2072]	3674	[2991, 619]
540	[965, 966]	1585	[2126, 2417]	2630	[1514, 1775]	3675	[4034, 3371]
541	[967, 968]	1586	[1204, 1002]	2631	[686, 3380]	3676	[4011, 1543]
542	[969, 970]	1587	[2375, 2376]	2632	[572, 3381]	3677	[1758, 1790]
543	[971, 972]	1588	[2418, 2419]	2633	[3382, 3209]	3678	[1919, 3325]
544	[973, 974]	1589	[919, 366]	2634	[3383, 3384]	3679	[1773, 1917]
545	[975, 976]	1590	[418, 2420]	2635	[3385, 715]	3680	[3437, 1434]
546	[977, 978]	1591	[2421, 2120]	2636	[3386, 752]	3681	[1672, 3973]
547	[979, 980]	1592	[2422, 2414]	2637	[218, 3387]	3682	[3388, 524]
548	[981, 982]	1593	[2288, 2423]	2638	[693, 444]	3683	[4034, 4035]
549	[983, 984]	1594	[2424, 2425]	2639	[3229, 1883]	3684	[2007, 1615]
550	[291, 79]	1595	[2319, 2426]	2640	[9, 3137]	3685	[1520, 1545]
551	[985, 986]	1596	[2427, 276]	2641	[3388, 3120]	3686	[1935, 1489]
552	[987, 296]	1597	[1242, 2428]	2642	[1819, 3389]	3687	[4036, 1987]
553	[988, 989]	1598	[1110, 2429]	2643	[3390, 3390]	3688	[1360, 3494]
554	[990, 991]	1599	[2430, 2431]	2644	[543, 1752]	3689	[1378, 1363]
555	[992, 19]	1600	[1131, 2334]	2645	[1785, 3391]	3690	[4026, 3252]
556	[381, 993]	1601	[394, 2432]	2646	[2036, 1612]	3691	[1751, 3485]
557	[359, 297]	1602	[2433, 2139]	2647	[2989, 450]	3692	[1582, 1398]
558	[994, 995]	1603	[2434, 2435]	2648	[2913, 2943]	3693	[1815, 4037]

559	[81, 996]	1604	[2436, 1055]	2649	[469, 1946]	3694	[4038, 1818]
560	[997, 998]	1605	[1086, 2437]	2650	[47, 1830]	3695	[4039, 3181]
561	[999, 1000]	1606	[910, 2245]	2651	[3392, 3393]	3696	[3265, 1635]
562	[63, 1001]	1607	[2438, 2439]	2652	[3394, 1902]	3697	[4040, 558]
563	[1002, 1003]	1608	[2304, 2440]	2653	[3119, 2060]	3698	[4041, 4042]
564	[1004, 1005]	1609	[2441, 2442]	2654	[3395, 182]	3699	[4043, 3432]
565	[1006, 1007]	1610	[2443, 2444]	2655	[684, 3056]	3700	[3268, 4037]
566	[1008, 1009]	1611	[2445, 2446]	2656	[3396, 3122]	3701	[3125, 1334]
567	[1010, 1011]	1612	[234, 2447]	2657	[3170, 3090]	3702	[3999, 1390]
568	[1012, 1013]	1613	[2448, 2449]	2658	[139, 3397]	3703	[4044, 144]
569	[1014, 94]	1614	[235, 984]	2659	[1453, 3272]	3704	[3382, 3320]
570	[1015, 1016]	1615	[2450, 2131]	2660	[1701, 3153]	3705	[2961, 1402]
571	[1017, 1018]	1616	[316, 2372]	2661	[3114, 3398]	3706	[637, 3185]
572	[1019, 1020]	1617	[2451, 841]	2662	[3399, 221]	3707	[1665, 583]
573	[349, 1021]	1618	[2452, 2453]	2663	[1474, 1671]	3708	[3984, 3201]
574	[1022, 332]	1619	[2454, 1319]	2664	[2984, 3350]	3709	[651, 596]
575	[1023, 397]	1620	[356, 2455]	2665	[1869, 2943]	3710	[4045, 1645]
576	[1024, 1025]	1621	[1241, 2456]	2666	[3400, 3401]	3711	[1491, 3124]
577	[808, 1026]	1622	[948, 2457]	2667	[3402, 1628]	3712	[1716, 1372]
578	[1027, 1028]	1623	[24, 2458]	2668	[3403, 3249]	3713	[156, 552]
579	[1029, 1030]	1624	[2459, 1110]	2669	[3404, 3405]	3714	[2020, 1685]
580	[1031, 1032]	1625	[2460, 2461]	2670	[698, 1894]	3715	[584, 1750]
581	[1033, 1034]	1626	[2462, 2463]	2671	[757, 3406]	3716	[2021, 4046]
582	[1035, 361]	1627	[2464, 2465]	2672	[595, 652]	3717	[1810, 4033]
583	[1036, 1037]	1628	[2466, 250]	2673	[628, 175]	3718	[3093, 3527]
584	[1038, 1039]	1629	[2467, 2311]	2674	[3407, 3228]	3719	[3083, 1558]
585	[1040, 1041]	1630	[2108, 941]	2675	[3408, 1674]	3720	[3378, 1876]
586	[1042, 1043]	1631	[2450, 809]	2676	[726, 463]	3721	[1376, 461]
587	[1044, 243]	1632	[2468, 2103]	2677	[3064, 3409]	3722	[1926, 626]
588	[1045, 1046]	1633	[1110, 2469]	2678	[699, 2965]	3723	[542, 1751]
589	[1047, 1048]	1634	[1179, 2470]	2679	[2078, 3410]	3724	[3243, 2957]
590	[1049, 407]	1635	[848, 2471]	2680	[3411, 1688]	3725	[447, 4017]
591	[1050, 1051]	1636	[881, 2472]	2681	[3412, 1735]	3726	[3318, 3400]
592	[918, 1052]	1637	[1015, 2473]	2682	[1961, 1728]	3727	[1590, 1763]
593	[1053, 917]	1638	[2474, 2475]	2683	[1964, 51]	3728	[2074, 1419]
594	[1054, 1055]	1639	[2476, 2477]	2684	[3006, 647]	3729	[1821, 581]
595	[1056, 1057]	1640	[2478, 283]	2685	[650, 643]	3730	[1451, 3071]
596	[1058, 1059]	1641	[2479, 964]	2686	[1914, 572]	3731	[3073, 3270]
597	[1060, 1061]	1642	[414, 2462]	2687	[644, 3069]	3732	[1884, 535]
598	[97, 1062]	1643	[2480, 1276]	2688	[3408, 738]	3733	[464, 3358]
599	[1063, 1064]	1644	[2481, 2482]	2689	[3413, 3123]	3734	[777, 4047]
600	[1065, 313]	1645	[2483, 2306]	2690	[3047, 473]	3735	[3403, 4048]
601	[1066, 1067]	1646	[1152, 2484]	2691	[3158, 3351]	3736	[4049, 189]
602	[1068, 1069]	1647	[2485, 2486]	2692	[1564, 458]	3737	[1548, 1484]

603	[362, 1070]	1648	[2487, 2488]	2693	[3263, 3354]	3738	[3483, 1697]
604	[1071, 1072]	1649	[2489, 1326]	2694	[3341, 3414]	3739	[3020, 1389]
605	[1073, 1074]	1650	[804, 2358]	2695	[1459, 3415]	3740	[1676, 1600]
606	[422, 1075]	1651	[2490, 2491]	2696	[1725, 3293]	3741	[1434, 537]
607	[978, 1076]	1652	[1117, 2492]	2697	[3416, 3417]	3742	[3278, 4050]
608	[1077, 261]	1653	[2493, 2494]	2698	[1858, 3418]	3743	[4051, 1944]
609	[1078, 1079]	1654	[2495, 2496]	2699	[2041, 3419]	3744	[1691, 3044]
610	[1080, 1081]	1655	[2497, 2498]	2700	[1614, 3420]	3745	[3315, 1680]
611	[1082, 1083]	1656	[1656, 1656]	2701	[3421, 681]	3746	[1553, 3310]
612	[1084, 1085]	1657	[249, 924]	2702	[3422, 3423]	3747	[2937, 191]
613	[1086, 1087]	1658	[2107, 940]	2703	[1845, 692]	3748	[685, 651]
614	[85, 1088]	1659	[2499, 2275]	2704	[3424, 3425]	3749	[4052, 4047]
615	[1089, 1090]	1660	[1193, 315]	2705	[3426, 1377]	3750	[3498, 3142]
616	[993, 1091]	1661	[378, 1236]	2706	[1597, 3301]	3751	[1726, 3046]
617	[1092, 1093]	1662	[2500, 2501]	2707	[1755, 3238]	3752	[55, 1960]
618	[1094, 1095]	1663	[2502, 2364]	2708	[1338, 3327]	3753	[3460, 4028]
619	[1096, 1097]	1664	[2503, 66]	2709	[3392, 3427]	3754	[3074, 4053]
620	[420, 970]	1665	[2504, 2505]	2710	[775, 1782]	3755	[4054, 1854]
621	[1098, 1099]	1666	[2506, 2507]	2711	[3428, 3429]	3756	[4055, 4056]
622	[1100, 1101]	1667	[2300, 2508]	2712	[3117, 186]	3757	[468, 2035]
623	[1102, 1103]	1668	[248, 2368]	2713	[1903, 728]	3758	[639, 1973]
624	[1104, 1105]	1669	[2509, 2510]	2714	[1547, 1691]	3759	[3337, 1956]
625	[27, 1106]	1670	[2389, 2511]	2715	[766, 531]	3760	[1510, 3472]
626	[1107, 1108]	1671	[2287, 2512]	2716	[547, 3430]	3761	[435, 1447]
627	[1109, 1110]	1672	[2513, 929]	2717	[3431, 1731]	3762	[3254, 3437]
628	[1111, 974]	1673	[2514, 2465]	2718	[1725, 3362]	3763	[1940, 3409]
629	[1112, 1113]	1674	[1049, 857]	2719	[2043, 3417]	3764	[1418, 3313]
630	[1114, 1115]	1675	[2515, 2516]	2720	[3374, 3300]	3765	[4057, 2011]
631	[1116, 1117]	1676	[2517, 394]	2721	[3079, 3432]	3766	[3993, 3100]
632	[64, 1118]	1677	[995, 1016]	2722	[1611, 1425]	3767	[4058, 4059]
633	[304, 1119]	1678	[2518, 2160]	2723	[1377, 2912]	3768	[3166, 121]
634	[1120, 961]	1679	[2274, 2470]	2724	[1335, 2085]	3769	[1604, 3346]
635	[1121, 1122]	1680	[2519, 351]	2725	[3433, 3434]	3770	[4060, 1517]
636	[1123, 1124]	1681	[2520, 816]	2726	[3435, 1871]	3771	[4061, 4062]
637	[1054, 1125]	1682	[2410, 2521]	2727	[1411, 3039]	3772	[3404, 1805]
638	[1126, 1127]	1683	[79, 2522]	2728	[3216, 223]	3773	[754, 3187]
639	[1128, 1115]	1684	[2368, 98]	2729	[435, 3231]	3774	[1570, 4063]
640	[847, 1129]	1685	[2394, 2523]	2730	[3170, 3436]	3775	[1991, 729]
641	[1130, 302]	1686	[2524, 2525]	2731	[473, 529]	3776	[1914, 3070]
642	[1131, 1132]	1687	[2526, 2527]	2732	[521, 467]	3777	[3089, 3436]
643	[1133, 1134]	1688	[2442, 814]	2733	[1707, 1418]	3778	[2007, 3420]
644	[1135, 1136]	1689	[2528, 2529]	2734	[3189, 1937]	3779	[3514, 129]
645	[1137, 1138]	1690	[2530, 2212]	2735	[1405, 1361]	3780	[1471, 1895]
646	[1089, 1139]	1691	[1177, 2511]	2736	[513, 2014]	3781	[1333, 3126]

