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

GUO-NIU HAN* AND YINING HU*

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

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 $(a,b)=(z,z^6+z)$, 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 $\mathrm{CF}(a,b)$,

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

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

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

2. Proof

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

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

By the basic properties of continued fractions, we have

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

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

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

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

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

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. $\square$

Define

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

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

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

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

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

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

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

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

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

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

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

which can be rewritten as

$$
\begin{aligned}
0 &= T[[w]_2] + T[[1w]_2] + T[[10w]_2] + T[[11w]_2] + T[[101w]_2] \\
&\quad + T[[111w]_2], \qquad (2.7)\\
0 &= T[[1w]_2] + T[[10w]_2] + T[[11w]_2] + T[[100w]_2] + T[[110w]_2] \\
&\quad + T[[1000w]_2], \qquad (2.8)\\
0 &= T[[1w]_2] + T[[100w]_2] + T[[1001w]_2], \qquad (2.9)\\
0 &= T[[10w]_2] + T[[101w]_2] + T[[1010w]_2], \qquad (2.10)\\
0 &= T[[11w]_2] + T[[110w]_2] + T[[1011w]_2], \qquad (2.11)\\
0 &= T[[1w]_2] + T[[10w]_2] + T[[11w]_2] + T[[100w]_2] + T[[101w]_2] \\
&\quad + T[[1100w]_2], \qquad (2.12)\\
0 &= T[[w]_2] + T[[10w]_2] + T[[11w]_2] + T[[100w]_2] + T[[101w]_2] \\
&\quad + T[[110w]_2] + T[[1101w]_2], \qquad (2.13)
\end{aligned}
$$

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

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

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

First we calculate an 2-automaton that generates T from its minimal polynomial and its first terms. This automaton has 3917 states; its transition function and output function can be found in the annex. Let $A(s, w)$ denote the state reached after reading w from right to left starting from the state s, and τ the output function. Define

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

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

$$
\begin{aligned}
0 &= \tau(A(s,\epsilon)) + \tau(A(s,1)) + \tau(A(s,10)) + \tau(A(s,11)) + \tau(A(s,101)) \\
&\quad + \tau(A(s,111)), \qquad (2.21)
\end{aligned}
$$

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

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

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

for $s = A(i, 0^{2k})$. We find that $(A(i, 0^{46}), E_{46}) = (A(i, 0^{22}), E_{22})$, so that we only have to verify that identities (2.21) through (2.34) hold for $2 \le k \le 23$, 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 $u = 2^{2k-1}$,*

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

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

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

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

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

We give the proof of

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

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

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

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

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

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

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

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

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

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

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

3. Annexe

All 16 polynomials are of the form

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

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

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

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

$$+x^{14}+x^{10}+x^{8}+x^{6}+x^{4}+x^{2},$$
$$p_{12}(x)=x^{120}+x^{80}+x^{56}+x^{40}+x^{16}+1,$$

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

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

$$\begin{aligned}
p_0(x)&=x^{117}+x^{112}+x^{102}+x^{99}+x^{97}+x^{94}+x^{91}+x^{87}+x^{82}+x^{77}+x^{76}\\
&\quad+x^{71}+x^{69}+x^{67}+x^{66}+x^{65}+x^{64}+x^{63}+x^{62}+x^{61}+x^{60}+x^{59}\\
&\quad+x^{58}+x^{57}+x^{54}+x^{51}+x^{40}+x^{39}+x^{37}+x^{36}+x^{31}+x^{29}+x^{27}\\
&\quad+x^{26}+x^{25}+x^{24}+x^{23}+x^{21}+x^{18},\\
p_3(x)&=x^{69}+x^{61}+x^{51}+x^{49}+x^{37}+x^{21}+x^{19}+x^{17}+x^{11}+x^{9},\\
p_6(x)&=x^{81}+x^{76}+x^{71}+x^{66}+x^{65}+x^{61}+x^{60}+x^{56}+x^{55}+x^{51}+x^{50}\\
&\quad+x^{49}+x^{46}+x^{44}+x^{41}+x^{39}+x^{36}+x^{34}+x^{33}+x^{31}+x^{29}+x^{28}\\
&\quad+x^{26}+x^{25}+x^{24}+x^{23}+x^{21}+x^{20}+x^{19}+x^{18}+x^{16}+x^{15}+x^{14}\\
&\quad+x^{11}+x^{10}+x^{6},\\
p_9(x)&=x^{93}+x^{85}+x^{83}+x^{77}+x^{69}+x^{67}+x^{61}+x^{57}+x^{53}+x^{51}+x^{49}\\
&\quad+x^{47}+x^{45}+x^{35}+x^{29}+x^{27}+x^{25}+x^{21}+x^{15}+x^{11}+x^{9}+x^{7}+x^{5}\\
&\quad+x^{3},\\
p_{12}(x)&=x^{105}+x^{100}+x^{85}+x^{80}+x^{41}+x^{36}+x^{25}+x^{21}+x^{20}+x^{16}+x^{5}+1,
\end{aligned}$$

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

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

$$\begin{aligned}
p_0(x)&=x^{117}+x^{112}+x^{102}+x^{99}+x^{97}+x^{94}+x^{91}+x^{87}+x^{82}+x^{77}+x^{76}\\
&\quad+x^{71}+x^{69}+x^{67}+x^{66}+x^{65}+x^{64}+x^{63}+x^{62}+x^{61}+x^{60}+x^{59}\\
&\quad+x^{58}+x^{57}+x^{54}+x^{51}+x^{40}+x^{39}+x^{37}+x^{36}+x^{31}+x^{29}+x^{27}\\
&\quad+x^{26}+x^{25}+x^{24}+x^{23}+x^{21}+x^{18},\\
p_3(x)&=x^{69}+x^{61}+x^{51}+x^{49}+x^{37}+x^{21}+x^{19}+x^{17}+x^{11}+x^{9},\\
p_6(x)&=x^{81}+x^{76}+x^{71}+x^{66}+x^{65}+x^{61}+x^{60}+x^{56}+x^{55}+x^{51}+x^{50}\\
&\quad+x^{49}+x^{46}+x^{44}+x^{41}+x^{39}+x^{36}+x^{34}+x^{33}+x^{31}+x^{29}+x^{28}\\
&\quad+x^{26}+x^{25}+x^{24}+x^{23}+x^{21}+x^{20}+x^{19}+x^{18}+x^{16}+x^{15}+x^{14}\\
&\quad+x^{11}+x^{10}+x^{6},\\
p_9(x)&=x^{93}+x^{85}+x^{83}+x^{77}+x^{69}+x^{67}+x^{61}+x^{57}+x^{53}+x^{51}+x^{49}\\
&\quad+x^{47}+x^{45}+x^{35}+x^{29}+x^{27}+x^{25}+x^{21}+x^{15}+x^{11}+x^{9}+x^{7}+x^{5}\\
&\quad+x^{3},\\
p_{12}(x)&=x^{105}+x^{100}+x^{85}+x^{80}+x^{41}+x^{36}+x^{25}+x^{21}+x^{20}+x^{16}+x^{5}+1,
\end{aligned}$$

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

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

$$\begin{aligned}
p_0(x)&=x^{102}+x^{82}+x^{76}+x^{62}+x^{50}+x^{42}+x^{36}+x^{30}+x^{24},\\
p_3(x)&=x^{86}+x^{76}+x^{60}+x^{58}+x^{56}+x^{54}+x^{50}+x^{48}+x^{44}+x^{36}+x^{28}
\end{aligned}$$

$$
\begin{aligned}
&+ x^{26} + x^{24} + x^{20} + x^{14} + x^{10} + x^8 + x^6,\\
p_6(x) &= x^{94} + x^{90} + x^{86} + x^{82} + x^{80} + x^{76} + x^{68} + x^{62} + x^{60} + x^{56} + x^{54}\\
&\quad + x^{48} + x^{44} + x^{26} + x^{24} + x^{22} + x^{20} + x^{18} + x^{16} + x^{10} + x^8 + x^6 + x^2\\
&\quad + 1,\\
p_9(x) &= x^{82} + x^{74} + x^{66} + x^{64} + x^{58} + x^{54} + x^{50} + x^{48} + x^{46} + x^{44} + x^{42}\\
&\quad + x^{32} + x^{24} + x^{22} + x^{18} + x^{16} + x^{12} + x^{10} + x^8 + x^6 + x^4 + x^2,\\
p_{12}(x) &= x^{90} + x^{80} + x^{26} + x^{16} + x^{10} + 1,
\end{aligned}
$$

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

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

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

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

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

$$
\begin{aligned}
p_0(x) &= x^{117} + x^{112} + x^{102} + x^{99} + x^{97} + x^{94} + x^{91} + x^{89} + x^{87} + x^{84} + x^{82}\\
&\quad + x^{79} + x^{77} + x^{76} + x^{74} + x^{71} + x^{67} + x^{66} + x^{65} + x^{63} + x^{62} + x^{60}\\
&\quad + x^{59} + x^{58} + x^{57} + x^{56} + x^{54} + x^{53} + x^{51} + x^{49} + x^{48} + x^{46} + x^{44}\\
&\quad + x^{40} + x^{35} + x^{34} + x^{32} + x^{31} + x^{27},\\
p_3(x) &= x^{69} + x^{61} + x^{51} + x^{49} + x^{37} + x^{21} + x^{19} + x^{17} + x^{11} + x^9,\\
p_6(x) &= x^{81} + x^{76} + x^{71} + x^{66} + x^{65} + x^{61} + x^{60} + x^{56} + x^{55} + x^{51} + x^{50}\\
&\quad + x^{49} + x^{46} + x^{44} + x^{41} + x^{39} + x^{36} + x^{34} + x^{33} + x^{31} + x^{29} + x^{28}\\
&\quad + x^{26} + x^{25} + x^{24} + x^{23} + x^{21} + x^{20} + x^{19} + x^{18} + x^{16} + x^{15} + x^{14}\\
&\quad + x^{11} + x^{10} + x^6,\\
p_9(x) &= x^{93} + x^{85} + x^{83} + x^{77} + x^{69} + x^{67} + x^{61} + x^{57} + x^{53} + x^{51} + x^{49}\\
&\quad + x^{47} + x^{45} + x^{35} + x^{29} + x^{27} + x^{25} + x^{21} + x^{15} + x^{11} + x^9 + x^7 + x^5\\
&\quad + x^3,\\
p_{12}(x) &= x^{105} + x^{100} + x^{85} + x^{80} + x^{41} + x^{36} + x^{25} + x^{21} + x^{20} + x^{16} + x^5 + 1,
\end{aligned}
$$

