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

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ABSTRACT. The continued fraction conjecture claims that the continued fraction defined by the (a,b)-Thue-Morse sequence is algebraic over $\mathbb{F}_2(x)$ for all pairs of distinct elements (a,b) in $\mathbb{F}_2[x]\setminus\mathbb{F}_2$. In this paper we prove the conjecture for $(a,b)=(z,z^6+z^5+z^3+z)$.

1. Introduction

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

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

as the limit of the finite continued fractions

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

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

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

admits a continued fraction expansion of form (1.1).

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

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

that we shall denote

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

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Theorem 1.1. *When $(a,b) = (z, z^6+z^5+z^3+z)$, the two power series* $\mathrm{CF}(a,b)$ *and* $\mathrm{CF}(b,a)$ *are algebraic over* $\mathbb{F}_2(z)$*, with minimal polynomials of the form*

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

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

$$\begin{aligned}
p_0(z) &= z^{18}+z^{15}+z^{12}+z^{11}+z^9+z^8+z^7+z^6+z^5+z^4+z^2+1,\\
p_1(z) &= z^{21}+z^{19}+z^{17}+z^{16}+z^{13}+z^{12}+z^{10}+z^8+z^7+z^6+z^5+z^3,\\
p_2(z) &= z^{22}+z^{20}+z^{18}+z^{16}+z^4+z^2,\\
p_3(z) &= z^{21}+z^{19}+z^{17}+z^{16}+z^{13}+z^{12}+z^{10}+z^8+z^7+z^6+z^5+z^3,\\
p_4(z) &= z^{20}+z^{16}+z^{15}+z^{14}+z^{12}+z^{11}+z^{10}+z^9+z^8+z^7+z^5+z^2+1,
\end{aligned}$$

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

$$\begin{aligned}
p_0(z) &= z^{15}+z^{14}+z^{12}+z^{11}+z^9+z^8+z^7+z^5+z^4+z^2+1,\\
p_1(z) &= z^{21}+z^{19}+z^{17}+z^{16}+z^{13}+z^{12}+z^{10}+z^8+z^7+z^6+z^5+z^3,\\
p_2(z) &= z^{22}+z^{20}+z^{18}+z^{16}+z^4+z^2,\\
p_3(z) &= z^{21}+z^{19}+z^{17}+z^{16}+z^{13}+z^{12}+z^{10}+z^8+z^7+z^6+z^5+z^3,\\
p_4(z) &= z^{20}+z^{18}+z^{16}+z^{15}+z^{12}+z^{11}+z^{10}+z^9+z^8+z^7+z^6+z^5+z^2+1
\end{aligned}$$

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2. Proof

Define the sequences of polynomials $(P_n(z))_{n\ge0}$ and $(Q_n(z))_{n\ge0}$ 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

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

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

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

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

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

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

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

for some positive integer d_n. Hence,

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

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

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

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

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

of the vector

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

where $T = M_{12,i,j}$ (resp. $M_{11,i,j}$, $W_{12,i,j}$, and $W_{11,i,j}$), found by the Derksen algorithm. We take the first 8 terms of $M_{12,i,j}$ (resp. $M_{11,i,j}$, $W_{12,i,j}$, and $W_{11,i,j}$) as initial conditions for $\phi(M^e,i,j)$ (resp. $\phi(M^o,i,j)$, $\phi(W^e,i,j)$, and $\phi(W^o,i,j)$). The following fact will be used to ensure that the solution exists and is unique: let $P(x,y) \in \mathbb{F}_2[x,y]$ and for each series $f(x) = \sum_{n=0}^{\infty} a_n x^n \in \mathbb{F}_2[[x]]$ denote the partial sum $\sum_{j=0}^{n-1} a_j x^j$ by $f_n(x)$ for $n \ge 0$. If for some $n \ge 0$ and $a_0, a_1, \ldots, a_{n-1} \in \mathbb{F}_2$ $P(x, \sum_{j=0}^{n-1} a_j x^j) = O(x^n)$ and $Q(x,y) := P(x, \sum_{j=0}^{n-1} a_j x^j + x^n y)$ can be written as $x^m \sum_{j=0}^{\infty} q_j(x) y^j$ where $q_j(x)$ are polynomials for $j \ge 0$, $q_1(0) = 1$, and $q_j(0) = 0$ for $j > 1$, then there exists a unique solution $f(x) \in \mathbb{F}_2[[x]]$ of $P(x, f(x)) = 0$ that satisfies the initial condition $f_n(x) = \sum_{j=0}^{n-1} a_j x^j$.

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

Lemma 2.1. *We have*

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

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

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

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

Proof. We give the proof of the identity

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

the proofs of the others being similar.

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

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

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

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

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

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

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

Define

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

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

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

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

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

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

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

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

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

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

which can be rewritten as

$$\begin{aligned} 0 &= T[[w]_2] + T[[1w]_2] + T[[10w]_2] + T[[11w]_2] + T[[101w]_2] \\ &\quad + T[[110w]_2] + T[[111w]_2], \end{aligned} \tag{2.7}$$

$$0 = T[[w]_2] + T[[100w]_2] + T[[101w]_2] + T[[1000w]_2], \tag{2.8}$$

$$0 = T[[1w]_2] + T[[101w]_2] + T[[110w]_2] + T[[1001w]_2], \tag{2.9}$$

$$0 = T[[w]_2] + T[[1w]_2] + T[[11w]_2] + T[[101w]_2] + T[[1010w]_2], \tag{2.10}$$

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

$$0 = T[[w]_2] + T[[110w]_2] + T[[1100w]_2], \tag{2.12}$$

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

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

$$0 = T[[w]_2] + T[[1w]_2] + T[[10w]_2] + T[[11w]_2] + T[[101w]_2]$$

$$
\begin{align}
&\quad + T[[110w]_2] + T[[111w]_2], \tag{2.14}\\
0 &= T[[w]_2] + T[[100w]_2] + T[[101w]_2] + T[[1000w]_2], \tag{2.15}\\
0 &= T[[1w]_2] + T[[101w]_2] + T[[110w]_2] + T[[1001w]_2], \tag{2.16}\\
0 &= T[[w]_2] + T[[1w]_2] + T[[11w]_2] + T[[101w]_2] + T[[1010w]_2], \tag{2.17}\\
0 &= T[[w]_2] + T[[1w]_2] + T[[10w]_2] + T[[100w]_2] + T[[110w]_2] \nonumber\\
&\quad + T[[1011w]_2], \tag{2.18}\\
0 &= T[[w]_2] + T[[110w]_2] + T[[1100w]_2], \tag{2.19}\\
0 &= T[[w]_2] + T[[10w]_2] + T[[11w]_2] + T[[101w]_2] + T[[110w]_2] \nonumber\\
&\quad + T[[1101w]_2], \tag{2.20}
\end{align}
$$

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

First we calculate an 2-automaton that generates T from its minimal polynomial and its first terms. This automaton has 3915 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

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

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

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

$$+\tau(A(s,110))+\tau(A(s,1101)), \tag{2.34}$$

for $s=A(i,0^{2k})$. We find that $(A(i,0^{42}),E_{42})=(A(i,0^{22}),E_{22})$, so that we only have to verify that identities (2.21) through (2.34) hold for $2\le k\le 21$, which turns out to be true. □

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

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

$$\begin{aligned}M_{2k}&=M^e[:7u]+x^uM^e[:6u]+x^{2u}M^e[:5u]+x^{4u}M^e[:3u]+x^{5u}M^e[:2u]\\&\quad+x^{6u}M^e[:u]+x^{7u}R^e,\\W_{2k}&=W^e[:7u]+x^uW^e[:6u]+x^{2u}W^e[:5u]+x^{4u}W^e[:3u]+x^{5u}W^e[:2u]\\&\quad+x^{6u}W^e[:u]+x^{7u}R^e.\end{aligned}$$

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

$$\begin{aligned}M_{2k+1}&=M^o[:7u]+x^uM^o[:6u]+x^{2u}M^o[:5u]+x^{4u}M^o[:3u]+x^{5u}M^o[:2u]\\&\quad+x^{6u}M^o[:u]+x^{7u}R^o,\\W_{2k+1}&=W^o[:7u]+x^uW^o[:6u]+x^{2u}W^o[:5u]+x^{4u}W^o[:3u]+x^{5u}W^o[:2u]\\&\quad+x^{6u}W^o[:u]+x^{7u}R^o.\end{aligned}$$

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

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

We give the proof of

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Define

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

where

$$\begin{aligned} q_0(x) &= x^{22} + x^{20} + x^{18} + x^{17} + x^{16} + x^{15} + x^{14} + x^{13} + x^{11} + x^{10} + x^7 + x^4, \\ q_1(x) &= x^{19} + x^{17} + x^{16} + x^{15} + x^{14} + x^{12} + x^{10} + x^9 + x^6 + x^5 + x^3 + x, \\ q_2(x) &= x^{20} + x^{18} + x^6 + x^4 + x^2 + 1, \\ q_3(x) &= x^{19} + x^{17} + x^{16} + x^{15} + x^{14} + x^{12} + x^{10} + x^9 + x^6 + x^5 + x^3 + x, \\ q_4(x) &= x^{22} + x^{20} + x^{17} + x^{15} + x^{14} + x^{13} + x^{12} + x^{11} + x^{10} + x^8 + x^7 + x^6 \\ &\quad + x^2. \end{aligned}$$

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

3. Annexe

All 16 polynomials are of the form

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

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

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

$$\begin{aligned}
p_0(x) &= x^{132} + x^{128} + x^{124} + x^{122} + x^{120} + x^{118} + x^{116} + x^{108} + x^{106} + x^{104} \\
&\quad + x^{102} + x^{98} + x^{94} + x^{92} + x^{90} + x^{86} + x^{82} + x^{80} + x^{76} + x^{74} + x^{68} \\
&\quad + x^{60} + x^{56} + x^{48} + x^{36} + x^{34} + x^{30} + x^{24} + x^{22} + x^{20} + x^{12}, \\
p_3(x) &= x^{122} + x^{118} + x^{116} + x^{114} + x^{112} + x^{110} + x^{106} + x^{102} + x^{94} + x^{92} \\
&\quad + x^{88} + x^{84} + x^{80} + x^{76} + x^{74} + x^{72} + x^{70} + x^{58} + x^{56} + x^{46} + x^{34} \\
&\quad + x^{28} + x^{22} + x^{18} + x^{16} + x^{8}, \\
p_6(x) &= x^{124} + x^{122} + x^{108} + x^{96} + x^{90} + x^{80} + x^{70} + x^{68} + x^{62} + x^{60} + x^{54} \\
&\quad + x^{50} + x^{46} + x^{44} + x^{42} + x^{34} + x^{32} + x^{30} + x^{24} + x^{18} + x^{16} + x^{12} \\
&\quad + x^{8} + x^{4} + x^{2} + 1, \\
p_9(x) &= x^{118} + x^{116} + x^{114} + x^{106} + x^{102} + x^{98} + x^{96} + x^{92} + x^{86} + x^{84} + x^{80} \\
&\quad + x^{78} + x^{76} + x^{74} + x^{62} + x^{60} + x^{58} + x^{50} + x^{44} + x^{40} + x^{36} + x^{34} \\
&\quad + x^{28} + x^{26} + x^{22} + x^{18} + x^{14} + x^{12} + x^{8} + x^{6} + x^{4} + x^{2}, \\
p_{12}(x) &= x^{120} + x^{88} + x^{80} + x^{72} + x^{64} + x^{48} + x^{32} + x^{24} + x^{8} + 1,
\end{aligned}$$

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

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

$$\begin{aligned}
p_0(x) &= x^{117} + x^{115} + x^{113} + x^{112} + x^{108} + x^{106} + x^{104} + x^{103} + x^{102} + x^{101} \\
&\quad + x^{98} + x^{96} + x^{92} + x^{91} + x^{87} + x^{85} + x^{84} + x^{79} + x^{76} + x^{75} + x^{74} \\
&\quad + x^{71} + x^{68} + x^{67} + x^{66} + x^{60} + x^{58} + x^{55} + x^{53} + x^{52} + x^{51} + x^{48} \\
&\quad + x^{47} + x^{46} + x^{43} + x^{41} + x^{37} + x^{36} + x^{35} + x^{32} + x^{31} + x^{28} + x^{27} \\
&\quad + x^{24} + x^{22} + x^{19} + x^{18}, \\
p_3(x) &= x^{96} + x^{93} + x^{92} + x^{91} + x^{88} + x^{85} + x^{84} + x^{83} + x^{82} + x^{79} + x^{77} \\
&\quad + x^{75} + x^{73} + x^{72} + x^{71} + x^{68} + x^{66} + x^{65} + x^{58} + x^{56} + x^{55} + x^{52} \\
&\quad + x^{50} + x^{49} + x^{48} + x^{45} + x^{44} + x^{43} + x^{42} + x^{40} + x^{39} + x^{36} + x^{33} \\
&\quad + x^{32} + x^{31} + x^{28} + x^{25} + x^{23} + x^{21} + x^{19} + x^{17} + x^{15} + x^{13} + x^{11} \\
&\quad + x^{10} + x^{9}, \\
p_6(x) &= x^{99} + x^{97} + x^{94} + x^{91} + x^{90} + x^{89} + x^{88} + x^{87} + x^{86} + x^{85} + x^{84} \\
&\quad + x^{83} + x^{82} + x^{80} + x^{78} + x^{75} + x^{74} + x^{73} + x^{72} + x^{71} + x^{70} + x^{68} \\
&\quad + x^{67} + x^{66} + x^{59} + x^{55} + x^{54} + x^{53} + x^{52} + x^{51} + x^{50} + x^{49} + x^{48}
\end{aligned}$$

$$
\begin{aligned}
&+ x^{46} + x^{45} + x^{44} + x^{43} + x^{41} + x^{39} + x^{38} + x^{37} + x^{33} + x^{32} + x^{30}\\
&+ x^{28} + x^{25} + x^{24} + x^{22} + x^{20} + x^{19} + x^{17} + x^{16} + x^{11} + x^{9} + x^{7} + x^{6},\\
p_9(x) &= x^{102} + x^{99} + x^{97} + x^{96} + x^{95} + x^{94} + x^{91} + x^{90} + x^{89} + x^{86} + x^{84}\\
&+ x^{83} + x^{82} + x^{80} + x^{79} + x^{78} + x^{76} + x^{75} + x^{72} + x^{69} + x^{67} + x^{66}\\
&+ x^{65} + x^{56} + x^{53} + x^{52} + x^{51} + x^{50} + x^{48} + x^{47} + x^{44} + x^{42} + x^{41}\\
&+ x^{40} + x^{37} + x^{36} + x^{35} + x^{34} + x^{31} + x^{30} + x^{29} + x^{26} + x^{24} + x^{23}\\
&+ x^{22} + x^{20} + x^{19} + x^{16} + x^{14} + x^{13} + x^{8} + x^{5} + x^{4} + x^{3},\\
p_{12}(x) &= x^{105} + x^{103} + x^{101} + x^{100} + x^{97} + x^{95} + x^{93} + x^{92} + x^{85} + x^{83} + x^{80}\\
&+ x^{79} + x^{77} + x^{76} + x^{69} + x^{67} + x^{64} + x^{63} + x^{61} + x^{60} + x^{53} + x^{51}\\
&+ x^{48} + x^{47} + x^{45} + x^{44} + x^{41} + x^{39} + x^{36} + x^{35} + x^{33} + x^{32} + x^{25}\\
&+ x^{23} + x^{21} + x^{20} + x^{17} + x^{15} + x^{13} + x^{12} + x^{9} + x^{7} + x^{4} + x^{3} + x + 1,
\end{aligned}
$$

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

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

$$
\begin{aligned}
p_0(x) &= x^{117} + x^{115} + x^{113} + x^{112} + x^{108} + x^{106} + x^{104} + x^{103} + x^{102} + x^{101}\\
&+ x^{98} + x^{96} + x^{92} + x^{91} + x^{87} + x^{85} + x^{84} + x^{79} + x^{76} + x^{75} + x^{74}\\
&+ x^{71} + x^{68} + x^{67} + x^{66} + x^{60} + x^{58} + x^{55} + x^{53} + x^{52} + x^{51} + x^{48}\\
&+ x^{47} + x^{46} + x^{43} + x^{41} + x^{37} + x^{36} + x^{35} + x^{32} + x^{31} + x^{28} + x^{27}\\
&+ x^{24} + x^{22} + x^{19} + x^{18},\\
p_3(x) &= x^{96} + x^{93} + x^{92} + x^{91} + x^{88} + x^{85} + x^{84} + x^{83} + x^{82} + x^{79} + x^{77}\\
&+ x^{75} + x^{73} + x^{72} + x^{71} + x^{68} + x^{66} + x^{65} + x^{58} + x^{56} + x^{55} + x^{52}\\
&+ x^{50} + x^{49} + x^{48} + x^{45} + x^{44} + x^{43} + x^{42} + x^{40} + x^{39} + x^{36} + x^{33}\\
&+ x^{32} + x^{31} + x^{28} + x^{25} + x^{23} + x^{21} + x^{19} + x^{17} + x^{15} + x^{13} + x^{11}\\
&+ x^{10} + x^{9},\\
p_6(x) &= x^{99} + x^{97} + x^{94} + x^{91} + x^{90} + x^{89} + x^{88} + x^{87} + x^{86} + x^{85} + x^{84}\\
&+ x^{83} + x^{82} + x^{80} + x^{78} + x^{75} + x^{74} + x^{73} + x^{72} + x^{71} + x^{70} + x^{68}\\
&+ x^{67} + x^{66} + x^{59} + x^{55} + x^{54} + x^{53} + x^{52} + x^{51} + x^{50} + x^{49} + x^{48}\\
&+ x^{46} + x^{45} + x^{44} + x^{43} + x^{41} + x^{39} + x^{38} + x^{37} + x^{33} + x^{32} + x^{30}\\
&+ x^{28} + x^{25} + x^{24} + x^{22} + x^{20} + x^{19} + x^{17} + x^{16} + x^{11} + x^{9} + x^{7} + x^{6},\\
p_9(x) &= x^{102} + x^{99} + x^{97} + x^{96} + x^{95} + x^{94} + x^{91} + x^{90} + x^{89} + x^{86} + x^{84}\\
&+ x^{83} + x^{82} + x^{80} + x^{79} + x^{78} + x^{76} + x^{75} + x^{72} + x^{69} + x^{67} + x^{66}\\
&+ x^{65} + x^{56} + x^{53} + x^{52} + x^{51} + x^{50} + x^{48} + x^{47} + x^{44} + x^{42} + x^{41}\\
&+ x^{40} + x^{37} + x^{36} + x^{35} + x^{34} + x^{31} + x^{30} + x^{29} + x^{26} + x^{24} + x^{23}\\
&+ x^{22} + x^{20} + x^{19} + x^{16} + x^{14} + x^{13} + x^{8} + x^{5} + x^{4} + x^{3},\\
p_{12}(x) &= x^{105} + x^{103} + x^{101} + x^{100} + x^{97} + x^{95} + x^{93} + x^{92} + x^{85} + x^{83} + x^{80}\\
&+ x^{79} + x^{77} + x^{76} + x^{69} + x^{67} + x^{64} + x^{63} + x^{61} + x^{60} + x^{53} + x^{51}
\end{aligned}
$$

$$+ x^{48} + x^{47} + x^{45} + x^{44} + x^{41} + x^{39} + x^{36} + x^{35} + x^{33} + x^{32} + x^{25}$$
$$+ x^{23} + x^{21} + x^{20} + x^{17} + x^{15} + x^{13} + x^{12} + x^{9} + x^{7} + x^{4} + x^{3} + x + 1,$$

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

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

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

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

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

$$\begin{aligned}
p_0(x) &= x^{102} + x^{94} + x^{88} + x^{86} + x^{84} + x^{82} + x^{80} + x^{68} + x^{66} + x^{64} + x^{60}\\
&\quad + x^{58} + x^{54} + x^{42} + x^{40} + x^{36} + x^{32} + x^{28} + x^{24} + x^{20} + x^{16} + x^{14}\\
&\quad + x^{12},\\
p_3(x) &= x^{92} + x^{86} + x^{84} + x^{82} + x^{78} + x^{74} + x^{72} + x^{66} + x^{64} + x^{62} + x^{60}\\
&\quad + x^{54} + x^{52} + x^{50} + x^{48} + x^{44} + x^{34} + x^{32} + x^{28} + x^{24} + x^{22} + x^{18}\\
&\quad + x^{16} + x^{14} + x^{12} + x^{8},\\
p_6(x) &= x^{94} + x^{92} + x^{90} + x^{88} + x^{86} + x^{80} + x^{78} + x^{74} + x^{72} + x^{70} + x^{64}\\
&\quad + x^{60} + x^{58} + x^{56} + x^{54} + x^{42} + x^{36} + x^{28} + x^{24} + x^{12} + x^{10} + 1,\\
p_9(x) &= x^{88} + x^{86} + x^{82} + x^{76} + x^{74} + x^{72} + x^{70} + x^{68} + x^{66} + x^{62} + x^{52}\\
&\quad + x^{48} + x^{38} + x^{36} + x^{34} + x^{32} + x^{30} + x^{28} + x^{20} + x^{16} + x^{12} + x^{10}\\
&\quad + x^{8} + x^{2},\\
p_{12}(x) &= x^{90} + x^{86} + x^{82} + x^{80} + x^{74} + x^{70} + x^{66} + x^{64} + x^{58} + x^{54} + x^{50}\\
&\quad + x^{48} + x^{42} + x^{38} + x^{34} + x^{32} + x^{10} + x^{6} + x^{2} + 1,
\end{aligned}$$