647	[1140, 1141]	1692	[2202, 1078]	2737	[3366, 3075]	3782	[4064, 3140]
648	[1142, 1143]	1693	[2421, 2531]	2738	[583, 2046]	3783	[4065, 4066]
649	[98, 1144]	1694	[1199, 2532]	2739	[1649, 3437]	3784	[4016, 2962]
650	[1145, 1146]	1695	[2533, 2384]	2740	[1620, 3407]	3785	[1449, 3343]
651	[1147, 1148]	1696	[1112, 2534]	2741	[592, 3113]	3786	[1974, 630]
652	[1149, 1150]	1697	[2535, 2536]	2742	[3120, 1828]	3787	[4067, 3270]
653	[1151, 86]	1698	[2537, 2538]	2743	[3331, 1679]	3788	[4065, 4068]
654	[1152, 1153]	1699	[2539, 2540]	2744	[3287, 1760]	3789	[3400, 3462]
655	[1154, 1155]	1700	[1136, 2541]	2745	[3438, 1477]	3790	[3112, 593]
656	[1011, 1156]	1701	[2496, 2542]	2746	[3139, 618]	3791	[4069, 4070]
657	[1157, 790]	1702	[2543, 2544]	2747	[3422, 11]	3792	[3513, 3075]
658	[1158, 1159]	1703	[2545, 2522]	2748	[3232, 3439]	3793	[3287, 3221]
659	[1160, 1161]	1704	[2131, 239]	2749	[473, 3183]	3794	[536, 1723]
660	[967, 1162]	1705	[2546, 2547]	2750	[3217, 3440]	3795	[3158, 3267]
661	[1163, 95]	1706	[2548, 2088]	2751	[3441, 617]	3796	[3050, 54]
662	[1164, 1165]	1707	[2549, 2115]	2752	[3385, 3442]	3797	[1417, 1708]
663	[1166, 1167]	1708	[1034, 2550]	2753	[3443, 3444]	3798	[1425, 3188]
664	[1168, 1169]	1709	[2551, 817]	2754	[3445, 3446]	3799	[4055, 2062]
665	[1170, 1171]	1710	[2552, 2202]	2755	[3447, 3448]	3800	[4071, 217]
666	[1172, 1173]	1711	[2553, 2554]	2756	[2947, 3449]	3801	[3407, 1584]
667	[1174, 1175]	1712	[863, 2555]	2757	[3196, 3450]	3802	[3503, 1820]
668	[813, 1176]	1713	[2449, 2556]	2758	[3292, 1732]	3803	[4072, 1840]
669	[987, 359]	1714	[2557, 267]	2759	[3209, 3321]	3804	[3012, 1468]
670	[1177, 994]	1715	[2558, 1176]	2760	[48, 3372]	3805	[4038, 3342]
671	[1178, 813]	1716	[2559, 2560]	2761	[3451, 2083]	3806	[3459, 4027]
672	[1179, 1180]	1717	[2244, 2561]	2762	[1836, 2000]	3807	[3072, 3163]
673	[4, 1181]	1718	[2562, 2245]	2763	[3452, 2075]	3808	[4015, 2930]
674	[973, 1182]	1719	[431, 2563]	2764	[2076, 738]	3809	[4073, 1641]
675	[1171, 1183]	1720	[909, 2385]	2765	[3068, 3453]	3810	[4049, 2035]
676	[278, 1184]	1721	[793, 2564]	2766	[3376, 1768]	3811	[4013, 1351]
677	[1185, 18]	1722	[2565, 2566]	2767	[3454, 3455]	3812	[3426, 1899]
678	[432, 1186]	1723	[2567, 2568]	2768	[3456, 3020]	3813	[3261, 2068]
679	[1187, 1188]	1724	[2569, 2570]	2769	[3457, 3458]	3814	[4054, 1672]
680	[1189, 387]	1725	[2132, 431]	2770	[3459, 3460]	3815	[136, 671]
681	[1190, 367]	1726	[2571, 232]	2771	[586, 752]	3816	[1911, 3391]
682	[1191, 1192]	1727	[317, 972]	2772	[614, 3246]	3817	[4074, 665]
683	[1193, 354]	1728	[2572, 934]	2773	[1629, 3154]	3818	[1628, 2055]
684	[1194, 1195]	1729	[2328, 405]	2774	[1813, 2937]	3819	[2073, 3400]
685	[842, 1122]	1730	[2573, 2574]	2775	[3461, 582]	3820	[3509, 4050]
686	[1196, 1197]	1731	[2575, 2469]	2776	[1343, 709]	3821	[4075, 4010]
687	[1198, 1199]	1732	[2576, 2577]	2777	[1589, 613]	3822	[3428, 3478]
688	[1200, 1201]	1733	[2578, 2579]	2778	[714, 3442]	3823	[3445, 1374]
689	[1202, 1203]	1734	[2115, 2580]	2779	[594, 2915]	3824	[2019, 1995]
690	[1204, 1205]	1735	[2581, 2425]	2780	[2958, 591]	3825	[1922, 4076]

691	[860, 849]	1736	[1257, 2582]	2781	[1622, 1430]	3826	[3131, 1972]
692	[1206, 1207]	1737	[2583, 1231]	2782	[32, 3462]	3827	[1736, 3407]
693	[1208, 802]	1738	[2203, 2584]	2783	[1978, 3463]	3828	[1575, 1924]
694	[1209, 1210]	1739	[1306, 2585]	2784	[3217, 1660]	3829	[528, 3971]
695	[1211, 833]	1740	[2586, 1328]	2785	[549, 1342]	3830	[2963, 1415]
696	[377, 243]	1741	[2587, 2588]	2786	[1735, 3114]	3831	[3370, 4035]
697	[313, 1212]	1742	[2096, 1187]	2787	[1770, 3022]	3832	[2977, 4077]
698	[1213, 905]	1743	[2589, 24]	2788	[1712, 3087]	3833	[4078, 4079]
699	[1214, 1215]	1744	[2590, 2312]	2789	[1402, 452]	3834	[1962, 609]
700	[26, 387]	1745	[2591, 2592]	2790	[1894, 2995]	3835	[2996, 1388]
701	[1216, 1217]	1746	[797, 320]	2791	[3464, 3333]	3836	[198, 1567]
702	[1218, 386]	1747	[2252, 820]	2792	[1619, 1616]	3837	[1390, 3987]
703	[103, 1219]	1748	[308, 2593]	2793	[3465, 3466]	3838	[3138, 1892]
704	[1220, 1221]	1749	[2594, 2482]	2794	[3467, 3468]	3839	[454, 3009]
705	[1222, 1223]	1750	[2595, 2596]	2795	[3469, 1466]	3840	[3438, 3493]
706	[1224, 1018]	1751	[2380, 2597]	2796	[44, 3470]	3841	[1407, 2986]
707	[1225, 423]	1752	[970, 2598]	2797	[3317, 3007]	3842	[137, 2926]
708	[1226, 1227]	1753	[2487, 2599]	2798	[3471, 598]	3843	[4080, 140]
709	[1228, 1229]	1754	[316, 349]	2799	[1739, 122]	3844	[3252, 3073]
710	[384, 1230]	1755	[2600, 2601]	2800	[1735, 3472]	3845	[1361, 3415]
711	[1231, 1232]	1756	[2602, 2603]	2801	[179, 1487]	3846	[4081, 4082]
712	[104, 1189]	1757	[2604, 2605]	2802	[1572, 3473]	3847	[3052, 3519]
713	[1052, 1190]	1758	[2606, 72]	2803	[2012, 722]	3848	[1373, 3446]
714	[1233, 1234]	1759	[1056, 2095]	2804	[3298, 3474]	3849	[3502, 3026]
715	[1235, 106]	1760	[2607, 1116]	2805	[3105, 476]	3850	[1358, 4083]
716	[1236, 1237]	1761	[2608, 2609]	2806	[1952, 2957]	3851	[4072, 3357]
717	[1238, 1239]	1762	[2610, 2611]	2807	[188, 3475]	3852	[220, 3992]
718	[1240, 1241]	1763	[2578, 2612]	2808	[578, 1991]	3853	[1997, 1582]
719	[895, 1242]	1764	[2613, 989]	2809	[1335, 721]	3854	[710, 3965]
720	[1243, 108]	1765	[2614, 2615]	2810	[1836, 729]	3855	[2944, 4084]
721	[1244, 1245]	1766	[77, 1215]	2811	[772, 3017]	3856	[3253, 4063]
722	[927, 983]	1767	[2616, 2617]	2812	[57, 3476]	3857	[4009, 3985]
723	[983, 236]	1768	[2618, 2619]	2813	[3477, 3478]	3858	[3003, 2059]
724	[1025, 1246]	1769	[96, 2620]	2814	[3479, 3480]	3859	[2028, 3518]
725	[1247, 1248]	1770	[2621, 1259]	2815	[1777, 634]	3860	[488, 1684]
726	[1249, 1250]	1771	[2622, 2623]	2816	[3481, 3457]	3861	[1593, 1561]
727	[1251, 1252]	1772	[2624, 2625]	2817	[3029, 1483]	3862	[4073, 3333]
728	[1253, 1254]	1773	[2626, 2627]	2818	[478, 2974]	3863	[3288, 3256]
729	[1028, 1255]	1774	[2628, 2629]	2819	[589, 3482]	3864	[3141, 3499]
730	[238, 1256]	1775	[2630, 2621]	2820	[3483, 665]	3865	[3191, 4085]
731	[1257, 1258]	1776	[868, 392]	2821	[3484, 1634]	3866	[3507, 485]
732	[1094, 1259]	1777	[2631, 317]	2822	[748, 3194]	3867	[182, 3070]
733	[1260, 1072]	1778	[2632, 2611]	2823	[543, 3485]	3868	[1618, 166]
734	[1261, 1262]	1779	[2633, 2634]	2824	[3486, 3094]	3869	[3421, 4086]