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

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

$$
p_0(x) = x^{117} + x^{112} + x^{102} + x^{99} + x^{97} + x^{94} + x^{91} + x^{89} + x^{87} + x^{84} + x^{82}
$$

$$
\begin{aligned}
&+x^{79}+x^{77}+x^{76}+x^{74}+x^{71}+x^{67}+x^{66}+x^{65}+x^{63}+x^{62}+x^{60}\\
&+x^{59}+x^{58}+x^{57}+x^{56}+x^{54}+x^{53}+x^{51}+x^{49}+x^{48}+x^{46}+x^{44}\\
&+x^{40}+x^{35}+x^{34}+x^{32}+x^{31}+x^{27},\\
p_3(x)&=x^{69}+x^{61}+x^{51}+x^{49}+x^{37}+x^{21}+x^{19}+x^{17}+x^{11}+x^{9},\\
p_6(x)&=x^{81}+x^{76}+x^{71}+x^{66}+x^{65}+x^{61}+x^{60}+x^{56}+x^{55}+x^{51}+x^{50}\\
&+x^{49}+x^{46}+x^{44}+x^{41}+x^{39}+x^{36}+x^{34}+x^{33}+x^{31}+x^{29}+x^{28}\\
&+x^{26}+x^{25}+x^{24}+x^{23}+x^{21}+x^{20}+x^{19}+x^{18}+x^{16}+x^{15}+x^{14}\\
&+x^{11}+x^{10}+x^{6},\\
p_9(x)&=x^{93}+x^{85}+x^{83}+x^{77}+x^{69}+x^{67}+x^{61}+x^{57}+x^{53}+x^{51}+x^{49}\\
&+x^{47}+x^{45}+x^{35}+x^{29}+x^{27}+x^{25}+x^{21}+x^{15}+x^{11}+x^{9}+x^{7}+x^{5}\\
&+x^{3},\\
p_{12}(x)&=x^{105}+x^{100}+x^{85}+x^{80}+x^{41}+x^{36}+x^{25}+x^{21}+x^{20}+x^{16}+x^{5}+1,
\end{aligned}
$$

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

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

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

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

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

$$
\begin{aligned}
p_0(x)&=x^{117}+x^{112}+x^{107}+x^{102}+x^{99}+x^{91}+x^{89}+x^{87}+x^{84}+x^{82}+x^{77}\\
&+x^{76}+x^{74}+x^{72}+x^{65}+x^{63}+x^{60}+x^{57}+x^{55}+x^{52}+x^{48}+x^{42}\\
&+x^{35}+x^{33}+x^{32}+x^{31}+x^{30}+x^{29}+x^{27}+x^{25}+x^{24}+x^{22}+x^{18}\\
&+x^{17}+x^{16}+x^{14}+x^{12},\\
p_3(x)&=x^{93}+x^{88}+x^{83}+x^{78}+x^{75}+x^{67}+x^{65}+x^{63}+x^{61}+x^{60}+x^{58}\\
&+x^{56}+x^{52}+x^{51}+x^{50}+x^{46}+x^{38}+x^{33}+x^{31}+x^{28}+x^{27}+x^{26}
\end{aligned}
$$

$$
\begin{aligned}
&+ x^{25} + x^{23} + x^{21} + x^{16} + x^{13} + x^{12} + x^{10} + x^{8},\\
p_6(x) &= x^{109} + x^{105} + x^{104} + x^{100} + x^{99} + x^{94} + x^{93} + x^{91} + x^{89} + x^{88} + x^{85}\\
&+ x^{84} + x^{81} + x^{80} + x^{78} + x^{77} + x^{76} + x^{75} + x^{72} + x^{71} + x^{68} + x^{66}\\
&+ x^{65} + x^{62} + x^{60} + x^{59} + x^{58} + x^{57} + x^{51} + x^{50} + x^{49} + x^{48} + x^{44}\\
&+ x^{43} + x^{39} + x^{38} + x^{37} + x^{36} + x^{34} + x^{33} + x^{32} + x^{31} + x^{22} + x^{21}\\
&+ x^{20} + x^{19} + x^{17} + x^{13} + x^{10} + x^{9} + x^{6} + x^{5} + x^{4} + 1,\\
p_9(x) &= x^{89} + x^{84} + x^{25} + x^{20} + x^{9} + x^{4},\\
p_{12}(x) &= x^{105} + x^{100} + x^{89} + x^{85} + x^{84} + x^{80} + x^{41} + x^{36} + x^{21} + x^{16} + x^{9}\\
&+ x^{5} + x^{4} + 1,
\end{aligned}
$$

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

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

$$
\begin{aligned}
p_0(x) &= x^{112} + x^{97} + x^{89} + x^{86} + x^{84} + x^{82} + x^{79} + x^{76} + x^{74} + x^{72} + x^{69}\\
&+ x^{67} + x^{64} + x^{60} + x^{57} + x^{56} + x^{51} + x^{49} + x^{45} + x^{44} + x^{43} + x^{42}\\
&+ x^{41} + x^{39} + x^{38} + x^{37} + x^{32} + x^{31} + x^{29} + x^{26} + x^{25} + x^{23} + x^{22}\\
&+ x^{21} + x^{20} + x^{18},\\
p_3(x) &= x^{64} + x^{59} + x^{54} + x^{49} + x^{32} + x^{27} + x^{24} + x^{22} + x^{19} + x^{17} + x^{14} + x^{9},\\
p_6(x) &= x^{76} + x^{66} + x^{60} + x^{56} + x^{50} + x^{46} + x^{44} + x^{36} + x^{34} + x^{28} + x^{26}\\
&+ x^{24} + x^{20} + x^{18} + x^{16} + x^{14} + x^{10} + x^{6},\\
p_9(x) &= x^{88} + x^{83} + x^{24} + x^{19} + x^{8} + x^{3},\\
p_{12}(x) &= x^{100} + x^{84} + x^{80} + x^{36} + x^{16} + x^{4} + 1,
\end{aligned}
$$

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

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

$$
\begin{aligned}
p_0(x) &= x^{132} + x^{117} + x^{112} + x^{109} + x^{106} + x^{102} + x^{99} + x^{97} + x^{92} + x^{87}\\
&+ x^{86} + x^{82} + x^{80} + x^{79} + x^{77} + x^{76} + x^{72} + x^{71} + x^{67} + x^{66} + x^{65}\\
&+ x^{63} + x^{62} + x^{59} + x^{54} + x^{53} + x^{46} + x^{45} + x^{43} + x^{42} + x^{40} + x^{39}\\
&+ x^{36} + x^{33} + x^{31} + x^{29} + x^{27},\\
p_3(x) &= x^{84} + x^{79} + x^{74} + x^{69} + x^{64} + x^{59} + x^{54} + x^{52} + x^{49} + x^{47} + x^{44}\\
&+ x^{42} + x^{39} + x^{37} + x^{34} + x^{32} + x^{29} + x^{27} + x^{24} + x^{22} + x^{19} + x^{17}\\
&+ x^{14} + x^{9},\\
p_6(x) &= x^{96} + x^{86} + x^{80} + x^{70} + x^{64} + x^{60} + x^{54} + x^{50} + x^{48} + x^{40} + x^{38}\\
&+ x^{30} + x^{28} + x^{24} + x^{20} + x^{18} + x^{16} + x^{14} + x^{10} + x^{6},\\
p_9(x) &= x^{108} + x^{103} + x^{88} + x^{83} + x^{44} + x^{39} + x^{28} + x^{24} + x^{23} + x^{19} + x^{8}\\
&+ x^{3},\\
p_{12}(x) &= x^{120} + x^{104} + x^{84} + x^{80} + x^{56} + x^{24} + x^{20} + x^{16} + x^{4} + 1,
\end{aligned}
$$

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

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

$$\begin{aligned}
p_0(x) &= x^{117}+x^{112}+x^{107}+x^{102}+x^{99}+x^{97}+x^{92}+x^{91}+x^{87}+x^{82}+x^{79}\\
&\quad+x^{77}+x^{76}+x^{72}+x^{67}+x^{65}+x^{63}+x^{62}+x^{60}+x^{59}+x^{57}+x^{55}\\
&\quad+x^{53}+x^{52}+x^{51}+x^{45}+x^{43}+x^{42}+x^{40}+x^{37}+x^{36}+x^{35}+x^{33},\\
p_3(x) &= x^{93}+x^{88}+x^{83}+x^{78}+x^{75}+x^{73}+x^{68}+x^{67}+x^{63}+x^{61}+x^{58}\\
&\quad+x^{56}+x^{55}+x^{53}+x^{52}+x^{51}+x^{48}+x^{46}+x^{41}+x^{38}+x^{36}+x^{33}\\
&\quad+x^{31}+x^{28}+x^{27}+x^{26}+x^{20}+x^{18}+x^{15}+x^{12},\\
p_6(x) &= x^{109}+x^{105}+x^{104}+x^{100}+x^{99}+x^{94}+x^{93}+x^{91}+x^{88}+x^{85}+x^{80}\\
&\quad+x^{78}+x^{77}+x^{75}+x^{73}+x^{72}+x^{62}+x^{61}+x^{59}+x^{58}+x^{56}+x^{55}\\
&\quad+x^{53}+x^{52}+x^{46}+x^{43}+x^{38}+x^{37}+x^{36}+x^{33}+x^{32}+x^{29}+x^{26}\\
&\quad+x^{25}+x^{24}+x^{23}+x^{22}+x^{21}+x^{18}+x^{15}+x^{14}+x^{12}+x^{11}+x^{8}\\
&\quad+x^{5}+1,\\
p_9(x) &= x^{89}+x^{84}+x^{25}+x^{20}+x^{9}+x^{4},\\
p_{12}(x) &= x^{105}+x^{100}+x^{89}+x^{85}+x^{84}+x^{80}+x^{41}+x^{36}+x^{21}+x^{16}+x^{9}\\
&\quad+x^{5}+x^{4}+1,
\end{aligned}$$

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

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

$$\begin{aligned}
p_0(x) &= x^{117}+x^{112}+x^{107}+x^{102}+x^{99}+x^{91}+x^{89}+x^{87}+x^{84}+x^{82}+x^{77}\\
&\quad+x^{76}+x^{74}+x^{72}+x^{65}+x^{63}+x^{60}+x^{57}+x^{55}+x^{52}+x^{48}+x^{42}\\
&\quad+x^{35}+x^{33}+x^{32}+x^{31}+x^{30}+x^{29}+x^{27}+x^{25}+x^{24}+x^{22}+x^{18}\\
&\quad+x^{17}+x^{16}+x^{14}+x^{12},\\
p_3(x) &= x^{93}+x^{88}+x^{83}+x^{78}+x^{75}+x^{67}+x^{65}+x^{63}+x^{61}+x^{60}+x^{58}\\
&\quad+x^{56}+x^{52}+x^{51}+x^{50}+x^{46}+x^{38}+x^{33}+x^{31}+x^{28}+x^{27}+x^{26}\\
&\quad+x^{25}+x^{23}+x^{21}+x^{16}+x^{13}+x^{12}+x^{10}+x^{8},\\
p_6(x) &= x^{109}+x^{105}+x^{104}+x^{100}+x^{99}+x^{94}+x^{93}+x^{91}+x^{89}+x^{88}+x^{85}\\
&\quad+x^{84}+x^{81}+x^{80}+x^{78}+x^{77}+x^{76}+x^{75}+x^{72}+x^{71}+x^{68}+x^{66}\\
&\quad+x^{65}+x^{62}+x^{60}+x^{59}+x^{58}+x^{57}+x^{51}+x^{50}+x^{49}+x^{48}+x^{44}\\
&\quad+x^{43}+x^{39}+x^{38}+x^{37}+x^{36}+x^{34}+x^{33}+x^{32}+x^{31}+x^{22}+x^{21}\\
&\quad+x^{20}+x^{19}+x^{17}+x^{13}+x^{10}+x^{9}+x^{6}+x^{5}+x^{4}+1,\\
p_9(x) &= x^{89}+x^{84}+x^{25}+x^{20}+x^{9}+x^{4},\\
p_{12}(x) &= x^{105}+x^{100}+x^{89}+x^{85}+x^{84}+x^{80}+x^{41}+x^{36}+x^{21}+x^{16}+x^{9}\\
&\quad+x^{5}+x^{4}+1,
\end{aligned}$$