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

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

$$\begin{aligned}
p_0(x) &= x^{117} + x^{115} + x^{113} + x^{112} + x^{108} + x^{107} + x^{106} + x^{105} + x^{104} + x^{99}\\
&\quad + x^{98} + x^{95} + x^{93} + x^{89} + x^{88} + x^{87} + x^{85} + x^{80} + x^{79} + x^{77} + x^{75}\\
&\quad + x^{71} + x^{69} + x^{67} + x^{66} + x^{65} + x^{64} + x^{62} + x^{61} + x^{60} + x^{57} + x^{55}
\end{aligned}$$

$$
\begin{aligned}
&+ x^{53} + x^{49} + x^{46} + x^{41} + x^{40} + x^{37} + x^{35} + x^{34} + x^{33} + x^{32} + x^{31}\\
&+ x^{29} + x^{27},\\
p_3(x) &= x^{96} + x^{93} + x^{92} + x^{91} + x^{88} + x^{85} + x^{84} + x^{83} + x^{82} + x^{79} + x^{77}\\
&+ x^{75} + x^{73} + x^{72} + x^{71} + x^{68} + x^{66} + x^{65} + x^{58} + x^{56} + x^{55} + x^{52}\\
&+ x^{50} + x^{49} + x^{48} + x^{45} + x^{44} + x^{43} + x^{42} + x^{40} + x^{39} + x^{36} + x^{33}\\
&+ x^{32} + x^{31} + x^{28} + x^{25} + x^{23} + x^{21} + x^{19} + x^{17} + x^{15} + x^{13} + x^{11}\\
&+ x^{10} + x^{9},\\
p_6(x) &= x^{99} + x^{97} + x^{94} + x^{91} + x^{90} + x^{89} + x^{88} + x^{87} + x^{86} + x^{85} + x^{84}\\
&+ x^{83} + x^{82} + x^{80} + x^{78} + x^{75} + x^{74} + x^{73} + x^{72} + x^{71} + x^{70} + x^{68}\\
&+ x^{67} + x^{66} + x^{59} + x^{55} + x^{54} + x^{53} + x^{52} + x^{51} + x^{50} + x^{49} + x^{48}\\
&+ x^{46} + x^{45} + x^{44} + x^{43} + x^{41} + x^{39} + x^{38} + x^{37} + x^{33} + x^{32} + x^{30}\\
&+ x^{28} + x^{25} + x^{24} + x^{22} + x^{20} + x^{19} + x^{17} + x^{16} + x^{11} + x^{9} + x^{7} + x^{6},\\
p_9(x) &= x^{102} + x^{99} + x^{97} + x^{96} + x^{95} + x^{94} + x^{91} + x^{90} + x^{89} + x^{86} + x^{84}\\
&+ x^{83} + x^{82} + x^{80} + x^{79} + x^{78} + x^{76} + x^{75} + x^{72} + x^{69} + x^{67} + x^{66}\\
&+ x^{65} + x^{56} + x^{53} + x^{52} + x^{51} + x^{50} + x^{48} + x^{47} + x^{44} + x^{42} + x^{41}\\
&+ x^{40} + x^{37} + x^{36} + x^{35} + x^{34} + x^{31} + x^{30} + x^{29} + x^{26} + x^{24} + x^{23}\\
&+ x^{22} + x^{20} + x^{19} + x^{16} + x^{14} + x^{13} + x^{8} + x^{5} + x^{4} + x^{3},\\
p_{12}(x) &= x^{105} + x^{103} + x^{101} + x^{100} + x^{97} + x^{95} + x^{93} + x^{92} + x^{85} + x^{83} + x^{80}\\
&+ x^{79} + x^{77} + x^{76} + x^{69} + x^{67} + x^{64} + x^{63} + x^{61} + x^{60} + x^{53} + x^{51}\\
&+ x^{48} + x^{47} + x^{45} + x^{44} + x^{41} + x^{39} + x^{36} + x^{35} + x^{33} + x^{32} + x^{25}\\
&+ x^{23} + x^{21} + x^{20} + x^{17} + x^{15} + x^{13} + x^{12} + x^{9} + x^{7} + x^{4} + x^{3} + x + 1,
\end{aligned}
$$

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

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

$$
\begin{aligned}
p_0(x) &= x^{117} + x^{115} + x^{113} + x^{112} + x^{108} + x^{107} + x^{106} + x^{105} + x^{104} + x^{99}\\
&+ x^{98} + x^{95} + x^{93} + x^{89} + x^{88} + x^{87} + x^{85} + x^{80} + x^{79} + x^{77} + x^{75}\\
&+ x^{71} + x^{69} + x^{67} + x^{66} + x^{65} + x^{64} + x^{62} + x^{61} + x^{60} + x^{57} + x^{55}\\
&+ x^{53} + x^{49} + x^{46} + x^{41} + x^{40} + x^{37} + x^{35} + x^{34} + x^{33} + x^{32} + x^{31}\\
&+ x^{29} + x^{27},\\
p_3(x) &= x^{96} + x^{93} + x^{92} + x^{91} + x^{88} + x^{85} + x^{84} + x^{83} + x^{82} + x^{79} + x^{77}\\
&+ x^{75} + x^{73} + x^{72} + x^{71} + x^{68} + x^{66} + x^{65} + x^{58} + x^{56} + x^{55} + x^{52}\\
&+ x^{50} + x^{49} + x^{48} + x^{45} + x^{44} + x^{43} + x^{42} + x^{40} + x^{39} + x^{36} + x^{33}\\
&+ x^{32} + x^{31} + x^{28} + x^{25} + x^{23} + x^{21} + x^{19} + x^{17} + x^{15} + x^{13} + x^{11}\\
&+ x^{10} + x^{9},\\
p_6(x) &= x^{99} + x^{97} + x^{94} + x^{91} + x^{90} + x^{89} + x^{88} + x^{87} + x^{86} + x^{85} + x^{84}\\
&+ x^{83} + x^{82} + x^{80} + x^{78} + x^{75} + x^{74} + x^{73} + x^{72} + x^{71} + x^{70} + x^{68}
\end{aligned}
$$

$$\begin{aligned}
&+ x^{67} + x^{66} + x^{59} + x^{55} + x^{54} + x^{53} + x^{52} + x^{51} + x^{50} + x^{49} + x^{48}\\
&+ x^{46} + x^{45} + x^{44} + x^{43} + x^{41} + x^{39} + x^{38} + x^{37} + x^{33} + x^{32} + x^{30}\\
&+ x^{28} + x^{25} + x^{24} + x^{22} + x^{20} + x^{19} + x^{17} + x^{16} + x^{11} + x^{9} + x^{7} + x^{6},\\
p_9(x) &= x^{102} + x^{99} + x^{97} + x^{96} + x^{95} + x^{94} + x^{91} + x^{90} + x^{89} + x^{86} + x^{84}\\
&+ x^{83} + x^{82} + x^{80} + x^{79} + x^{78} + x^{76} + x^{75} + x^{72} + x^{69} + x^{67} + x^{66}\\
&+ x^{65} + x^{56} + x^{53} + x^{52} + x^{51} + x^{50} + x^{48} + x^{47} + x^{44} + x^{42} + x^{41}\\
&+ x^{40} + x^{37} + x^{36} + x^{35} + x^{34} + x^{31} + x^{30} + x^{29} + x^{26} + x^{24} + x^{23}\\
&+ x^{22} + x^{20} + x^{19} + x^{16} + x^{14} + x^{13} + x^{8} + x^{5} + x^{4} + x^{3},\\
p_{12}(x) &= x^{105} + x^{103} + x^{101} + x^{100} + x^{97} + x^{95} + x^{93} + x^{92} + x^{85} + x^{83} + x^{80}\\
&+ x^{79} + x^{77} + x^{76} + x^{69} + x^{67} + x^{64} + x^{63} + x^{61} + x^{60} + x^{53} + x^{51}\\
&+ x^{48} + x^{47} + x^{45} + x^{44} + x^{41} + x^{39} + x^{36} + x^{35} + x^{33} + x^{32} + x^{25}\\
&+ x^{23} + x^{21} + x^{20} + x^{17} + x^{15} + x^{13} + x^{12} + x^{9} + x^{7} + x^{4} + x^{3} + x + 1,
\end{aligned}$$

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

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

$$\begin{aligned}
p_0(x) &= x^{132} + x^{128} + x^{122} + x^{120} + x^{118} + x^{116} + x^{104} + x^{96} + x^{92} + x^{90}\\
&+ x^{88} + x^{78} + x^{72} + x^{70} + x^{62} + x^{60} + x^{58} + x^{54} + x^{52} + x^{50} + x^{46}\\
&+ x^{44} + x^{42},\\
p_3(x) &= x^{122} + x^{118} + x^{116} + x^{112} + x^{110} + x^{108} + x^{106} + x^{102} + x^{96} + x^{90}\\
&+ x^{84} + x^{80} + x^{78} + x^{76} + x^{74} + x^{72} + x^{70} + x^{56} + x^{52} + x^{46} + x^{42}\\
&+ x^{40} + x^{38} + x^{32} + x^{28} + x^{24} + x^{22} + x^{20} + x^{8} + x^{6},\\
p_6(x) &= x^{124} + x^{122} + x^{116} + x^{114} + x^{108} + x^{104} + x^{96} + x^{94} + x^{88} + x^{80}\\
&+ x^{78} + x^{76} + x^{70} + x^{68} + x^{62} + x^{58} + x^{54} + x^{50} + x^{48} + x^{46} + x^{38}\\
&+ x^{32} + x^{30} + x^{24} + x^{20} + x^{12} + x^{8} + x^{6} + x^{2} + 1,\\
p_9(x) &= x^{118} + x^{116} + x^{114} + x^{106} + x^{102} + x^{98} + x^{96} + x^{92} + x^{86} + x^{84} + x^{80}\\
&+ x^{78} + x^{76} + x^{74} + x^{62} + x^{60} + x^{58} + x^{50} + x^{44} + x^{40} + x^{36} + x^{34}\\
&+ x^{28} + x^{26} + x^{22} + x^{18} + x^{14} + x^{12} + x^{8} + x^{6} + x^{4} + x^{2},\\
p_{12}(x) &= x^{120} + x^{88} + x^{80} + x^{72} + x^{64} + x^{48} + x^{32} + x^{24} + x^{8} + 1,
\end{aligned}$$

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

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

$$\begin{aligned}
p_0(x) &= x^{117} + x^{115} + x^{112} + x^{109} + x^{108} + x^{107} + x^{105} + x^{104} + x^{103} + x^{101}\\
&+ x^{95} + x^{92} + x^{91} + x^{90} + x^{88} + x^{84} + x^{81} + x^{79} + x^{74} + x^{71} + x^{68}\\
&+ x^{67} + x^{66} + x^{63} + x^{62} + x^{60} + x^{56} + x^{55} + x^{54} + x^{53} + x^{52} + x^{50}\\
&+ x^{49} + x^{48} + x^{47} + x^{45} + x^{44} + x^{43} + x^{42} + x^{41} + x^{40} + x^{38} + x^{37}\\
&+ x^{34} + x^{31} + x^{29} + x^{28} + x^{24} + x^{23} + x^{20} + x^{14} + x^{13} + x^{12},\\
p_3(x) &= x^{105} + x^{103} + x^{100} + x^{97} + x^{96} + x^{95} + x^{92} + x^{88} + x^{80} + x^{79} + x^{77}
\end{aligned}$$

$$
\begin{aligned}
&+ x^{71} + x^{67} + x^{65} + x^{63} + x^{62} + x^{59} + x^{57} + x^{56} + x^{51} + x^{50} + x^{49}\\
&+ x^{48} + x^{45} + x^{44} + x^{43} + x^{42} + x^{41} + x^{39} + x^{37} + x^{36} + x^{34} + x^{30}\\
&+ x^{29} + x^{28} + x^{27} + x^{26} + x^{25} + x^{23} + x^{22} + x^{20} + x^{15} + x^{14} + x^{10}\\
&+ x^{9} + x^{8},\\
p_6(x) &= x^{109} + x^{107} + x^{104} + x^{100} + x^{99} + x^{97} + x^{95} + x^{91} + x^{89} + x^{88} + x^{87}\\
&+ x^{84} + x^{83} + x^{79} + x^{76} + x^{75} + x^{71} + x^{68} + x^{67} + x^{66} + x^{62} + x^{61}\\
&+ x^{60} + x^{57} + x^{56} + x^{55} + x^{53} + x^{52} + x^{51} + x^{49} + x^{48} + x^{47} + x^{46}\\
&+ x^{45} + x^{44} + x^{43} + x^{41} + x^{40} + x^{39} + x^{38} + x^{36} + x^{35} + x^{34} + x^{33}\\
&+ x^{32} + x^{31} + x^{27} + x^{26} + x^{23} + x^{19} + x^{18} + x^{17} + x^{16} + x^{14} + x^{13}\\
&+ x^{12} + x^{11} + x^{8} + x^{7} + x^{6} + x^{5} + x^{3} + x + 1,\\
p_9(x) &= x^{101} + x^{99} + x^{97} + x^{96} + x^{93} + x^{91} + x^{88} + x^{87} + x^{84} + x^{83} + x^{81}\\
&+ x^{80} + x^{77} + x^{75} + x^{72} + x^{71} + x^{68} + x^{67} + x^{65} + x^{64} + x^{61} + x^{59}\\
&+ x^{56} + x^{55} + x^{52} + x^{51} + x^{49} + x^{48} + x^{45} + x^{43} + x^{40} + x^{39} + x^{37}\\
&+ x^{36} + x^{21} + x^{19} + x^{17} + x^{16} + x^{13} + x^{11} + x^{8} + x^{7} + x^{5} + x^{4},\\
p_{12}(x) &= x^{105} + x^{103} + x^{100} + x^{99} + x^{96} + x^{95} + x^{92} + x^{91} + x^{88} + x^{87} + x^{85}\\
&+ x^{84} + x^{81} + x^{79} + x^{76} + x^{75} + x^{72} + x^{71} + x^{69} + x^{68} + x^{65} + x^{63}\\
&+ x^{60} + x^{59} + x^{56} + x^{55} + x^{53} + x^{52} + x^{49} + x^{47} + x^{44} + x^{43} + x^{41}\\
&+ x^{40} + x^{37} + x^{35} + x^{33} + x^{32} + x^{25} + x^{23} + x^{20} + x^{19} + x^{16} + x^{15}\\
&+ x^{12} + x^{11} + x^{9} + x^{8} + x^{5} + x^{3} + x + 1,
\end{aligned}
$$

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

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

$$
\begin{aligned}
p_0(x) &= x^{112} + x^{106} + x^{104} + x^{103} + x^{102} + x^{101} + x^{99} + x^{98} + x^{93} + x^{90}\\
&+ x^{88} + x^{87} + x^{86} + x^{85} + x^{80} + x^{79} + x^{78} + x^{74} + x^{73} + x^{71} + x^{69}\\
&+ x^{67} + x^{64} + x^{62} + x^{60} + x^{57} + x^{56} + x^{52} + x^{48} + x^{47} + x^{46} + x^{44}\\
&+ x^{43} + x^{42} + x^{40} + x^{39} + x^{33} + x^{30} + x^{29} + x^{26} + x^{22} + x^{21} + x^{20}\\
&+ x^{18},\\
p_3(x) &= x^{91} + x^{88} + x^{87} + x^{85} + x^{84} + x^{83} + x^{78} + x^{76} + x^{73} + x^{72} + x^{71}\\
&+ x^{70} + x^{69} + x^{67} + x^{65} + x^{64} + x^{63} + x^{61} + x^{60} + x^{56} + x^{55} + x^{54}\\
&+ x^{53} + x^{51} + x^{49} + x^{48} + x^{47} + x^{45} + x^{44} + x^{43} + x^{38} + x^{36} + x^{35}\\
&+ x^{33} + x^{30} + x^{28} + x^{27} + x^{25} + x^{22} + x^{20} + x^{17} + x^{16} + x^{15} + x^{14}\\
&+ x^{13} + x^{9},\\
p_6(x) &= x^{94} + x^{90} + x^{88} + x^{86} + x^{84} + x^{82} + x^{80} + x^{78} + x^{74} + x^{72} + x^{70}\\
&+ x^{68} + x^{66} + x^{54} + x^{52} + x^{50} + x^{48} + x^{46} + x^{44} + x^{38} + x^{32} + x^{30}\\
&+ x^{28} + x^{24} + x^{22} + x^{20} + x^{16} + x^{6},\\
p_9(x) &= x^{97} + x^{94} + x^{93} + x^{90} + x^{89} + x^{88} + x^{87} + x^{83} + x^{81} + x^{78} + x^{77}
\end{aligned}
$$

$$
\begin{aligned}
&+ x^{74} + x^{73} + x^{72} + x^{71} + x^{67} + x^{65} + x^{62} + x^{61} + x^{58} + x^{57} + x^{56}\\
&+ x^{55} + x^{51} + x^{49} + x^{46} + x^{45} + x^{42} + x^{41} + x^{40} + x^{39} + x^{35} + x^{17}\\
&+ x^{14} + x^{13} + x^{10} + x^{9} + x^{8} + x^{7} + x^{3},\\
p_{12}(x) &= x^{100} + x^{96} + x^{92} + x^{88} + x^{84} + x^{76} + x^{72} + x^{68} + x^{60} + x^{56} + x^{52}\\
&+ x^{44} + x^{40} + x^{32} + x^{20} + x^{16} + x^{12} + x^{8} + 1,
\end{aligned}
$$

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

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

$$
\begin{aligned}
p_0(x) &= x^{132} + x^{126} + x^{123} + x^{121} + x^{120} + x^{119} + x^{116} + x^{115} + x^{111} + x^{108}\\
&+ x^{106} + x^{105} + x^{104} + x^{103} + x^{100} + x^{99} + x^{97} + x^{92} + x^{91} + x^{90}\\
&+ x^{88} + x^{87} + x^{86} + x^{82} + x^{81} + x^{78} + x^{75} + x^{73} + x^{72} + x^{70} + x^{69}\\
&+ x^{68} + x^{67} + x^{65} + x^{64} + x^{63} + x^{60} + x^{58} + x^{53} + x^{52} + x^{50} + x^{48}\\
&+ x^{47} + x^{46} + x^{45} + x^{44} + x^{43} + x^{42} + x^{40} + x^{37} + x^{35} + x^{32} + x^{29}\\
&+ x^{28} + x^{27},\\
p_3(x) &= x^{111} + x^{108} + x^{107} + x^{105} + x^{104} + x^{100} + x^{99} + x^{98} + x^{97} + x^{93}\\
&+ x^{91} + x^{88} + x^{87} + x^{85} + x^{84} + x^{83} + x^{79} + x^{78} + x^{75} + x^{71} + x^{70}\\
&+ x^{69} + x^{68} + x^{66} + x^{64} + x^{63} + x^{60} + x^{56} + x^{54} + x^{53} + x^{52} + x^{45}\\
&+ x^{44} + x^{43} + x^{42} + x^{40} + x^{38} + x^{37} + x^{34} + x^{31} + x^{30} + x^{29} + x^{24}\\
&+ x^{22} + x^{19} + x^{18} + x^{16} + x^{15} + x^{14} + x^{9},\\
p_6(x) &= x^{114} + x^{110} + x^{108} + x^{104} + x^{98} + x^{96} + x^{92} + x^{88} + x^{84} + x^{82} + x^{78}\\
&+ x^{76} + x^{74} + x^{72} + x^{70} + x^{66} + x^{62} + x^{60} + x^{58} + x^{52} + x^{48} + x^{46}\\
&+ x^{44} + x^{42} + x^{38} + x^{36} + x^{32} + x^{30} + x^{28} + x^{22} + x^{18} + x^{16} + x^{10}\\
&+ x^{6},\\
p_9(x) &= x^{117} + x^{114} + x^{113} + x^{110} + x^{108} + x^{107} + x^{106} + x^{105} + x^{103} + x^{102}\\
&+ x^{101} + x^{100} + x^{99} + x^{97} + x^{95} + x^{94} + x^{88} + x^{87} + x^{86} + x^{85} + x^{84}\\
&+ x^{81} + x^{79} + x^{78} + x^{72} + x^{71} + x^{70} + x^{69} + x^{68} + x^{65} + x^{63} + x^{62}\\
&+ x^{56} + x^{55} + x^{54} + x^{52} + x^{50} + x^{47} + x^{44} + x^{43} + x^{42} + x^{41} + x^{40}\\
&+ x^{37} + x^{35} + x^{34} + x^{33} + x^{30} + x^{28} + x^{27} + x^{26} + x^{25} + x^{23} + x^{22}\\
&+ x^{20} + x^{19} + x^{18} + x^{15} + x^{12} + x^{11} + x^{10} + x^{9} + x^{8} + x^{3},\\
p_{12}(x) &= x^{120} + x^{116} + x^{104} + x^{100} + x^{92} + x^{80} + x^{76} + x^{64} + x^{60} + x^{56} + x^{52}\\
&+ x^{48} + x^{44} + x^{32} + x^{12} + x^{8} + x^{4} + 1,
\end{aligned}
$$

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

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

$$
\begin{aligned}
p_0(x) &= x^{117} + x^{115} + x^{112} + x^{108} + x^{107} + x^{105} + x^{102} + x^{101} + x^{99} + x^{97}\\
&+ x^{94} + x^{93} + x^{92} + x^{87} + x^{85} + x^{84} + x^{83} + x^{82} + x^{79} + x^{78} + x^{77}\\
&+ x^{73} + x^{72} + x^{71} + x^{69} + x^{67} + x^{66} + x^{64} + x^{61} + x^{56} + x^{53} + x^{51}
\end{aligned}
$$

$$
\begin{aligned}
&+x^{50}+x^{49}+x^{46}+x^{44}+x^{42}+x^{41}+x^{40}+x^{39}+x^{37}+x^{36}+x^{33},\\
p_3(x) &= x^{105}+x^{103}+x^{100}+x^{96}+x^{95}+x^{91}+x^{90}+x^{89}+x^{88}+x^{84}+x^{82}\\
&+x^{80}+x^{78}+x^{76}+x^{75}+x^{74}+x^{72}+x^{70}+x^{69}+x^{64}+x^{63}+x^{62}\\
&+x^{56}+x^{55}+x^{54}+x^{53}+x^{50}+x^{49}+x^{45}+x^{43}+x^{38}+x^{36}+x^{34}\\
&+x^{32}+x^{31}+x^{28}+x^{27}+x^{26}+x^{24}+x^{21}+x^{19}+x^{18}+x^{17}+x^{16}\\
&+x^{13}+x^{12},\\
p_6(x) &= x^{109}+x^{107}+x^{104}+x^{101}+x^{100}+x^{99}+x^{96}+x^{94}+x^{93}+x^{92}+x^{90}\\
&+x^{89}+x^{87}+x^{86}+x^{85}+x^{84}+x^{83}+x^{82}+x^{78}+x^{75}+x^{74}+x^{70}\\
&+x^{69}+x^{67}+x^{64}+x^{63}+x^{62}+x^{59}+x^{57}+x^{56}+x^{54}+x^{53}+x^{51}\\
&+x^{50}+x^{49}+x^{48}+x^{47}+x^{45}+x^{43}+x^{39}+x^{37}+x^{34}+x^{33}+x^{32}\\
&+x^{31}+x^{30}+x^{29}+x^{28}+x^{26}+x^{25}+x^{22}+x^{19}+x^{18}+x^{17}+x^{16}\\
&+x^{14}+x^{13}+x^{12}+x^{8}+x^{7}+x^{4}+x^{3}+x+1,\\
p_9(x) &= x^{101}+x^{99}+x^{97}+x^{96}+x^{93}+x^{91}+x^{88}+x^{87}+x^{84}+x^{83}+x^{81}\\
&+x^{80}+x^{77}+x^{75}+x^{72}+x^{71}+x^{68}+x^{67}+x^{65}+x^{64}+x^{61}+x^{59}\\
&+x^{56}+x^{55}+x^{52}+x^{51}+x^{49}+x^{48}+x^{45}+x^{43}+x^{40}+x^{39}+x^{37}\\
&+x^{36}+x^{21}+x^{19}+x^{17}+x^{16}+x^{13}+x^{11}+x^{8}+x^{7}+x^{5}+x^{4},\\
p_{12}(x) &= x^{105}+x^{103}+x^{100}+x^{99}+x^{96}+x^{95}+x^{92}+x^{91}+x^{88}+x^{87}+x^{85}\\
&+x^{84}+x^{81}+x^{79}+x^{76}+x^{75}+x^{72}+x^{71}+x^{69}+x^{68}+x^{65}+x^{63}\\
&+x^{60}+x^{59}+x^{56}+x^{55}+x^{53}+x^{52}+x^{49}+x^{47}+x^{44}+x^{43}+x^{41}\\
&+x^{40}+x^{37}+x^{35}+x^{33}+x^{32}+x^{25}+x^{23}+x^{20}+x^{19}+x^{16}+x^{15}\\
&+x^{12}+x^{11}+x^{9}+x^{8}+x^{5}+x^{3}+x+1,
\end{aligned}
$$