735	[1263, 1264]	1780	[2609, 2635]	2825	[3123, 3133]	3870	[3493, 1941]
736	[1048, 1265]	1781	[788, 2636]	2826	[3282, 179]	3871	[587, 2042]
737	[1266, 1267]	1782	[2637, 1223]	2827	[1560, 3379]	3872	[4087, 3341]
738	[1268, 1074]	1783	[2638, 233]	2828	[1742, 1977]	3873	[3135, 4088]
739	[1269, 419]	1784	[2276, 1106]	2829	[3161, 1710]	3874	[3069, 3307]
740	[1270, 1271]	1785	[1058, 2639]	2830	[2000, 3156]	3875	[4089, 3165]
741	[1272, 1057]	1786	[2640, 2192]	2831	[2981, 3487]	3876	[563, 574]
742	[1273, 1043]	1787	[1135, 2641]	2832	[3322, 3215]	3877	[3252, 4067]
743	[1274, 1067]	1788	[2140, 2642]	2833	[3488, 2916]	3878	[2915, 130]
744	[1275, 1276]	1789	[2643, 1281]	2834	[1582, 1923]	3879	[133, 491]
745	[1277, 1278]	1790	[1147, 2644]	2835	[3489, 3158]	3880	[2082, 3380]
746	[1279, 1280]	1791	[1243, 2293]	2836	[3040, 3211]	3881	[4071, 146]
747	[1281, 889]	1792	[1044, 2171]	2837	[3007, 3490]	3882	[4090, 518]
748	[1282, 1283]	1793	[2645, 2646]	2838	[1703, 3491]	3883	[3153, 3336]
749	[1284, 1285]	1794	[2647, 2648]	2839	[3492, 658]	3884	[574, 1859]
750	[938, 1286]	1795	[2649, 2650]	2840	[661, 1850]	3885	[481, 3102]
751	[1287, 1288]	1796	[1202, 2651]	2841	[41, 1719]	3886	[1987, 3257]
752	[1289, 1030]	1797	[2652, 2653]	2842	[2031, 3195]	3887	[3449, 1827]
753	[1290, 1291]	1798	[2654, 2655]	2843	[3102, 123]	3888	[4091, 3410]
754	[1114, 1292]	1799	[1133, 2523]	2844	[3003, 1341]	3889	[1462, 1397]
755	[1293, 1294]	1800	[2656, 2657]	2845	[3493, 1478]	3890	[4092, 4093]
756	[1295, 1296]	1801	[2658, 2659]	2846	[1439, 3193]	3891	[2063, 3173]
757	[1297, 1298]	1802	[372, 2660]	2847	[1712, 3494]	3892	[3484, 3265]
758	[1299, 1258]	1803	[2661, 2662]	2848	[774, 59]	3893	[3026, 2049]
759	[91, 278]	1804	[392, 2663]	2849	[3495, 2066]	3894	[188, 4083]
760	[1300, 1301]	1805	[2664, 2619]	2850	[2970, 3297]	3895	[2069, 1874]
761	[1302, 1303]	1806	[2102, 2665]	2851	[3496, 3320]	3896	[2008, 1531]
762	[1304, 1305]	1807	[2377, 2423]	2852	[2972, 3497]	3897	[1827, 3463]
763	[1306, 1307]	1808	[343, 2666]	2853	[3498, 3499]	3898	[4094, 4066]
764	[1308, 920]	1809	[2667, 2668]	2854	[3500, 2053]	3899	[206, 1499]
765	[1309, 1303]	1810	[2621, 1095]	2855	[1847, 607]	3900	[3456, 1388]
766	[1310, 364]	1811	[2669, 2670]	2856	[1743, 3448]	3901	[187, 1358]
767	[1311, 1312]	1812	[2671, 2672]	2857	[3501, 3304]	3902	[3291, 45]
768	[1313, 23]	1813	[2673, 949]	2858	[3086, 3214]	3903	[466, 522]
769	[1190, 1314]	1814	[2315, 1085]	2859	[2002, 779]	3904	[3295, 1408]
770	[1315, 1316]	1815	[888, 393]	2860	[3269, 1930]	3905	[1585, 3406]
771	[1317, 980]	1816	[2674, 2675]	2861	[3502, 1746]	3906	[550, 39]
772	[1318, 821]	1817	[2140, 2676]	2862	[2002, 723]	3907	[4095, 3476]
773	[1319, 1045]	1818	[2677, 2678]	2863	[3503, 3389]	3908	[3326, 3166]
774	[1320, 1321]	1819	[2679, 2680]	2864	[1922, 3482]	3909	[3043, 472]
775	[1322, 1323]	1820	[1292, 2681]	2865	[657, 1791]	3910	[3095, 4072]
776	[1324, 371]	1821	[2682, 2263]	2866	[3504, 3505]	3911	[3286, 1585]
777	[1325, 1326]	1822	[2683, 1091]	2867	[3506, 3233]	3912	[4096, 2966]
778	[1327, 882]	1823	[2684, 272]	2868	[3507, 3364]	3913	[1388, 3021]

779	[1137, 1328]	1824	[2685, 2686]	2869	[136, 228]	3914	[3270, 4053]
780	[1329, 1330]	1825	[2687, 2688]	2870	[3508, 2038]	3915	[4027, 4097]
781	[1331, 1332]	1826	[2689, 2690]	2871	[3509, 3279]	3916	[3162, 3972]
782	[1333, 1334]	1827	[1084, 2316]	2872	[732, 723]	3917	[120, 1872]
783	[35, 1335]	1828	[1235, 2691]	2873	[460, 455]	3918	[4098, 2063]
784	[1336, 1337]	1829	[1045, 1005]	2874	[3510, 3511]	3919	[1659, 3440]
785	[1338, 1339]	1830	[16, 2370]	2875	[3512, 2074]	3920	[213, 1361]
786	[1340, 1341]	1831	[2692, 100]	2876	[3513, 1451]	3921	[3005, 1954]
787	[645, 1342]	1832	[292, 2127]	2877	[3461, 1665]	3922	[213, 1459]
788	[1343, 216]	1833	[2693, 2690]	2878	[3514, 2915]	3923	[166, 1616]
789	[1344, 1345]	1834	[825, 2694]	2879	[1737, 3222]	3924	[3309, 1715]
790	[1346, 1347]	1835	[1317, 2695]	2880	[3236, 3515]	3925	[4099, 3487]
791	[1348, 1349]	1836	[1026, 238]	2881	[1548, 3044]	3926	[440, 142]
792	[1350, 1351]	1837	[2115, 2538]	2882	[3276, 3516]	3927	[3184, 638]
793	[1352, 1353]	1838	[2458, 2696]	2883	[3517, 3518]	3928	[4100, 4101]
794	[1354, 1355]	1839	[2697, 262]	2884	[3432, 3519]	3929	[1686, 2918]
795	[1356, 510]	1840	[302, 2698]	2885	[1969, 521]	3930	[2912, 2968]
796	[457, 1357]	1841	[1288, 2699]	2886	[3347, 3520]	3931	[164, 4102]
797	[731, 1358]	1842	[2235, 2435]	2887	[3075, 1452]	3932	[3224, 3220]
798	[1359, 1360]	1843	[2227, 2700]	2888	[150, 1855]	3933	[3386, 587]
799	[1361, 1362]	1844	[2234, 2379]	2889	[1721, 2933]	3934	[4103, 3493]
800	[1363, 1364]	1845	[2701, 2702]	2890	[1576, 1925]	3935	[3153, 3522]
801	[1365, 1366]	1846	[1113, 2703]	2891	[3521, 1799]	3936	[1688, 4104]
802	[1357, 211]	1847	[2704, 2705]	2892	[3057, 1725]	3937	[3510, 1355]
803	[1367, 1368]	1848	[2706, 2707]	2893	[779, 724]	3938	[2015, 3003]
804	[604, 476]	1849	[2708, 2709]	2894	[1931, 172]	3939	[1901, 2980]
805	[1369, 1370]	1850	[2710, 2711]	2895	[1455, 3522]	3940	[1870, 3012]
806	[1371, 1372]	1851	[253, 2712]	2896	[3250, 1909]	3941	[4105, 36]
807	[1373, 1374]	1852	[2195, 2713]	2897	[3424, 3523]	3942	[4087, 3066]
808	[1375, 451]	1853	[2714, 2514]	2898	[3524, 1913]	3943	[1382, 3010]
809	[1376, 455]	1854	[2715, 1094]	2899	[3036, 2951]	3944	[758, 4059]
810	[1377, 1378]	1855	[1272, 2095]	2900	[3434, 2022]	3945	[1645, 3202]
811	[1379, 1380]	1856	[289, 2716]	2901	[3471, 1580]	3946	[503, 3497]
812	[1381, 1382]	1857	[2717, 2718]	2902	[741, 3303]	3947	[1898, 1377]
813	[1383, 1384]	1858	[2719, 2100]	2903	[3525, 625]	3948	[3062, 636]
814	[1385, 1386]	1859	[287, 2644]	2904	[1989, 1987]	3949	[146, 4106]
815	[1387, 443]	1860	[2720, 2162]	2905	[3526, 55]	3950	[3978, 3390]
816	[1388, 1389]	1861	[2721, 1060]	2906	[2921, 1689]	3951	[3106, 2048]
817	[446, 1390]	1862	[1028, 1082]	2907	[1568, 3330]	3952	[2024, 1527]
818	[1391, 1392]	1863	[933, 2490]	2908	[668, 3225]	3953	[449, 2989]
819	[438, 1393]	1864	[2223, 2722]	2909	[3486, 3527]	3954	[3251, 3076]
820	[1394, 1395]	1865	[1006, 1267]	2910	[577, 1835]	3955	[3239, 3991]
821	[1396, 1397]	1866	[2723, 2724]	2911	[3528, 2833]	3956	[2950, 3037]
822	[8, 1398]	1867	[903, 2725]	2912	[2558, 2165]	3957	[175, 3227]