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

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

$$p_0(x) = x^{132}+x^{117}+x^{112}+x^{109}+x^{106}+x^{102}+x^{99}+x^{97}+x^{92}+x^{87}$$

$$
\begin{aligned}
&+x^{86}+x^{82}+x^{80}+x^{79}+x^{77}+x^{76}+x^{72}+x^{71}+x^{67}+x^{66}+x^{65}\\
&+x^{63}+x^{62}+x^{59}+x^{54}+x^{53}+x^{46}+x^{45}+x^{43}+x^{42}+x^{40}+x^{39}\\
&+x^{36}+x^{33}+x^{31}+x^{29}+x^{27},\\
p_3(x) &= x^{84}+x^{79}+x^{74}+x^{69}+x^{64}+x^{59}+x^{54}+x^{52}+x^{49}+x^{47}+x^{44}\\
&+x^{42}+x^{39}+x^{37}+x^{34}+x^{32}+x^{29}+x^{27}+x^{24}+x^{22}+x^{19}+x^{17}\\
&+x^{14}+x^{9},\\
p_6(x) &= x^{96}+x^{86}+x^{80}+x^{70}+x^{64}+x^{60}+x^{54}+x^{50}+x^{48}+x^{40}+x^{38}\\
&+x^{30}+x^{28}+x^{24}+x^{20}+x^{18}+x^{16}+x^{14}+x^{10}+x^{6},\\
p_9(x) &= x^{108}+x^{103}+x^{88}+x^{83}+x^{44}+x^{39}+x^{28}+x^{24}+x^{23}+x^{19}+x^{8}\\
&+x^{3},\\
p_{12}(x) &= x^{120}+x^{104}+x^{84}+x^{80}+x^{56}+x^{24}+x^{20}+x^{16}+x^{4}+1,
\end{aligned}
$$

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

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

$$
\begin{aligned}
p_0(x) &= x^{112}+x^{97}+x^{89}+x^{86}+x^{84}+x^{82}+x^{79}+x^{76}+x^{74}+x^{72}+x^{69}\\
&+x^{67}+x^{64}+x^{60}+x^{57}+x^{56}+x^{51}+x^{49}+x^{45}+x^{44}+x^{43}+x^{42}\\
&+x^{41}+x^{39}+x^{38}+x^{37}+x^{32}+x^{31}+x^{29}+x^{26}+x^{25}+x^{23}+x^{22}\\
&+x^{21}+x^{20}+x^{18},\\
p_3(x) &= x^{64}+x^{59}+x^{54}+x^{49}+x^{32}+x^{27}+x^{24}+x^{22}+x^{19}+x^{17}+x^{14}+x^{9},\\
p_6(x) &= x^{76}+x^{66}+x^{60}+x^{56}+x^{50}+x^{46}+x^{44}+x^{36}+x^{34}+x^{28}+x^{26}\\
&+x^{24}+x^{20}+x^{18}+x^{16}+x^{14}+x^{10}+x^{6},\\
p_9(x) &= x^{88}+x^{83}+x^{24}+x^{19}+x^{8}+x^{3},\\
p_{12}(x) &= x^{100}+x^{84}+x^{80}+x^{36}+x^{16}+x^{4}+1,
\end{aligned}
$$

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

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

$$
\begin{aligned}
p_0(x) &= x^{117}+x^{112}+x^{107}+x^{102}+x^{99}+x^{97}+x^{92}+x^{91}+x^{87}+x^{82}+x^{79}\\
&+x^{77}+x^{76}+x^{72}+x^{67}+x^{65}+x^{63}+x^{62}+x^{60}+x^{59}+x^{57}+x^{55}\\
&+x^{53}+x^{52}+x^{51}+x^{45}+x^{43}+x^{42}+x^{40}+x^{37}+x^{36}+x^{35}+x^{33},\\
p_3(x) &= x^{93}+x^{88}+x^{83}+x^{78}+x^{75}+x^{73}+x^{68}+x^{67}+x^{63}+x^{61}+x^{58}\\
&+x^{56}+x^{55}+x^{53}+x^{52}+x^{51}+x^{48}+x^{46}+x^{41}+x^{38}+x^{36}+x^{33}\\
&+x^{31}+x^{28}+x^{27}+x^{26}+x^{20}+x^{18}+x^{15}+x^{12},\\
p_6(x) &= x^{109}+x^{105}+x^{104}+x^{100}+x^{99}+x^{94}+x^{93}+x^{91}+x^{88}+x^{85}+x^{80}\\
&+x^{78}+x^{77}+x^{75}+x^{73}+x^{72}+x^{62}+x^{61}+x^{59}+x^{58}+x^{56}+x^{55}\\
&+x^{53}+x^{52}+x^{46}+x^{43}+x^{38}+x^{37}+x^{36}+x^{33}+x^{32}+x^{29}+x^{26}\\
&+x^{25}+x^{24}+x^{23}+x^{22}+x^{21}+x^{18}+x^{15}+x^{14}+x^{12}+x^{11}+x^{8}\\
&+x^{5}+1,
\end{aligned}
$$

$$\begin{aligned} p_9(x) &= x^{89}+x^{84}+x^{25}+x^{20}+x^9+x^4, \\ p_{12}(x) &= x^{105}+x^{100}+x^{89}+x^{85}+x^{84}+x^{80}+x^{41}+x^{36}+x^{21}+x^{16}+x^9 \\ &\quad +x^5+x^4+1, \end{aligned}$$

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

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

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

n	$\Lambda(n)$	n	$\Lambda(n)$	n	$\Lambda(n)$	n	$\Lambda(n)$
0	[1, 2]	980	[1531, 1532]	1960	[2601, 1704]	2940	[1666, 1250]
1	[3, 4]	981	[1533, 1442]	1961	[2602, 2603]	2941	[1275, 2338]
2	[5, 6]	982	[1534, 651]	1962	[433, 1687]	2942	[3340, 692]
3	[7, 8]	983	[49, 439]	1963	[2604, 2605]	2943	[2688, 2512]
4	[9, 10]	984	[1535, 1536]	1964	[1527, 2606]	2944	[3341, 1269]
5	[11, 12]	985	[1537, 1538]	1965	[2607, 2608]	2945	[696, 1231]
6	[13, 14]	986	[1539, 1540]	1966	[2609, 1604]	2946	[2509, 2743]
7	[15, 16]	987	[1541, 1542]	1967	[2610, 2611]	2947	[1200, 448]
8	[17, 18]	988	[1543, 1544]	1968	[526, 120]	2948	[3342, 1356]
9	[19, 20]	989	[1545, 1546]	1969	[2612, 1289]	2949	[2791, 1316]
10	[21, 22]	990	[1267, 1547]	1970	[479, 201]	2950	[2385, 1666]
11	[23, 24]	991	[1548, 1549]	1971	[2613, 648]	2951	[1517, 2536]
12	[25, 26]	992	[1550, 408]	1972	[2614, 439]	2952	[3343, 1352]
13	[27, 28]	993	[1551, 410]	1973	[2615, 1571]	2953	[3344, 1451]
14	[29, 30]	994	[1552, 406]	1974	[2616, 1674]	2954	[3345, 197]
15	[31, 32]	995	[1229, 1354]	1975	[610, 2617]	2955	[3346, 2910]
16	[33, 34]	996	[1286, 571]	1976	[2618, 2548]	2956	[3347, 1448]
17	[35, 36]	997	[637, 1553]	1977	[2619, 1589]	2957	[1642, 2565]
18	[37, 38]	998	[1554, 137]	1978	[2620, 1162]	2958	[3348, 3349]
19	[39, 40]	999	[1555, 1556]	1979	[2621, 646]	2959	[3350, 2800]
20	[41, 42]	1000	[1557, 1558]	1980	[1492, 2622]	2960	[3351, 501]
21	[10, 43]	1001	[1232, 1325]	1981	[2623, 570]	2961	[3352, 2727]
22	[44, 45]	1002	[1559, 1429]	1982	[2624, 571]	2962	[3353, 1264]
23	[46, 47]	1003	[1560, 1228]	1983	[2625, 2626]	2963	[3354, 3339]
24	[48, 49]	1004	[1561, 1562]	1984	[2627, 2628]	2964	[3355, 3356]
25	[50, 51]	1005	[1563, 1564]	1985	[2457, 2629]	2965	[3357, 599]
26	[52, 53]	1006	[1565, 457]	1986	[2630, 2376]	2966	[2920, 627]
27	[54, 55]	1007	[601, 1566]	1987	[1515, 526]	2967	[3358, 630]
28	[56, 57]	1008	[1298, 1567]	1988	[2405, 2500]	2968	[3359, 2347]
29	[58, 59]	1009	[1568, 1280]	1989	[2631, 2611]	2969	[2512, 180]
30	[60, 61]	1010	[1569, 1517]	1990	[2632, 2633]	2970	[1292, 1444]
31	[62, 63]	1011	[1570, 1571]	1991	[1473, 2336]	2971	[2559, 1639]
32	[64, 65]	1012	[1572, 1573]	1992	[2634, 2635]	2972	[3360, 1443]
33	[66, 67]	1013	[1574, 1575]	1993	[2636, 1669]	2973	[3361, 2464]
34	[68, 69]	1014	[1576, 1577]	1994	[2494, 158]	2974	[2449, 2751]