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

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

$$
\begin{aligned}
p_0(x) &= x^{117}+x^{115}+x^{112}+x^{109}+x^{108}+x^{107}+x^{105}+x^{104}+x^{103}+x^{101}\\
&+x^{95}+x^{92}+x^{91}+x^{90}+x^{88}+x^{84}+x^{81}+x^{79}+x^{74}+x^{71}+x^{68}\\
&+x^{67}+x^{66}+x^{63}+x^{62}+x^{60}+x^{56}+x^{55}+x^{54}+x^{53}+x^{52}+x^{50}\\
&+x^{49}+x^{48}+x^{47}+x^{45}+x^{44}+x^{43}+x^{42}+x^{41}+x^{40}+x^{38}+x^{37}\\
&+x^{34}+x^{31}+x^{29}+x^{28}+x^{24}+x^{23}+x^{20}+x^{14}+x^{13}+x^{12},\\
p_3(x) &= x^{105}+x^{103}+x^{100}+x^{97}+x^{96}+x^{95}+x^{92}+x^{88}+x^{80}+x^{79}+x^{77}\\
&+x^{71}+x^{67}+x^{65}+x^{63}+x^{62}+x^{59}+x^{57}+x^{56}+x^{51}+x^{50}+x^{49}\\
&+x^{48}+x^{45}+x^{44}+x^{43}+x^{42}+x^{41}+x^{39}+x^{37}+x^{36}+x^{34}+x^{30}\\
&+x^{29}+x^{28}+x^{27}+x^{26}+x^{25}+x^{23}+x^{22}+x^{20}+x^{15}+x^{14}+x^{10}\\
&+x^{9}+x^{8},\\
p_6(x) &= x^{109}+x^{107}+x^{104}+x^{100}+x^{99}+x^{97}+x^{95}+x^{91}+x^{89}+x^{88}+x^{87}\\
&+x^{84}+x^{83}+x^{79}+x^{76}+x^{75}+x^{71}+x^{68}+x^{67}+x^{66}+x^{62}+x^{61}
\end{aligned}
$$

$$
\begin{aligned}
&+ x^{60} + x^{57} + x^{56} + x^{55} + x^{53} + x^{52} + x^{51} + x^{49} + x^{48} + x^{47} + x^{46}\\
&+ x^{45} + x^{44} + x^{43} + x^{41} + x^{40} + x^{39} + x^{38} + x^{36} + x^{35} + x^{34} + x^{33}\\
&+ x^{32} + x^{31} + x^{27} + x^{26} + x^{23} + x^{19} + x^{18} + x^{17} + x^{16} + x^{14} + x^{13}\\
&+ x^{12} + x^{11} + x^{8} + x^{7} + x^{6} + x^{5} + x^{3} + x + 1,\\
p_9(x) &= x^{101} + x^{99} + x^{97} + x^{96} + x^{93} + x^{91} + x^{88} + x^{87} + x^{84} + x^{83} + x^{81}\\
&+ x^{80} + x^{77} + x^{75} + x^{72} + x^{71} + x^{68} + x^{67} + x^{65} + x^{64} + x^{61} + x^{59}\\
&+ x^{56} + x^{55} + x^{52} + x^{51} + x^{49} + x^{48} + x^{45} + x^{43} + x^{40} + x^{39} + x^{37}\\
&+ x^{36} + x^{21} + x^{19} + x^{17} + x^{16} + x^{13} + x^{11} + x^{8} + x^{7} + x^{5} + x^{4},\\
p_{12}(x) &= x^{105} + x^{103} + x^{100} + x^{99} + x^{96} + x^{95} + x^{92} + x^{91} + x^{88} + x^{87} + x^{85}\\
&+ x^{84} + x^{81} + x^{79} + x^{76} + x^{75} + x^{72} + x^{71} + x^{69} + x^{68} + x^{65} + x^{63}\\
&+ x^{60} + x^{59} + x^{56} + x^{55} + x^{53} + x^{52} + x^{49} + x^{47} + x^{44} + x^{43} + x^{41}\\
&+ x^{40} + x^{37} + x^{35} + x^{33} + x^{32} + x^{25} + x^{23} + x^{20} + x^{19} + x^{16} + x^{15}\\
&+ x^{12} + x^{11} + x^{9} + x^{8} + x^{5} + x^{3} + x + 1,
\end{aligned}
$$

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

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

$$
\begin{aligned}
p_0(x) &= x^{132} + x^{126} + x^{123} + x^{121} + x^{120} + x^{119} + x^{116} + x^{115} + x^{111} + x^{108}\\
&+ x^{106} + x^{105} + x^{104} + x^{103} + x^{100} + x^{99} + x^{97} + x^{92} + x^{91} + x^{90}\\
&+ x^{88} + x^{87} + x^{86} + x^{82} + x^{81} + x^{78} + x^{75} + x^{73} + x^{72} + x^{70} + x^{69}\\
&+ x^{68} + x^{67} + x^{65} + x^{64} + x^{63} + x^{60} + x^{58} + x^{53} + x^{52} + x^{50} + x^{48}\\
&+ x^{47} + x^{46} + x^{45} + x^{44} + x^{43} + x^{42} + x^{40} + x^{37} + x^{35} + x^{32} + x^{29}\\
&+ x^{28} + x^{27},\\
p_3(x) &= x^{111} + x^{108} + x^{107} + x^{105} + x^{104} + x^{100} + x^{99} + x^{98} + x^{97} + x^{93}\\
&+ x^{91} + x^{88} + x^{87} + x^{85} + x^{84} + x^{83} + x^{79} + x^{78} + x^{75} + x^{71} + x^{70}\\
&+ x^{69} + x^{68} + x^{66} + x^{64} + x^{63} + x^{60} + x^{56} + x^{54} + x^{53} + x^{52} + x^{45}\\
&+ x^{44} + x^{43} + x^{42} + x^{40} + x^{38} + x^{37} + x^{34} + x^{31} + x^{30} + x^{29} + x^{24}\\
&+ x^{22} + x^{19} + x^{18} + x^{16} + x^{15} + x^{14} + x^{9},\\
p_6(x) &= x^{114} + x^{110} + x^{108} + x^{104} + x^{98} + x^{96} + x^{92} + x^{88} + x^{84} + x^{82} + x^{78}\\
&+ x^{76} + x^{74} + x^{72} + x^{70} + x^{66} + x^{62} + x^{60} + x^{58} + x^{52} + x^{48} + x^{46}\\
&+ x^{44} + x^{42} + x^{38} + x^{36} + x^{32} + x^{30} + x^{28} + x^{22} + x^{18} + x^{16} + x^{10}\\
&+ x^{6},\\
p_9(x) &= x^{117} + x^{114} + x^{113} + x^{110} + x^{108} + x^{107} + x^{106} + x^{105} + x^{103} + x^{102}\\
&+ x^{101} + x^{100} + x^{99} + x^{97} + x^{95} + x^{94} + x^{88} + x^{87} + x^{86} + x^{85} + x^{84}\\
&+ x^{81} + x^{79} + x^{78} + x^{72} + x^{71} + x^{70} + x^{69} + x^{68} + x^{65} + x^{63} + x^{62}\\
&+ x^{56} + x^{55} + x^{54} + x^{52} + x^{50} + x^{47} + x^{44} + x^{43} + x^{42} + x^{41} + x^{40}\\
&+ x^{37} + x^{35} + x^{34} + x^{33} + x^{30} + x^{28} + x^{27} + x^{26} + x^{25} + x^{23} + x^{22}
\end{aligned}
$$

$$\begin{aligned}
&+ x^{20} + x^{19} + x^{18} + x^{15} + x^{12} + x^{11} + x^{10} + x^{9} + x^{8} + x^{3},\\
p_{12}(x) &= x^{120} + x^{116} + x^{104} + x^{100} + x^{92} + x^{80} + x^{76} + x^{64} + x^{60} + x^{56} + x^{52}\\
&\quad + x^{48} + x^{44} + x^{32} + x^{12} + x^{8} + x^{4} + 1,
\end{aligned}$$

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

$$\begin{aligned}
p_0(x) &= x^{112} + x^{106} + x^{104} + x^{103} + x^{102} + x^{101} + x^{99} + x^{98} + x^{93} + x^{90}\\
&\quad + x^{88} + x^{87} + x^{86} + x^{85} + x^{80} + x^{79} + x^{78} + x^{74} + x^{73} + x^{71} + x^{69}\\
&\quad + x^{67} + x^{64} + x^{62} + x^{60} + x^{57} + x^{56} + x^{52} + x^{48} + x^{47} + x^{46} + x^{44}\\
&\quad + x^{43} + x^{42} + x^{40} + x^{39} + x^{33} + x^{30} + x^{29} + x^{26} + x^{22} + x^{21} + x^{20}\\
&\quad + x^{18},\\
p_3(x) &= x^{91} + x^{88} + x^{87} + x^{85} + x^{84} + x^{83} + x^{78} + x^{76} + x^{73} + x^{72} + x^{71}\\
&\quad + x^{70} + x^{69} + x^{67} + x^{65} + x^{64} + x^{63} + x^{61} + x^{60} + x^{56} + x^{55} + x^{54}\\
&\quad + x^{53} + x^{51} + x^{49} + x^{48} + x^{47} + x^{45} + x^{44} + x^{43} + x^{38} + x^{36} + x^{35}\\
&\quad + x^{33} + x^{30} + x^{28} + x^{27} + x^{25} + x^{22} + x^{20} + x^{17} + x^{16} + x^{15} + x^{14}\\
&\quad + x^{13} + x^{9},\\
p_6(x) &= x^{94} + x^{90} + x^{88} + x^{86} + x^{84} + x^{82} + x^{80} + x^{78} + x^{74} + x^{72} + x^{70}\\
&\quad + x^{68} + x^{66} + x^{54} + x^{52} + x^{50} + x^{48} + x^{46} + x^{44} + x^{38} + x^{32} + x^{30}\\
&\quad + x^{28} + x^{24} + x^{22} + x^{20} + x^{16} + x^{6},\\
p_9(x) &= x^{97} + x^{94} + x^{93} + x^{90} + x^{89} + x^{88} + x^{87} + x^{83} + x^{81} + x^{78} + x^{77}\\
&\quad + x^{74} + x^{73} + x^{72} + x^{71} + x^{67} + x^{65} + x^{62} + x^{61} + x^{58} + x^{57} + x^{56}\\
&\quad + x^{55} + x^{51} + x^{49} + x^{46} + x^{45} + x^{42} + x^{41} + x^{40} + x^{39} + x^{35} + x^{17}\\
&\quad + x^{14} + x^{13} + x^{10} + x^{9} + x^{8} + x^{7} + x^{3},\\
p_{12}(x) &= x^{100} + x^{96} + x^{92} + x^{88} + x^{84} + x^{76} + x^{72} + x^{68} + x^{60} + x^{56} + x^{52}\\
&\quad + x^{44} + x^{40} + x^{32} + x^{20} + x^{16} + x^{12} + x^{8} + 1,
\end{aligned}$$

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

$$\begin{aligned}
p_0(x) &= x^{117} + x^{115} + x^{112} + x^{108} + x^{107} + x^{105} + x^{102} + x^{101} + x^{99} + x^{97}\\
&\quad + x^{94} + x^{93} + x^{92} + x^{87} + x^{85} + x^{84} + x^{83} + x^{82} + x^{79} + x^{78} + x^{77}\\
&\quad + x^{73} + x^{72} + x^{71} + x^{69} + x^{67} + x^{66} + x^{64} + x^{61} + x^{56} + x^{53} + x^{51}\\
&\quad + x^{50} + x^{49} + x^{46} + x^{44} + x^{42} + x^{41} + x^{40} + x^{39} + x^{37} + x^{36} + x^{33},\\
p_3(x) &= x^{105} + x^{103} + x^{100} + x^{96} + x^{95} + x^{91} + x^{90} + x^{89} + x^{88} + x^{84} + x^{82}\\
&\quad + x^{80} + x^{78} + x^{76} + x^{75} + x^{74} + x^{72} + x^{70} + x^{69} + x^{64} + x^{63} + x^{62}\\
&\quad + x^{56} + x^{55} + x^{54} + x^{53} + x^{50} + x^{49} + x^{45} + x^{43} + x^{38} + x^{36} + x^{34}\\
&\quad + x^{32} + x^{31} + x^{28} + x^{27} + x^{26} + x^{24} + x^{21} + x^{19} + x^{18} + x^{17} + x^{16}\\
&\quad + x^{13} + x^{12},
\end{aligned}$$

$$\begin{aligned}
p_6(x) &= x^{109} + x^{107} + x^{104} + x^{101} + x^{100} + x^{99} + x^{96} + x^{94} + x^{93} + x^{92} + x^{90} \\
&\quad + x^{89} + x^{87} + x^{86} + x^{85} + x^{84} + x^{83} + x^{82} + x^{78} + x^{75} + x^{74} + x^{70} \\
&\quad + x^{69} + x^{67} + x^{64} + x^{63} + x^{62} + x^{59} + x^{57} + x^{56} + x^{54} + x^{53} + x^{51} \\
&\quad + x^{50} + x^{49} + x^{48} + x^{47} + x^{45} + x^{43} + x^{39} + x^{37} + x^{34} + x^{33} + x^{32} \\
&\quad + x^{31} + x^{30} + x^{29} + x^{28} + x^{26} + x^{25} + x^{22} + x^{19} + x^{18} + x^{17} + x^{16} \\
&\quad + x^{14} + x^{13} + x^{12} + x^{8} + x^{7} + x^{4} + x^{3} + x + 1, \\
p_9(x) &= x^{101} + x^{99} + x^{97} + x^{96} + x^{93} + x^{91} + x^{88} + x^{87} + x^{84} + x^{83} + x^{81} \\
&\quad + x^{80} + x^{77} + x^{75} + x^{72} + x^{71} + x^{68} + x^{67} + x^{65} + x^{64} + x^{61} + x^{59} \\
&\quad + x^{56} + x^{55} + x^{52} + x^{51} + x^{49} + x^{48} + x^{45} + x^{43} + x^{40} + x^{39} + x^{37} \\
&\quad + x^{36} + x^{21} + x^{19} + x^{17} + x^{16} + x^{13} + x^{11} + x^{8} + x^{7} + x^{5} + x^{4}, \\
p_{12}(x) &= x^{105} + x^{103} + x^{100} + x^{99} + x^{96} + x^{95} + x^{92} + x^{91} + x^{88} + x^{87} + x^{85} \\
&\quad + x^{84} + x^{81} + x^{79} + x^{76} + x^{75} + x^{72} + x^{71} + x^{69} + x^{68} + x^{65} + x^{63} \\
&\quad + x^{60} + x^{59} + x^{56} + x^{55} + x^{53} + x^{52} + x^{49} + x^{47} + x^{44} + x^{43} + x^{41} \\
&\quad + x^{40} + x^{37} + x^{35} + x^{33} + x^{32} + x^{25} + x^{23} + x^{20} + x^{19} + x^{16} + x^{15} \\
&\quad + x^{12} + x^{11} + x^{9} + x^{8} + x^{5} + x^{3} + x + 1,
\end{aligned}$$

and the initial terms are [0, 0, 0, 0, 0, 0, 0, 1, 1, 0, 1, 0, 1, 1, 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]	979	[1499, 733]	1958	[2614, 2338]	2937	[2291, 381]
1	[3, 4]	980	[14, 1598]	1959	[2615, 1342]	2938	[3276, 2160]
2	[5, 6]	981	[1599, 1600]	1960	[2319, 1398]	2939	[3277, 2385]
3	[7, 8]	982	[1601, 1602]	1961	[1153, 1380]	2940	[2257, 2382]
4	[9, 10]	983	[1603, 1604]	1962	[2616, 1119]	2941	[3278, 433]
5	[11, 12]	984	[1605, 1606]	1963	[2617, 1035]	2942	[3279, 2499]
6	[13, 14]	985	[1607, 1608]	1964	[2224, 1279]	2943	[3280, 350]
7	[15, 16]	986	[1457, 1609]	1965	[2618, 1249]	2944	[3281, 320]
8	[17, 18]	987	[249, 686]	1966	[2594, 449]	2945	[3282, 1341]
9	[19, 20]	988	[1610, 1475]	1967	[2619, 1357]	2946	[3283, 2252]
10	[21, 22]	989	[1611, 671]	1968	[2620, 2372]	2947	[2669, 2522]
11	[23, 24]	990	[1612, 1613]	1969	[1187, 2286]	2948	[1390, 2237]
12	[25, 26]	991	[1614, 1615]	1970	[2621, 459]	2949	[3284, 970]
13	[27, 28]	992	[1616, 1617]	1971	[1112, 894]	2950	[3285, 951]
14	[29, 30]	993	[1618, 1619]	1972	[2622, 2418]	2951	[3286, 982]
15	[31, 32]	994	[738, 1620]	1973	[77, 1017]	2952	[3287, 2275]
16	[33, 34]	995	[1597, 1621]	1974	[2623, 21]	2953	[3288, 1050]
17	[35, 36]	996	[1622, 1623]	1975	[2624, 984]	2954	[3244, 865]
18	[37, 38]	997	[1535, 1624]	1976	[2625, 874]	2955	[3289, 2288]
19	[39, 40]	998	[1537, 1625]	1977	[1107, 2486]	2956	[3290, 877]

20	[41, 42]	999	[1626, 1627]	1978	[2626, 1283]	2957	[3291, 2379]
21	[43, 44]	1000	[1628, 1629]	1979	[1057, 2627]	2958	[3292, 2359]
22	[45, 46]	1001	[1630, 1631]	1980	[2628, 2399]	2959	[3293, 1250]
23	[47, 48]	1002	[1632, 1633]	1981	[2629, 416]	2960	[3294, 894]
24	[49, 50]	1003	[1634, 1406]	1982	[2630, 108]	2961	[2418, 2421]
25	[51, 52]	1004	[1635, 1636]	1983	[2631, 106]	2962	[3295, 1115]
26	[53, 54]	1005	[1637, 658]	1984	[417, 1115]	2963	[2627, 3]
27	[55, 56]	1006	[833, 1508]	1985	[2632, 891]	2964	[3296, 1358]
28	[57, 58]	1007	[1638, 1639]	1986	[103, 2465]	2965	[2488, 1265]
29	[59, 60]	1008	[1640, 1446]	1987	[2320, 1337]	2966	[964, 1166]
30	[61, 62]	1009	[1641, 1642]	1988	[2552, 2482]	2967	[2500, 106]
31	[63, 64]	1010	[1643, 1644]	1989	[2633, 311]	2968	[3297, 1333]
32	[65, 17]	1011	[683, 1645]	1990	[1097, 2634]	2969	[1120, 72]
33	[66, 67]	1012	[147, 1646]	1991	[2635, 2500]	2970	[3298, 2525]
34	[68, 69]	1013	[1647, 1475]	1992	[1063, 2636]	2971	[3299, 2170]
35	[70, 71]	1014	[1648, 1649]	1993	[1328, 306]	2972	[3300, 1084]
36	[72, 73]	1015	[1650, 31]	1994	[2637, 2638]	2973	[3301, 1340]
37	[74, 75]	1016	[1651, 205]	1995	[2639, 2638]	2974	[3302, 2212]
38	[76, 77]	1017	[1652, 1653]	1996	[1012, 2252]	2975	[2394, 999]
39	[78, 79]	1018	[1654, 1625]	1997	[2604, 2227]	2976	[3303, 287]
40	[80, 81]	1019	[1655, 558]	1998	[111, 2640]	2977	[2495, 2330]
41	[82, 83]	1020	[1656, 1657]	1999	[340, 2591]	2978	[3304, 1033]
42	[84, 85]	1021	[1658, 1659]	2000	[1179, 2641]	2979	[3305, 2284]
43	[86, 87]	1022	[1468, 1660]	2001	[2642, 2322]	2980	[3306, 2660]
44	[88, 89]	1023	[1661, 605]	2002	[2643, 1219]	2981	[1321, 1163]
45	[90, 91]	1024	[1662, 1663]	2003	[2644, 2305]	2982	[3307, 379]
46	[92, 93]	1025	[801, 1664]	2004	[2168, 2340]	2983	[3308, 1300]
47	[94, 95]	1026	[1665, 1666]	2005	[2352, 860]	2984	[2250, 1173]
48	[96, 97]	1027	[1667, 1668]	2006	[2645, 2348]	2985	[2667, 3215]
49	[98, 99]	1028	[1669, 546]	2007	[456, 2646]	2986	[382, 2239]
50	[100, 101]	1029	[1670, 1671]	2008	[2647, 2626]	2987	[3309, 918]
51	[102, 103]	1030	[1672, 520]	2009	[2159, 2190]	2988	[3310, 88]
52	[104, 105]	1031	[1673, 1674]	2010	[2648, 930]	2989	[3311, 2419]
53	[106, 107]	1032	[1675, 1676]	2011	[2649, 1294]	2990	[18, 890]
54	[108, 109]	1033	[1677, 1678]	2012	[281, 1159]	2991	[3312, 2441]
55	[110, 111]	1034	[1679, 1680]	2013	[2650, 2566]	2992	[3313, 1306]
56	[112, 113]	1035	[157, 1681]	2014	[1268, 1294]	2993	[3314, 1188]
57	[114, 115]	1036	[1682, 1683]	2015	[435, 2164]	2994	[3315, 1137]
58	[116, 117]	1037	[1684, 1685]	2016	[2651, 265]	2995	[3316, 3168]
59	[118, 119]	1038	[1686, 1687]	2017	[2652, 2480]	2996	[3317, 2536]
60	[120, 121]	1039	[1688, 636]	2018	[2653, 2356]	2997	[3318, 112]
61	[122, 123]	1040	[1689, 1690]	2019	[2654, 2151]	2998	[1095, 2393]
62	[124, 125]	1041	[245, 1691]	2020	[2646, 1006]	2999	[3319, 2457]
63	[126, 127]	1042	[1692, 1693]	2021	[1392, 2532]	3000	[3320, 267]