823	[1399, 1379]	1868	[994, 1015]	2913	[2170, 2666]	3958	[3432, 3053]
824	[1400, 1401]	1869	[796, 319]	2914	[3529, 2388]	3959	[3525, 1926]
825	[1402, 1403]	1870	[2726, 2277]	2915	[364, 2722]	3960	[1452, 3162]
826	[1404, 1405]	1871	[2727, 2728]	2916	[3530, 846]	3961	[4105, 1335]
827	[747, 1406]	1872	[230, 2729]	2917	[3531, 3532]	3962	[4107, 2376]
828	[1407, 1408]	1873	[2730, 2731]	2918	[1271, 3533]	3963	[2122, 2391]
829	[1409, 1410]	1874	[1296, 256]	2919	[1001, 3534]	3964	[1656, 2266]
830	[1411, 1412]	1875	[892, 2732]	2920	[3535, 3536]	3965	[2903, 2410]
831	[1413, 1414]	1876	[2245, 2733]	2921	[858, 3537]	3966	[2569, 2092]
832	[1415, 1416]	1877	[2734, 919]	2922	[3538, 2777]	3967	[4108, 2269]
833	[1417, 1418]	1878	[2735, 2736]	2923	[806, 295]	3968	[4109, 3673]
834	[1419, 1420]	1879	[2737, 2659]	2924	[924, 2730]	3969	[2519, 3885]
835	[1421, 1422]	1880	[288, 2738]	2925	[2793, 2170]	3970	[3928, 4110]
836	[1423, 1424]	1881	[2445, 2431]	2926	[2671, 3539]	3971	[2367, 2614]
837	[1425, 1426]	1882	[2739, 2740]	2927	[1188, 305]	3972	[2255, 2252]
838	[528, 1427]	1883	[2186, 2741]	2928	[3540, 2444]	3973	[2357, 2673]
839	[1428, 459]	1884	[2742, 91]	2929	[2728, 3541]	3974	[100, 1225]
840	[1429, 1430]	1885	[2743, 2744]	2930	[3542, 3543]	3975	[4111, 2544]
841	[1431, 1432]	1886	[2745, 870]	2931	[3544, 3545]	3976	[3777, 1290]
842	[1433, 1434]	1887	[2746, 2747]	2932	[2682, 1040]	3977	[113, 2886]
843	[1435, 227]	1888	[2748, 2749]	2933	[2385, 3546]	3978	[3877, 4112]
844	[1436, 1437]	1889	[841, 1121]	2934	[3547, 3548]	3979	[3676, 4113]
845	[624, 1438]	1890	[1053, 2750]	2935	[3549, 3550]	3980	[1150, 2698]
846	[1439, 1440]	1891	[294, 807]	2936	[3551, 364]	3981	[3665, 231]
847	[1441, 1442]	1892	[2751, 2752]	2937	[1052, 366]	3982	[4114, 75]
848	[1443, 183]	1893	[2506, 2753]	2938	[1113, 3552]	3983	[2595, 3670]
849	[1444, 1445]	1894	[359, 2754]	2939	[3553, 3554]	3984	[4115, 3757]
850	[1446, 1447]	1895	[2755, 2756]	2940	[932, 3555]	3985	[2745, 2468]
851	[694, 1448]	1896	[2757, 2753]	2941	[3556, 2227]	3986	[4116, 2333]
852	[1449, 1450]	1897	[2758, 1102]	2942	[1040, 2264]	3987	[4113, 4117]
853	[1451, 1452]	1898	[2188, 1186]	2943	[3543, 2788]	3988	[4118, 912]
854	[1453, 1395]	1899	[912, 2759]	2944	[890, 3557]	3989	[788, 2331]
855	[1454, 1455]	1900	[2760, 2696]	2945	[2179, 312]	3990	[889, 3664]
856	[147, 1456]	1901	[2317, 2761]	2946	[1290, 277]	3991	[1132, 3883]
857	[515, 761]	1902	[2597, 1045]	2947	[3558, 2623]	3992	[4114, 4119]
858	[1457, 1458]	1903	[2762, 1249]	2948	[3559, 2630]	3993	[2193, 265]
859	[1459, 1362]	1904	[2763, 1248]	2949	[1266, 1007]	3994	[922, 1282]
860	[1460, 1461]	1905	[2764, 961]	2950	[3560, 3561]	3995	[4113, 4120]
861	[1462, 1463]	1906	[2765, 287]	2951	[1293, 3562]	3996	[2157, 2873]
862	[1464, 1465]	1907	[2761, 2766]	2952	[782, 3563]	3997	[248, 97]
863	[1466, 578]	1908	[2765, 1147]	2953	[3564, 1232]	3998	[4121, 79]
864	[518, 1467]	1909	[1132, 2767]	2954	[3565, 2268]	3999	[4122, 4113]
865	[1332, 1468]	1910	[2768, 2769]	2955	[3566, 3564]	4000	[2610, 2895]
866	[1469, 1470]	1911	[1149, 302]	2956	[1231, 3567]	4001	[4123, 2643]

867	[1471, 1472]	1912	[2770, 2217]	2957	[3568, 3569]	4002	[4124, 904]
868	[1473, 1474]	1913	[2771, 1037]	2958	[1268, 2191]	4003	[4125, 2647]
869	[166, 147]	1914	[2478, 2772]	2959	[3570, 3571]	4004	[430, 2133]
870	[1475, 1476]	1915	[1031, 2383]	2960	[3572, 3573]	4005	[4126, 3804]
871	[1477, 1478]	1916	[2459, 2575]	2961	[3574, 3537]	4006	[262, 2265]
872	[1479, 1480]	1917	[2773, 2774]	2962	[3575, 3576]	4007	[2857, 4127]
873	[525, 1481]	1918	[2775, 1193]	2963	[2572, 825]	4008	[832, 2153]
874	[1482, 1483]	1919	[2776, 2777]	2964	[3577, 3578]	4009	[3531, 1280]
875	[1484, 1485]	1920	[2161, 2778]	2965	[3579, 3580]	4010	[1150, 303]
876	[1486, 1487]	1921	[93, 2779]	2966	[2310, 2313]	4011	[830, 2571]
877	[1488, 1489]	1922	[2780, 2781]	2967	[920, 3581]	4012	[3614, 3871]
878	[1490, 1491]	1923	[16, 2782]	2968	[851, 3582]	4013	[3955, 2207]
879	[1492, 1493]	1924	[2594, 2783]	2969	[823, 3583]	4014	[2335, 4128]
880	[1494, 1495]	1925	[2239, 2784]	2970	[2438, 3584]	4015	[3819, 2170]
881	[1496, 1497]	1926	[1081, 235]	2971	[2442, 800]	4016	[4129, 3688]
882	[1498, 1499]	1927	[2785, 2786]	2972	[3585, 3586]	4017	[2110, 4130]
883	[1500, 59]	1928	[2167, 2525]	2973	[2701, 2339]	4018	[4131, 853]
884	[462, 727]	1929	[2787, 2788]	2974	[2885, 114]	4019	[2338, 2702]
885	[143, 1501]	1930	[2789, 2790]	2975	[3587, 420]	4020	[2124, 82]
886	[1474, 1502]	1931	[2791, 1277]	2976	[2587, 3588]	4021	[4132, 1086]
887	[490, 134]	1932	[2550, 20]	2977	[2440, 3589]	4022	[894, 1151]
888	[1503, 1504]	1933	[2243, 2792]	2978	[2738, 3590]	4023	[4133, 4134]
889	[1505, 1506]	1934	[2777, 856]	2979	[3591, 895]	4024	[4107, 2493]
890	[1507, 1393]	1935	[2793, 343]	2980	[3592, 3593]	4025	[4135, 3543]
891	[1508, 219]	1936	[2794, 2795]	2981	[3594, 2520]	4026	[3557, 3548]
892	[1509, 1510]	1937	[2645, 1093]	2982	[1195, 3595]	4027	[2518, 3950]
893	[1511, 1512]	1938	[1039, 2796]	2983	[2344, 3596]	4028	[853, 4136]
894	[1513, 167]	1939	[2334, 2767]	2984	[3597, 864]	4029	[2565, 1278]
895	[1514, 1515]	1940	[2797, 2780]	2985	[871, 307]	4030	[3944, 979]
896	[1516, 1379]	1941	[2798, 2332]	2986	[402, 1105]	4031	[4137, 4138]
897	[1517, 1357]	1942	[2799, 30]	2987	[2303, 319]	4032	[2712, 2894]
898	[723, 780]	1943	[942, 2800]	2988	[3598, 2761]	4033	[872, 3668]
899	[1518, 1519]	1944	[287, 1148]	2989	[963, 2837]	4034	[3919, 3891]
900	[1520, 1521]	1945	[2801, 2542]	2990	[374, 3599]	4035	[1269, 3587]
901	[1522, 1523]	1946	[2243, 788]	2991	[2848, 2896]	4036	[4139, 1221]
902	[1524, 1525]	1947	[1128, 1292]	2992	[934, 3600]	4037	[373, 4140]
903	[1526, 1527]	1948	[817, 840]	2993	[2897, 3601]	4038	[2474, 2808]
904	[1528, 1529]	1949	[2697, 2190]	2994	[1138, 3602]	4039	[999, 2238]
905	[1530, 1531]	1950	[1154, 829]	2995	[905, 3603]	4040	[1214, 78]
906	[1532, 1533]	1951	[815, 2802]	2996	[379, 1237]	4041	[3645, 3717]
907	[1534, 1535]	1952	[2803, 1049]	2997	[22, 2116]	4042	[2607, 2395]
908	[1536, 1537]	1953	[2353, 315]	2998	[2862, 400]	4043	[4141, 2262]
909	[1538, 1539]	1954	[2375, 2493]	2999	[250, 925]	4044	[3871, 2845]
910	[449, 123]	1955	[1218, 2173]	3000	[2493, 2300]	4045	[4142, 4143]