35	[70, 71]	1015	[1578, 1579]	1995	[649, 1629]	2975	[2738, 1681]
36	[72, 73]	1016	[1580, 1560]	1996	[1324, 688]	2976	[3362, 1664]
37	[74, 75]	1017	[1327, 1581]	1997	[2637, 2638]	2977	[1316, 532]
38	[76, 77]	1018	[1582, 1583]	1998	[2578, 2639]	2978	[3363, 2384]
39	[78, 79]	1019	[1584, 1585]	1999	[2640, 1367]	2979	[3364, 1487]
40	[80, 81]	1020	[1586, 1587]	2000	[1297, 2641]	2980	[1366, 1153]
41	[82, 83]	1021	[1588, 1589]	2001	[2642, 1268]	2981	[3365, 2720]
42	[84, 85]	1022	[1590, 1591]	2002	[2643, 558]	2982	[620, 1718]
43	[20, 86]	1023	[1592, 1593]	2003	[2644, 1430]	2983	[3366, 1382]
44	[16, 87]	1024	[1585, 40]	2004	[2645, 2646]	2984	[520, 1531]
45	[18, 88]	1025	[1594, 475]	2005	[1466, 2647]	2985	[3367, 2686]
46	[89, 90]	1026	[581, 1595]	2006	[2648, 2649]	2986	[1170, 1641]
47	[91, 92]	1027	[1596, 187]	2007	[2650, 2651]	2987	[3368, 1312]
48	[93, 94]	1028	[1597, 1457]	2008	[2652, 1691]	2988	[3369, 653]
49	[95, 96]	1029	[1598, 1594]	2009	[2653, 2600]	2989	[3370, 1292]
50	[97, 98]	1030	[1599, 569]	2010	[2654, 634]	2990	[3371, 190]
51	[99, 100]	1031	[1600, 1291]	2011	[2655, 1208]	2991	[2802, 1701]
52	[101, 102]	1032	[605, 1310]	2012	[2656, 1378]	2992	[3372, 1552]
53	[103, 104]	1033	[1601, 1567]	2013	[2657, 1542]	2993	[1653, 2497]
54	[105, 106]	1034	[1602, 1603]	2014	[2658, 2659]	2994	[616, 2318]
55	[107, 108]	1035	[512, 1604]	2015	[2660, 2661]	2995	[466, 2912]
56	[109, 110]	1036	[1605, 1606]	2016	[2662, 2663]	2996	[1401, 2340]
57	[111, 112]	1037	[1607, 1608]	2017	[2664, 1325]	2997	[3373, 1621]
58	[113, 114]	1038	[1609, 1610]	2018	[2665, 1579]	2998	[3374, 2546]
59	[115, 116]	1039	[1611, 1612]	2019	[2595, 1405]	2999	[1699, 1712]
60	[117, 118]	1040	[1613, 1149]	2020	[2666, 614]	3000	[3375, 41]
61	[119, 16]	1041	[1614, 1615]	2021	[2451, 1469]	3001	[1395, 554]
62	[120, 121]	1042	[1616, 1617]	2022	[2667, 2668]	3002	[142, 2718]
63	[122, 123]	1043	[1618, 1619]	2023	[2669, 2670]	3003	[2847, 1289]
64	[124, 125]	1044	[1620, 1318]	2024	[2671, 2527]	3004	[3376, 61]
65	[126, 127]	1045	[597, 1621]	2025	[639, 1437]	3005	[3377, 2641]
66	[53, 128]	1046	[1622, 1623]	2026	[2672, 2673]	3006	[3378, 1547]
67	[129, 130]	1047	[1145, 1482]	2027	[2674, 1563]	3007	[3379, 2561]
68	[131, 132]	1048	[1624, 1625]	2028	[2675, 1548]	3008	[3380, 444]
69	[133, 134]	1049	[215, 1626]	2029	[2676, 530]	3009	[2842, 403]
70	[135, 136]	1050	[1152, 1202]	2030	[686, 1389]	3010	[3381, 2484]
71	[137, 138]	1051	[1627, 1628]	2031	[2677, 1611]	3011	[1469, 1678]
72	[139, 140]	1052	[34, 1206]	2032	[2678, 2679]	3012	[1349, 2482]
73	[141, 142]	1053	[554, 515]	2033	[2680, 2608]	3013	[3382, 1549]
74	[143, 144]	1054	[539, 1226]	2034	[2681, 1501]	3014	[3383, 1379]
75	[145, 146]	1055	[625, 622]	2035	[1644, 1395]	3015	[3384, 1612]
76	[147, 148]	1056	[1629, 1630]	2036	[2682, 1396]	3016	[1671, 499]
77	[149, 150]	1057	[1631, 1632]	2037	[2683, 120]	3017	[3385, 34]
78	[151, 152]	1058	[1633, 1366]	2038	[2684, 1553]	3018	[2505, 1632]

79	[153, 154]	1059	[59, 1634]	2039	[2436, 2685]	3019	[3386, 2631]
80	[155, 156]	1060	[1635, 127]	2040	[2679, 2686]	3020	[3387, 1531]
81	[157, 158]	1061	[1636, 503]	2041	[2687, 2688]	3021	[3388, 2547]
82	[159, 160]	1062	[1536, 1637]	2042	[562, 1583]	3022	[1389, 1552]
83	[161, 162]	1063	[1638, 1639]	2043	[2689, 2690]	3023	[3389, 506]
84	[127, 32]	1064	[1640, 1641]	2044	[2691, 2692]	3024	[1538, 1142]
85	[163, 164]	1065	[1587, 1642]	2045	[2693, 2694]	3025	[3390, 516]
86	[40, 165]	1066	[545, 551]	2046	[2695, 1574]	3026	[3391, 59]
87	[32, 166]	1067	[1643, 1644]	2047	[2696, 1297]	3027	[662, 1704]
88	[36, 167]	1068	[1645, 1646]	2048	[1277, 1512]	3028	[2315, 190]
89	[168, 169]	1069	[1647, 1648]	2049	[2569, 2697]	3029	[3392, 51]
90	[170, 171]	1070	[1649, 1650]	2050	[2698, 147]	3030	[3393, 1726]
91	[128, 172]	1071	[1566, 122]	2051	[2508, 1398]	3031	[3394, 3395]
92	[173, 174]	1072	[1651, 1500]	2052	[2555, 2699]	3032	[3396, 1717]
93	[175, 176]	1073	[1652, 1653]	2053	[2561, 682]	3033	[3397, 3398]
94	[177, 178]	1074	[1654, 1655]	2054	[2700, 2701]	3034	[3399, 2563]
95	[179, 180]	1075	[1656, 1657]	2055	[2439, 1412]	3035	[169, 2494]
96	[181, 182]	1076	[1658, 1659]	2056	[2702, 618]	3036	[3400, 604]
97	[183, 184]	1077	[1660, 1661]	2057	[2703, 2704]	3037	[3401, 2665]
98	[185, 186]	1078	[1662, 1663]	2058	[2441, 1240]	3038	[493, 1264]
99	[187, 188]	1079	[1610, 1664]	2059	[2413, 2705]	3039	[217, 2875]
100	[189, 48]	1080	[1665, 1666]	2060	[2706, 2707]	3040	[1612, 493]
101	[190, 191]	1081	[1667, 452]	2061	[1499, 1406]	3041	[2491, 1172]
102	[192, 193]	1082	[1372, 441]	2062	[2701, 2708]	3042	[3402, 2392]
103	[194, 195]	1083	[481, 565]	2063	[2709, 2549]	3043	[3403, 155]
104	[196, 197]	1084	[1462, 1183]	2064	[2710, 2711]	3044	[3404, 1213]
105	[174, 198]	1085	[1668, 601]	2065	[2712, 2713]	3045	[3405, 3406]
106	[199, 200]	1086	[1553, 1669]	2066	[2714, 1173]	3046	[1593, 470]
107	[201, 202]	1087	[528, 1515]	2067	[1313, 1433]	3047	[1430, 2505]
108	[203, 204]	1088	[1240, 147]	2068	[2715, 580]	3048	[2629, 2439]
109	[205, 12]	1089	[1670, 1671]	2069	[2716, 2717]	3049	[3407, 2342]
110	[206, 207]	1090	[1672, 424]	2070	[2692, 1456]	3050	[3408, 556]
111	[208, 209]	1091	[1673, 1674]	2071	[2718, 2566]	3051	[2828, 2375]
112	[210, 1]	1092	[1637, 1675]	2072	[2719, 2390]	3052	[2530, 512]
113	[211, 212]	1093	[1676, 1677]	2073	[694, 2638]	3053	[3409, 2752]
114	[213, 131]	1094	[1678, 1497]	2074	[2720, 2721]	3054	[3410, 1504]
115	[214, 215]	1095	[1679, 1303]	2075	[2722, 2723]	3055	[1623, 1381]
116	[216, 217]	1096	[1680, 1681]	2076	[2724, 2485]	3056	[3411, 1383]
117	[218, 219]	1097	[1669, 1507]	2077	[1603, 2666]	3057	[1345, 1245]
118	[220, 221]	1098	[1682, 1683]	2078	[2725, 1133]	3058	[3412, 35]
119	[207, 222]	1099	[1684, 1685]	2079	[2726, 2488]	3059	[2467, 1685]
120	[110, 223]	1100	[1686, 1687]	2080	[1282, 2704]	3060	[150, 3398]
121	[224, 117]	1101	[1688, 1689]	2081	[2727, 466]	3061	[3413, 3414]
122	[225, 226]	1102	[1690, 1653]	2082	[2728, 2619]	3062	[2800, 2532]

123	[227, 228]	1103	[1691, 1692]	2083	[2729, 2596]	3063	[599, 520]
124	[229, 230]	1104	[1693, 1694]	2084	[2730, 1355]	3064	[1456, 1275]
125	[231, 232]	1105	[1695, 1696]	2085	[2731, 1241]	3065	[3415, 2434]
126	[233, 64]	1106	[1697, 1698]	2086	[2732, 2631]	3066	[1595, 2792]
127	[234, 235]	1107	[1412, 1699]	2087	[2, 43]	3067	[2646, 1717]
128	[116, 236]	1108	[1700, 1535]	2088	[564, 170]	3068	[3416, 2597]
129	[237, 238]	1109	[1701, 1702]	2089	[2733, 1207]	3069	[1381, 2470]
130	[239, 240]	1110	[1703, 1317]	2090	[2734, 170]	3070	[3417, 2765]
131	[241, 242]	1111	[1704, 1705]	2091	[2735, 2653]	3071	[3418, 3419]
132	[243, 244]	1112	[1706, 1390]	2092	[2736, 1509]	3072	[614, 1668]
133	[245, 246]	1113	[1707, 1708]	2093	[2737, 2738]	3073	[2685, 589]
134	[247, 248]	1114	[1709, 1710]	2094	[2739, 2740]	3074	[2670, 691]
135	[249, 250]	1115	[1711, 1712]	2095	[2741, 565]	3075	[3420, 1417]
136	[251, 252]	1116	[1713, 1174]	2096	[130, 1163]	3076	[3421, 2828]
137	[253, 254]	1117	[1714, 1715]	2097	[2742, 557]	3077	[1486, 2485]
138	[255, 256]	1118	[1716, 1446]	2098	[2470, 1485]	3078	[3422, 2666]
139	[257, 258]	1119	[1628, 35]	2099	[2743, 2404]	3079	[3423, 1406]
140	[259, 260]	1120	[1717, 518]	2100	[2526, 663]	3080	[2883, 1131]
141	[261, 251]	1121	[1718, 1719]	2101	[2744, 2745]	3081	[3424, 1363]
142	[262, 263]	1122	[1720, 1721]	2102	[2746, 2405]	3082	[1199, 1710]
143	[264, 265]	1123	[1722, 1723]	2103	[2747, 1673]	3083	[1387, 3425]
144	[266, 267]	1124	[1188, 1724]	2104	[2748, 2727]	3084	[3426, 416]
145	[268, 269]	1125	[1725, 1726]	2105	[2749, 2378]	3085	[2864, 575]
146	[270, 19]	1126	[1727, 247]	2106	[2750, 2751]	3086	[1221, 1281]
147	[271, 272]	1127	[1728, 1124]	2107	[1579, 2752]	3087	[2545, 1454]
148	[273, 274]	1128	[1729, 869]	2108	[2753, 2451]	3088	[3427, 182]
149	[275, 276]	1129	[1730, 1731]	2109	[2754, 2755]	3089	[3428, 546]
150	[277, 278]	1130	[1732, 1733]	2110	[1362, 656]	3090	[1685, 1487]
151	[279, 245]	1131	[1734, 1735]	2111	[2756, 9]	3091	[2807, 607]
152	[280, 281]	1132	[1109, 977]	2112	[1290, 2757]	3092	[3429, 1234]
153	[282, 283]	1133	[1736, 814]	2113	[2758, 539]	3093	[2888, 2791]
154	[284, 285]	1134	[1737, 1079]	2114	[2759, 1147]	3094	[1403, 1657]
155	[286, 287]	1135	[1738, 1739]	2115	[1634, 1476]	3095	[221, 2384]
156	[288, 289]	1136	[1740, 1741]	2116	[2760, 649]	3096	[2663, 617]
157	[290, 291]	1137	[1742, 1743]	2117	[1215, 9]	3097	[1408, 1167]
158	[292, 293]	1138	[1744, 883]	2118	[2761, 1532]	3098	[1567, 2409]
159	[294, 295]	1139	[1745, 1746]	2119	[2626, 2762]	3099	[2472, 2389]
160	[296, 297]	1140	[1747, 1748]	2120	[2763, 1652]	3100	[2603, 683]
161	[298, 299]	1141	[1749, 1750]	2121	[2764, 1476]	3101	[3430, 2407]
162	[300, 301]	1142	[1020, 1064]	2122	[2765, 173]	3102	[3431, 2894]
163	[302, 95]	1143	[847, 1751]	2123	[584, 2766]	3103	[583, 3419]
164	[303, 304]	1144	[761, 27]	2124	[2447, 1570]	3104	[3432, 2388]
165	[79, 305]	1145	[1051, 111]	2125	[2767, 2768]	3105	[458, 2422]
166	[63, 306]	1146	[1752, 1753]	2126	[2769, 2770]	3106	[3433, 434]