64	[128, 129]	1043	[1694, 1695]	2022	[2318, 1179]	3001	[3321, 2193]
65	[130, 131]	1044	[1696, 1697]	2023	[983, 2511]	3002	[3322, 2291]
66	[132, 133]	1045	[503, 1698]	2024	[2609, 434]	3003	[1122, 969]
67	[134, 135]	1046	[1699, 1643]	2025	[2655, 2642]	3004	[3323, 1322]
68	[136, 137]	1047	[1700, 1416]	2026	[2656, 1189]	3005	[3324, 2158]
69	[138, 139]	1048	[1701, 1590]	2027	[1091, 2141]	3006	[3325, 466]
70	[140, 141]	1049	[1702, 1412]	2028	[2657, 2658]	3007	[3326, 1100]
71	[142, 143]	1050	[1703, 1704]	2029	[2440, 328]	3008	[3327, 937]
72	[144, 145]	1051	[1705, 1706]	2030	[2659, 437]	3009	[273, 2660]
73	[146, 147]	1052	[1707, 1559]	2031	[2660, 2661]	3010	[3328, 993]
74	[148, 149]	1053	[1708, 1709]	2032	[2662, 439]	3011	[3329, 378]
75	[150, 151]	1054	[1710, 198]	2033	[2538, 1039]	3012	[3330, 334]
76	[152, 153]	1055	[1711, 1712]	2034	[346, 2523]	3013	[2671, 1321]
77	[154, 155]	1056	[763, 1558]	2035	[2663, 2426]	3014	[3331, 1020]
78	[156, 157]	1057	[1713, 1714]	2036	[2596, 1008]	3015	[3332, 923]
79	[158, 159]	1058	[1715, 1534]	2037	[996, 2293]	3016	[3333, 1098]
80	[160, 161]	1059	[803, 1716]	2038	[1046, 2413]	3017	[410, 993]
81	[162, 163]	1060	[1717, 1718]	2039	[2664, 30]	3018	[3334, 419]
82	[164, 165]	1061	[1719, 1720]	2040	[968, 1256]	3019	[2689, 2215]
83	[166, 167]	1062	[1721, 1722]	2041	[1059, 2403]	3020	[3335, 1092]
84	[8, 168]	1063	[1723, 1724]	2042	[308, 2535]	3021	[115, 1089]
85	[10, 169]	1064	[1725, 772]	2043	[2665, 69]	3022	[3336, 2604]
86	[170, 171]	1065	[1726, 809]	2044	[2209, 2210]	3023	[3337, 2497]
87	[172, 173]	1066	[1727, 1728]	2045	[2313, 1161]	3024	[3338, 1387]
88	[174, 175]	1067	[1473, 136]	2046	[2666, 2667]	3025	[2658, 1037]
89	[176, 177]	1068	[1729, 170]	2047	[2668, 2669]	3026	[3339, 2518]
90	[178, 179]	1069	[627, 1730]	2048	[2579, 293]	3027	[3340, 2421]
91	[180, 181]	1070	[1731, 1670]	2049	[2670, 2543]	3028	[3341, 1208]
92	[182, 183]	1071	[1732, 1698]	2050	[1134, 2671]	3029	[3342, 945]
93	[184, 185]	1072	[509, 1549]	2051	[2672, 321]	3030	[466, 2626]
94	[186, 187]	1073	[1733, 1734]	2052	[2673, 2674]	3031	[3343, 2248]
95	[188, 189]	1074	[1735, 1667]	2053	[2638, 2196]	3032	[3344, 1158]
96	[190, 191]	1075	[1736, 1737]	2054	[1030, 360]	3033	[436, 3273]
97	[192, 193]	1076	[1738, 1561]	2055	[2675, 1004]	3034	[295, 1069]
98	[194, 195]	1077	[1739, 1740]	2056	[2676, 1169]	3035	[3345, 76]
99	[196, 197]	1078	[1741, 587]	2057	[2354, 2593]	3036	[3346, 1022]
100	[198, 199]	1079	[582, 1742]	2058	[2677, 2623]	3037	[3347, 1381]
101	[200, 201]	1080	[1743, 1520]	2059	[119, 349]	3038	[3348, 1015]
102	[202, 203]	1081	[1744, 1609]	2060	[2198, 1139]	3039	[2289, 415]
103	[204, 205]	1082	[1745, 1746]	2061	[2678, 2394]	3040	[3349, 438]
104	[206, 207]	1083	[1747, 140]	2062	[2679, 2327]	3041	[1021, 1345]
105	[208, 209]	1084	[1748, 1749]	2063	[2680, 1046]	3042	[3350, 871]
106	[210, 211]	1085	[1750, 195]	2064	[1275, 2430]	3043	[3351, 1111]
107	[212, 213]	1086	[1751, 1513]	2065	[393, 2637]	3044	[3352, 388]

108	[214, 215]	1087	[1752, 1575]	2066	[260, 355]	3045	[3353, 2319]
109	[216, 217]	1088	[1753, 1754]	2067	[2681, 1329]	3046	[3354, 2146]
110	[218, 219]	1089	[1755, 1756]	2068	[1236, 1304]	3047	[3355, 856]
111	[220, 221]	1090	[1757, 1758]	2069	[2682, 2683]	3048	[2365, 2611]
112	[222, 223]	1091	[1759, 1760]	2070	[263, 1014]	3049	[3356, 360]
113	[224, 225]	1092	[1761, 134]	2071	[2684, 1313]	3050	[3357, 2535]
114	[226, 227]	1093	[1762, 1763]	2072	[1056, 2685]	3051	[3358, 972]
115	[228, 229]	1094	[1728, 1764]	2073	[2686, 97]	3052	[3359, 268]
116	[230, 231]	1095	[175, 1765]	2074	[880, 2683]	3053	[3360, 1057]
117	[232, 233]	1096	[1766, 1767]	2075	[2687, 1203]	3054	[3361, 870]
118	[234, 235]	1097	[1768, 1769]	2076	[2688, 271]	3055	[3362, 426]
119	[236, 237]	1098	[1770, 726]	2077	[2493, 2689]	3056	[3363, 1011]
120	[238, 239]	1099	[1771, 1772]	2078	[2216, 2505]	3057	[3364, 2685]
121	[240, 241]	1100	[1773, 1774]	2079	[1277, 2658]	3058	[3365, 3244]
122	[242, 243]	1101	[1775, 1776]	2080	[2153, 2538]	3059	[3366, 2268]
123	[244, 245]	1102	[1777, 1778]	2081	[2690, 2599]	3060	[3367, 2311]
124	[246, 247]	1103	[1779, 1780]	2082	[2390, 1298]	3061	[3368, 124]
125	[248, 249]	1104	[1781, 1685]	2083	[1250, 1010]	3062	[1081, 314]
126	[250, 251]	1105	[1782, 1783]	2084	[960, 1331]	3063	[3369, 2552]
127	[252, 253]	1106	[1784, 1785]	2085	[2602, 100]	3064	[3370, 3215]
128	[254, 121]	1107	[1786, 1787]	2086	[2691, 465]	3065	[3371, 295]
129	[255, 256]	1108	[1788, 1490]	2087	[2692, 980]	3066	[2212, 2441]
130	[257, 258]	1109	[1789, 1790]	2088	[2693, 1010]	3067	[3372, 1162]
131	[259, 260]	1110	[1791, 1792]	2089	[2694, 2611]	3068	[3373, 1272]
132	[261, 104]	1111	[1793, 1794]	2090	[2695, 367]	3069	[334, 2491]
133	[262, 263]	1112	[1795, 660]	2091	[991, 2696]	3070	[3374, 1202]
134	[264, 265]	1113	[1495, 1796]	2092	[2697, 432]	3071	[3375, 464]
135	[266, 267]	1114	[1797, 1798]	2093	[2696, 2345]	3072	[2437, 2599]
136	[268, 269]	1115	[1799, 1800]	2094	[113, 1205]	3073	[3376, 436]
137	[270, 271]	1116	[1801, 1755]	2095	[2698, 2495]	3074	[3377, 253]
138	[272, 273]	1117	[1737, 1802]	2096	[2699, 463]	3075	[3378, 903]
139	[274, 275]	1118	[805, 1803]	2097	[2322, 1040]	3076	[3246, 96]
140	[276, 277]	1119	[1804, 144]	2098	[2700, 275]	3077	[1157, 2150]
141	[278, 279]	1120	[1805, 583]	2099	[935, 92]	3078	[3379, 2430]
142	[280, 281]	1121	[524, 1806]	2100	[1028, 1207]	3079	[3380, 985]
143	[282, 283]	1122	[526, 1807]	2101	[2388, 1208]	3080	[3381, 391]
144	[284, 285]	1123	[1808, 1809]	2102	[2701, 1195]	3081	[994, 1276]
145	[286, 287]	1124	[1810, 1811]	2103	[1127, 2390]	3082	[3382, 974]
146	[288, 289]	1125	[1812, 1813]	2104	[1038, 2406]	3083	[3383, 342]
147	[290, 291]	1126	[1814, 1815]	2105	[2702, 1008]	3084	[3384, 1228]
148	[292, 293]	1127	[1816, 1817]	2106	[2703, 1295]	3085	[2577, 1339]
149	[294, 295]	1128	[1818, 1819]	2107	[22, 2205]	3086	[3385, 1265]
150	[121, 296]	1129	[1820, 1821]	2108	[1313, 2704]	3087	[3386, 2420]
151	[256, 297]	1130	[1642, 1783]	2109	[2685, 952]	3088	[3387, 90]

152	[298, 262]	1131	[1822, 1823]	2110	[449, 88]	3089	[3388, 900]
153	[299, 300]	1132	[1824, 1710]	2111	[2705, 2164]	3090	[3389, 1140]
154	[301, 302]	1133	[1825, 1826]	2112	[2539, 1100]	3091	[3390, 2374]
155	[303, 304]	1134	[1827, 1828]	2113	[2706, 2696]	3092	[3391, 2636]
156	[305, 306]	1135	[1645, 1545]	2114	[1177, 2271]	3093	[3392, 1061]
157	[307, 308]	1136	[1829, 1830]	2115	[2707, 2551]	3094	[3393, 113]
158	[309, 310]	1137	[1831, 1832]	2116	[2708, 1345]	3095	[3394, 2258]
159	[311, 312]	1138	[1833, 1834]	2117	[2641, 2513]	3096	[3395, 2539]
160	[313, 314]	1139	[1800, 1835]	2118	[2368, 1362]	3097	[3396, 92]
161	[315, 282]	1140	[471, 1426]	2119	[2709, 1215]	3098	[3397, 2159]
162	[316, 317]	1141	[1836, 1837]	2120	[447, 2202]	3099	[3398, 1103]
163	[318, 319]	1142	[1653, 1838]	2121	[2710, 1156]	3100	[3399, 411]
164	[320, 321]	1143	[1839, 1840]	2122	[317, 2674]	3101	[3400, 1144]
165	[322, 323]	1144	[1841, 1842]	2123	[2711, 2579]	3102	[3401, 2205]
166	[324, 325]	1145	[1452, 807]	2124	[2712, 2713]	3103	[3402, 1242]
167	[326, 326]	1146	[1843, 1844]	2125	[1144, 90]	3104	[2338, 1280]
168	[16, 327]	1147	[1845, 681]	2126	[2714, 2640]	3105	[3403, 1186]
169	[20, 311]	1148	[1846, 1847]	2127	[896, 1158]	3106	[3404, 2671]
170	[328, 329]	1149	[2, 1848]	2128	[1331, 2315]	3107	[2572, 2356]
171	[330, 272]	1150	[1849, 1501]	2129	[2715, 2368]	3108	[1148, 442]
172	[331, 332]	1151	[1850, 1851]	2130	[2716, 1316]	3109	[3405, 981]
173	[333, 334]	1152	[237, 1852]	2131	[2193, 2554]	3110	[3406, 2609]
174	[335, 336]	1153	[135, 1853]	2132	[2717, 1073]	3111	[3407, 878]
175	[337, 338]	1154	[1533, 1854]	2133	[2361, 1172]	3112	[3408, 2259]
176	[339, 340]	1155	[1855, 1418]	2134	[2340, 385]	3113	[3409, 1025]
177	[341, 342]	1156	[1856, 1857]	2135	[2718, 2437]	3114	[2206, 1218]
178	[343, 344]	1157	[1858, 243]	2136	[2719, 2365]	3115	[3410, 1029]
179	[345, 346]	1158	[1859, 1661]	2137	[1326, 2189]	3116	[3411, 976]
180	[347, 348]	1159	[1860, 1665]	2138	[2720, 2721]	3117	[3412, 865]
181	[349, 350]	1160	[1627, 143]	2139	[1807, 1638]	3118	[3413, 63]
182	[351, 352]	1161	[1861, 1862]	2140	[2722, 164]	3119	[3414, 461]
183	[353, 354]	1162	[213, 1863]	2141	[2723, 698]	3120	[3415, 427]
184	[355, 80]	1163	[1864, 1865]	2142	[2724, 787]	3121	[3416, 29]
185	[356, 357]	1164	[1866, 1781]	2143	[2725, 136]	3122	[3417, 380]
186	[358, 359]	1165	[1867, 796]	2144	[2726, 2727]	3123	[3418, 2255]
187	[360, 276]	1166	[1573, 1868]	2145	[2728, 2729]	3124	[3419, 1233]
188	[361, 362]	1167	[1869, 1406]	2146	[2730, 2731]	3125	[3420, 2422]
189	[363, 364]	1168	[1870, 1871]	2147	[1620, 2732]	3126	[3421, 885]
190	[365, 366]	1169	[510, 1872]	2148	[2733, 1949]	3127	[3422, 939]
191	[367, 368]	1170	[1873, 1874]	2149	[2734, 2735]	3128	[3423, 910]
192	[369, 370]	1171	[1875, 1876]	2150	[1857, 216]	3129	[3424, 1317]
193	[371, 372]	1172	[1877, 626]	2151	[2736, 2038]	3130	[3425, 431]
194	[373, 374]	1173	[1878, 1879]	2152	[2737, 2738]	3131	[3426, 1114]
195	[375, 376]	1174	[1574, 1522]	2153	[1907, 1414]	3132	[3427, 2282]

196	[377, 378]	1175	[1880, 174]	2154	[1722, 2739]	3133	[3428, 1159]
197	[379, 380]	1176	[1881, 1882]	2155	[2740, 2044]	3134	[3429, 911]
198	[381, 382]	1177	[1883, 1884]	2156	[2741, 1600]	3135	[3430, 2261]
199	[370, 383]	1178	[709, 1885]	2157	[2742, 2743]	3136	[3431, 2587]
200	[384, 385]	1179	[1886, 1887]	2158	[847, 2744]	3137	[3432, 919]
201	[386, 387]	1180	[1888, 1889]	2159	[2068, 2745]	3138	[3433, 1288]
202	[388, 389]	1181	[586, 1890]	2160	[2746, 2747]	3139	[1219, 2468]
203	[390, 391]	1182	[1585, 1891]	2161	[1832, 557]	3140	[3434, 67]
204	[392, 393]	1183	[1892, 1410]	2162	[2748, 1649]	3141	[3435, 327]
205	[394, 395]	1184	[1893, 1894]	2163	[2749, 2750]	3142	[3436, 1334]
206	[396, 118]	1185	[1895, 1896]	2164	[662, 2751]	3143	[3437, 1375]
207	[397, 120]	1186	[1897, 1898]	2165	[2752, 1415]	3144	[3438, 308]
208	[398, 399]	1187	[1899, 744]	2166	[1787, 2753]	3145	[3439, 330]
209	[400, 71]	1188	[545, 1900]	2167	[2754, 1]	3146	[3440, 451]
210	[89, 68]	1189	[1868, 1901]	2168	[2755, 2101]	3147	[3441, 998]
211	[401, 402]	1190	[131, 678]	2169	[2756, 2757]	3148	[3442, 2596]
212	[403, 404]	1191	[1902, 472]	2170	[1874, 2758]	3149	[3443, 1225]
213	[391, 405]	1192	[1903, 1801]	2171	[1813, 1511]	3150	[3444, 1246]
214	[406, 407]	1193	[1423, 1448]	2172	[1399, 2759]	3151	[3445, 2271]
215	[359, 408]	1194	[1904, 1905]	2173	[1403, 210]	3152	[3446, 440]
216	[409, 410]	1195	[1906, 1907]	2174	[718, 1661]	3153	[3447, 255]
217	[411, 412]	1196	[1908, 477]	2175	[2760, 2133]	3154	[2931, 774]
218	[413, 414]	1197	[1909, 1825]	2176	[2761, 2762]	3155	[1, 602]
219	[415, 416]	1198	[1910, 1911]	2177	[2763, 772]	3156	[3448, 575]
220	[395, 417]	1199	[1912, 1913]	2178	[823, 520]	3157	[3449, 2065]
221	[418, 419]	1200	[1778, 1914]	2179	[2764, 2765]	3158	[829, 227]
222	[420, 421]	1201	[726, 1637]	2180	[2766, 1399]	3159	[3450, 1955]
223	[422, 423]	1202	[1915, 1834]	2181	[2767, 1491]	3160	[2041, 1964]
224	[424, 425]	1203	[1916, 630]	2182	[2768, 2769]	3161	[760, 635]
225	[426, 427]	1204	[637, 1917]	2183	[2770, 2739]	3162	[3451, 660]
226	[428, 429]	1205	[1693, 1918]	2184	[1441, 1837]	3163	[3452, 814]
227	[430, 431]	1206	[1919, 1638]	2185	[625, 2771]	3164	[3453, 1664]
228	[432, 433]	1207	[1920, 1921]	2186	[2772, 808]	3165	[562, 1861]
229	[434, 435]	1208	[1922, 1610]	2187	[1433, 1848]	3166	[3454, 1907]
230	[329, 436]	1209	[1923, 1924]	2188	[2773, 2774]	3167	[3455, 610]
231	[289, 302]	1210	[58, 1925]	2189	[2775, 1674]	3168	[3456, 2963]
232	[437, 438]	1211	[1926, 1927]	2190	[2744, 1631]	3169	[2803, 495]
233	[439, 440]	1212	[1928, 1929]	2191	[2776, 1513]	3170	[3457, 1838]
234	[441, 442]	1213	[1930, 1931]	2192	[1519, 721]	3171	[3458, 681]
235	[443, 264]	1214	[1932, 220]	2193	[2777, 2778]	3172	[1876, 2932]
236	[444, 445]	1215	[1933, 1934]	2194	[1481, 2778]	3173	[3459, 59]
237	[446, 447]	1216	[1862, 1935]	2195	[233, 1915]	3174	[3460, 2748]
238	[448, 449]	1217	[1936, 1937]	2196	[2779, 2128]	3175	[3461, 2080]
239	[450, 451]	1218	[1938, 1939]	2197	[2780, 56]	3176	[3462, 760]

240	[452, 453]	1219	[1940, 1941]	2198	[2091, 1712]	3177	[3463, 2751]
241	[454, 455]	1220	[1942, 245]	2199	[2781, 797]	3178	[199, 727]
242	[431, 456]	1221	[1943, 1621]	2200	[2782, 1722]	3179	[1891, 2883]
243	[457, 458]	1222	[1803, 1944]	2201	[2783, 2009]	3180	[3464, 199]
244	[459, 460]	1223	[1945, 1573]	2202	[817, 2784]	3181	[3465, 1900]
245	[461, 462]	1224	[1946, 1947]	2203	[2785, 831]	3182	[3466, 159]
246	[463, 464]	1225	[1948, 1770]	2204	[607, 236]	3183	[137, 1992]
247	[465, 466]	1226	[1949, 1950]	2205	[2786, 2787]	3184	[3467, 2919]
248	[467, 468]	1227	[1951, 1667]	2206	[46, 1940]	3185	[3468, 2969]
249	[469, 446]	1228	[1952, 1953]	2207	[2788, 2789]	3186	[2774, 2808]
250	[470, 471]	1229	[1954, 1790]	2208	[819, 38]	3187	[3469, 3030]
251	[472, 473]	1230	[141, 1478]	2209	[1896, 2790]	3188	[1890, 1429]
252	[474, 475]	1231	[1505, 803]	2210	[2791, 2059]	3189	[1911, 2890]
253	[476, 477]	1232	[1460, 1955]	2211	[2792, 2793]	3190	[3470, 2035]
254	[478, 479]	1233	[1956, 1957]	2212	[853, 2794]	3191	[3471, 2784]
255	[480, 481]	1234	[1958, 1885]	2213	[2795, 2796]	3192	[1602, 2012]
256	[482, 483]	1235	[1959, 1960]	2214	[2037, 1501]	3193	[1767, 1800]
257	[484, 485]	1236	[666, 1961]	2215	[2797, 1845]	3194	[3472, 1944]
258	[486, 487]	1237	[1962, 639]	2216	[2798, 1909]	3195	[3473, 58]
259	[488, 489]	1238	[1963, 1964]	2217	[1882, 2767]	3196	[3474, 828]
260	[490, 491]	1239	[1965, 1966]	2218	[2799, 617]	3197	[3475, 733]
261	[492, 493]	1240	[1967, 818]	2219	[1749, 664]	3198	[2122, 3107]
262	[494, 495]	1241	[1734, 830]	2220	[2800, 1670]	3199	[3476, 618]
263	[496, 497]	1242	[1968, 1969]	2221	[2045, 2801]	3200	[1969, 587]
264	[498, 499]	1243	[1970, 1971]	2222	[1695, 1789]	3201	[3477, 1426]
265	[500, 501]	1244	[1972, 197]	2223	[1941, 149]	3202	[1780, 1774]
266	[502, 503]	1245	[1551, 1926]	2224	[729, 1520]	3203	[1917, 191]
267	[504, 505]	1246	[1973, 1974]	2225	[2802, 840]	3204	[3478, 2041]
268	[506, 507]	1247	[1975, 1478]	2226	[1527, 173]	3205	[3479, 2990]
269	[508, 509]	1248	[1976, 1977]	2227	[1990, 2803]	3206	[1439, 724]
270	[155, 510]	1249	[1978, 1979]	2228	[2804, 2034]	3207	[1608, 2841]
271	[227, 511]	1250	[1980, 1443]	2229	[1600, 1410]	3208	[3480, 2860]
272	[512, 513]	1251	[1981, 1671]	2230	[597, 2072]	3209	[1633, 192]
273	[514, 515]	1252	[1982, 53]	2231	[2046, 2805]	3210	[3481, 769]
274	[516, 517]	1253	[1983, 1984]	2232	[2806, 1496]	3211	[2745, 3033]
275	[518, 519]	1254	[1985, 1986]	2233	[1547, 1504]	3212	[1485, 720]
276	[520, 521]	1255	[1987, 1988]	2234	[2807, 505]	3213	[3107, 3081]
277	[522, 523]	1256	[1989, 1990]	2235	[181, 1673]	3214	[3482, 1485]
278	[505, 524]	1257	[1580, 786]	2236	[635, 1584]	3215	[2789, 2915]
279	[525, 526]	1258	[685, 805]	2237	[2808, 2809]	3216	[3483, 819]
280	[527, 528]	1259	[1991, 1992]	2238	[2810, 792]	3217	[3484, 2927]
281	[529, 530]	1260	[1993, 1932]	2239	[2811, 2801]	3218	[3485, 194]
282	[531, 488]	1261	[609, 219]	2240	[1838, 718]	3219	[3486, 137]
283	[532, 533]	1262	[838, 1994]	2241	[2812, 2800]	3220	[3487, 1666]