911	[696, 125]	1956	[2466, 924]	3001	[3604, 1111]	4046	[871, 2104]
912	[1540, 1515]	1957	[2804, 1113]	3002	[3605, 2439]	4047	[4144, 259]
913	[1541, 1424]	1958	[2805, 1311]	3003	[2139, 966]	4048	[1019, 4145]
914	[1542, 1543]	1959	[2806, 2807]	3004	[3606, 1321]	4049	[2214, 1234]
915	[1544, 1545]	1960	[2808, 2809]	3005	[3607, 255]	4050	[2324, 4146]
916	[1546, 624]	1961	[2810, 2328]	3006	[242, 3608]	4051	[4147, 4148]
917	[1547, 1548]	1962	[2811, 1178]	3007	[2369, 2782]	4052	[2197, 2230]
918	[1549, 1550]	1963	[2812, 2813]	3008	[3609, 3610]	4053	[2887, 3666]
919	[1551, 1552]	1964	[2196, 2814]	3009	[2576, 3569]	4054	[4149, 2361]
920	[1553, 1554]	1965	[2815, 2816]	3010	[3611, 3612]	4055	[408, 3662]
921	[1555, 1556]	1966	[2817, 385]	3011	[2669, 2126]	4056	[1120, 3733]
922	[1557, 1558]	1967	[2818, 400]	3012	[319, 2141]	4057	[1007, 4150]
923	[1559, 44]	1968	[2819, 2776]	3013	[2631, 971]	4058	[3799, 357]
924	[1560, 1561]	1969	[2251, 2820]	3014	[1321, 3613]	4059	[1100, 4128]
925	[1562, 1563]	1970	[2821, 971]	3015	[3587, 969]	4060	[2326, 2844]
926	[1564, 1428]	1971	[377, 2171]	3016	[3614, 3615]	4061	[2583, 3564]
927	[1565, 448]	1972	[2771, 2354]	3017	[284, 310]	4062	[3586, 4151]
928	[1566, 1567]	1973	[2822, 2823]	3018	[3616, 1311]	4063	[4152, 2437]
929	[1568, 1569]	1974	[2403, 1069]	3019	[2590, 3617]	4064	[4153, 881]
930	[1570, 1571]	1975	[935, 2824]	3020	[2483, 1241]	4065	[2831, 3877]
931	[1572, 1573]	1976	[2739, 411]	3021	[3618, 3619]	4066	[2637, 3874]
932	[1574, 1438]	1977	[1178, 2558]	3022	[3620, 3621]	4067	[2606, 4154]
933	[1575, 1576]	1978	[919, 1190]	3023	[1158, 2665]	4068	[1324, 418]
934	[1577, 1578]	1979	[2690, 2825]	3024	[2260, 2203]	4069	[339, 3945]
935	[1579, 1580]	1980	[2509, 2302]	3025	[950, 1285]	4070	[3774, 4155]
936	[182, 572]	1981	[296, 2754]	3026	[2548, 867]	4071	[2721, 2601]
937	[1581, 1582]	1982	[2826, 2827]	3027	[789, 3622]	4072	[2424, 3691]
938	[1583, 1584]	1983	[2828, 2628]	3028	[3623, 3604]	4073	[3900, 3771]
939	[756, 1585]	1984	[1194, 2137]	3029	[3624, 3625]	4074	[2549, 2537]
940	[48, 1586]	1985	[2829, 2830]	3030	[3626, 3627]	4075	[4156, 4157]
941	[1574, 1587]	1986	[2733, 64]	3031	[1191, 3628]	4076	[2779, 3867]
942	[1588, 1589]	1987	[2831, 2832]	3032	[2447, 3629]	4077	[2343, 2468]
943	[1590, 1591]	1988	[2833, 2834]	3033	[2087, 3630]	4078	[2810, 404]
944	[1592, 1593]	1989	[2835, 369]	3034	[282, 2772]	4079	[2803, 406]
945	[1594, 1595]	1990	[2832, 2836]	3035	[2751, 3631]	4080	[4158, 2607]
946	[1596, 1597]	1991	[2479, 2837]	3036	[3632, 2565]	4081	[4122, 3677]
947	[628, 1598]	1992	[397, 2838]	3037	[975, 2883]	4082	[2467, 2590]
948	[1599, 1481]	1993	[2839, 920]	3038	[3633, 3634]	4083	[1258, 3778]
949	[1600, 1601]	1994	[2840, 2841]	3039	[3635, 3636]	4084	[2738, 2716]
950	[1602, 1603]	1995	[87, 401]	3040	[2852, 3637]	4085	[787, 2792]
951	[1604, 1605]	1996	[1321, 2842]	3041	[3638, 884]	4086	[2856, 940]
952	[1606, 435]	1997	[2843, 2709]	3042	[3639, 3640]	4087	[4159, 900]
953	[1607, 1608]	1998	[1166, 2844]	3043	[2822, 3641]	4088	[2827, 92]
954	[1609, 734]	1999	[2845, 2846]	3044	[3642, 3643]	4089	[4160, 2593]

955	[1610, 621]	2000	[1185, 2847]	3045	[3644, 2728]	4090	[4161, 1203]
956	[1611, 1612]	2001	[25, 1189]	3046	[2454, 2597]	4091	[4162, 2785]
957	[1613, 475]	2002	[2848, 1025]	3047	[3645, 3646]	4092	[1213, 3951]
958	[1614, 1615]	2003	[1075, 281]	3048	[2774, 2352]	4093	[3642, 4163]
959	[1616, 148]	2004	[2226, 2849]	3049	[2688, 3647]	4094	[2832, 4112]
960	[1617, 466]	2005	[20, 2850]	3050	[2184, 1036]	4095	[4164, 2687]
961	[1618, 1619]	2006	[2851, 835]	3051	[3648, 3649]	4096	[4165, 2855]
962	[1620, 1583]	2007	[2586, 1138]	3052	[1092, 2646]	4097	[2448, 3960]
963	[646, 1621]	2008	[2852, 233]	3053	[1170, 3650]	4098	[917, 3736]
964	[1622, 1623]	2009	[2514, 2853]	3054	[3651, 3652]	4099	[4166, 2736]
965	[1624, 1625]	2010	[2854, 2855]	3055	[2434, 2236]	4100	[4167, 4168]
966	[746, 1386]	2011	[2856, 2108]	3056	[3653, 3654]	4101	[3905, 323]
967	[1626, 1627]	2012	[2630, 1094]	3057	[3535, 1228]	4102	[312, 2407]
968	[1628, 1629]	2013	[366, 1314]	3058	[2229, 1286]	4103	[4169, 4170]
969	[1630, 1631]	2014	[2857, 2858]	3059	[1017, 2201]	4104	[3536, 3818]
970	[1632, 645]	2015	[2859, 254]	3060	[2791, 2565]	4105	[4171, 1244]
971	[1633, 1442]	2016	[2860, 2815]	3061	[3655, 85]	4106	[2601, 2884]
972	[1634, 1635]	2017	[2861, 1293]	3062	[2248, 1058]	4107	[1862, 1865]
973	[672, 1636]	2018	[2862, 87]	3063	[1244, 3656]	4108	[2957, 590]
974	[1637, 1638]	2019	[243, 2863]	3064	[1316, 3657]	4109	[4043, 3052]
975	[1639, 1640]	2020	[992, 2550]	3065	[2113, 1255]	4110	[3115, 3339]
976	[1641, 1642]	2021	[1096, 2129]	3066	[2266, 2266]	4111	[4172, 3450]
977	[1643, 1644]	2022	[2864, 2800]	3067	[3658, 3659]	4112	[4053, 4026]
978	[1645, 1646]	2023	[2865, 2866]	3068	[3660, 1193]	4113	[4173, 4174]
979	[1421, 1647]	2024	[2867, 978]	3069	[426, 896]	4114	[1857, 540]
980	[1648, 533]	2025	[1226, 2868]	3070	[347, 1120]	4115	[3431, 1575]
981	[1649, 1433]	2026	[2618, 2869]	3071	[3661, 3662]	4116	[4044, 1501]
982	[1650, 1651]	2027	[270, 2634]	3072	[2571, 3663]	4117	[1641, 3334]
983	[1428, 1652]	2028	[2114, 2537]	3073	[2643, 2887]	4118	[3018, 512]
984	[1653, 1654]	2029	[2870, 2871]	3074	[3664, 3557]	4119	[3335, 668]
985	[553, 39]	2030	[2872, 2148]	3075	[3665, 2571]	4120	[3517, 2029]
986	[40, 151]	2031	[2873, 852]	3076	[3666, 3664]	4121	[3316, 664]
987	[199, 555]	2032	[2562, 911]	3077	[2390, 2123]	4122	[3464, 1641]
988	[156, 152]	2033	[1187, 304]	3078	[3579, 3667]	4123	[4080, 3397]
989	[552, 553]	2034	[2874, 2875]	3079	[3668, 2535]	4124	[1592, 1560]
990	[1655, 555]	2035	[2230, 2505]	3080	[873, 2535]	4125	[2930, 2913]
991	[555, 554]	2036	[2108, 247]	3081	[3669, 3670]	4126	[480, 448]
992	[1656, 201]	2037	[2876, 2405]	3082	[2556, 3671]	4127	[1728, 1949]
993	[153, 203]	2038	[2504, 2231]	3083	[3672, 3673]	4128	[1877, 3449]
994	[1657, 1658]	2039	[2259, 2202]	3084	[2526, 3674]	4129	[3041, 632]
995	[1659, 1660]	2040	[2877, 2878]	3085	[837, 3675]	4130	[1746, 3059]
996	[706, 1661]	2041	[237, 2879]	3086	[3676, 3677]	4131	[3076, 4067]
997	[1662, 708]	2042	[2880, 2881]	3087	[3610, 3575]	4132	[3492, 1791]
998	[1663, 1591]	2043	[1076, 2574]	3088	[2511, 995]	4133	[2010, 2999]