167	[71, 269]	1147	[1754, 1755]	2127	[1511, 1586]	3107	[3434, 2792]
168	[307, 308]	1148	[1756, 1757]	2128	[2771, 479]	3108	[1532, 2717]
169	[309, 310]	1149	[1758, 265]	2129	[2772, 2584]	3109	[3435, 403]
170	[311, 312]	1150	[746, 233]	2130	[2773, 2687]	3110	[3436, 3391]
171	[313, 314]	1151	[839, 1759]	2131	[2774, 1321]	3111	[2415, 597]
172	[315, 316]	1152	[944, 1760]	2132	[2532, 2775]	3112	[3437, 1167]
173	[317, 318]	1153	[1761, 1057]	2133	[2776, 2680]	3113	[3438, 451]
174	[319, 320]	1154	[1762, 982]	2134	[2777, 2778]	3114	[2755, 521]
175	[321, 322]	1155	[1075, 1763]	2135	[2779, 2685]	3115	[1368, 1362]
176	[323, 324]	1156	[1764, 341]	2136	[2780, 2781]	3116	[3439, 1304]
177	[69, 325]	1157	[1765, 355]	2137	[2782, 2783]	3117	[2585, 2325]
178	[326, 327]	1158	[1766, 1767]	2138	[2784, 196]	3118	[3440, 2748]
179	[328, 329]	1159	[1768, 1769]	2139	[2785, 221]	3119	[1549, 620]
180	[330, 331]	1160	[1770, 950]	2140	[2786, 1600]	3120	[3441, 1702]
181	[77, 332]	1161	[1771, 1772]	2141	[2322, 2787]	3121	[3442, 699]
182	[333, 334]	1162	[940, 913]	2142	[193, 2745]	3122	[3443, 482]
183	[335, 336]	1163	[238, 731]	2143	[2788, 2789]	3123	[3444, 122]
184	[337, 338]	1164	[1773, 946]	2144	[2790, 2791]	3124	[2778, 1462]
185	[339, 340]	1165	[1774, 316]	2145	[1663, 1367]	3125	[3445, 1282]
186	[341, 342]	1166	[274, 253]	2146	[1544, 2478]	3126	[3446, 2320]
187	[343, 344]	1167	[1775, 300]	2147	[2792, 2793]	3127	[1329, 1196]
188	[244, 6]	1168	[739, 1776]	2148	[2794, 430]	3128	[3447, 2606]
189	[345, 346]	1169	[1777, 1753]	2149	[2538, 2795]	3129	[3448, 202]
190	[347, 348]	1170	[1778, 1779]	2150	[2796, 462]	3130	[3356, 625]
191	[349, 241]	1171	[1780, 1781]	2151	[2797, 2732]	3131	[3449, 456]
192	[350, 351]	1172	[1782, 1783]	2152	[2798, 1701]	3132	[1562, 477]
193	[352, 353]	1173	[1784, 863]	2153	[1344, 2799]	3133	[162, 1516]
194	[354, 228]	1174	[1785, 1786]	2154	[1135, 2477]	3134	[3450, 1489]
195	[355, 356]	1175	[1787, 940]	2155	[2395, 2800]	3135	[3451, 1634]
196	[357, 358]	1176	[1788, 111]	2156	[2801, 2802]	3136	[1168, 2656]
197	[359, 360]	1177	[1789, 1790]	2157	[2803, 2473]	3137	[1186, 3356]
198	[361, 362]	1178	[1123, 1784]	2158	[2804, 2805]	3138	[3452, 1156]
199	[363, 3]	1179	[1791, 1792]	2159	[460, 1522]	3139	[2694, 1645]
200	[364, 365]	1180	[1793, 1794]	2160	[2806, 2807]	3140	[1210, 2781]
201	[366, 357]	1181	[1795, 1055]	2161	[1608, 2352]	3141	[2425, 1312]
202	[367, 368]	1182	[1796, 1797]	2162	[1385, 1644]	3142	[2606, 2578]
203	[369, 370]	1183	[1798, 315]	2163	[2808, 2526]	3143	[158, 2381]
204	[235, 371]	1184	[331, 1799]	2164	[2543, 2809]	3144	[2897, 547]
205	[372, 90]	1185	[1800, 799]	2165	[2810, 1508]	3145	[3453, 1445]
206	[373, 374]	1186	[789, 803]	2166	[2766, 2540]	3146	[3454, 2373]
207	[375, 376]	1187	[1801, 1802]	2167	[2811, 124]	3147	[3455, 2433]
208	[377, 378]	1188	[1803, 1095]	2168	[2812, 2583]	3148	[3456, 628]
209	[379, 323]	1189	[1804, 1104]	2169	[2813, 683]	3149	[1573, 580]
210	[380, 381]	1190	[1805, 951]	2170	[496, 1320]	3150	[1148, 1137]

211	[382, 383]	1191	[1806, 337]	2171	[2814, 2815]	3151	[3457, 1311]
212	[356, 326]	1192	[1807, 1808]	2172	[2816, 1245]	3152	[1571, 2920]
213	[384, 367]	1193	[853, 231]	2173	[2375, 1385]	3153	[3458, 172]
214	[385, 386]	1194	[1809, 28]	2174	[2817, 2818]	3154	[1674, 1562]
215	[387, 388]	1195	[1810, 100]	2175	[2819, 2820]	3155	[1529, 536]
216	[389, 390]	1196	[1811, 1812]	2176	[2821, 2432]	3156	[3459, 2766]
217	[391, 392]	1197	[1813, 321]	2177	[1726, 1135]	3157	[2593, 1466]
218	[393, 394]	1198	[1814, 1815]	2178	[2822, 2565]	3158	[2910, 1689]
219	[395, 396]	1199	[1816, 1817]	2179	[2697, 2823]	3159	[2371, 1499]
220	[397, 398]	1200	[322, 247]	2180	[2824, 1281]	3160	[1509, 2765]
221	[399, 400]	1201	[329, 1818]	2181	[1724, 680]	3161	[472, 616]
222	[374, 401]	1202	[1759, 1819]	2182	[2574, 2818]	3162	[2837, 2574]
223	[402, 33]	1203	[996, 107]	2183	[2825, 450]	3163	[3460, 2721]
224	[403, 220]	1204	[1820, 1821]	2184	[2826, 222]	3164	[426, 1548]
225	[404, 405]	1205	[1822, 1823]	2185	[2827, 1139]	3165	[2501, 155]
226	[406, 407]	1206	[252, 1824]	2186	[1615, 2828]	3166	[3461, 3462]
227	[408, 409]	1207	[921, 1825]	2187	[2829, 44]	3167	[3463, 1322]
228	[410, 411]	1208	[1826, 1038]	2188	[2830, 2831]	3168	[3464, 2353]
229	[412, 413]	1209	[1827, 1828]	2189	[2832, 2397]	3169	[592, 1708]
230	[414, 415]	1210	[1103, 1829]	2190	[2833, 2389]	3170	[47, 612]
231	[416, 417]	1211	[1830, 107]	2191	[2525, 2834]	3171	[2893, 2864]
232	[418, 419]	1212	[65, 819]	2192	[2835, 1434]	3172	[3465, 2350]
233	[420, 126]	1213	[775, 779]	2193	[2805, 2520]	3173	[1661, 1671]
234	[421, 422]	1214	[1831, 919]	2194	[2836, 2837]	3174	[1589, 1442]
235	[423, 424]	1215	[721, 21]	2195	[1370, 2687]	3175	[1335, 1180]
236	[425, 426]	1216	[1824, 1119]	2196	[2740, 1199]	3176	[3466, 515]
237	[427, 45]	1217	[1832, 243]	2197	[2838, 1724]	3177	[2925, 674]
238	[428, 429]	1218	[346, 716]	2198	[2839, 1349]	3178	[3467, 1273]
239	[430, 431]	1219	[1833, 1834]	2199	[2668, 2840]	3179	[3468, 2622]
240	[432, 433]	1220	[794, 1835]	2200	[2841, 2842]	3180	[1507, 496]
241	[434, 208]	1221	[1836, 1837]	2201	[160, 2843]	3181	[3469, 1564]
242	[435, 436]	1222	[1838, 229]	2202	[2844, 1512]	3182	[3470, 2371]
243	[429, 13]	1223	[1839, 721]	2203	[2845, 1725]	3183	[3471, 2796]
244	[437, 438]	1224	[1821, 965]	2204	[2768, 1248]	3184	[1205, 2748]
245	[439, 440]	1225	[1840, 1754]	2205	[2846, 2847]	3185	[3472, 1152]
246	[441, 442]	1226	[285, 1756]	2206	[1443, 460]	3186	[2713, 2515]
247	[443, 444]	1227	[1841, 780]	2207	[1140, 2646]	3187	[660, 1425]
248	[445, 446]	1228	[1842, 1843]	2208	[2848, 1416]	3188	[1318, 2778]
249	[447, 448]	1229	[1844, 764]	2209	[405, 2413]	3189	[1696, 1189]
250	[449, 450]	1230	[1845, 1846]	2210	[2849, 2850]	3190	[3473, 1364]
251	[451, 452]	1231	[1847, 1848]	2211	[2820, 1268]	3191	[2346, 2319]
252	[453, 210]	1232	[287, 1849]	2212	[2851, 1645]	3192	[2757, 2668]
253	[454, 455]	1233	[299, 280]	2213	[2852, 2853]	3193	[3474, 1237]
254	[456, 457]	1234	[1750, 1066]	2214	[1425, 1439]	3194	[2789, 1132]