284	[534, 535]	1263	[1995, 242]	2242	[2813, 2814]	3221	[1763, 1905]
285	[536, 537]	1264	[487, 1669]	2243	[2815, 1444]	3222	[1706, 1851]
286	[538, 539]	1265	[1996, 1997]	2244	[2816, 2817]	3223	[3488, 198]
287	[540, 541]	1266	[1998, 1999]	2245	[2818, 2036]	3224	[3489, 670]
288	[542, 543]	1267	[2000, 2001]	2246	[483, 2103]	3225	[1994, 1706]
289	[544, 545]	1268	[2002, 628]	2247	[1817, 814]	3226	[2117, 654]
290	[546, 547]	1269	[2003, 2004]	2248	[2819, 2820]	3227	[1555, 1822]
291	[548, 549]	1270	[2005, 666]	2249	[2821, 2734]	3228	[3490, 1512]
292	[550, 501]	1271	[2006, 2007]	2250	[758, 2822]	3229	[3491, 1482]
293	[551, 552]	1272	[2008, 41]	2251	[2823, 1574]	3230	[3492, 1624]
294	[205, 157]	1273	[2009, 1659]	2252	[601, 2824]	3231	[535, 651]
295	[553, 554]	1274	[2010, 184]	2253	[1950, 700]	3232	[1629, 549]
296	[479, 555]	1275	[2011, 2012]	2254	[742, 2825]	3233	[3493, 1424]
297	[481, 556]	1276	[2013, 2014]	2255	[2131, 2826]	3234	[791, 1937]
298	[557, 558]	1277	[1730, 2015]	2256	[1774, 2727]	3235	[3494, 2120]
299	[559, 560]	1278	[2016, 1770]	2257	[1776, 2827]	3236	[1522, 553]
300	[561, 562]	1279	[2017, 1771]	2258	[2828, 528]	3237	[3495, 582]
301	[563, 564]	1280	[2018, 1461]	2259	[599, 1471]	3238	[3496, 1915]
302	[565, 566]	1281	[2019, 1875]	2260	[2829, 2005]	3239	[731, 153]
303	[183, 567]	1282	[1819, 2020]	2261	[2830, 2802]	3240	[2042, 2734]
304	[568, 569]	1283	[849, 2021]	2262	[2831, 2832]	3241	[1894, 244]
305	[570, 509]	1284	[1772, 2022]	2263	[1992, 2748]	3242	[3497, 1505]
306	[571, 572]	1285	[523, 1889]	2264	[2833, 1678]	3243	[1490, 625]
307	[573, 574]	1286	[2023, 2024]	2265	[2834, 2100]	3244	[1545, 3454]
308	[575, 576]	1287	[558, 526]	2266	[2835, 1532]	3245	[3498, 1863]
309	[577, 578]	1288	[2025, 2000]	2267	[591, 1949]	3246	[3499, 192]
310	[579, 580]	1289	[2026, 2027]	2268	[2836, 1699]	3247	[3500, 1472]
311	[40, 581]	1290	[2028, 771]	2269	[2837, 2838]	3248	[3501, 2954]
312	[42, 582]	1291	[207, 59]	2270	[1986, 2839]	3249	[3502, 1491]
313	[583, 584]	1292	[2029, 1931]	2271	[2840, 2841]	3250	[1977, 630]
314	[585, 586]	1293	[2030, 2031]	2272	[2820, 2842]	3251	[217, 1496]
315	[587, 588]	1294	[2032, 232]	2273	[554, 1555]	3252	[2014, 164]
316	[589, 497]	1295	[1844, 2033]	2274	[2843, 2844]	3253	[1714, 3104]
317	[590, 591]	1296	[2034, 2035]	2275	[2845, 584]	3254	[3503, 3454]
318	[592, 593]	1297	[2036, 2037]	2276	[1935, 1728]	3255	[649, 478]
319	[594, 595]	1298	[2038, 1603]	2277	[54, 2083]	3256	[3504, 768]
320	[596, 597]	1299	[1794, 1725]	2278	[2846, 2847]	3257	[2112, 1687]
321	[598, 599]	1300	[1931, 170]	2279	[2070, 1842]	3258	[3505, 849]
322	[600, 601]	1301	[687, 1771]	2280	[2848, 2127]	3259	[610, 500]
323	[602, 603]	1302	[2020, 828]	2281	[2849, 2808]	3260	[2879, 1695]
324	[604, 605]	1303	[2039, 603]	2282	[2850, 2851]	3261	[2099, 232]
325	[606, 607]	1304	[2040, 741]	2283	[1572, 2852]	3262	[497, 2793]
326	[608, 609]	1305	[1792, 1754]	2284	[1834, 2853]	3263	[3506, 1807]
327	[32, 610]	1306	[1811, 2041]	2285	[2854, 827]	3264	[3507, 2022]

328	[611, 612]	1307	[1681, 2042]	2286	[2855, 573]	3265	[3508, 645]
329	[613, 614]	1308	[2043, 1542]	2287	[1591, 710]	3266	[1466, 2757]
330	[615, 514]	1309	[2044, 2045]	2288	[2856, 2857]	3267	[1823, 1662]
331	[616, 617]	1310	[1947, 2046]	2289	[1503, 2858]	3268	[3509, 2085]
332	[618, 619]	1311	[2047, 2048]	2290	[2859, 228]	3269	[1450, 1634]
333	[620, 621]	1312	[1401, 1795]	2291	[2101, 706]	3270	[3510, 1502]
334	[622, 623]	1313	[2049, 2050]	2292	[2732, 847]	3271	[2074, 1510]
335	[624, 625]	1314	[2051, 126]	2293	[2860, 2068]	3272	[3511, 1891]
336	[626, 627]	1315	[56, 1998]	2294	[588, 1787]	3273	[3512, 1876]
337	[628, 629]	1316	[1853, 1436]	2295	[1934, 601]	3274	[3513, 1780]
338	[630, 631]	1317	[2052, 2053]	2296	[1676, 239]	3275	[3514, 1645]
339	[632, 633]	1318	[1847, 2054]	2297	[2861, 1524]	3276	[3062, 1481]
340	[634, 635]	1319	[2055, 712]	2298	[2862, 557]	3277	[1918, 201]
341	[636, 637]	1320	[1507, 609]	2299	[699, 2131]	3278	[3515, 165]
342	[638, 639]	1321	[2056, 2057]	2300	[1420, 2860]	3279	[3034, 2800]
343	[640, 641]	1322	[2058, 1973]	2301	[2863, 2864]	3280	[664, 578]
344	[642, 643]	1323	[2059, 2060]	2302	[211, 1735]	3281	[740, 791]
345	[644, 645]	1324	[2061, 1950]	2303	[840, 2865]	3282	[707, 565]
346	[646, 202]	1325	[2062, 1826]	2304	[1900, 1506]	3283	[3516, 2966]
347	[647, 648]	1326	[2063, 478]	2305	[2866, 476]	3284	[765, 618]
348	[475, 649]	1327	[189, 1651]	2306	[2867, 515]	3285	[2864, 1971]
349	[650, 651]	1328	[1830, 2064]	2307	[2868, 853]	3286	[3517, 1603]
350	[652, 203]	1329	[530, 2065]	2308	[2120, 2869]	3287	[3081, 207]
351	[621, 147]	1330	[808, 2031]	2309	[2870, 1941]	3288	[1674, 1610]
352	[653, 654]	1331	[678, 2066]	2310	[2871, 706]	3289	[3518, 33]
353	[655, 656]	1332	[2067, 2068]	2311	[2872, 2873]	3290	[2084, 2906]
354	[657, 658]	1333	[2012, 768]	2312	[1422, 1526]	3291	[3519, 1796]
355	[489, 659]	1334	[2069, 2070]	2313	[2874, 2875]	3292	[3520, 1806]
356	[660, 564]	1335	[2071, 2072]	2314	[1540, 2876]	3293	[3521, 1643]
357	[661, 662]	1336	[1615, 1466]	2315	[2877, 2878]	3294	[3522, 1940]
358	[663, 664]	1337	[2073, 2074]	2316	[2066, 2879]	3295	[3523, 1547]
359	[665, 666]	1338	[555, 1987]	2317	[2880, 2881]	3296	[3524, 2021]
360	[667, 668]	1339	[2075, 702]	2318	[2882, 2883]	3297	[3525, 1988]
361	[669, 573]	1340	[2076, 2077]	2319	[654, 1948]	3298	[1758, 202]
362	[670, 575]	1341	[2078, 2048]	2320	[619, 542]	3299	[3526, 709]
363	[521, 671]	1342	[543, 2079]	2321	[1595, 2884]	3300	[163, 823]
364	[672, 673]	1343	[1411, 2080]	2322	[1582, 1575]	3301	[1502, 1441]
365	[674, 675]	1344	[2081, 1993]	2323	[2885, 1853]	3302	[1964, 2873]
366	[676, 504]	1345	[1657, 2082]	2324	[1889, 2886]	3303	[3019, 680]
367	[677, 678]	1346	[2083, 1519]	2325	[2887, 1855]	3304	[3527, 829]
368	[679, 680]	1347	[1549, 1996]	2326	[2888, 1862]	3305	[3528, 1423]
369	[681, 33]	1348	[34, 1627]	2327	[229, 2889]	3306	[3529, 555]
370	[682, 683]	1349	[693, 2084]	2328	[2890, 782]	3307	[1539, 1830]
371	[684, 685]	1350	[2085, 669]	2329	[2891, 2107]	3308	[2841, 1570]

372	[686, 687]	1351	[2086, 246]	2330	[2892, 540]	3309	[2809, 14]
373	[688, 689]	1352	[2087, 544]	2331	[2886, 2893]	3310	[1407, 1939]
374	[690, 691]	1353	[2088, 565]	2332	[2894, 196]	3311	[2731, 752]
375	[692, 693]	1354	[2089, 1952]	2333	[1742, 517]	3312	[3530, 1742]
376	[694, 695]	1355	[2090, 734]	2334	[2895, 506]	3313	[3531, 229]
377	[696, 697]	1356	[2064, 2091]	2335	[2896, 2893]	3314	[3532, 1868]
378	[698, 699]	1357	[2092, 2093]	2336	[2897, 1751]	3315	[3072, 476]
379	[700, 701]	1358	[177, 2094]	2337	[2048, 1801]	3316	[1416, 2802]
380	[702, 703]	1359	[491, 471]	2338	[2079, 2762]	3317	[3533, 2918]
381	[704, 705]	1360	[1984, 638]	2339	[1709, 712]	3318	[1418, 1633]
382	[706, 707]	1361	[2095, 139]	2340	[2898, 2054]	3319	[3534, 1514]
383	[708, 709]	1362	[2096, 2097]	2341	[1463, 2899]	3320	[1765, 787]
384	[710, 711]	1363	[2098, 2099]	2342	[2900, 2901]	3321	[3535, 2839]
385	[712, 713]	1364	[2100, 2101]	2343	[2902, 2903]	3322	[2125, 3069]
386	[714, 715]	1365	[2102, 2103]	2344	[2904, 1932]	3323	[247, 2831]
387	[716, 585]	1366	[1798, 2104]	2345	[697, 2864]	3324	[3536, 1504]
388	[717, 718]	1367	[2105, 621]	2346	[2905, 2906]	3325	[1456, 1623]
389	[719, 720]	1368	[2106, 1484]	2347	[2907, 2908]	3326	[2778, 580]
390	[721, 722]	1369	[2107, 1451]	2348	[2909, 1761]	3327	[1542, 3048]
391	[723, 724]	1370	[2108, 2109]	2349	[2109, 2027]	3328	[3537, 614]
392	[725, 726]	1371	[1606, 2110]	2350	[2910, 500]	3329	[2916, 1615]
393	[727, 592]	1372	[2111, 2112]	2351	[2911, 742]	3330	[3538, 247]
394	[728, 729]	1373	[2113, 2092]	2352	[2912, 795]	3331	[1905, 131]
395	[730, 731]	1374	[2114, 138]	2353	[2913, 2914]	3332	[3539, 2967]
396	[732, 236]	1375	[1617, 1899]	2354	[1955, 196]	3333	[1691, 1734]
397	[733, 240]	1376	[2115, 613]	2355	[2915, 2916]	3334	[3540, 2961]
398	[734, 163]	1377	[2116, 2117]	2356	[2917, 1434]	3335	[3541, 2759]
399	[735, 736]	1378	[1489, 2118]	2357	[2918, 813]	3336	[2853, 1990]
400	[737, 738]	1379	[2119, 1861]	2358	[1659, 539]	3337	[3542, 1899]
401	[739, 740]	1380	[1852, 2120]	2359	[2873, 2919]	3338	[517, 533]
402	[741, 742]	1381	[2121, 2122]	2360	[2920, 42]	3339	[1444, 537]
403	[743, 744]	1382	[1914, 2078]	2361	[2921, 2922]	3340	[3543, 510]
404	[745, 746]	1383	[2123, 2078]	2362	[1625, 2059]	3341	[3544, 2108]
405	[747, 518]	1384	[2124, 2029]	2363	[2923, 644]	3342	[639, 189]
406	[748, 225]	1385	[1806, 2125]	2364	[2924, 836]	3343	[3039, 1516]
407	[749, 750]	1386	[2126, 722]	2365	[2925, 2767]	3344	[3545, 1535]
408	[751, 752]	1387	[2127, 2085]	2366	[2750, 2036]	3345	[1543, 62]
409	[753, 754]	1388	[2128, 1568]	2367	[2926, 1784]	3346	[1557, 514]
410	[755, 756]	1389	[720, 246]	2368	[1835, 2927]	3347	[3546, 1914]
411	[757, 758]	1390	[1472, 2009]	2369	[2928, 2916]	3348	[2771, 31]
412	[759, 760]	1391	[2129, 1457]	2370	[2929, 691]	3349	[2838, 530]
413	[761, 135]	1392	[656, 1534]	2371	[2930, 1999]	3350	[3547, 2858]
414	[762, 763]	1393	[2130, 2131]	2372	[477, 1703]	3351	[3548, 1795]
415	[764, 765]	1394	[2132, 1822]	2373	[241, 2931]	3352	[2827, 3114]

416	[766, 767]	1395	[691, 2133]	2374	[1566, 1467]	3353	[3549, 1961]
417	[768, 57]	1396	[1593, 2134]	2375	[2932, 1857]	3354	[3550, 1620]
418	[564, 769]	1397	[2135, 1476]	2376	[2933, 2093]	3355	[569, 1439]
419	[770, 771]	1398	[2136, 2137]	2377	[2934, 2890]	3356	[1937, 585]
420	[772, 488]	1399	[1216, 2138]	2378	[2825, 2935]	3357	[3551, 2853]
421	[773, 774]	1400	[2139, 2140]	2379	[1764, 2936]	3358	[3552, 1730]
422	[767, 775]	1401	[2141, 2142]	2380	[1526, 2937]	3359	[1690, 508]
423	[776, 43]	1402	[2143, 89]	2381	[2938, 2771]	3360	[3553, 1974]
424	[777, 778]	1403	[1304, 401]	2382	[1664, 818]	3361	[3554, 2091]
425	[779, 780]	1404	[2144, 1026]	2383	[2939, 2940]	3362	[1848, 1613]
426	[781, 782]	1405	[364, 2145]	2384	[2941, 2804]	3363	[3555, 1541]
427	[783, 784]	1406	[2146, 2147]	2385	[2942, 1564]	3364	[3556, 721]
428	[785, 786]	1407	[2148, 1050]	2386	[528, 1431]	3365	[705, 1986]
429	[787, 589]	1408	[2149, 2150]	2387	[2943, 2773]	3366	[2961, 503]
430	[788, 789]	1409	[1371, 2151]	2388	[1754, 1923]	3367	[3557, 2889]
431	[790, 791]	1410	[2152, 2153]	2389	[1553, 2038]	3368	[3558, 2826]
432	[499, 792]	1411	[2154, 1092]	2390	[2944, 711]	3369	[671, 2975]
433	[793, 794]	1412	[2155, 1308]	2391	[2945, 1779]	3370	[1479, 642]
434	[795, 770]	1413	[2156, 2157]	2392	[2946, 2947]	3371	[3559, 627]
435	[796, 797]	1414	[2158, 2159]	2393	[2948, 485]	3372	[3560, 1660]
436	[798, 799]	1415	[914, 2160]	2394	[2949, 1628]	3373	[3013, 1760]
437	[800, 801]	1416	[2161, 369]	2395	[2950, 2118]	3374	[1604, 763]
438	[802, 803]	1417	[2162, 2163]	2396	[2951, 1669]	3375	[1578, 2097]
439	[804, 805]	1418	[2164, 1083]	2397	[2727, 1607]	3376	[3561, 756]
440	[50, 806]	1419	[399, 2165]	2398	[2952, 2764]	3377	[1514, 1405]
441	[807, 808]	1420	[1076, 2166]	2399	[2953, 727]	3378	[1961, 1792]
442	[809, 810]	1421	[2167, 2168]	2400	[2893, 2954]	3379	[1740, 45]
443	[811, 602]	1422	[389, 2169]	2401	[2955, 713]	3380	[2757, 620]
444	[812, 813]	1423	[1145, 2170]	2402	[2956, 1756]	3381	[3562, 2936]
445	[814, 815]	1424	[2166, 2171]	2403	[2065, 708]	3382	[3563, 1872]
446	[816, 817]	1425	[336, 79]	2404	[2957, 2931]	3383	[3564, 1608]
447	[818, 819]	1426	[855, 2172]	2405	[2958, 1927]	3384	[2998, 583]
448	[820, 9]	1427	[857, 2173]	2406	[1685, 1766]	3385	[3565, 1998]
449	[821, 176]	1428	[2174, 272]	2407	[1471, 1557]	3386	[3566, 1646]
450	[822, 823]	1429	[1084, 2175]	2408	[2959, 54]	3387	[2050, 2053]
451	[824, 825]	1430	[2176, 2177]	2409	[2960, 2805]	3388	[173, 1422]
452	[826, 674]	1431	[2150, 118]	2410	[794, 1487]	3389	[3567, 1639]
453	[552, 827]	1432	[2178, 1081]	2411	[197, 2961]	3390	[2935, 1415]
454	[828, 829]	1433	[2179, 2180]	2412	[2015, 695]	3391	[145, 3025]
455	[830, 831]	1434	[2181, 2182]	2413	[2962, 32]	3392	[2082, 3009]
456	[832, 833]	1435	[2183, 1312]	2414	[1979, 748]	3393	[1851, 1693]
457	[834, 141]	1436	[2184, 2185]	2415	[595, 623]	3394	[3077, 1494]
458	[835, 836]	1437	[2186, 2187]	2416	[2963, 689]	3395	[1458, 2074]
459	[837, 838]	1438	[2188, 2189]	2417	[2964, 2125]	3396	[493, 184]

460	[839, 840]	1439	[2190, 463]	2418	[1809, 2965]	3397	[3568, 830]
461	[841, 842]	1440	[2191, 2192]	2419	[537, 2966]	3398	[1871, 183]
462	[193, 55]	1441	[981, 2193]	2420	[752, 2897]	3399	[3569, 759]
463	[843, 844]	1442	[2194, 2195]	2421	[2077, 2967]	3400	[2104, 2984]
464	[845, 534]	1443	[2196, 255]	2422	[2965, 759]	3401	[3570, 1803]
465	[846, 847]	1444	[2197, 2198]	2423	[2134, 1769]	3402	[1666, 1828]
466	[848, 849]	1445	[2199, 1211]	2424	[1826, 213]	3403	[3571, 703]
467	[850, 586]	1446	[2187, 2200]	2425	[2968, 2745]	3404	[2033, 2963]
468	[851, 852]	1447	[2201, 2202]	2426	[643, 2969]	3405	[3572, 806]
469	[648, 853]	1448	[376, 1349]	2427	[2970, 637]	3406	[1492, 795]
470	[854, 855]	1449	[2203, 65]	2428	[2971, 2869]	3407	[167, 1683]
471	[856, 857]	1450	[2204, 108]	2429	[797, 1811]	3408	[3573, 1701]
472	[858, 859]	1451	[861, 1343]	2430	[1529, 2838]	3409	[2947, 1597]
473	[860, 861]	1452	[2205, 2206]	2431	[2972, 2037]	3410	[3574, 1704]
474	[862, 863]	1453	[2207, 1049]	2432	[2973, 631]	3411	[1720, 1434]
475	[87, 864]	1454	[2208, 2209]	2433	[2072, 2108]	3412	[3575, 44]
476	[865, 866]	1455	[2210, 1322]	2434	[225, 209]	3413	[1409, 740]
477	[867, 868]	1456	[2211, 2212]	2435	[1716, 1984]	3414	[3576, 193]
478	[869, 870]	1457	[1317, 2213]	2436	[2974, 2975]	3415	[2137, 3039]
479	[871, 872]	1458	[71, 1230]	2437	[1944, 2092]	3416	[1559, 1977]
480	[873, 458]	1459	[2214, 1180]	2438	[2976, 2977]	3417	[3577, 185]
481	[874, 359]	1460	[2215, 2216]	2439	[38, 2004]	3418	[1649, 817]
482	[875, 876]	1461	[332, 1168]	2440	[623, 613]	3419	[580, 2835]
483	[877, 878]	1462	[2217, 2218]	2441	[2793, 1721]	3420	[3578, 1507]
484	[879, 880]	1463	[2219, 95]	2442	[2097, 2127]	3421	[3579, 589]
485	[881, 882]	1464	[2220, 374]	2443	[1971, 2857]	3422	[3580, 1468]
486	[883, 884]	1465	[2221, 1212]	2444	[2978, 1917]	3423	[810, 1577]
487	[287, 461]	1466	[429, 278]	2445	[2979, 240]	3424	[750, 1619]
488	[885, 886]	1467	[2222, 2223]	2446	[2980, 2981]	3425	[187, 1911]
489	[887, 888]	1468	[1334, 2224]	2447	[2982, 1427]	3426	[2118, 2814]
490	[889, 890]	1469	[2225, 412]	2448	[2790, 1409]	3427	[3581, 1572]
491	[73, 891]	1470	[2226, 1194]	2449	[1966, 1606]	3428	[231, 801]
492	[892, 893]	1471	[2227, 2228]	2450	[547, 8]	3429	[3582, 1948]
493	[894, 356]	1472	[2157, 2229]	2451	[2983, 2984]	3430	[2967, 1865]
494	[895, 896]	1473	[321, 2230]	2452	[2985, 2986]	3431	[2021, 1653]
495	[402, 897]	1474	[2231, 1277]	2453	[2987, 2040]	3432	[852, 1617]
496	[898, 899]	1475	[2232, 2233]	2454	[1704, 2112]	3433	[1683, 1553]
497	[900, 901]	1476	[1181, 1060]	2455	[2988, 1662]	3434	[651, 2122]
498	[902, 408]	1477	[2234, 2235]	2456	[2989, 1696]	3435	[3583, 241]
499	[878, 903]	1478	[277, 363]	2457	[168, 2990]	3436	[3584, 729]
500	[904, 905]	1479	[279, 1121]	2458	[2817, 1813]	3437	[3585, 1663]
501	[906, 907]	1480	[2236, 2181]	2459	[1821, 2903]	3438	[3586, 2079]
502	[908, 909]	1481	[2237, 367]	2460	[1924, 1847]	3439	[3587, 2034]
503	[101, 910]	1482	[251, 1140]	2461	[2991, 151]	3440	[2747, 140]