999	[1664, 1665]	2044	[2882, 2883]	3089	[3678, 833]	4134	[1784, 1739]
1000	[1666, 1667]	2045	[1060, 2884]	3090	[2270, 2686]	4135	[3416, 2044]
1001	[1668, 1669]	2046	[2885, 2886]	3091	[2164, 3679]	4136	[4067, 3074]
1002	[1433, 536]	2047	[2887, 889]	3092	[2386, 3680]	4137	[4175, 4014]
1003	[1670, 1671]	2048	[2333, 1132]	3093	[3681, 2732]	4138	[4090, 2012]
1004	[1672, 1673]	2049	[426, 1242]	3094	[3682, 3683]	4139	[4020, 1446]
1005	[1674, 1675]	2050	[2888, 847]	3095	[2249, 2639]	4140	[1921, 589]
1006	[1676, 1594]	2051	[2175, 2620]	3096	[2898, 3684]	4141	[4176, 674]
1007	[1677, 1550]	2052	[2405, 853]	3097	[925, 2731]	4142	[1562, 628]
1008	[1678, 1679]	2053	[959, 2889]	3098	[2865, 3685]	4143	[3248, 4048]
1009	[1680, 1681]	2054	[2468, 871]	3099	[874, 3686]	4144	[600, 4101]
1010	[1460, 1682]	2055	[2490, 2890]	3100	[3554, 3652]	4145	[588, 1922]
1011	[1683, 1684]	2056	[250, 2730]	3101	[2609, 1099]	4146	[3345, 1605]
1012	[1444, 1685]	2057	[2891, 1282]	3102	[3687, 3688]	4147	[135, 227]
1013	[1686, 1687]	2058	[23, 2892]	3103	[371, 2420]	4148	[1891, 3423]
1014	[1688, 1689]	2059	[254, 2893]	3104	[1276, 2628]	4149	[3402, 1864]
1015	[1690, 1691]	2060	[254, 2894]	3105	[3689, 2442]	4150	[3103, 3258]
1016	[1692, 1693]	2061	[115, 2255]	3106	[3690, 2169]	4151	[3200, 3983]
1017	[1694, 1695]	2062	[2632, 2895]	3107	[2581, 3691]	4152	[2945, 4174]
1018	[1696, 1573]	2063	[1024, 2896]	3108	[258, 3692]	4153	[3489, 3266]
1019	[1697, 1698]	2064	[2685, 2271]	3109	[1042, 3693]	4154	[3460, 4097]
1020	[1634, 1699]	2065	[2897, 2769]	3110	[3694, 1168]	4155	[3329, 1569]
1021	[571, 1700]	2066	[941, 248]	3111	[2322, 2881]	4156	[127, 3453]
1022	[1701, 1455]	2067	[1299, 2582]	3112	[2622, 3695]	4157	[2920, 1688]
1023	[1702, 1703]	2068	[2898, 2899]	3113	[2311, 3617]	4158	[3979, 1345]
1024	[1704, 1705]	2069	[2900, 2718]	3114	[373, 3696]	4159	[1878, 3145]
1025	[443, 1706]	2070	[2901, 2440]	3115	[2904, 342]	4160	[1749, 585]
1026	[1707, 1708]	2071	[2529, 2902]	3116	[3697, 1244]	4161	[1403, 1984]
1027	[1709, 1710]	2072	[2903, 901]	3117	[73, 2453]	4162	[1854, 1673]
1028	[1363, 1711]	2073	[2904, 2136]	3118	[885, 3698]	4163	[1637, 1788]
1029	[1359, 1712]	2074	[1249, 2564]	3119	[2591, 1161]	4164	[4091, 2079]
1030	[1541, 1713]	2075	[22, 2796]	3120	[2777, 2567]	4165	[3223, 2007]
1031	[1714, 1715]	2076	[2363, 2515]	3121	[3699, 3700]	4166	[4058, 759]
1032	[1544, 1521]	2077	[2905, 2560]	3122	[1209, 784]	4167	[2973, 479]
1033	[1716, 1717]	2078	[2906, 2655]	3123	[3701, 3702]	4168	[501, 1661]
1034	[1718, 1719]	2079	[2464, 2853]	3124	[2819, 3538]	4169	[3395, 1914]
1035	[1720, 1721]	2080	[2604, 2749]	3125	[3703, 847]	4170	[4074, 1697]
1036	[1633, 1722]	2081	[2328, 2907]	3126	[2371, 1070]	4171	[2018, 1504]
1037	[1434, 1723]	2082	[2889, 2908]	3127	[1296, 345]	4172	[954, 2254]
1038	[189, 1724]	2083	[94, 2909]	3128	[2372, 2099]	4173	[2256, 3931]
1039	[1522, 1725]	2084	[2910, 1116]	3129	[3704, 2345]	4174	[2880, 2323]
1040	[1726, 1727]	2085	[1123, 334]	3130	[3705, 3706]	4175	[277, 2377]
1041	[1728, 1729]	2086	[2911, 1990]	3131	[3707, 2090]	4176	[4177, 2536]
1042	[1730, 1731]	2087	[1899, 2912]	3132	[3708, 876]	4177	[1976, 678]

1043	[1732, 1733]	2088	[2913, 1870]	3134	[2845, 3709]		
1044	[1624, 1734]	2089	[2914, 654]	3134	[3710, 3711]		

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	697	1	1394	1	2091	0	2788	1	3485	1
1	0	698	0	1395	1	2092	0	2789	1	3486	1
2	0	699	1	1396	1	2093	1	2790	0	3487	1
3	0	700	0	1397	1	2094	0	2791	0	3488	1
4	0	701	1	1398	1	2095	1	2792	0	3489	0
5	0	702	0	1399	0	2096	0	2793	1	3490	0
6	0	703	1	1400	1	2097	0	2794	1	3491	0
7	0	704	0	1401	1	2098	1	2795	0	3492	0
8	1	705	1	1402	1	2099	1	2796	0	3493	0
9	0	706	1	1403	1	2100	0	2797	0	3494	1
10	0	707	1	1404	0	2101	0	2798	0	3495	1
11	0	708	1	1405	1	2102	0	2799	1	3496	0
12	1	709	1	1406	1	2103	0	2800	1	3497	0
13	0	710	1	1407	1	2104	0	2801	0	3498	1
14	0	711	1	1408	0	2105	1	2802	1	3499	0
15	0	712	0	1409	0	2106	0	2803	0	3500	0
16	0	713	0	1410	1	2107	0	2804	1	3501	0
17	1	714	0	1411	1	2108	0	2805	0	3502	0
18	0	715	1	1412	1	2109	1	2806	0	3503	1
19	0	716	1	1413	0	2110	1	2807	1	3504	1
20	0	717	1	1414	1	2111	1	2808	0	3505	0
21	0	718	0	1415	1	2112	1	2809	1	3506	1
22	0	719	0	1416	0	2113	0	2810	0	3507	0
23	0	720	0	1417	1	2114	1	2811	1	3508	1
24	1	721	1	1418	0	2115	1	2812	0	3509	1
25	1	722	0	1419	1	2116	1	2813	0	3510	1
26	0	723	0	1420	0	2117	0	2814	0	3511	1
27	0	724	1	1421	0	2118	1	2815	1	3512	0
28	1	725	1	1422	1	2119	0	2816	1	3513	0
29	0	726	1	1423	1	2120	0	2817	0	3514	0
30	1	727	0	1424	0	2121	1	2818	1	3515	0
31	0	728	1	1425	0	2122	0	2819	1	3516	0
32	1	729	1	1426	1	2123	0	2820	1	3517	0
33	0	730	0	1427	0	2124	1	2821	0	3518	0
34	1	731	0	1428	0	2125	0	2822	0	3519	0
35	1	732	1	1429	1	2126	1	2823	0	3520	0
36	0	733	0	1430	0	2127	1	2824	1	3521	0
37	0	734	1	1431	0	2128	1	2825	1	3522	1
38	0	735	0	1432	1	2129	1	2826	0	3523	0

39	0	736	1	1433	1	2130	0	2827	1	3524	0
40	1	737	1	1434	0	2131	1	2828	0	3525	0
41	0	738	0	1435	0	2132	1	2829	1	3526	0
42	1	739	0	1436	1	2133	1	2830	0	3527	0
43	0	740	0	1437	0	2134	1	2831	1	3528	0
44	0	741	1	1438	1	2135	0	2832	0	3529	0
45	0	742	0	1439	0	2136	1	2833	1	3530	0
46	0	743	1	1440	0	2137	1	2834	0	3531	0
47	0	744	1	1441	1	2138	0	2835	0	3532	0
48	1	745	0	1442	0	2139	0	2836	1	3533	0
49	1	746	1	1443	0	2140	0	2837	1	3534	1
50	1	747	1	1444	1	2141	0	2838	0	3535	0
51	0	748	0	1445	1	2142	0	2839	0	3536	0
52	0	749	0	1446	0	2143	0	2840	1	3537	1
53	0	750	0	1447	1	2144	0	2841	0	3538	0
54	0	751	0	1448	1	2145	1	2842	1	3539	1
55	1	752	0	1449	1	2146	0	2843	1	3540	1
56	1	753	1	1450	1	2147	0	2844	0	3541	0
57	0	754	1	1451	1	2148	1	2845	0	3542	0
58	0	755	0	1452	0	2149	0	2846	0	3543	1
59	1	756	0	1453	0	2150	0	2847	1	3544	1
60	1	757	0	1454	0	2151	0	2848	0	3545	1
61	0	758	1	1455	1	2152	0	2849	1	3546	0
62	0	759	0	1456	0	2153	0	2850	0	3547	0
63	1	760	0	1457	0	2154	0	2851	0	3548	1
64	0	761	0	1458	0	2155	0	2852	1	3549	1
65	0	762	1	1459	0	2156	0	2853	1	3550	1
66	1	763	1	1460	1	2157	0	2854	0	3551	0
67	1	764	1	1461	1	2158	0	2855	0	3552	1
68	1	765	1	1462	0	2159	1	2856	1	3553	1
69	1	766	1	1463	0	2160	0	2857	0	3554	1
70	0	767	0	1464	1	2161	1	2858	1	3555	1
71	0	768	1	1465	1	2162	1	2859	0	3556	1
72	0	769	0	1466	1	2163	0	2860	1	3557	1
73	0	770	0	1467	1	2164	0	2861	0	3558	1
74	1	771	1	1468	0	2165	0	2862	0	3559	1
75	0	772	1	1469	0	2166	0	2863	1	3560	0
76	0	773	0	1470	0	2167	0	2864	0	3561	0
77	0	774	0	1471	0	2168	0	2865	1	3562	1
78	1	775	0	1472	1	2169	0	2866	1	3563	1
79	1	776	1	1473	0	2170	1	2867	1	3564	0
80	0	777	0	1474	0	2171	0	2868	0	3565	0
81	0	778	0	1475	1	2172	1	2869	1	3566	0
82	0	779	1	1476	1	2173	1	2870	1	3567	0