255	[409, 458]	1235	[1850, 1851]	2215	[2854, 2503]	3195	[538, 2483]
256	[411, 408]	1236	[1852, 1853]	2216	[2855, 684]	3196	[1522, 436]
257	[459, 460]	1237	[1854, 829]	2217	[1265, 1271]	3197	[3475, 555]
258	[461, 462]	1238	[1855, 1856]	2218	[2856, 636]	3198	[1376, 2569]
259	[463, 464]	1239	[1857, 1117]	2219	[2356, 2796]	3199	[3476, 1246]
260	[465, 466]	1240	[752, 273]	2220	[2857, 504]	3200	[3477, 2598]
261	[467, 468]	1241	[1117, 1858]	2221	[2858, 617]	3201	[3478, 1477]
262	[469, 470]	1242	[1859, 1860]	2222	[2859, 414]	3202	[3479, 164]
263	[471, 472]	1243	[1861, 1099]	2223	[2860, 644]	3203	[3480, 48]
264	[473, 474]	1244	[1862, 1863]	2224	[2861, 2385]	3204	[3481, 590]
265	[475, 169]	1245	[98, 1864]	2225	[2862, 1678]	3205	[3482, 1345]
266	[476, 477]	1246	[1865, 937]	2226	[2863, 2864]	3206	[1302, 2392]
267	[478, 479]	1247	[1866, 1867]	2227	[2865, 1140]	3207	[3483, 1196]
268	[480, 188]	1248	[1868, 1869]	2228	[2866, 2348]	3208	[1423, 2738]
269	[136, 481]	1249	[1870, 978]	2229	[2477, 636]	3209	[1231, 2328]
270	[482, 41]	1250	[1055, 1871]	2230	[2867, 2843]	3210	[2781, 1358]
271	[483, 484]	1251	[901, 1872]	2231	[2868, 2705]	3211	[2397, 3391]
272	[485, 486]	1252	[1873, 1874]	2232	[2869, 2870]	3212	[3484, 1555]
273	[487, 488]	1253	[1875, 705]	2233	[2871, 1143]	3213	[3485, 411]
274	[489, 181]	1254	[1876, 933]	2234	[2401, 2595]	3214	[3486, 443]
275	[490, 491]	1255	[1877, 881]	2235	[2872, 2873]	3215	[3487, 418]
276	[492, 493]	1256	[1878, 1122]	2236	[1320, 560]	3216	[3488, 13]
277	[470, 494]	1257	[1879, 1802]	2237	[2874, 2875]	3217	[3489, 2840]
278	[495, 496]	1258	[1880, 994]	2238	[2876, 1150]	3218	[1458, 1413]
279	[497, 441]	1259	[1881, 278]	2239	[2877, 1705]	3219	[182, 1372]
280	[498, 499]	1260	[396, 1882]	2240	[2878, 2472]	3220	[1414, 1503]
281	[500, 501]	1261	[1883, 1884]	2241	[2879, 2880]	3221	[2475, 2449]
282	[502, 10]	1262	[1885, 1886]	2242	[2881, 1265]	3222	[594, 1220]
283	[503, 504]	1263	[1887, 378]	2243	[1617, 2850]	3223	[3490, 2401]
284	[505, 506]	1264	[1097, 903]	2244	[2882, 2823]	3224	[2340, 1327]
285	[507, 508]	1265	[1888, 825]	2245	[2571, 2883]	3225	[2433, 2596]
286	[509, 510]	1266	[1889, 911]	2246	[2884, 49]	3226	[3491, 1646]
287	[511, 512]	1267	[1890, 1891]	2247	[1719, 633]	3227	[1648, 1329]
288	[513, 514]	1268	[1741, 1892]	2248	[504, 1193]	3228	[1583, 2802]
289	[515, 516]	1269	[1893, 1894]	2249	[2885, 1200]	3229	[3492, 2699]
290	[517, 518]	1270	[1895, 1896]	2250	[2886, 549]	3230	[491, 3462]
291	[519, 520]	1271	[308, 238]	2251	[2887, 2657]	3231	[3493, 629]
292	[521, 522]	1272	[1897, 1898]	2252	[1197, 2888]	3232	[650, 2628]
293	[523, 524]	1273	[1899, 1900]	2253	[2889, 206]	3233	[3494, 446]
294	[525, 526]	1274	[1901, 1902]	2254	[2890, 412]	3234	[1238, 1421]
295	[527, 528]	1275	[338, 1903]	2255	[2891, 2688]	3235	[1715, 2361]
296	[529, 530]	1276	[1904, 347]	2256	[2892, 2893]	3236	[3495, 1183]
297	[531, 532]	1277	[1905, 1873]	2257	[2633, 2894]	3237	[1262, 2464]
298	[533, 534]	1278	[1906, 1041]	2258	[2895, 2793]	3238	[2795, 1280]

299	[419, 500]	1279	[1907, 1859]	2259	[2896, 2897]	3239	[2641, 686]
300	[535, 536]	1280	[1908, 1909]	2260	[2898, 2600]	3240	[3496, 1410]
301	[537, 538]	1281	[730, 1851]	2261	[2899, 2799]	3241	[3497, 2883]
302	[165, 456]	1282	[1910, 1911]	2262	[2900, 167]	3242	[2536, 2847]
303	[154, 539]	1283	[1912, 769]	2263	[2638, 214]	3243	[666, 1260]
304	[540, 541]	1284	[358, 1913]	2264	[690, 2598]	3244	[1546, 1434]
305	[152, 133]	1285	[950, 946]	2265	[634, 2701]	3245	[3462, 508]
306	[121, 542]	1286	[1772, 1752]	2266	[2901, 2902]	3246	[3498, 417]
307	[543, 544]	1287	[1914, 714]	2267	[2751, 1555]	3247	[2520, 1156]
308	[55, 545]	1288	[1915, 93]	2268	[2903, 2387]	3248	[518, 3487]
309	[516, 546]	1289	[1916, 1917]	2269	[2904, 209]	3249	[2673, 1470]
310	[547, 548]	1290	[1918, 1761]	2270	[2905, 2590]	3250	[3499, 2479]
311	[549, 550]	1291	[1919, 712]	2271	[2906, 1429]	3251	[3500, 3487]
312	[551, 552]	1292	[1920, 1921]	2272	[2907, 1272]	3252	[3501, 2762]
313	[553, 554]	1293	[916, 75]	2273	[2908, 2795]	3253	[1626, 2474]
314	[555, 556]	1294	[281, 1922]	2274	[1477, 1480]	3254	[2783, 1617]
315	[557, 558]	1295	[1923, 303]	2275	[2909, 1597]	3255	[2659, 2548]
316	[559, 474]	1296	[1894, 1924]	2276	[2711, 1408]	3256	[3502, 208]
317	[560, 141]	1297	[1819, 1925]	2277	[2422, 639]	3257	[2409, 200]
318	[561, 562]	1298	[1926, 1927]	2278	[1244, 2910]	3258	[407, 2342]
319	[563, 564]	1299	[1928, 1929]	2279	[2911, 2912]	3259	[3503, 478]
320	[565, 566]	1300	[870, 1930]	2280	[2913, 1205]	3260	[3504, 1449]
321	[567, 443]	1301	[1931, 1932]	2281	[2914, 663]	3261	[3505, 2475]
322	[568, 121]	1302	[291, 1933]	2282	[1374, 1393]	3262	[3506, 1298]
323	[569, 570]	1303	[1934, 1037]	2283	[2915, 2916]	3263	[1257, 1603]
324	[571, 572]	1304	[1932, 1935]	2284	[1723, 2378]	3264	[688, 1212]
325	[202, 557]	1305	[1936, 1937]	2285	[2622, 2447]	3265	[1441, 1382]
326	[573, 574]	1306	[1938, 1879]	2286	[1639, 1254]	3266	[654, 534]
327	[575, 434]	1307	[1939, 1036]	2287	[2917, 1525]	3267	[140, 1591]
328	[576, 577]	1308	[1940, 1074]	2288	[2823, 1560]	3268	[1398, 1663]
329	[578, 579]	1309	[1941, 332]	2289	[1542, 2770]	3269	[2815, 2679]
330	[580, 581]	1310	[1760, 373]	2290	[2918, 2502]	3270	[1558, 2502]
331	[582, 583]	1311	[813, 99]	2291	[2919, 2920]	3271	[2547, 2399]
332	[148, 584]	1312	[1942, 1943]	2292	[2921, 2362]	3272	[3507, 2393]
333	[585, 205]	1313	[1944, 1945]	2293	[587, 2387]	3273	[3395, 1600]
334	[579, 206]	1314	[265, 1946]	2294	[2922, 584]	3274	[3508, 574]
335	[586, 587]	1315	[1947, 1948]	2295	[2923, 2501]	3275	[2320, 2805]
336	[588, 589]	1316	[1949, 704]	2296	[1625, 1308]	3276	[3509, 1391]
337	[486, 590]	1317	[1950, 799]	2297	[2924, 2925]	3277	[3510, 1163]
338	[591, 592]	1318	[880, 1951]	2298	[2870, 1683]	3278	[3511, 423]
339	[593, 594]	1319	[1952, 1105]	2299	[2926, 1586]	3279	[2515, 430]
340	[595, 573]	1320	[914, 1919]	2300	[699, 1267]	3280	[3512, 1633]
341	[596, 597]	1321	[1953, 972]	2301	[1220, 1333]	3281	[1689, 455]
342	[598, 599]	1322	[1954, 1955]	2302	[2927, 494]	3282	[3513, 2346]