504	[338, 911]	1483	[2238, 83]	2462	[2937, 1710]	3441	[3588, 1735]
505	[907, 912]	1484	[2239, 877]	2463	[2881, 48]	3442	[3589, 3108]
506	[913, 914]	1485	[1295, 896]	2464	[2057, 1874]	3443	[2906, 1898]
507	[915, 916]	1486	[2240, 2241]	2465	[2992, 1755]	3444	[3590, 231]
508	[917, 19]	1487	[69, 2242]	2466	[2993, 690]	3445	[2031, 2820]
509	[918, 919]	1488	[2243, 1173]	2467	[2994, 46]	3446	[215, 728]
510	[920, 921]	1489	[1032, 1238]	2468	[1939, 1677]	3447	[1487, 1894]
511	[922, 923]	1490	[253, 348]	2469	[1697, 2901]	3448	[3591, 2173]
512	[924, 925]	1491	[2244, 1154]	2470	[2995, 675]	3449	[3592, 866]
513	[926, 390]	1492	[2245, 1296]	2471	[2883, 668]	3450	[3593, 377]
514	[927, 928]	1493	[2246, 2247]	2472	[159, 1966]	3451	[3594, 1255]
515	[929, 930]	1494	[1226, 1156]	2473	[2996, 2932]	3452	[3595, 2148]
516	[931, 932]	1495	[2172, 1312]	2474	[2997, 1721]	3453	[3596, 1355]
517	[933, 103]	1496	[2248, 2249]	2475	[2857, 493]	3454	[2293, 2158]
518	[934, 935]	1497	[412, 2250]	2476	[2889, 2998]	3455	[3597, 2367]
519	[936, 937]	1498	[2251, 434]	2477	[2027, 1531]	3456	[3598, 2228]
520	[938, 939]	1499	[2252, 1111]	2478	[239, 2005]	3457	[3599, 2343]
521	[940, 941]	1500	[2253, 1254]	2479	[2999, 616]	3458	[3600, 66]
522	[942, 943]	1501	[1041, 990]	2480	[1872, 1541]	3459	[3601, 2245]
523	[944, 945]	1502	[2254, 1374]	2481	[3000, 2915]	3460	[3602, 3273]
524	[911, 946]	1503	[2255, 1131]	2482	[2975, 559]	3461	[3603, 1118]
525	[947, 948]	1504	[1103, 1200]	2483	[3001, 699]	3462	[3604, 2229]
526	[949, 375]	1505	[2256, 2257]	2484	[3002, 3003]	3463	[3605, 1023]
527	[950, 951]	1506	[905, 2258]	2485	[515, 1737]	3464	[3606, 100]
528	[952, 258]	1507	[2259, 1048]	2486	[3004, 728]	3465	[3607, 338]
529	[953, 307]	1508	[1374, 1357]	2487	[3005, 2836]	3466	[3608, 2529]
530	[954, 955]	1509	[2260, 1379]	2488	[2876, 1523]	3467	[3609, 17]
531	[956, 887]	1510	[2189, 2261]	2489	[2787, 1720]	3468	[3610, 2475]
532	[957, 958]	1511	[1136, 1327]	2490	[3006, 2986]	3469	[3611, 2493]
533	[959, 960]	1512	[438, 1329]	2491	[3007, 1668]	3470	[3612, 1356]
534	[943, 961]	1513	[2262, 345]	2492	[2852, 129]	3471	[3613, 1177]
535	[368, 962]	1514	[2230, 2263]	2493	[3008, 3009]	3472	[3614, 2697]
536	[963, 964]	1515	[2264, 2265]	2494	[3010, 507]	3473	[3615, 1260]
537	[965, 966]	1516	[97, 887]	2495	[689, 1]	3474	[3616, 1147]
538	[967, 968]	1517	[2266, 1157]	2496	[3011, 1697]	3475	[3617, 452]
539	[969, 970]	1518	[2267, 1209]	2497	[3012, 3013]	3476	[3618, 2315]
540	[971, 972]	1519	[1354, 1227]	2498	[3014, 2865]	3477	[3619, 1259]
541	[973, 904]	1520	[2142, 2268]	2499	[3015, 2774]	3478	[3620, 2145]
542	[974, 975]	1521	[2269, 2270]	2500	[1405, 1947]	3479	[3621, 315]
543	[976, 977]	1522	[1369, 909]	2501	[1516, 249]	3480	[3622, 1236]
544	[978, 979]	1523	[985, 333]	2502	[3016, 3017]	3481	[3623, 269]
545	[980, 981]	1524	[2271, 2272]	2503	[1865, 1537]	3482	[3624, 2470]
546	[982, 983]	1525	[2273, 2274]	2504	[3018, 3019]	3483	[3625, 2523]
547	[984, 985]	1526	[1358, 884]	2505	[1960, 648]	3484	[3626, 2478]

548	[986, 987]	1527	[2275, 987]	2506	[724, 540]	3485	[3627, 2283]
549	[988, 457]	1528	[2276, 1044]	2507	[3020, 3021]	3486	[3628, 82]
550	[989, 990]	1529	[2277, 2278]	2508	[3022, 1996]	3487	[3629, 1199]
551	[366, 991]	1530	[2279, 2213]	2509	[2007, 1819]	3488	[3630, 370]
552	[992, 268]	1531	[2280, 1105]	2510	[3023, 1699]	3489	[3631, 1024]
553	[993, 426]	1532	[899, 2281]	2511	[3024, 3025]	3490	[3632, 337]
554	[909, 885]	1533	[2282, 2283]	2512	[1863, 506]	3491	[3633, 979]
555	[870, 915]	1534	[1139, 2284]	2513	[3026, 1599]	3492	[3634, 2554]
556	[458, 994]	1535	[1129, 869]	2514	[3027, 553]	3493	[3635, 336]
557	[995, 459]	1536	[2285, 2286]	2515	[1564, 1882]	3494	[3636, 2444]
558	[67, 996]	1537	[1164, 1288]	2516	[3028, 1533]	3495	[3637, 2355]
559	[997, 998]	1538	[2287, 2272]	2517	[1988, 1809]	3496	[3638, 2519]
560	[999, 1000]	1539	[24, 1125]	2518	[3029, 551]	3497	[3639, 2509]
561	[1001, 1002]	1540	[2288, 16]	2519	[2986, 3030]	3498	[3640, 1185]
562	[1003, 1004]	1541	[921, 2289]	2520	[3031, 715]	3499	[3641, 371]
563	[1005, 1006]	1542	[1199, 2290]	2521	[3032, 2066]	3500	[3642, 868]
564	[1007, 82]	1543	[1365, 2291]	2522	[3033, 3034]	3501	[3643, 2505]
565	[1008, 1009]	1544	[2292, 2293]	2523	[645, 1696]	3502	[3644, 120]
566	[1010, 1011]	1545	[109, 1090]	2524	[3035, 511]	3503	[3645, 2138]
567	[352, 1012]	1546	[2294, 1076]	2525	[567, 848]	3504	[3646, 114]
568	[1013, 969]	1547	[1101, 2256]	2526	[3036, 1852]	3505	[3647, 2153]
569	[1014, 1015]	1548	[2295, 1012]	2527	[1671, 1529]	3506	[3648, 872]
570	[1016, 1017]	1549	[1017, 294]	2528	[3037, 837]	3507	[3649, 1131]
571	[1018, 387]	1550	[2296, 975]	2529	[3038, 3039]	3508	[3650, 2571]
572	[1019, 388]	1551	[1114, 881]	2530	[3021, 181]	3509	[3651, 1170]
573	[1020, 1021]	1552	[2297, 1034]	2531	[3040, 1511]	3510	[3652, 905]
574	[1022, 1023]	1553	[1300, 1377]	2532	[658, 2773]	3511	[3653, 453]
575	[1024, 954]	1554	[2298, 2299]	2533	[2133, 2875]	3512	[3654, 2169]
576	[1025, 1026]	1555	[2300, 414]	2534	[1621, 1969]	3513	[3655, 859]
577	[1027, 1028]	1556	[2301, 1039]	2535	[574, 3041]	3514	[3656, 1354]
578	[1029, 1030]	1557	[2195, 465]	2536	[3042, 2835]	3515	[3657, 252]
579	[1031, 1032]	1558	[2302, 2303]	2537	[3043, 1688]	3516	[3658, 2451]
580	[1033, 1034]	1559	[1289, 1267]	2538	[2738, 2940]	3517	[3659, 460]
581	[79, 1035]	1560	[2304, 1392]	2539	[3044, 1578]	3518	[3660, 68]
582	[83, 900]	1561	[2305, 252]	2540	[3045, 2935]	3519	[3661, 2324]
583	[1036, 856]	1562	[2306, 2280]	2541	[171, 2114]	3520	[3662, 1382]
584	[1037, 1038]	1563	[2307, 2211]	2542	[2914, 2747]	3521	[3663, 2378]
585	[1039, 373]	1564	[2308, 1184]	2543	[3046, 1634]	3522	[3664, 2154]
586	[1040, 1041]	1565	[2309, 2222]	2544	[3047, 3048]	3523	[3665, 2262]
587	[300, 1042]	1566	[269, 1355]	2545	[3049, 1886]	3524	[3666, 117]
588	[1043, 1044]	1567	[2310, 1082]	2546	[3050, 2924]	3525	[3667, 1097]
589	[1045, 1046]	1568	[2299, 2311]	2547	[3051, 755]	3526	[3668, 2704]
590	[1047, 1048]	1569	[2312, 1235]	2548	[2981, 1929]	3527	[3669, 345]
591	[925, 1049]	1570	[1132, 2313]	2549	[3052, 1473]	3528	[3670, 1120]

592	[1050, 988]	1571	[2314, 1086]	2550	[3053, 1978]	3529	[3671, 375]
593	[1051, 874]	1572	[2315, 2316]	2551	[3054, 620]	3530	[3672, 417]
594	[1052, 1053]	1573	[2317, 2318]	2552	[744, 641]	3531	[3673, 346]
595	[1054, 409]	1574	[323, 2319]	2553	[3055, 2033]	3532	[3674, 2479]
596	[1055, 1056]	1575	[1168, 2320]	2554	[2839, 544]	3533	[3675, 296]
597	[293, 1057]	1576	[2321, 2322]	2555	[3056, 780]	3534	[3676, 394]
598	[1058, 1059]	1577	[1023, 1379]	2556	[1925, 1832]	3535	[3677, 978]
599	[1060, 1061]	1578	[1211, 1176]	2557	[736, 1688]	3536	[3678, 1369]
600	[1062, 250]	1579	[2323, 1315]	2558	[3057, 524]	3537	[3679, 2316]
601	[427, 114]	1580	[2324, 2325]	2559	[1644, 1595]	3538	[3680, 2545]
602	[888, 1063]	1581	[2326, 260]	2560	[3058, 57]	3539	[3681, 864]
603	[4, 84]	1582	[2327, 1394]	2561	[3059, 175]	3540	[3682, 1232]
604	[1064, 1065]	1583	[2328, 2329]	2562	[3060, 1766]	3541	[3683, 1090]
605	[1066, 1067]	1584	[2330, 1293]	2563	[235, 702]	3542	[3684, 857]
606	[1068, 328]	1585	[2325, 2331]	2564	[3061, 1437]	3543	[3685, 2325]
607	[1069, 1070]	1586	[2332, 64]	2565	[1431, 1879]	3544	[3686, 912]
608	[1071, 469]	1587	[2333, 1106]	2566	[1884, 3062]	3545	[3687, 454]
609	[1072, 1073]	1588	[2334, 992]	2567	[3063, 1987]	3546	[3688, 2216]
610	[64, 906]	1589	[2335, 1085]	2568	[3064, 2831]	3547	[3689, 386]
611	[1074, 72]	1590	[1093, 2336]	2569	[1879, 755]	3548	[3690, 1146]
612	[1075, 1076]	1591	[2337, 2338]	2570	[2919, 2023]	3549	[3691, 101]
613	[1077, 965]	1592	[2339, 2340]	2571	[3065, 3033]	3550	[3692, 107]
614	[1078, 1079]	1593	[2341, 6]	2572	[3066, 2918]	3551	[3693, 1200]
615	[1080, 929]	1594	[2342, 455]	2573	[813, 1778]	3552	[3694, 435]
616	[864, 320]	1595	[2343, 1272]	2574	[3067, 593]	3553	[3695, 19]
617	[387, 1081]	1596	[2344, 2345]	2575	[844, 1817]	3554	[3696, 251]
618	[1048, 974]	1597	[2346, 1212]	2576	[3068, 3069]	3555	[3697, 1112]
619	[1082, 29]	1598	[28, 1315]	2577	[3070, 700]	3556	[3698, 999]
620	[1083, 1084]	1599	[2347, 266]	2578	[3071, 2758]	3557	[3699, 1095]
621	[1085, 1086]	1600	[2348, 2154]	2579	[1476, 3072]	3558	[3700, 869]
622	[1087, 1077]	1601	[2349, 284]	2580	[815, 1412]	3559	[3701, 2446]
623	[312, 1078]	1602	[2350, 322]	2581	[3073, 701]	3560	[3702, 2666]
624	[1088, 1089]	1603	[1377, 86]	2582	[2940, 2057]	3561	[3703, 363]
625	[1090, 1091]	1604	[460, 2302]	2583	[3074, 545]	3562	[3704, 1122]
626	[1092, 1093]	1605	[2351, 2352]	2584	[3075, 567]	3563	[3705, 926]
627	[1094, 1095]	1606	[1053, 339]	2585	[695, 3076]	3564	[3706, 1222]
628	[1096, 1097]	1607	[2353, 2354]	2586	[1756, 591]	3565	[3707, 340]
629	[1098, 1099]	1608	[2355, 299]	2587	[784, 1978]	3566	[3708, 2511]
630	[1100, 1101]	1609	[325, 2218]	2588	[2758, 1779]	3567	[3709, 364]
631	[1102, 1103]	1610	[2356, 2155]	2589	[659, 661]	3568	[3710, 1021]
632	[1104, 1105]	1611	[2357, 1216]	2590	[2794, 2924]	3569	[3711, 1283]
633	[1106, 1107]	1612	[2358, 962]	2591	[1957, 3077]	3570	[3712, 1101]
634	[1108, 1109]	1613	[2359, 1252]	2592	[3078, 127]	3571	[3713, 2646]
635	[81, 1110]	1614	[2360, 922]	2593	[3079, 2876]	3572	[3714, 1143]

636	[1111, 1112]	1615	[2278, 2361]	2594	[703, 174]	3573	[3715, 1093]
637	[1113, 318]	1616	[2362, 2363]	2595	[511, 2844]	3574	[3716, 2627]
638	[1002, 1114]	1617	[1344, 1259]	2596	[3080, 3081]	3575	[3717, 2438]
639	[1115, 28]	1618	[2364, 1054]	2597	[3082, 521]	3576	[3718, 110]
640	[1116, 115]	1619	[342, 2365]	2598	[1837, 512]	3577	[3719, 349]
641	[1117, 1118]	1620	[2182, 913]	2599	[746, 2948]	3578	[3720, 2634]
642	[1119, 1120]	1621	[2345, 1214]	2600	[1624, 3019]	3579	[3721, 933]
643	[1121, 1122]	1622	[2366, 997]	2601	[3083, 560]	3580	[3722, 1343]
644	[1123, 1124]	1623	[2367, 2186]	2602	[3084, 3085]	3581	[3723, 2409]
645	[1125, 1024]	1624	[2284, 2368]	2603	[2844, 1443]	3582	[3724, 91]
646	[1126, 1127]	1625	[2286, 964]	2604	[179, 2804]	3583	[3725, 2331]
647	[1128, 1129]	1626	[2369, 2289]	2605	[3086, 1979]	3584	[3726, 2142]
648	[916, 1113]	1627	[310, 968]	2606	[2765, 2977]	3585	[3727, 1060]
649	[863, 899]	1628	[1000, 24]	2607	[1828, 758]	3586	[3728, 1391]
650	[1130, 259]	1629	[970, 332]	2608	[556, 1724]	3587	[3729, 2337]
651	[1131, 1132]	1630	[2370, 988]	2609	[1512, 796]	3588	[3730, 1072]
652	[1133, 1134]	1631	[1391, 2209]	2610	[3087, 169]	3589	[3731, 1371]
653	[1135, 1136]	1632	[2371, 1384]	2611	[3088, 2884]	3590	[3732, 1198]
654	[958, 1137]	1633	[26, 2282]	2612	[3089, 221]	3591	[149, 475]
655	[1138, 1139]	1634	[2372, 2148]	2613	[1680, 53]	3592	[3733, 2886]
656	[1140, 1129]	1635	[2373, 1267]	2614	[3090, 1425]	3593	[629, 698]
657	[1141, 1142]	1636	[2200, 2348]	2615	[3091, 10]	3594	[2769, 1419]
658	[1143, 1144]	1637	[2374, 2161]	2616	[782, 1680]	3595	[3734, 1607]
659	[886, 1145]	1638	[2283, 430]	2617	[3092, 3034]	3596	[3735, 2064]
660	[1146, 1147]	1639	[1347, 1245]	2618	[3093, 2827]	3597	[2053, 2029]
661	[405, 1148]	1640	[2375, 936]	2619	[3094, 177]	3598	[3736, 649]
662	[374, 1029]	1641	[2376, 1284]	2620	[3095, 2803]	3599	[2899, 161]
663	[1149, 1150]	1642	[2145, 366]	2621	[3096, 554]	3600	[3737, 134]
664	[1151, 1054]	1643	[2377, 1222]	2622	[1796, 2077]	3601	[3738, 512]
665	[1152, 1153]	1644	[2378, 2379]	2623	[3097, 45]	3602	[12, 673]
666	[1154, 1143]	1645	[897, 2254]	2624	[3098, 1703]	3603	[3739, 2024]
667	[1155, 456]	1646	[1086, 867]	2625	[2826, 616]	3604	[2847, 2914]
668	[1156, 1157]	1647	[2380, 928]	2626	[1623, 3066]	3605	[3740, 1994]
669	[1158, 1022]	1648	[2381, 2382]	2627	[1974, 9]	3606	[1901, 1602]
670	[1159, 1025]	1649	[453, 404]	2628	[3099, 1751]	3607	[3741, 2832]
671	[939, 997]	1650	[2383, 1214]	2629	[1929, 487]	3608	[48, 1840]
672	[1160, 1161]	1651	[362, 307]	2630	[3100, 216]	3609	[153, 1450]
673	[1162, 104]	1652	[2384, 1045]	2631	[3101, 1673]	3610	[3742, 1591]
674	[1163, 1032]	1653	[966, 2385]	2632	[715, 3017]	3611	[3743, 659]
675	[1109, 1164]	1654	[2386, 339]	2633	[3102, 1508]	3612	[3009, 1794]
676	[1165, 1166]	1655	[2387, 2388]	2634	[3103, 3104]	3613	[3104, 595]
677	[1167, 1168]	1656	[2389, 2390]	2635	[3105, 1451]	3614	[1455, 499]
678	[1169, 1170]	1657	[297, 2391]	2636	[3106, 3107]	3615	[1997, 599]
679	[1171, 1172]	1658	[2392, 2393]	2637	[2954, 2947]	3616	[2901, 2738]

680	[1173, 421]	1659	[910, 281]	2638	[1497, 3108]	3617	[3744, 552]
681	[1166, 1174]	1660	[2223, 1109]	2639	[3109, 1765]	3618	[3745, 546]
682	[1175, 3]	1661	[1362, 2394]	2640	[219, 1815]	3619	[2753, 1580]
683	[1176, 1177]	1662	[2316, 2346]	2641	[3110, 2023]	3620	[1887, 799]
684	[1178, 1179]	1663	[1302, 1241]	2642	[3111, 3076]	3621	[3746, 2794]
685	[6, 1180]	1664	[302, 1188]	2643	[60, 176]	3622	[2851, 2040]
686	[468, 1181]	1665	[30, 2395]	2644	[1898, 2922]	3623	[3747, 2753]
687	[1070, 1182]	1666	[2185, 1249]	2645	[1815, 472]	3624	[1785, 2847]
688	[1183, 897]	1667	[2258, 2347]	2646	[3112, 1506]	3625	[3025, 569]
689	[1184, 1185]	1668	[2396, 1269]	2647	[3113, 1495]	3626	[3748, 748]
690	[1186, 1187]	1669	[2397, 984]	2648	[756, 1551]	3627	[722, 235]
691	[1188, 1189]	1670	[319, 2398]	2649	[2784, 230]	3628	[3749, 473]
692	[1190, 960]	1671	[2399, 2400]	2650	[1660, 1642]	3629	[519, 789]
693	[882, 1191]	1672	[2401, 940]	2651	[3085, 1460]	3630	[3750, 708]
694	[1192, 1193]	1673	[1089, 2327]	2652	[3114, 714]	3631	[1746, 1561]
695	[1194, 1195]	1674	[946, 2232]	2653	[3115, 3041]	3632	[1921, 1401]
696	[1196, 1197]	1675	[2402, 2403]	2654	[3116, 2809]	3633	[769, 1665]
697	[1198, 1199]	1676	[2229, 2352]	2655	[1461, 1582]	3634	[799, 2981]
698	[1200, 924]	1677	[383, 880]	2656	[3117, 1997]	3635	[169, 158]
699	[1099, 1201]	1678	[2404, 284]	2657	[3118, 2109]	3636	[1668, 749]
700	[941, 1198]	1679	[2405, 1164]	2658	[2805, 2985]	3637	[3751, 1789]
701	[1202, 1056]	1680	[2406, 2146]	2659	[572, 2729]	3638	[2878, 2007]
702	[1172, 335]	1681	[306, 1072]	2660	[3119, 244]	3639	[3752, 3139]
703	[1203, 337]	1682	[2407, 1019]	2661	[3120, 2735]	3640	[1760, 2128]
704	[1204, 1205]	1683	[419, 871]	2662	[2865, 50]	3641	[3753, 686]
705	[1206, 855]	1684	[2408, 1363]	2663	[641, 3021]	3642	[3754, 1835]
706	[1207, 290]	1685	[923, 2409]	2664	[3121, 217]	3643	[1436, 1484]
707	[1208, 1209]	1686	[2410, 2347]	2665	[3122, 1637]	3644	[3755, 1452]
708	[955, 63]	1687	[1319, 1365]	2666	[792, 2789]	3645	[3756, 1456]
709	[1210, 1211]	1688	[1245, 2411]	2667	[3123, 2114]	3646	[2024, 228]
710	[1212, 917]	1689	[2412, 1000]	2668	[576, 1776]	3647	[1425, 1844]
711	[1213, 286]	1690	[1150, 918]	2669	[2796, 837]	3648	[2903, 1709]
712	[1214, 411]	1691	[2413, 2414]	2670	[3124, 2985]	3649	[3757, 2042]
713	[1215, 1216]	1692	[2415, 96]	2671	[3125, 2046]	3650	[1802, 833]
714	[1217, 976]	1693	[407, 2334]	2672	[1639, 179]	3651	[3758, 1590]
715	[1218, 1219]	1694	[2416, 1182]	2673	[1698, 2750]	3652	[3759, 2852]
716	[1220, 1040]	1695	[893, 2417]	2674	[3126, 3114]	3653	[1577, 2070]
717	[1221, 1069]	1696	[1124, 2418]	2675	[3127, 619]	3654	[581, 1676]
718	[1222, 1223]	1697	[2419, 2420]	2676	[3128, 581]	3655	[3760, 1890]
719	[1224, 971]	1698	[2421, 2422]	2677	[2110, 43]	3656	[2729, 765]
720	[1225, 929]	1699	[357, 418]	2678	[1842, 844]	3657	[1598, 1566]
721	[1209, 1226]	1700	[2423, 1091]	2679	[3129, 1716]	3658	[3761, 2083]
722	[1227, 1228]	1701	[1342, 2337]	2680	[3130, 1825]	3659	[3762, 211]
723	[1229, 1176]	1702	[2424, 111]	2681	[2080, 40]	3660	[3763, 138]