83	1	780	0	1477	1	2174	0	2871	1	3568	1
84	0	781	0	1478	1	2175	0	2872	1	3569	1
85	0	782	0	1479	0	2176	1	2873	1	3570	1
86	1	783	1	1480	0	2177	0	2874	1	3571	0
87	0	784	0	1481	0	2178	0	2875	0	3572	1
88	1	785	0	1482	1	2179	1	2876	0	3573	1
89	0	786	1	1483	0	2180	1	2877	0	3574	1
90	1	787	1	1484	1	2181	1	2878	0	3575	1
91	0	788	1	1485	1	2182	1	2879	1	3576	0
92	0	789	0	1486	1	2183	1	2880	0	3577	1
93	0	790	0	1487	1	2184	1	2881	1	3578	0
94	0	791	1	1488	0	2185	0	2882	0	3579	1
95	1	792	1	1489	0	2186	1	2883	0	3580	0
96	1	793	0	1490	1	2187	0	2884	0	3581	1
97	1	794	0	1491	0	2188	1	2885	1	3582	0
98	0	795	1	1492	0	2189	0	2886	1	3583	0
99	1	796	0	1493	0	2190	0	2887	0	3584	1
100	1	797	0	1494	1	2191	1	2888	0	3585	1
101	0	798	1	1495	1	2192	1	2889	0	3586	1
102	0	799	1	1496	1	2193	1	2890	1	3587	1
103	1	800	1	1497	1	2194	1	2891	0	3588	1
104	0	801	0	1498	1	2195	1	2892	0	3589	1
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106	0	803	0	1500	1	2197	1	2894	0	3591	0
107	1	804	1	1501	1	2198	1	2895	1	3592	0
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110	0	807	0	1504	0	2201	1	2898	0	3595	1
111	0	808	0	1505	1	2202	1	2899	1	3596	1
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113	0	810	0	1507	1	2204	0	2901	0	3598	0
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116	1	813	0	1510	0	2207	0	2904	0	3601	1
117	1	814	0	1511	0	2208	0	2905	0	3602	0
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119	0	816	0	1513	0	2210	1	2907	0	3604	1
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123	1	820	1	1517	1	2214	1	2911	0	3608	1
124	1	821	1	1518	0	2215	0	2912	1	3609	0
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144	0	841	0	1538	0	2235	1	2932	0	3629	0
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225	1	922	1	1619	0	2316	1	3013	1	3710	1
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229	0	926	0	1623	1	2320	1	3017	1	3714	0
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264	0	961	1	1658	0	2355	0	3052	1	3749	1
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378	0	1075	1	1772	1	2469	1	3166	0	3863	0
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380	0	1077	0	1774	0	2471	1	3168	0	3865	1
381	0	1078	1	1775	0	2472	0	3169	1	3866	0
382	1	1079	1	1776	0	2473	0	3170	0	3867	0
383	1	1080	1	1777	1	2474	1	3171	1	3868	1
384	1	1081	1	1778	0	2475	1	3172	1	3869	0
385	1	1082	1	1779	1	2476	1	3173	1	3870	0
386	0	1083	0	1780	1	2477	1	3174	1	3871	1
387	1	1084	0	1781	1	2478	1	3175	1	3872	1
388	0	1085	0	1782	0	2479	1	3176	1	3873	1
389	0	1086	0	1783	0	2480	0	3177	0	3874	1
390	1	1087	0	1784	1	2481	1	3178	0	3875	0

391	1	1088	0	1785	0	2482	0	3179	1	3876	1
392	0	1089	0	1786	0	2483	1	3180	1	3877	1
393	1	1090	1	1787	0	2484	1	3181	0	3878	0
394	0	1091	0	1788	0	2485	0	3182	0	3879	1
395	0	1092	1	1789	0	2486	0	3183	1	3880	0
396	1	1093	1	1790	1	2487	1	3184	0	3881	0
397	0	1094	1	1791	0	2488	1	3185	1	3882	1
398	0	1095	1	1792	1	2489	1	3186	1	3883	0
399	0	1096	0	1793	0	2490	0	3187	0	3884	1
400	1	1097	0	1794	0	2491	0	3188	0	3885	1
401	0	1098	0	1795	1	2492	0	3189	0	3886	1
402	1	1099	0	1796	0	2493	1	3190	1	3887	1
403	1	1100	1	1797	0	2494	0	3191	1	3888	1
404	1	1101	1	1798	1	2495	1	3192	1	3889	0
405	1	1102	1	1799	1	2496	1	3193	1	3890	0
406	0	1103	1	1800	0	2497	1	3194	1	3891	1
407	0	1104	0	1801	0	2498	1	3195	0	3892	0
408	0	1105	0	1802	1	2499	0	3196	0	3893	1
409	0	1106	0	1803	0	2500	0	3197	0	3894	1
410	0	1107	1	1804	0	2501	1	3198	0	3895	1
411	0	1108	0	1805	1	2502	1	3199	1	3896	1
412	0	1109	0	1806	0	2503	1	3200	0	3897	0
413	0	1110	0	1807	1	2504	1	3201	0	3898	0
414	1	1111	1	1808	0	2505	1	3202	0	3899	0
415	1	1112	0	1809	1	2506	1	3203	1	3900	1
416	0	1113	1	1810	0	2507	0	3204	1	3901	1
417	0	1114	1	1811	1	2508	0	3205	1	3902	0
418	0	1115	0	1812	0	2509	0	3206	0	3903	0
419	0	1116	1	1813	1	2510	0	3207	1	3904	0
420	1	1117	1	1814	1	2511	0	3208	0	3905	1
421	0	1118	0	1815	1	2512	1	3209	1	3906	0
422	1	1119	0	1816	1	2513	0	3210	0	3907	1
423	0	1120	1	1817	0	2514	0	3211	0	3908	1
424	1	1121	0	1818	1	2515	1	3212	1	3909	0
425	1	1122	1	1819	0	2516	1	3213	0	3910	1
426	1	1123	0	1820	1	2517	0	3214	0	3911	1
427	1	1124	0	1821	0	2518	0	3215	0	3912	1
428	0	1125	0	1822	0	2519	1	3216	0	3913	0
429	1	1126	0	1823	1	2520	0	3217	1	3914	1
430	0	1127	1	1824	1	2521	0	3218	0	3915	0
431	0	1128	0	1825	0	2522	1	3219	1	3916	0
432	0	1129	1	1826	0	2523	1	3220	0	3917	0
433	1	1130	0	1827	0	2524	1	3221	0	3918	0
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435	1	1132	0	1829	1	2526	1	3223	1	3920	0
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437	1	1134	0	1831	0	2528	1	3225	1	3922	0
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439	1	1136	0	1833	1	2530	1	3227	0	3924	0
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442	0	1139	0	1836	0	2533	1	3230	0	3927	0
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445	0	1142	0	1839	1	2536	0	3233	0	3930	1
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450	0	1147	1	1844	0	2541	1	3238	0	3935	0
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452	0	1149	1	1846	1	2543	0	3240	1	3937	1
453	1	1150	0	1847	0	2544	0	3241	1	3938	0
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455	0	1152	1	1849	0	2546	0	3243	1	3940	0
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460	1	1157	1	1854	1	2551	0	3248	1	3945	1
461	1	1158	1	1855	1	2552	0	3249	1	3946	0
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463	1	1160	0	1857	0	2554	1	3251	0	3948	1
464	0	1161	1	1858	0	2555	0	3252	1	3949	0
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466	0	1163	1	1860	0	2557	1	3254	0	3951	1
467	0	1164	1	1861	0	2558	1	3255	1	3952	1
468	0	1165	0	1862	1	2559	1	3256	1	3953	0
469	1	1166	0	1863	0	2560	0	3257	0	3954	0
470	1	1167	1	1864	1	2561	1	3258	1	3955	0
471	1	1168	1	1865	0	2562	1	3259	1	3956	0
472	1	1169	1	1866	0	2563	1	3260	0	3957	1
473	0	1170	1	1867	0	2564	1	3261	0	3958	0
474	1	1171	1	1868	1	2565	1	3262	0	3959	0
475	0	1172	1	1869	0	2566	0	3263	1	3960	0
476	0	1173	1	1870	0	2567	1	3264	0	3961	0
477	0	1174	0	1871	1	2568	1	3265	1	3962	1
478	1	1175	1	1872	0	2569	1	3266	0	3963	0

479	0	1176	1	1873	0	2570	1	3267	0	3964	0
480	1	1177	0	1874	1	2571	1	3268	0	3965	0
481	1	1178	1	1875	1	2572	0	3269	1	3966	1
482	0	1179	0	1876	1	2573	1	3270	1	3967	1
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484	1	1181	1	1878	1	2575	1	3272	0	3969	1
485	0	1182	0	1879	1	2576	0	3273	1	3970	0
486	1	1183	1	1880	0	2577	0	3274	0	3971	1
487	1	1184	0	1881	1	2578	1	3275	0	3972	0
488	0	1185	0	1882	1	2579	0	3276	0	3973	1
489	1	1186	0	1883	1	2580	1	3277	1	3974	1
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491	1	1188	1	1885	1	2582	0	3279	1	3976	1
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494	1	1191	0	1888	0	2585	0	3282	0	3979	1
495	1	1192	0	1889	0	2586	0	3283	1	3980	0
496	1	1193	1	1890	1	2587	0	3284	1	3981	0
497	1	1194	1	1891	1	2588	0	3285	0	3982	0
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502	1	1199	0	1896	0	2593	1	3290	0	3987	0
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504	1	1201	1	1898	1	2595	0	3292	0	3989	1
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506	0	1203	1	1900	1	2597	1	3294	1	3991	0
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509	0	1206	0	1903	0	2600	1	3297	0	3994	1
510	1	1207	1	1904	0	2601	0	3298	1	3995	0
511	0	1208	0	1905	0	2602	1	3299	1	3996	0
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513	1	1210	1	1907	1	2604	1	3301	0	3998	1
514	1	1211	0	1908	1	2605	1	3302	1	3999	0
515	1	1212	0	1909	0	2606	1	3303	0	4000	1
516	1	1213	0	1910	1	2607	1	3304	0	4001	1
517	0	1214	1	1911	1	2608	1	3305	0	4002	1
518	1	1215	0	1912	1	2609	1	3306	1	4003	0
519	0	1216	1	1913	1	2610	1	3307	1	4004	0
520	1	1217	0	1914	1	2611	0	3308	1	4005	1
521	1	1218	0	1915	1	2612	1	3309	0	4006	1
522	1	1219	1	1916	1	2613	0	3310	0	4007	0