343	[600, 601]	1323	[1956, 784]	2303	[532, 1535]	3283	[2902, 1363]
344	[602, 603]	1324	[894, 1957]	2304	[1254, 2873]	3284	[1192, 2315]
345	[604, 605]	1325	[332, 1958]	2305	[1497, 2897]	3285	[3419, 1277]
346	[606, 607]	1326	[1959, 1960]	2306	[612, 1159]	3286	[1659, 660]
347	[608, 471]	1327	[1961, 1112]	2307	[2388, 2313]	3287	[3514, 2647]
348	[609, 610]	1328	[1962, 1963]	2308	[2590, 1648]	3288	[1378, 1606]
349	[611, 612]	1329	[92, 706]	2309	[2928, 2718]	3289	[1236, 2582]
350	[613, 614]	1330	[1892, 1771]	2310	[2708, 2428]	3290	[1144, 8]
351	[615, 616]	1331	[1964, 1965]	2311	[2929, 2656]	3291	[2343, 2711]
352	[617, 618]	1332	[1966, 938]	2312	[2930, 2931]	3292	[3515, 464]
353	[619, 620]	1333	[1967, 738]	2313	[1763, 1816]	3293	[2557, 405]
354	[621, 437]	1334	[1968, 1062]	2314	[2932, 2143]	3294	[3516, 2888]
355	[622, 623]	1335	[1969, 985]	2315	[327, 349]	3295	[3339, 1360]
356	[624, 625]	1336	[1970, 996]	2316	[1960, 2933]	3296	[3517, 1258]
357	[626, 627]	1337	[1971, 304]	2317	[2934, 2001]	3297	[3518, 2540]
358	[452, 628]	1338	[1972, 1758]	2318	[991, 2935]	3298	[3519, 2629]
359	[558, 47]	1339	[1882, 1920]	2319	[815, 2936]	3299	[3520, 55]
360	[629, 630]	1340	[1871, 284]	2320	[1837, 352]	3300	[3521, 132]
361	[631, 632]	1341	[1973, 1907]	2321	[2937, 2938]	3301	[3522, 1314]
362	[633, 634]	1342	[886, 1902]	2322	[1739, 837]	3302	[3523, 2585]
363	[635, 207]	1343	[1974, 1779]	2323	[2939, 888]	3303	[3524, 60]
364	[636, 637]	1344	[1975, 1876]	2324	[2940, 1731]	3304	[2325, 1151]
365	[638, 639]	1345	[1976, 1977]	2325	[6, 944]	3305	[3525, 2697]
366	[640, 641]	1346	[1978, 724]	2326	[2941, 805]	3306	[3526, 2566]
367	[642, 643]	1347	[1071, 719]	2327	[2942, 297]	3307	[3527, 1232]
368	[644, 645]	1348	[1979, 718]	2328	[2244, 2031]	3308	[2649, 1573]
369	[646, 647]	1349	[1935, 1980]	2329	[2943, 1031]	3309	[2875, 3349]
370	[648, 649]	1350	[1981, 921]	2330	[2944, 2268]	3310	[3528, 2834]
371	[499, 505]	1351	[1982, 323]	2331	[2945, 2946]	3311	[2358, 193]
372	[188, 650]	1352	[1983, 262]	2332	[2250, 2947]	3312	[2313, 592]
373	[651, 652]	1353	[1984, 366]	2333	[1909, 896]	3313	[2428, 2842]
374	[653, 654]	1354	[1843, 1985]	2334	[2948, 2949]	3314	[1619, 2657]
375	[655, 656]	1355	[873, 1986]	2335	[1937, 2279]	3315	[3529, 1168]
376	[657, 658]	1356	[836, 1987]	2336	[1922, 732]	3316	[3349, 2322]
377	[659, 660]	1357	[1988, 1983]	2337	[2950, 1916]	3317	[2894, 2335]
378	[661, 662]	1358	[1743, 1960]	2338	[981, 2144]	3318	[1694, 3406]
379	[415, 203]	1359	[1989, 1990]	2339	[2951, 1882]	3319	[3530, 542]
380	[663, 664]	1360	[258, 1899]	2340	[1834, 2151]	3320	[1342, 1401]
381	[665, 666]	1361	[1991, 1793]	2341	[2208, 2163]	3321	[43, 2692]
382	[667, 668]	1362	[230, 748]	2342	[927, 2952]	3322	[3531, 174]
383	[669, 670]	1363	[1992, 1734]	2343	[708, 292]	3323	[2462, 1538]
384	[671, 566]	1364	[1993, 1002]	2344	[2953, 324]	3324	[3532, 2528]
385	[672, 598]	1365	[1994, 226]	2345	[2954, 766]	3325	[3533, 2617]
386	[673, 674]	1366	[1995, 283]	2346	[934, 1910]	3326	[2364, 1511]

387	[675, 676]	1367	[971, 1996]	2347	[2251, 2946]	3327	[3534, 1435]
388	[677, 678]	1368	[1997, 1998]	2348	[2947, 311]	3328	[1460, 2557]
389	[679, 680]	1369	[1999, 2000]	2349	[254, 798]	3329	[632, 2880]
390	[681, 682]	1370	[1869, 2001]	2350	[856, 854]	3330	[1129, 2807]
391	[683, 684]	1371	[2002, 1082]	2351	[2955, 1743]	3331	[3535, 1201]
392	[685, 686]	1372	[289, 343]	2352	[2182, 2057]	3332	[3536, 1581]
393	[687, 688]	1373	[2003, 2004]	2353	[1061, 1995]	3333	[2576, 2555]
394	[689, 690]	1374	[2005, 2006]	2354	[2956, 767]	3334	[2916, 2525]
395	[691, 692]	1375	[2007, 302]	2355	[2957, 1874]	3335	[3537, 17]
396	[693, 694]	1376	[2008, 2009]	2356	[2958, 2959]	3336	[3538, 1871]
397	[695, 696]	1377	[2010, 2011]	2357	[2960, 923]	3337	[3539, 1070]
398	[548, 478]	1378	[1776, 976]	2358	[967, 276]	3338	[3540, 2051]
399	[697, 529]	1379	[2012, 1008]	2359	[2961, 2935]	3339	[1848, 1764]
400	[698, 699]	1380	[2013, 2014]	2360	[2962, 1950]	3340	[3541, 791]
401	[652, 144]	1381	[717, 2015]	2361	[892, 2963]	3341	[3542, 2007]
402	[700, 68]	1382	[2016, 788]	2362	[2964, 101]	3342	[3543, 1909]
403	[701, 399]	1383	[2017, 1087]	2363	[2965, 744]	3343	[3544, 1984]
404	[702, 703]	1384	[2018, 838]	2364	[882, 1868]	3344	[3545, 932]
405	[704, 705]	1385	[2019, 2020]	2365	[2966, 755]	3345	[3546, 1824]
406	[706, 66]	1386	[2021, 2022]	2366	[2967, 70]	3346	[3547, 2206]
407	[707, 708]	1387	[2023, 2024]	2367	[884, 1048]	3347	[3548, 266]
408	[709, 710]	1388	[2025, 842]	2368	[2968, 375]	3348	[3549, 2031]
409	[87, 711]	1389	[1084, 1813]	2369	[2969, 314]	3349	[2093, 2172]
410	[712, 709]	1390	[2026, 2027]	2370	[2970, 910]	3350	[3550, 2998]
411	[85, 713]	1391	[2028, 990]	2371	[1790, 2307]	3351	[3551, 1751]
412	[714, 715]	1392	[2029, 396]	2372	[2971, 2252]	3352	[3552, 2979]
413	[716, 717]	1393	[392, 385]	2373	[2949, 1742]	3353	[3553, 1888]
414	[718, 369]	1394	[2030, 1017]	2374	[2972, 1862]	3354	[3554, 2006]
415	[719, 63]	1395	[22, 1750]	2375	[2024, 1888]	3355	[3555, 1804]
416	[381, 720]	1396	[2031, 2032]	2376	[1929, 2973]	3356	[1755, 845]
417	[4, 721]	1397	[2033, 908]	2377	[2974, 2141]	3357	[3556, 2231]
418	[722, 723]	1398	[1874, 971]	2378	[2297, 879]	3358	[3557, 109]
419	[724, 725]	1399	[1089, 76]	2379	[2178, 2975]	3359	[3558, 227]
420	[726, 234]	1400	[2034, 1967]	2380	[2976, 1817]	3360	[3559, 1108]
421	[727, 728]	1401	[297, 1775]	2381	[938, 347]	3361	[3560, 3110]
422	[729, 82]	1402	[2035, 814]	2382	[2977, 1811]	3362	[3561, 900]
423	[240, 730]	1403	[2036, 2037]	2383	[703, 2978]	3363	[3562, 2186]
424	[731, 243]	1404	[2038, 1925]	2384	[771, 2979]	3364	[3563, 1844]
425	[732, 270]	1405	[2039, 2040]	2385	[2186, 337]	3365	[3564, 1938]
426	[733, 734]	1406	[1748, 2041]	2386	[2980, 1047]	3366	[3565, 2017]
427	[735, 713]	1407	[2042, 2043]	2387	[2117, 3]	3367	[3566, 987]
428	[736, 27]	1408	[310, 2044]	2388	[949, 1969]	3368	[3567, 1944]
429	[737, 29]	1409	[2045, 2046]	2389	[2981, 1944]	3369	[3568, 20]
430	[738, 739]	1410	[2047, 862]	2390	[112, 2094]	3370	[3569, 340]

431	[740, 741]	1411	[2048, 1855]	2391	[2982, 1782]	3371	[3570, 1918]
432	[742, 743]	1412	[2049, 875]	2392	[2283, 2983]	3372	[3571, 706]
433	[744, 745]	1413	[83, 2050]	2393	[1933, 2984]	3373	[3572, 1738]
434	[728, 746]	1414	[2051, 2052]	2394	[2985, 2065]	3374	[3573, 3011]
435	[747, 748]	1415	[2053, 2047]	2395	[705, 1842]	3375	[3574, 1995]
436	[749, 750]	1416	[1023, 1890]	2396	[2986, 873]	3376	[3575, 1065]
437	[713, 751]	1417	[2054, 2055]	2397	[2001, 1896]	3377	[3576, 3112]
438	[88, 752]	1418	[2056, 392]	2398	[2987, 1854]	3378	[3577, 973]
439	[94, 753]	1419	[2057, 701]	2399	[1858, 1855]	3379	[3578, 2235]
440	[96, 754]	1420	[2058, 969]	2400	[2988, 233]	3380	[3579, 857]
441	[334, 109]	1421	[1825, 70]	2401	[2032, 2039]	3381	[3580, 1826]
442	[242, 755]	1422	[2059, 2060]	2402	[2989, 2990]	3382	[3581, 2275]
443	[723, 756]	1423	[2061, 2062]	2403	[2991, 1113]	3383	[3582, 1730]
444	[757, 93]	1424	[2063, 2064]	2404	[2112, 2992]	3384	[3583, 863]
445	[758, 759]	1425	[2065, 2066]	2405	[1849, 391]	3385	[3584, 252]
446	[760, 761]	1426	[2067, 224]	2406	[2993, 1873]	3386	[3585, 2068]
447	[762, 281]	1427	[2068, 2069]	2407	[2022, 2994]	3387	[3586, 2163]
448	[108, 763]	1428	[2070, 849]	2408	[2995, 1945]	3388	[3587, 988]
449	[764, 765]	1429	[2071, 1107]	2409	[811, 773]	3389	[3588, 99]
450	[766, 767]	1430	[2072, 906]	2410	[2996, 1746]	3390	[3589, 830]
451	[768, 769]	1431	[828, 1984]	2411	[862, 1950]	3391	[751, 919]
452	[770, 771]	1432	[2073, 2074]	2412	[2997, 2175]	3392	[3590, 362]
453	[772, 773]	1433	[942, 768]	2413	[745, 2998]	3393	[3591, 2036]
454	[774, 775]	1434	[2075, 1803]	2414	[2999, 749]	3394	[3592, 1936]
455	[776, 777]	1435	[2076, 2077]	2415	[2979, 1792]	3395	[1119, 261]
456	[81, 778]	1436	[2078, 745]	2416	[3000, 29]	3396	[3593, 2106]
457	[779, 780]	1437	[1902, 2079]	2417	[3001, 96]	3397	[3594, 1080]
458	[710, 781]	1438	[2080, 1074]	2418	[3002, 2055]	3398	[260, 1916]
459	[782, 783]	1439	[1828, 2054]	2419	[909, 2266]	3399	[3595, 1123]
460	[784, 785]	1440	[2081, 2082]	2420	[3003, 1736]	3400	[3596, 1063]
461	[786, 787]	1441	[2083, 2084]	2421	[3004, 232]	3401	[3597, 1775]
462	[788, 789]	1442	[2085, 784]	2422	[2278, 1834]	3402	[3598, 2309]
463	[790, 791]	1443	[2086, 1011]	2423	[3005, 1778]	3403	[3599, 2168]
464	[792, 239]	1444	[857, 1948]	2424	[3006, 1942]	3404	[3600, 872]
465	[793, 794]	1445	[1921, 744]	2425	[2027, 1730]	3405	[3601, 2079]
466	[795, 796]	1446	[1047, 718]	2426	[2268, 999]	3406	[1797, 1938]
467	[797, 798]	1447	[2087, 401]	2427	[3007, 1045]	3407	[3602, 1985]
468	[799, 800]	1448	[269, 1754]	2428	[2963, 2023]	3408	[3603, 949]
469	[801, 802]	1449	[320, 2088]	2429	[3008, 1934]	3409	[3604, 2131]
470	[803, 804]	1450	[2089, 850]	2430	[890, 2093]	3410	[3605, 1784]
471	[805, 806]	1451	[2088, 930]	2431	[3009, 898]	3411	[3606, 1872]
472	[807, 808]	1452	[917, 1934]	2432	[823, 3010]	3412	[3607, 72]
473	[809, 356]	1453	[2090, 372]	2433	[3011, 2166]	3413	[3608, 999]
474	[316, 359]	1454	[2091, 2008]	2434	[1025, 1758]	3414	[3043, 2964]