724	[1230, 973]	1703	[866, 2300]	2682	[3131, 2822]	3661	[3764, 1802]
725	[1231, 20]	1704	[868, 1193]	2683	[3132, 1532]	3662	[1718, 133]
726	[265, 1232]	1705	[2425, 2426]	2684	[3133, 2824]	3663	[3765, 1764]
727	[1233, 1234]	1706	[350, 1235]	2685	[1712, 778]	3664	[754, 644]
728	[1235, 1146]	1707	[2427, 333]	2686	[1885, 52]	3665	[842, 1761]
729	[408, 1236]	1708	[2428, 300]	2687	[2822, 628]	3666	[3766, 2060]
730	[1237, 1132]	1709	[1161, 1215]	2688	[3134, 2965]	3667	[3767, 547]
731	[1238, 1239]	1710	[2422, 110]	2689	[3135, 1725]	3668	[2721, 572]
732	[1240, 446]	1711	[2429, 1305]	2690	[3136, 2825]	3669	[3768, 629]
733	[1241, 454]	1712	[2430, 1333]	2691	[3137, 848]	3670	[2884, 1749]
734	[1242, 1243]	1713	[2431, 1213]	2692	[1636, 1599]	3671	[2922, 1781]
735	[1244, 1245]	1714	[2163, 1325]	2693	[495, 683]	3672	[673, 1714]
736	[1246, 452]	1715	[2432, 1398]	2694	[2814, 607]	3673	[3769, 741]
737	[1247, 1248]	1716	[1336, 2433]	2695	[3138, 2110]	3674	[1531, 2764]
738	[1249, 1250]	1717	[2434, 276]	2696	[2908, 1701]	3675	[3770, 34]
739	[1251, 1252]	1718	[2170, 1213]	2697	[3017, 3139]	3676	[3771, 1598]
740	[951, 1253]	1719	[2435, 1326]	2698	[3140, 1924]	3677	[1663, 1499]
741	[1254, 1255]	1720	[2393, 1053]	2699	[3141, 1901]	3678	[2093, 1909]
742	[1256, 1257]	1721	[2436, 2437]	2700	[2035, 242]	3679	[1790, 2769]
743	[1258, 1117]	1722	[372, 2438]	2701	[2743, 1913]	3680	[1913, 2100]
744	[1259, 1260]	1723	[2439, 2440]	2702	[675, 562]	3681	[2842, 3003]
745	[1261, 1262]	1724	[2441, 2168]	2703	[3142, 1467]	3682	[3772, 3072]
746	[872, 1263]	1725	[1266, 1217]	2704	[2824, 670]	3683	[3773, 60]
747	[1264, 25]	1726	[2442, 1038]	2705	[3143, 1925]	3684	[2832, 736]
748	[1265, 1266]	1727	[2443, 2414]	2706	[778, 697]	3685	[3774, 1420]
749	[1267, 1268]	1728	[2398, 2444]	2707	[3144, 1923]	3686	[3775, 1503]
750	[1269, 1028]	1729	[2445, 886]	2708	[513, 483]	3687	[3776, 2744]
751	[1270, 1271]	1730	[2446, 2195]	2709	[3145, 489]	3688	[507, 1960]
752	[1272, 978]	1731	[2447, 2197]	2710	[3146, 588]	3689	[3777, 1644]
753	[1273, 297]	1732	[2448, 81]	2711	[1588, 551]	3690	[2966, 1845]
754	[1274, 1275]	1733	[2449, 1370]	2712	[3147, 2094]	3691	[3778, 171]
755	[1276, 1096]	1734	[451, 1372]	2713	[3148, 2937]	3692	[3779, 838]
756	[972, 1277]	1735	[1174, 876]	2714	[3149, 513]	3693	[3780, 1651]
757	[1278, 1279]	1736	[2450, 356]	2715	[3150, 576]	3694	[3781, 662]
758	[1280, 1119]	1737	[1350, 2451]	2716	[3151, 1523]	3695	[603, 41]
759	[1281, 1282]	1738	[2452, 2453]	2717	[3152, 2020]	3696	[612, 1973]
760	[1283, 1284]	1739	[2454, 1309]	2718	[1854, 746]	3697	[578, 734]
761	[1285, 1286]	1740	[2455, 439]	2719	[3153, 1823]	3698	[836, 1896]
762	[1287, 1079]	1741	[2456, 1043]	2720	[3154, 2406]	3699	[3782, 2948]
763	[1288, 1289]	1742	[85, 2457]	2721	[2640, 959]	3700	[3003, 2787]
764	[1290, 415]	1743	[2458, 2166]	2722	[3155, 322]	3701	[3783, 233]
765	[1291, 1082]	1744	[2459, 2141]	2723	[3156, 861]	3702	[789, 1855]
766	[1292, 1293]	1745	[2460, 2187]	2724	[3157, 2532]	3703	[485, 491]
767	[442, 443]	1746	[1191, 250]	2725	[3158, 270]	3704	[3784, 2998]

768	[1294, 116]	1747	[2461, 1083]	2726	[3159, 2353]	3705	[3785, 1558]
769	[1147, 1295]	1748	[2462, 1151]	2727	[2482, 2355]	3706	[1613, 1875]
770	[1296, 1297]	1749	[2463, 1206]	2728	[3160, 263]	3707	[668, 1957]
771	[1234, 934]	1750	[2464, 1145]	2729	[932, 2265]	3708	[3786, 542]
772	[1298, 468]	1751	[2465, 270]	2730	[3161, 2463]	3709	[3787, 1691]
773	[1299, 77]	1752	[2466, 373]	2731	[2568, 2363]	3710	[1584, 2000]
774	[1252, 25]	1753	[2467, 2377]	2732	[107, 1262]	3711	[3788, 1772]
775	[1293, 1300]	1754	[2468, 2469]	2733	[3162, 1218]	3712	[2759, 656]
776	[1301, 1302]	1755	[2438, 2470]	2734	[2634, 399]	3713	[3139, 2796]
777	[1303, 1304]	1756	[1197, 469]	2735	[2683, 936]	3714	[3789, 687]
778	[1305, 1306]	1757	[2471, 1291]	2736	[3163, 277]	3715	[3790, 2897]
779	[1307, 124]	1758	[998, 2396]	2737	[3164, 2257]	3716	[1494, 731]
780	[1308, 1309]	1759	[2472, 1253]	2738	[859, 2343]	3717	[3791, 1854]
781	[1310, 326]	1760	[75, 2473]	2739	[2233, 920]	3718	[3792, 220]
782	[1189, 1002]	1761	[2329, 2152]	2740	[3165, 2313]	3719	[3793, 707]
783	[1311, 84]	1762	[2474, 2330]	2741	[3166, 2152]	3720	[2001, 1758]
784	[1312, 1313]	1763	[2274, 317]	2742	[3167, 959]	3721	[775, 2721]
785	[1314, 304]	1764	[2414, 2475]	2743	[3168, 1242]	3722	[3794, 168]
786	[1315, 1316]	1765	[2268, 1045]	2744	[1262, 1162]	3723	[3795, 636]
787	[990, 1317]	1766	[1363, 2277]	2745	[2557, 863]	3724	[44, 597]
788	[1318, 1298]	1767	[2311, 2476]	2746	[3169, 1239]	3725	[1619, 794]
789	[1297, 1319]	1768	[2477, 1003]	2747	[2426, 1384]	3726	[185, 2836]
790	[1320, 1321]	1769	[2478, 325]	2748	[271, 1169]	3727	[3796, 1407]
791	[455, 927]	1770	[1137, 2374]	2749	[3170, 2397]	3728	[711, 1628]
792	[1322, 1323]	1771	[928, 2479]	2750	[1282, 948]	3729	[3797, 574]
793	[1324, 282]	1772	[2480, 386]	2751	[2249, 2566]	3730	[549, 2050]
794	[1325, 1326]	1773	[2481, 2482]	2752	[3171, 2161]	3731	[3798, 2015]
795	[1042, 1051]	1774	[2420, 66]	2753	[1044, 2222]	3732	[3799, 1492]
796	[1327, 1328]	1775	[2483, 2263]	2754	[3172, 405]	3733	[3800, 1124]
797	[1329, 1059]	1776	[2484, 1194]	2755	[3173, 381]	3734	[3801, 85]
798	[1330, 1331]	1777	[2485, 2486]	2756	[3174, 369]	3735	[3802, 991]
799	[1011, 400]	1778	[2487, 377]	2757	[2336, 1085]	3736	[3803, 2689]
800	[1332, 920]	1779	[2147, 309]	2758	[2593, 99]	3737	[3804, 266]
801	[1333, 1334]	1780	[99, 2488]	2759	[1067, 1094]	3738	[3805, 921]
802	[1335, 1336]	1781	[987, 940]	2760	[3175, 952]	3739	[3806, 291]
803	[1337, 933]	1782	[2489, 353]	2761	[3176, 1297]	3740	[3807, 946]
804	[1338, 1339]	1783	[125, 2275]	2762	[977, 1396]	3741	[3808, 2278]
805	[1110, 1340]	1784	[1309, 2490]	2763	[3177, 2473]	3742	[3809, 1187]
806	[1341, 1342]	1785	[2491, 2440]	2764	[2591, 1397]	3743	[3810, 913]
807	[1343, 425]	1786	[2492, 2400]	2765	[1105, 1387]	3744	[3811, 1368]
808	[1061, 1344]	1787	[462, 2493]	2766	[3178, 906]	3745	[3812, 279]
809	[1345, 1150]	1788	[2494, 2171]	2767	[2228, 2245]	3746	[3813, 925]
810	[105, 1291]	1789	[1182, 2495]	2768	[3179, 934]	3747	[3814, 2239]
811	[1346, 1347]	1790	[2417, 2341]	2769	[2391, 2623]	3748	[3815, 2300]

812	[1348, 1349]	1791	[2496, 2468]	2770	[3180, 87]	3749	[3816, 309]
813	[423, 1102]	1792	[380, 2497]	2771	[348, 2372]	3750	[3817, 1210]
814	[1248, 1350]	1793	[2498, 400]	2772	[3181, 1266]	3751	[3818, 1289]
815	[1351, 1307]	1794	[2261, 2499]	2773	[1142, 2598]	3752	[3819, 914]
816	[1352, 1353]	1795	[2140, 1007]	2774	[1382, 1066]	3753	[3820, 1070]
817	[258, 1354]	1796	[2173, 2500]	2775	[3182, 397]	3754	[3821, 2404]
818	[1355, 1356]	1797	[2501, 105]	2776	[3183, 2230]	3755	[3822, 2223]
819	[1357, 1358]	1798	[890, 2502]	2777	[3184, 1030]	3756	[3823, 983]
820	[1359, 1323]	1799	[2503, 1296]	2778	[2241, 3168]	3757	[3824, 402]
821	[1360, 341]	1800	[416, 2504]	2779	[3185, 1217]	3758	[3825, 2663]
822	[1361, 1362]	1801	[2505, 1197]	2780	[3186, 1307]	3759	[3826, 965]
823	[962, 1363]	1802	[930, 2192]	2781	[3187, 432]	3760	[3827, 290]
824	[1364, 1365]	1803	[1180, 980]	2782	[3188, 2233]	3761	[3828, 329]
825	[1366, 1075]	1804	[2506, 286]	2783	[3189, 1282]	3762	[3829, 1174]
826	[1367, 125]	1805	[2507, 2190]	2784	[1353, 289]	3763	[3830, 274]
827	[1368, 1369]	1806	[912, 75]	2785	[3190, 2250]	3764	[3831, 966]
828	[440, 394]	1807	[948, 1347]	2786	[3191, 1037]	3765	[3832, 2546]
829	[1006, 922]	1808	[2508, 2488]	2787	[2169, 2241]	3766	[3833, 80]
830	[1370, 1371]	1809	[2509, 1281]	2788	[3192, 21]	3767	[3834, 904]
831	[1372, 943]	1810	[2510, 2227]	2789	[903, 2184]	3768	[3835, 1337]
832	[1373, 1374]	1811	[2511, 1036]	2790	[2576, 2247]	3769	[3836, 2165]
833	[1375, 1186]	1812	[2512, 2513]	2791	[3193, 2198]	3770	[3837, 2594]
834	[1376, 1377]	1813	[2290, 2514]	2792	[3194, 2436]	3771	[3838, 1063]
835	[1378, 1344]	1814	[2515, 2398]	2793	[1034, 893]	3772	[3839, 2346]
836	[1379, 1151]	1815	[414, 1153]	2794	[2411, 2308]	3773	[3840, 86]
837	[1380, 1210]	1816	[2516, 2182]	2795	[3195, 1380]	3774	[3841, 1256]
838	[1381, 1382]	1817	[1035, 1351]	2796	[2270, 2157]	3775	[3842, 18]
839	[1383, 901]	1818	[2517, 335]	2797	[3196, 907]	3776	[3843, 977]
840	[1384, 1233]	1819	[2518, 2519]	2798	[3197, 2522]	3777	[3844, 2354]
841	[1385, 422]	1820	[2520, 2396]	2799	[3198, 917]	3778	[3845, 109]
842	[961, 1203]	1821	[1015, 2163]	2800	[2331, 2399]	3779	[3846, 2637]
843	[1386, 450]	1822	[2473, 2317]	2801	[2303, 3199]	3780	[3847, 430]
844	[1387, 1248]	1823	[1073, 1302]	2802	[2704, 2436]	3781	[3848, 2249]
845	[1388, 368]	1824	[2521, 1207]	2803	[2235, 971]	3782	[3849, 881]
846	[1389, 1390]	1825	[2522, 397]	2804	[344, 2663]	3783	[3850, 2514]
847	[1185, 1391]	1826	[2523, 1353]	2805	[884, 1020]	3784	[3851, 2224]
848	[354, 1392]	1827	[2524, 312]	2806	[3200, 1121]	3785	[3852, 2417]
849	[919, 1375]	1828	[2525, 2526]	2807	[3201, 1281]	3786	[3853, 410]
850	[1393, 1394]	1829	[2527, 1275]	2808	[2713, 2248]	3787	[3854, 1154]
851	[1395, 1396]	1830	[1195, 1368]	2809	[1223, 362]	3788	[3855, 2318]
852	[1397, 1271]	1831	[2528, 995]	2810	[3202, 354]	3789	[3856, 1350]
853	[1398, 1225]	1832	[2451, 2529]	2811	[3203, 26]	3790	[3857, 2465]
854	[605, 1399]	1833	[2530, 1257]	2812	[3204, 938]	3791	[3858, 2320]
855	[1400, 1401]	1834	[2519, 2509]	2813	[3205, 319]	3792	[3859, 418]

856	[1402, 1403]	1835	[2476, 2359]	2814	[2247, 444]	3793	[3860, 1041]
857	[1404, 1405]	1836	[2531, 924]	2815	[3206, 2317]	3794	[3861, 2175]
858	[1406, 1407]	1837	[2192, 926]	2816	[3207, 882]	3795	[3862, 1113]
859	[1408, 1409]	1838	[2532, 938]	2817	[95, 1136]	3796	[3863, 445]
860	[1410, 1411]	1839	[2533, 1230]	2818	[3208, 996]	3797	[3864, 1372]
861	[1412, 779]	1840	[327, 1127]	2819	[3209, 2491]	3798	[3865, 2206]
862	[1413, 1414]	1841	[2534, 1163]	2820	[1396, 2455]	3799	[3866, 462]
863	[1415, 1416]	1842	[2535, 2536]	2821	[3210, 2308]	3800	[2060, 626]
864	[1417, 1418]	1843	[2537, 2538]	2822	[1279, 1098]	3801	[3867, 779]
865	[1419, 1420]	1844	[2138, 2539]	2823	[3211, 2256]	3802	[806, 2908]
866	[1421, 1422]	1845	[117, 2353]	2824	[2453, 2419]	3803	[1953, 1718]
867	[195, 1423]	1846	[2540, 318]	2825	[1255, 2270]	3804	[501, 504]
868	[1424, 1425]	1847	[2529, 2329]	2826	[1316, 932]	3805	[3868, 150]
869	[1426, 1427]	1848	[283, 259]	2827	[2263, 2299]	3806	[3869, 1767]
870	[1428, 1429]	1849	[2541, 2254]	2828	[3212, 1238]	3807	[1724, 3013]
871	[1430, 1431]	1850	[2542, 1123]	2829	[3213, 1042]	3808	[3870, 669]
872	[1432, 1433]	1851	[2543, 2544]	2830	[3214, 278]	3809	[161, 2137]
873	[1434, 738]	1852	[2545, 2546]	2831	[445, 2484]	3810	[1448, 2878]
874	[223, 187]	1853	[1286, 2324]	2832	[3215, 344]	3811	[473, 2107]
875	[1435, 1436]	1854	[2281, 1390]	2833	[3216, 2237]	3812	[3871, 1681]
876	[566, 1437]	1855	[2499, 950]	2834	[3217, 2242]	3813	[62, 1763]
877	[1438, 1439]	1856	[2547, 409]	2835	[385, 371]	3814	[3872, 237]
878	[1440, 1441]	1857	[2403, 2288]	2836	[1118, 2377]	3815	[2984, 167]
879	[1442, 807]	1858	[2548, 2487]	2837	[3218, 2484]	3816	[3873, 2879]
880	[1443, 1444]	1859	[2549, 1066]	2838	[2400, 393]	3817	[3874, 1926]
881	[1445, 710]	1860	[2550, 2185]	2839	[891, 2697]	3818	[1570, 1657]
882	[1446, 12]	1861	[2433, 2551]	2840	[3219, 2572]	3819	[3875, 1540]
883	[1447, 1448]	1862	[1004, 858]	2841	[2385, 1123]	3820	[3876, 1585]
884	[1449, 1450]	1863	[404, 2552]	2842	[2661, 123]	3821	[1687, 481]
885	[1451, 1452]	1864	[2553, 2433]	2843	[3220, 2598]	3822	[3877, 559]
886	[1453, 714]	1865	[2554, 1043]	2844	[1356, 2197]	3823	[3108, 3085]
887	[1454, 1455]	1866	[2555, 2196]	2845	[3221, 2290]	3824	[2801, 527]
888	[541, 1456]	1867	[2556, 2557]	2846	[3222, 994]	3825	[3878, 1677]
889	[221, 1457]	1868	[1079, 315]	2847	[2202, 2543]	3826	[1524, 1455]
890	[36, 1458]	1869	[2558, 1351]	2848	[3223, 2602]	3827	[2990, 2817]
891	[1459, 1460]	1870	[2559, 2219]	2849	[3224, 1223]	3828	[593, 1636]
892	[203, 1461]	1871	[2180, 2140]	2850	[3225, 2179]	3829	[3879, 566]
893	[1462, 1463]	1872	[304, 2525]	2851	[2567, 1254]	3830	[2735, 518]
894	[1464, 661]	1873	[2560, 2232]	2852	[2409, 341]	3831	[3880, 815]
895	[1465, 1466]	1874	[2177, 2545]	2853	[1257, 2235]	3832	[3076, 2881]
896	[1467, 1468]	1875	[1243, 2274]	2854	[3226, 323]	3833	[3881, 55]
897	[1469, 642]	1876	[2379, 450]	2855	[3227, 447]	3834	[3041, 705]
898	[1470, 1471]	1877	[2561, 1094]	2856	[3228, 2667]	3835	[3882, 1604]
899	[1414, 1472]	1878	[2562, 1276]	2857	[2242, 112]	3836	[701, 1403]

900	[165, 1473]	1879	[2382, 2211]	2858	[2175, 2219]	3837	[1769, 1489]
901	[1474, 543]	1880	[2563, 1327]	2859	[3229, 1241]	3838	[3883, 1935]
902	[1475, 1476]	1881	[2564, 927]	2860	[2165, 2557]	3839	[3884, 2732]
903	[1477, 158]	1882	[937, 2244]	2861	[3230, 2303]	3840	[1927, 1871]
904	[1478, 1479]	1883	[2565, 283]	2862	[3231, 310]	3841	[1646, 1993]
905	[1480, 1481]	1884	[2566, 2567]	2863	[3232, 2395]	3842	[3048, 693]
906	[127, 1482]	1885	[2160, 958]	2864	[1306, 2388]	3843	[533, 1952]
907	[129, 150]	1886	[1228, 2568]	2865	[901, 1341]	3844	[201, 2743]
908	[1483, 210]	1887	[421, 2569]	2866	[3233, 867]	3845	[2762, 2099]
909	[1484, 1485]	1888	[2570, 992]	2867	[3234, 2155]	3846	[3885, 1497]
910	[1486, 1487]	1889	[2213, 2571]	2868	[3235, 2411]	3847	[3886, 1479]
911	[1488, 1489]	1890	[1394, 2255]	2869	[2444, 407]	3848	[617, 1884]
912	[1482, 1490]	1891	[1201, 2572]	2870	[3236, 294]	3849	[774, 1446]
913	[1491, 1492]	1892	[2573, 93]	2871	[3237, 2281]	3850	[3030, 784]
914	[1493, 1494]	1893	[2574, 949]	2872	[3238, 2526]	3851	[2977, 674]
915	[1427, 1495]	1894	[314, 982]	2873	[2536, 2367]	3852	[243, 825]
916	[1496, 1497]	1895	[2575, 2576]	2874	[3239, 2215]	3853	[139, 852]
917	[1498, 1499]	1896	[275, 2577]	2875	[3199, 2642]	3854	[831, 1921]
918	[1500, 508]	1897	[2578, 1319]	2876	[1065, 274]	3855	[680, 1886]
919	[1501, 1502]	1898	[1253, 1134]	2877	[3240, 1366]	3856	[2969, 1746]
920	[1429, 1503]	1899	[1271, 2579]	2878	[2490, 2518]	3857	[2739, 155]
921	[1504, 1505]	1900	[979, 995]	2879	[1170, 2480]	3858	[2094, 2117]
922	[1506, 1507]	1901	[2479, 2179]	2880	[3241, 2544]	3859	[3887, 770]
923	[1508, 690]	1902	[2580, 860]	2881	[2272, 2350]	3860	[2022, 842]
924	[1509, 1510]	1903	[2581, 303]	2882	[3242, 299]	3861	[539, 144]
925	[1511, 1512]	1904	[2582, 1243]	2883	[2636, 2487]	3862	[3888, 592]
926	[1513, 1514]	1905	[1284, 2177]	2884	[2151, 2576]	3863	[771, 1934]
927	[1515, 1516]	1906	[2583, 357]	2885	[3243, 2184]	3864	[191, 1463]
928	[1517, 749]	1907	[2171, 1381]	2886	[945, 3244]	3865	[1840, 1821]
929	[1518, 1519]	1908	[2584, 955]	2887	[3245, 3246]	3866	[2751, 1690]
930	[1520, 1424]	1909	[291, 76]	2888	[3247, 1078]	3867	[3889, 256]
931	[1521, 1522]	1910	[2585, 2204]	2889	[433, 2666]	3868	[3890, 1308]
932	[1523, 1524]	1911	[296, 2280]	2890	[1239, 1019]	3869	[3891, 858]
933	[1525, 1526]	1912	[2586, 1325]	2891	[3248, 1099]	3870	[3892, 382]
934	[633, 1527]	1913	[2457, 949]	2892	[3249, 2244]	3871	[3893, 2469]
935	[1528, 1529]	1914	[2486, 1117]	2893	[2571, 2669]	3872	[3894, 2147]
936	[1530, 1531]	1915	[2514, 2587]	2894	[3250, 2172]	3873	[3895, 372]
937	[1532, 1533]	1916	[2588, 1102]	2895	[3251, 915]	3874	[3896, 1263]
938	[1534, 1535]	1917	[2395, 353]	2896	[3252, 116]	3875	[3897, 941]
939	[1536, 1537]	1918	[2544, 1003]	2897	[2363, 2262]	3876	[3898, 1201]
940	[1538, 1539]	1919	[2589, 4]	2898	[3253, 1110]	3877	[3899, 1227]
941	[713, 1540]	1920	[2590, 2591]	2899	[2218, 2181]	3878	[3900, 2504]
942	[1541, 1542]	1921	[2502, 352]	2900	[3254, 22]	3879	[3901, 2186]
943	[825, 1543]	1922	[2592, 2593]	2901	[378, 1336]	3880	[3902, 1181]