523	0	1220	0	1917	1	2614	1	3311	0	4008	1
524	0	1221	1	1918	0	2615	0	3312	0	4009	0
525	1	1222	1	1919	1	2616	1	3313	0	4010	0
526	1	1223	0	1920	1	2617	0	3314	1	4011	1
527	1	1224	1	1921	0	2618	0	3315	0	4012	1
528	1	1225	1	1922	0	2619	0	3316	1	4013	0
529	0	1226	1	1923	0	2620	1	3317	0	4014	0
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533	1	1230	0	1927	0	2624	1	3321	1	4018	0
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535	0	1232	1	1929	0	2626	0	3323	1	4020	1
536	1	1233	0	1930	1	2627	0	3324	0	4021	0
537	0	1234	1	1931	0	2628	0	3325	0	4022	0
538	1	1235	1	1932	1	2629	0	3326	1	4023	0
539	0	1236	1	1933	0	2630	0	3327	0	4024	1
540	1	1237	1	1934	1	2631	1	3328	1	4025	1
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542	0	1239	1	1936	1	2633	1	3330	1	4027	0
543	0	1240	0	1937	0	2634	0	3331	1	4028	1
544	0	1241	1	1938	1	2635	1	3332	0	4029	1
545	1	1242	0	1939	1	2636	0	3333	0	4030	1
546	0	1243	0	1940	0	2637	0	3334	0	4031	1
547	0	1244	1	1941	0	2638	0	3335	1	4032	0
548	1	1245	0	1942	1	2639	0	3336	0	4033	0
549	0	1246	1	1943	1	2640	0	3337	1	4034	0
550	0	1247	1	1944	0	2641	1	3338	1	4035	0
551	1	1248	0	1945	0	2642	0	3339	1	4036	1
552	0	1249	1	1946	0	2643	0	3340	0	4037	0
553	1	1250	0	1947	0	2644	0	3341	0	4038	1
554	1	1251	0	1948	1	2645	0	3342	0	4039	1
555	0	1252	0	1949	1	2646	0	3343	0	4040	1
556	0	1253	1	1950	0	2647	0	3344	1	4041	1
557	0	1254	0	1951	1	2648	1	3345	1	4042	1
558	1	1255	0	1952	0	2649	1	3346	1	4043	1
559	0	1256	1	1953	0	2650	0	3347	1	4044	1
560	0	1257	0	1954	0	2651	0	3348	0	4045	1
561	1	1258	1	1955	0	2652	0	3349	0	4046	1
562	1	1259	0	1956	0	2653	1	3350	0	4047	1
563	1	1260	0	1957	1	2654	1	3351	1	4048	0
564	0	1261	1	1958	0	2655	1	3352	0	4049	1
565	0	1262	0	1959	0	2656	0	3353	0	4050	0
566	0	1263	0	1960	0	2657	0	3354	0	4051	1

567	1	1264	0	1961	0	2658	0	3355	0	4052	1
568	1	1265	0	1962	1	2659	0	3356	0	4053	0
569	1	1266	1	1963	0	2660	1	3357	0	4054	1
570	1	1267	1	1964	0	2661	0	3358	1	4055	0
571	0	1268	0	1965	1	2662	1	3359	0	4056	1
572	0	1269	0	1966	0	2663	0	3360	0	4057	0
573	1	1270	0	1967	1	2664	1	3361	1	4058	0
574	1	1271	0	1968	1	2665	0	3362	0	4059	1
575	0	1272	1	1969	1	2666	0	3363	1	4060	1
576	1	1273	0	1970	0	2667	1	3364	1	4061	1
577	0	1274	1	1971	0	2668	0	3365	1	4062	1
578	0	1275	1	1972	1	2669	1	3366	1	4063	1
579	1	1276	1	1973	0	2670	0	3367	1	4064	0
580	1	1277	0	1974	1	2671	0	3368	0	4065	1
581	1	1278	1	1975	1	2672	0	3369	0	4066	0
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587	1	1284	0	1981	1	2678	1	3375	1	4072	0
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589	1	1286	1	1983	0	2680	1	3377	0	4074	0
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591	1	1288	0	1985	1	2682	0	3379	0	4076	1
592	1	1289	0	1986	0	2683	0	3380	1	4077	1
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596	0	1293	0	1990	0	2687	0	3384	0	4081	0
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601	0	1298	1	1995	0	2692	0	3389	0	4086	1
602	0	1299	1	1996	0	2693	1	3390	0	4087	1
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604	1	1301	0	1998	0	2695	0	3392	0	4089	0
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606	1	1303	0	2000	0	2697	1	3394	0	4091	1
607	1	1304	1	2001	1	2698	0	3395	1	4092	0
608	0	1305	1	2002	0	2699	1	3396	0	4093	0
609	1	1306	1	2003	1	2700	1	3397	1	4094	0
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611	1	1308	1	2005	0	2702	0	3399	1	4096	1
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614	0	1311	0	2008	1	2705	0	3402	1	4099	0
615	0	1312	1	2009	0	2706	0	3403	0	4100	0
616	1	1313	1	2010	0	2707	1	3404	1	4101	1
617	1	1314	1	2011	1	2708	0	3405	0	4102	0
618	1	1315	0	2012	0	2709	0	3406	0	4103	1
619	0	1316	1	2013	1	2710	0	3407	1	4104	0
620	1	1317	1	2014	0	2711	1	3408	1	4105	0
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622	1	1319	0	2016	1	2713	0	3410	0	4107	1
623	1	1320	0	2017	0	2714	0	3411	1	4108	1
624	0	1321	0	2018	0	2715	1	3412	0	4109	1
625	0	1322	0	2019	1	2716	0	3413	0	4110	0
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627	0	1324	1	2021	0	2718	1	3415	0	4112	0
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635	0	1332	0	2029	1	2726	0	3423	1	4120	0
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645	1	1342	0	2039	1	2736	1	3433	1	4130	0
646	0	1343	1	2040	0	2737	1	3434	1	4131	0
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648	0	1345	0	2042	0	2739	1	3436	1	4133	0
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650	1	1347	1	2044	0	2741	1	3438	0	4135	1
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652	1	1349	0	2046	1	2743	1	3440	0	4137	1
653	1	1350	1	2047	0	2744	0	3441	0	4138	1
654	1	1351	1	2048	0	2745	0	3442	0	4139	1

655	0	1352	0	2049	1	2746	1	3443	1	4140	0
656	1	1353	1	2050	0	2747	0	3444	1	4141	1
657	1	1354	0	2051	0	2748	0	3445	1	4142	1
658	1	1355	0	2052	1	2749	0	3446	1	4143	1
659	0	1356	1	2053	1	2750	1	3447	0	4144	1
660	0	1357	0	2054	0	2751	0	3448	0	4145	1
661	1	1358	0	2055	0	2752	1	3449	1	4146	1
662	1	1359	1	2056	0	2753	1	3450	1	4147	1
663	0	1360	0	2057	0	2754	1	3451	1	4148	1
664	1	1361	1	2058	0	2755	0	3452	0	4149	1
665	1	1362	1	2059	1	2756	1	3453	1	4150	1
666	1	1363	1	2060	1	2757	0	3454	1	4151	0
667	0	1364	1	2061	1	2758	0	3455	1	4152	1
668	0	1365	0	2062	0	2759	1	3456	1	4153	0
669	0	1366	0	2063	1	2760	1	3457	0	4154	1
670	0	1367	0	2064	1	2761	1	3458	1	4155	1
671	1	1368	0	2065	0	2762	0	3459	1	4156	0
672	0	1369	1	2066	1	2763	0	3460	1	4157	0
673	0	1370	0	2067	1	2764	0	3461	0	4158	1
674	0	1371	0	2068	0	2765	1	3462	0	4159	1
675	1	1372	0	2069	1	2766	0	3463	0	4160	0
676	1	1373	0	2070	0	2767	1	3464	0	4161	1
677	0	1374	0	2071	1	2768	1	3465	1	4162	1
678	0	1375	0	2072	0	2769	0	3466	1	4163	1
679	1	1376	0	2073	0	2770	1	3467	1	4164	1
680	1	1377	0	2074	1	2771	1	3468	1	4165	1
681	0	1378	0	2075	0	2772	0	3469	0	4166	0
682	0	1379	1	2076	0	2773	1	3470	1	4167	0
683	1	1380	1	2077	0	2774	1	3471	0	4168	0
684	1	1381	0	2078	0	2775	0	3472	1	4169	1
685	1	1382	0	2079	1	2776	1	3473	0	4170	0
686	1	1383	0	2080	1	2777	1	3474	0	4171	0
687	0	1384	0	2081	0	2778	0	3475	0	4172	1
688	1	1385	0	2082	0	2779	1	3476	1	4173	0
689	0	1386	0	2083	0	2780	0	3477	0	4174	0
690	1	1387	1	2084	0	2781	0	3478	1	4175	1
691	1	1388	0	2085	0	2782	1	3479	0	4176	1
692	0	1389	1	2086	0	2783	1	3480	0	4177	1
693	0	1390	1	2087	1	2784	1	3481	1		
694	0	1391	0	2088	1	2785	0	3482	0		
695	0	1392	1	2089	0	2786	1	3483	1		
696	0	1393	0	2090	0	2787	0	3484	0		

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