944	[1544, 1545]	1923	[2497, 2594]	2902	[3255, 950]	3881	[3903, 355]
945	[1546, 1419]	1924	[2469, 1033]	2903	[876, 65]	3882	[3904, 119]
946	[631, 1547]	1925	[1260, 2259]	2904	[3256, 395]	3883	[3905, 2277]
947	[1548, 1549]	1926	[975, 2478]	2905	[3257, 2569]	3884	[3906, 888]
948	[1550, 1551]	1927	[1263, 1106]	2906	[2475, 3246]	3885	[3907, 1148]
949	[1552, 1553]	1928	[2595, 1014]	2907	[3258, 916]	3886	[3908, 1096]
950	[1554, 1555]	1929	[425, 2596]	2908	[1232, 2446]	3887	[3909, 1234]
951	[1556, 1557]	1930	[2597, 444]	2909	[3259, 264]	3888	[3910, 1051]
952	[1558, 1559]	1931	[2598, 330]	2910	[3260, 1067]	3889	[1609, 534]
953	[1560, 1411]	1932	[2599, 2378]	2911	[3261, 1007]	3890	[2875, 767]
954	[1561, 126]	1933	[2600, 2341]	2912	[3262, 2476]	3891	[1437, 612]
955	[1562, 527]	1934	[285, 2453]	2913	[3263, 457]	3892	[2858, 1588]
956	[1563, 541]	1935	[2551, 1370]	2914	[2674, 262]	3893	[3911, 643]
957	[1510, 1564]	1936	[2601, 1184]	2915	[1323, 1246]	3894	[1631, 1539]
958	[1565, 1566]	1937	[2569, 2602]	2916	[267, 429]	3895	[560, 2014]
959	[1567, 1568]	1938	[2603, 383]	2917	[3264, 1280]	3896	[3069, 1784]
960	[1569, 1570]	1939	[464, 2404]	2918	[1009, 1366]	3897	[780, 2731]
961	[1571, 230]	1940	[91, 2604]	2919	[2526, 1202]	3898	[3912, 3066]
962	[1568, 1572]	1941	[93, 303]	2920	[3265, 401]	3899	[209, 1593]
963	[614, 1573]	1942	[2605, 2413]	2921	[3266, 389]	3900	[2103, 2044]
964	[827, 1574]	1943	[2606, 2361]	2922	[1193, 2713]	3901	[143, 1433]
965	[1575, 194]	1944	[1340, 1305]	2923	[3267, 1125]	3902	[2869, 754]
966	[1576, 1577]	1945	[2607, 2302]	2924	[2470, 437]	3903	[1999, 523]
967	[133, 1578]	1946	[2608, 1036]	2925	[3268, 973]	3904	[1678, 2851]
968	[1579, 1580]	1947	[1026, 2397]	2926	[3269, 2661]	3905	[151, 215]
969	[1581, 1582]	1948	[2513, 1286]	2927	[2504, 422]	3906	[2936, 1740]
970	[1583, 1584]	1949	[2265, 1065]	2928	[3270, 954]	3907	[52, 809]
971	[786, 1585]	1950	[1049, 2609]	2929	[3271, 2336]	3908	[2927, 685]
972	[1586, 638]	1951	[2610, 390]	2930	[3272, 1226]	3909	[1783, 633]
973	[1587, 1588]	1952	[1205, 1274]	2931	[3273, 2305]	3910	[2054, 223]
974	[1589, 479]	1953	[2611, 2204]	2932	[123, 1077]	3911	[3913, 376]
975	[1590, 1591]	1954	[2612, 273]	2933	[3274, 1328]	3912	[3914, 1009]
976	[1592, 1593]	1955	[1339, 379]	2934	[3275, 3199]	3913	[2004, 36]
977	[1594, 1595]	1956	[2613, 1269]	2935	[2587, 1142]	3914	[584, 1798]
978	[1596, 1597]	1957	[1349, 944]	2936	[2546, 2463]		

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	653	1	1306	1	1959	1	2612	1	3265	1
1	0	654	0	1307	1	1960	0	2613	1	3266	1
2	0	655	0	1308	1	1961	1	2614	1	3267	0
3	0	656	0	1309	0	1962	0	2615	1	3268	1
4	0	657	0	1310	0	1963	0	2616	0	3269	1
5	0	658	1	1311	1	1964	1	2617	0	3270	1

6	0	659	1	1312	1	1965	1	2618	1	3271	1
7	0	660	0	1313	1	1966	0	2619	0	3272	1
8	0	661	1	1314	1	1967	0	2620	1	3273	1
9	0	662	0	1315	1	1968	1	2621	0	3274	1
10	1	663	0	1316	1	1969	1	2622	0	3275	1
11	0	664	0	1317	0	1970	0	2623	0	3276	1
12	0	665	0	1318	0	1971	0	2624	1	3277	1
13	0	666	1	1319	1	1972	0	2625	1	3278	1
14	1	667	1	1320	0	1973	1	2626	1	3279	1
15	0	668	0	1321	1	1974	0	2627	0	3280	0
16	0	669	0	1322	0	1975	1	2628	1	3281	1
17	0	670	0	1323	0	1976	1	2629	1	3282	1
18	1	671	0	1324	0	1977	1	2630	0	3283	0
19	0	672	1	1325	0	1978	1	2631	0	3284	0
20	0	673	1	1326	1	1979	0	2632	0	3285	1
21	1	674	0	1327	0	1980	1	2633	1	3286	0
22	0	675	0	1328	1	1981	1	2634	0	3287	1
23	0	676	1	1329	0	1982	0	2635	1	3288	0
24	1	677	1	1330	1	1983	0	2636	0	3289	0
25	0	678	0	1331	0	1984	0	2637	1	3290	0
26	1	679	0	1332	1	1985	0	2638	1	3291	0
27	0	680	0	1333	1	1986	1	2639	0	3292	1
28	1	681	1	1334	0	1987	1	2640	0	3293	0
29	1	682	1	1335	0	1988	1	2641	0	3294	1
30	0	683	0	1336	1	1989	1	2642	1	3295	1
31	0	684	0	1337	1	1990	0	2643	1	3296	1
32	0	685	0	1338	1	1991	1	2644	0	3297	0
33	0	686	1	1339	0	1992	1	2645	1	3298	0
34	0	687	1	1340	1	1993	1	2646	0	3299	0
35	0	688	1	1341	0	1994	1	2647	1	3300	0
36	0	689	1	1342	0	1995	0	2648	1	3301	1
37	1	690	0	1343	1	1996	1	2649	0	3302	1
38	1	691	1	1344	0	1997	0	2650	0	3303	1
39	0	692	0	1345	1	1998	0	2651	0	3304	0
40	0	693	1	1346	1	1999	1	2652	0	3305	1
41	0	694	1	1347	1	2000	0	2653	1	3306	1
42	0	695	0	1348	0	2001	1	2654	1	3307	1
43	1	696	1	1349	1	2002	1	2655	0	3308	1
44	1	697	0	1350	1	2003	0	2656	0	3309	1
45	0	698	1	1351	0	2004	1	2657	0	3310	1
46	0	699	1	1352	0	2005	1	2658	0	3311	0
47	0	700	0	1353	0	2006	1	2659	0	3312	1
48	0	701	1	1354	0	2007	0	2660	0	3313	1
49	1	702	0	1355	1	2008	1	2661	1	3314	0

50	1	703	0	1356	0	2009	1	2662	0	3315	1
51	0	704	1	1357	0	2010	1	2663	1	3316	1
52	0	705	1	1358	1	2011	0	2664	0	3317	1
53	1	706	0	1359	1	2012	1	2665	1	3318	0
54	1	707	1	1360	0	2013	0	2666	0	3319	0
55	0	708	1	1361	1	2014	1	2667	1	3320	0
56	1	709	0	1362	1	2015	0	2668	1	3321	0
57	1	710	0	1363	1	2016	0	2669	1	3322	0
58	0	711	1	1364	0	2017	0	2670	1	3323	1
59	1	712	1	1365	1	2018	1	2671	1	3324	1
60	1	713	0	1366	0	2019	1	2672	1	3325	0
61	0	714	0	1367	0	2020	0	2673	0	3326	0
62	1	715	0	1368	0	2021	0	2674	0	3327	0
63	0	716	0	1369	0	2022	1	2675	1	3328	1
64	0	717	0	1370	1	2023	1	2676	1	3329	0
65	0	718	1	1371	0	2024	0	2677	0	3330	0
66	0	719	0	1372	1	2025	0	2678	0	3331	1
67	1	720	1	1373	0	2026	0	2679	0	3332	1
68	0	721	0	1374	1	2027	0	2680	1	3333	1
69	0	722	0	1375	0	2028	0	2681	1	3334	1
70	0	723	1	1376	1	2029	0	2682	0	3335	0
71	0	724	0	1377	1	2030	0	2683	0	3336	0
72	0	725	1	1378	0	2031	0	2684	0	3337	1
73	1	726	0	1379	1	2032	0	2685	1	3338	1
74	1	727	1	1380	1	2033	0	2686	1	3339	1
75	0	728	1	1381	0	2034	1	2687	0	3340	1
76	1	729	1	1382	1	2035	1	2688	1	3341	1
77	1	730	0	1383	0	2036	1	2689	1	3342	1
78	0	731	0	1384	0	2037	1	2690	0	3343	1
79	1	732	0	1385	0	2038	1	2691	0	3344	1
80	0	733	0	1386	1	2039	0	2692	0	3345	1
81	0	734	1	1387	0	2040	0	2693	0	3346	1
82	0	735	0	1388	0	2041	1	2694	0	3347	0
83	0	736	1	1389	1	2042	0	2695	1	3348	0
84	0	737	1	1390	1	2043	1	2696	1	3349	0
85	1	738	1	1391	1	2044	0	2697	0	3350	0
86	1	739	1	1392	0	2045	0	2698	1	3351	0
87	0	740	1	1393	0	2046	0	2699	1	3352	1
88	1	741	0	1394	0	2047	1	2700	1	3353	0
89	1	742	1	1395	1	2048	0	2701	1	3354	0
90	0	743	0	1396	1	2049	1	2702	0	3355	1
91	1	744	1	1397	0	2050	1	2703	0	3356	1
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93	0	746	1	1399	1	2052	0	2705	1	3358	0

94	0	747	1	1400	0	2053	1	2706	0	3359	0
95	0	748	1	1401	1	2054	0	2707	1	3360	0
96	0	749	0	1402	0	2055	1	2708	1	3361	1
97	1	750	0	1403	0	2056	1	2709	1	3362	0
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101	0	754	1	1407	1	2060	1	2713	0	3366	0
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103	1	756	1	1409	0	2062	0	2715	1	3368	0
104	0	757	0	1410	0	2063	1	2716	0	3369	0
105	1	758	1	1411	1	2064	0	2717	0	3370	0
106	1	759	1	1412	0	2065	1	2718	0	3371	0
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108	1	761	0	1414	0	2067	1	2720	1	3373	1
109	1	762	1	1415	0	2068	1	2721	0	3374	0
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112	1	765	0	1418	0	2071	0	2724	1	3377	1
113	0	766	0	1419	0	2072	0	2725	0	3378	1
114	1	767	1	1420	1	2073	1	2726	0	3379	1
115	0	768	0	1421	0	2074	1	2727	0	3380	0
116	0	769	1	1422	0	2075	0	2728	1	3381	1
117	1	770	1	1423	1	2076	1	2729	1	3382	1
118	1	771	1	1424	0	2077	0	2730	0	3383	0
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120	1	773	0	1426	0	2079	1	2732	0	3385	0
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122	0	775	0	1428	1	2081	0	2734	0	3387	1
123	1	776	1	1429	0	2082	1	2735	0	3388	1
124	1	777	0	1430	0	2083	1	2736	1	3389	1
125	0	778	0	1431	1	2084	0	2737	0	3390	1
126	0	779	1	1432	1	2085	1	2738	0	3391	0
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128	0	781	0	1434	0	2087	0	2740	0	3393	0
129	0	782	0	1435	0	2088	0	2741	0	3394	1
130	0	783	1	1436	1	2089	0	2742	1	3395	0
131	0	784	1	1437	0	2090	1	2743	1	3396	0
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133	0	786	1	1439	0	2092	0	2745	1	3398	1
134	1	787	1	1440	0	2093	1	2746	1	3399	0
135	1	788	0	1441	1	2094	0	2747	0	3400	0
136	0	789	1	1442	0	2095	1	2748	0	3401	1
137	0	790	0	1443	1	2096	1	2749	1	3402	0

138	0	791	1	1444	1	2097	1	2750	1	3403	1
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141	0	794	0	1447	0	2100	0	2753	1	3406	0
142	0	795	1	1448	1	2101	0	2754	0	3407	1
143	0	796	0	1449	0	2102	1	2755	1	3408	0
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145	0	798	1	1451	0	2104	0	2757	0	3410	1
146	1	799	0	1452	1	2105	0	2758	0	3411	1
147	1	800	1	1453	1	2106	0	2759	1	3412	0
148	1	801	1	1454	0	2107	0	2760	0	3413	0
149	1	802	0	1455	0	2108	1	2761	0	3414	0
150	0	803	1	1456	0	2109	1	2762	0	3415	1
151	0	804	1	1457	0	2110	0	2763	1	3416	0
152	1	805	0	1458	0	2111	1	2764	1	3417	1
153	1	806	0	1459	1	2112	1	2765	0	3418	1
154	1	807	1	1460	1	2113	0	2766	1	3419	1
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156	0	809	1	1462	0	2115	1	2768	0	3421	0
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158	1	811	1	1464	0	2117	0	2770	0	3423	1
159	0	812	0	1465	0	2118	0	2771	0	3424	0
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161	1	814	1	1467	0	2120	1	2773	0	3426	0
162	0	815	0	1468	0	2121	0	2774	1	3427	0
163	0	816	0	1469	1	2122	1	2775	0	3428	0
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165	1	818	1	1471	0	2124	0	2777	1	3430	1
166	0	819	0	1472	1	2125	0	2778	0	3431	0
167	1	820	1	1473	1	2126	1	2779	1	3432	0
168	0	821	0	1474	0	2127	0	2780	1	3433	1
169	0	822	1	1475	1	2128	0	2781	1	3434	1
170	1	823	1	1476	0	2129	1	2782	0	3435	1
171	0	824	0	1477	1	2130	0	2783	0	3436	0
172	0	825	0	1478	0	2131	1	2784	0	3437	1
173	1	826	0	1479	0	2132	0	2785	0	3438	1
174	1	827	0	1480	0	2133	1	2786	1	3439	1
175	1	828	1	1481	0	2134	1	2787	0	3440	0
176	1	829	0	1482	0	2135	0	2788	1	3441	0
177	1	830	1	1483	1	2136	0	2789	1	3442	0
178	0	831	1	1484	1	2137	1	2790	1	3443	1
179	0	832	0	1485	1	2138	1	2791	0	3444	1
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182	0	835	0	1488	0	2141	1	2794	0	3447	0
183	0	836	1	1489	0	2142	1	2795	0	3448	1
184	0	837	1	1490	0	2143	0	2796	1	3449	1
185	0	838	0	1491	0	2144	0	2797	1	3450	0
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187	1	840	0	1493	0	2146	0	2799	1	3452	1
188	0	841	0	1494	1	2147	0	2800	0	3453	0
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191	1	844	0	1497	1	2150	1	2803	1	3456	1
192	1	845	0	1498	1	2151	1	2804	0	3457	1
193	0	846	1	1499	1	2152	0	2805	0	3458	0
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195	0	848	0	1501	0	2154	1	2807	1	3460	0
196	1	849	0	1502	1	2155	0	2808	0	3461	0
197	0	850	0	1503	1	2156	0	2809	1	3462	0
198	1	851	1	1504	0	2157	1	2810	1	3463	1
199	1	852	0	1505	1	2158	0	2811	1	3464	0
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202	0	855	0	1508	1	2161	1	2814	0	3467	1
203	0	856	0	1509	0	2162	0	2815	0	3468	1
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212	0	865	0	1518	0	2171	1	2824	1	3477	1
213	1	866	0	1519	0	2172	1	2825	1	3478	0
214	1	867	0	1520	1	2173	0	2826	1	3479	1
215	0	868	0	1521	0	2174	1	2827	1	3480	0
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217	0	870	1	1523	1	2176	0	2829	0	3482	0
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220	0	873	0	1526	1	2179	1	2832	1	3485	0
221	0	874	1	1527	1	2180	1	2833	0	3486	1
222	1	875	0	1528	1	2181	0	2834	1	3487	1
223	1	876	1	1529	1	2182	0	2835	1	3488	0
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225	0	878	0	1531	0	2184	1	2837	0	3490	1

226	1	879	0	1532	0	2185	0	2838	0	3491	1
227	0	880	1	1533	1	2186	0	2839	1	3492	0
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229	1	882	1	1535	1	2188	0	2841	1	3494	0
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231	0	884	0	1537	0	2190	0	2843	1	3496	0
232	1	885	0	1538	0	2191	0	2844	0	3497	1
233	1	886	1	1539	1	2192	0	2845	1	3498	0
234	1	887	0	1540	1	2193	1	2846	1	3499	0
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236	0	889	0	1542	0	2195	1	2848	0	3501	1
237	0	890	0	1543	1	2196	1	2849	0	3502	1
238	1	891	1	1544	0	2197	1	2850	1	3503	0
239	1	892	0	1545	1	2198	1	2851	0	3504	0
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241	1	894	0	1547	0	2200	0	2853	0	3506	1
242	0	895	0	1548	0	2201	0	2854	0	3507	0
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244	1	897	1	1550	0	2203	0	2856	1	3509	1
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281	1	934	0	1587	1	2240	1	2893	0	3546	0
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283	0	936	1	1589	1	2242	1	2895	0	3548	0
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287	1	940	0	1593	1	2246	0	2899	1	3552	0
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296	0	949	0	1602	1	2255	1	2908	1	3561	1
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313	0	966	0	1619	1	2272	1	2925	1	3578	1

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320	0	973	1	1626	1	2279	1	2932	1	3585	1
321	1	974	1	1627	1	2280	0	2933	1	3586	1
322	1	975	0	1628	1	2281	0	2934	1	3587	1
323	1	976	0	1629	1	2282	1	2935	1	3588	0
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328	1	981	1	1634	0	2287	0	2940	0	3593	0
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593	0	1246	1	1899	1	2552	1	3205	1	3858	0
594	0	1247	1	1900	1	2553	0	3206	0	3859	0
595	1	1248	1	1901	0	2554	1	3207	0	3860	1
596	0	1249	1	1902	0	2555	0	3208	0	3861	1
597	1	1250	1	1903	1	2556	1	3209	1	3862	0
598	1	1251	1	1904	0	2557	1	3210	1	3863	1
599	0	1252	0	1905	1	2558	1	3211	1	3864	1
600	1	1253	0	1906	1	2559	1	3212	1	3865	0
601	1	1254	0	1907	1	2560	1	3213	0	3866	1
602	1	1255	1	1908	1	2561	0	3214	0	3867	1
603	0	1256	1	1909	0	2562	0	3215	1	3868	1
604	0	1257	0	1910	0	2563	1	3216	0	3869	0
605	0	1258	0	1911	0	2564	0	3217	1	3870	0
606	1	1259	1	1912	0	2565	1	3218	0	3871	1
607	1	1260	1	1913	0	2566	0	3219	1	3872	1
608	1	1261	1	1914	1	2567	0	3220	1	3873	1
609	1	1262	0	1915	1	2568	0	3221	1	3874	0
610	0	1263	0	1916	0	2569	1	3222	1	3875	1
611	1	1264	1	1917	1	2570	1	3223	0	3876	0
612	1	1265	1	1918	1	2571	0	3224	0	3877	1
613	0	1266	0	1919	1	2572	0	3225	1	3878	1
614	0	1267	0	1920	0	2573	1	3226	0	3879	0
615	0	1268	1	1921	1	2574	1	3227	1	3880	0
616	0	1269	0	1922	1	2575	0	3228	1	3881	1
617	0	1270	1	1923	0	2576	1	3229	1	3882	0
618	0	1271	1	1924	1	2577	0	3230	0	3883	0
619	1	1272	1	1925	1	2578	0	3231	0	3884	1
620	1	1273	1	1926	0	2579	0	3232	1	3885	0
621	0	1274	1	1927	0	2580	0	3233	0	3886	1

622	0	1275	0	1928	0	2581	1	3234	1	3887	0
623	0	1276	0	1929	1	2582	0	3235	0	3888	0
624	1	1277	1	1930	1	2583	1	3236	0	3889	1
625	0	1278	0	1931	0	2584	1	3237	1	3890	1
626	1	1279	0	1932	1	2585	0	3238	0	3891	0
627	1	1280	1	1933	0	2586	0	3239	0	3892	0
628	1	1281	1	1934	0	2587	1	3240	0	3893	1
629	0	1282	1	1935	1	2588	0	3241	1	3894	1
630	0	1283	0	1936	0	2589	1	3242	1	3895	1
631	0	1284	1	1937	1	2590	0	3243	0	3896	0
632	1	1285	0	1938	0	2591	1	3244	1	3897	1
633	0	1286	1	1939	0	2592	1	3245	0	3898	0
634	1	1287	1	1940	1	2593	0	3246	0	3899	1
635	0	1288	0	1941	0	2594	0	3247	1	3900	1
636	1	1289	0	1942	0	2595	0	3248	1	3901	0
637	1	1290	0	1943	0	2596	1	3249	1	3902	0
638	1	1291	0	1944	1	2597	1	3250	1	3903	1
639	1	1292	0	1945	1	2598	0	3251	0	3904	0
640	0	1293	0	1946	0	2599	1	3252	1	3905	0
641	1	1294	0	1947	0	2600	0	3253	1	3906	1
642	0	1295	1	1948	1	2601	0	3254	0	3907	0
643	0	1296	1	1949	1	2602	1	3255	0	3908	1
644	0	1297	1	1950	1	2603	0	3256	0	3909	0
645	1	1298	1	1951	0	2604	0	3257	1	3910	0
646	1	1299	0	1952	0	2605	0	3258	1	3911	1
647	1	1300	0	1953	1	2606	0	3259	0	3912	0
648	1	1301	1	1954	1	2607	1	3260	1	3913	1
649	0	1302	0	1955	0	2608	0	3261	1	3914	0
650	1	1303	0	1956	1	2609	0	3262	1		
651	1	1304	0	1957	1	2610	0	3263	1		
652	1	1305	0	1958	1	2611	1	3264	0		

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