475	[810, 811]	1455	[2092, 2093]	2435	[3012, 2173]	3415	[3609, 236]
476	[812, 813]	1456	[2052, 1967]	2436	[989, 822]	3416	[3610, 385]
477	[814, 770]	1457	[2094, 852]	2437	[3013, 1091]	3417	[3611, 1013]
478	[318, 815]	1458	[1917, 2051]	2438	[3014, 2049]	3418	[3612, 1829]
479	[816, 367]	1459	[2095, 319]	2439	[1898, 2295]	3419	[1036, 286]
480	[817, 309]	1460	[941, 2096]	2440	[3015, 277]	3420	[3613, 895]
481	[250, 818]	1461	[2097, 1798]	2441	[2230, 2171]	3421	[3614, 1745]
482	[819, 84]	1462	[2098, 926]	2442	[3016, 235]	3422	[3615, 2072]
483	[820, 821]	1463	[2099, 1785]	2443	[3017, 818]	3423	[3616, 1735]
484	[822, 823]	1464	[1746, 805]	2444	[3018, 1756]	3424	[3617, 1993]
485	[824, 792]	1465	[2100, 1886]	2445	[3019, 1996]	3425	[1867, 3067]
486	[825, 826]	1466	[1951, 2101]	2446	[3020, 2199]	3426	[3618, 119]
487	[827, 828]	1467	[2102, 1987]	2447	[1872, 2200]	3427	[3619, 997]
488	[829, 703]	1468	[2103, 2104]	2448	[3021, 2182]	3428	[3620, 1819]
489	[75, 830]	1469	[2105, 2106]	2449	[2237, 1953]	3429	[3621, 2251]
490	[831, 832]	1470	[2107, 1022]	2450	[3022, 2226]	3430	[3622, 2983]
491	[833, 834]	1471	[866, 1884]	2451	[2984, 1733]	3431	[3623, 3128]
492	[835, 836]	1472	[2108, 259]	2452	[3023, 709]	3432	[3624, 1924]
493	[837, 838]	1473	[1783, 2109]	2453	[3024, 231]	3433	[3625, 1759]
494	[802, 839]	1474	[2110, 267]	2454	[3025, 765]	3434	[3626, 342]
495	[840, 296]	1475	[2111, 223]	2455	[3026, 88]	3435	[3627, 397]
496	[841, 842]	1476	[102, 2112]	2456	[3027, 2195]	3436	[3628, 825]
497	[843, 242]	1477	[1818, 1082]	2457	[2060, 2125]	3437	[3629, 298]
498	[844, 845]	1478	[2113, 369]	2458	[3028, 2964]	3438	[3630, 770]
499	[846, 847]	1479	[2114, 334]	2459	[3029, 1757]	3439	[3631, 339]
500	[848, 849]	1480	[2115, 929]	2460	[2206, 394]	3440	[3632, 734]
501	[725, 850]	1481	[2116, 819]	2461	[3030, 1120]	3441	[3633, 1015]
502	[851, 30]	1482	[767, 2117]	2462	[3031, 867]	3442	[3634, 3068]
503	[852, 853]	1483	[2118, 1905]	2463	[3032, 2062]	3443	[3635, 117]
504	[854, 229]	1484	[2040, 1940]	2464	[834, 3033]	3444	[3636, 2947]
505	[855, 856]	1485	[2015, 1050]	2465	[1886, 2247]	3445	[3637, 1958]
506	[759, 857]	1486	[348, 2119]	2466	[3034, 1768]	3446	[3638, 2992]
507	[858, 859]	1487	[2120, 1072]	2467	[2290, 2016]	3447	[3639, 738]
508	[860, 848]	1488	[2121, 67]	2468	[3035, 299]	3448	[3640, 929]
509	[861, 862]	1489	[104, 303]	2469	[3036, 2094]	3449	[3641, 779]
510	[863, 864]	1490	[2122, 344]	2470	[2998, 1836]	3450	[3642, 1026]
511	[865, 866]	1491	[2123, 2124]	2471	[2232, 3037]	3451	[3643, 102]
512	[867, 795]	1492	[2125, 2126]	2472	[3038, 2949]	3452	[3644, 1765]
513	[868, 86]	1493	[2127, 974]	2473	[2160, 1031]	3453	[3645, 3138]
514	[869, 870]	1494	[2128, 1922]	2474	[226, 1885]	3454	[3646, 789]
515	[871, 333]	1495	[1011, 1078]	2475	[1980, 395]	3455	[3647, 822]
516	[872, 873]	1496	[2129, 829]	2476	[3039, 2109]	3456	[3648, 2112]
517	[874, 875]	1497	[2106, 1782]	2477	[781, 1043]	3457	[3649, 97]
518	[876, 877]	1498	[2130, 1748]	2478	[1808, 1098]	3458	[3650, 1049]

519	[878, 808]	1499	[2131, 833]	2479	[2311, 3038]	3459	[3651, 2257]
520	[879, 880]	1500	[2132, 2133]	2480	[3040, 2311]	3460	[3652, 2152]
521	[881, 882]	1501	[2134, 115]	2481	[3041, 2245]	3461	[3653, 906]
522	[883, 884]	1502	[2135, 1975]	2482	[362, 2281]	3462	[912, 1798]
523	[885, 886]	1503	[2136, 2137]	2483	[3042, 1997]	3463	[3654, 2202]
524	[887, 888]	1504	[821, 2000]	2484	[2004, 1867]	3464	[3655, 381]
525	[889, 890]	1505	[2138, 103]	2485	[1065, 3043]	3465	[3656, 756]
526	[891, 892]	1506	[2139, 2140]	2486	[2166, 1094]	3466	[3657, 777]
527	[893, 894]	1507	[400, 1068]	2487	[3044, 1892]	3467	[3658, 2981]
528	[895, 891]	1508	[1733, 1796]	2488	[3045, 2235]	3468	[3659, 2959]
529	[896, 897]	1509	[1735, 2141]	2489	[3046, 1921]	3469	[3660, 2192]
530	[898, 758]	1510	[2142, 1897]	2490	[3047, 239]	3470	[3661, 823]
531	[899, 292]	1511	[1059, 397]	2491	[2992, 1880]	3471	[3662, 2126]
532	[900, 901]	1512	[2143, 2085]	2492	[3048, 3049]	3472	[3663, 377]
533	[902, 752]	1513	[2144, 2145]	2493	[3050, 2096]	3473	[3664, 879]
534	[903, 351]	1514	[2146, 968]	2494	[1927, 390]	3474	[3665, 2295]
535	[904, 905]	1515	[2147, 1120]	2495	[3051, 2172]	3475	[3666, 928]
536	[906, 907]	1516	[1049, 2148]	2496	[3052, 2149]	3476	[3667, 2148]
537	[908, 909]	1517	[2149, 1035]	2497	[2152, 1108]	3477	[3668, 2200]
538	[910, 911]	1518	[2150, 2151]	2498	[3053, 887]	3478	[3669, 771]
539	[100, 372]	1519	[978, 2152]	2499	[3054, 1035]	3479	[3670, 346]
540	[383, 912]	1520	[2153, 1961]	2500	[1100, 2043]	3480	[3671, 95]
541	[913, 914]	1521	[2154, 986]	2501	[1053, 288]	3481	[3672, 897]
542	[223, 119]	1522	[370, 1061]	2502	[1769, 2185]	3482	[3673, 355]
543	[915, 916]	1523	[2155, 2156]	2503	[2190, 3049]	3483	[3674, 1813]
544	[755, 828]	1524	[2055, 2071]	2504	[3055, 834]	3484	[3675, 959]
545	[106, 917]	1525	[1792, 1028]	2505	[715, 775]	3485	[3676, 322]
546	[830, 68]	1526	[2157, 2158]	2506	[3056, 2133]	3486	[3677, 320]
547	[918, 361]	1527	[963, 1932]	2507	[3057, 1860]	3487	[1946, 329]
548	[919, 816]	1528	[2159, 860]	2508	[2126, 2215]	3488	[3678, 1772]
549	[741, 313]	1529	[2140, 2160]	2509	[2044, 2115]	3489	[3679, 3116]
550	[920, 921]	1530	[2161, 118]	2510	[3058, 1037]	3490	[3680, 1050]
551	[324, 922]	1531	[808, 2162]	2511	[3059, 2107]	3491	[3681, 2237]
552	[267, 923]	1532	[2163, 2164]	2512	[90, 724]	3492	[3682, 804]
553	[924, 871]	1533	[2165, 2166]	2513	[1107, 1828]	3493	[3683, 945]
554	[925, 872]	1534	[2167, 373]	2514	[3060, 3061]	3494	[3684, 847]
555	[926, 927]	1535	[2096, 2168]	2515	[26, 1076]	3495	[3685, 331]
556	[928, 766]	1536	[1903, 2169]	2516	[3062, 891]	3496	[3686, 1098]
557	[929, 91]	1537	[2170, 877]	2517	[3063, 2978]	3497	[3687, 989]
558	[930, 24]	1538	[401, 871]	2518	[842, 2192]	3498	[3688, 730]
559	[931, 932]	1539	[2171, 1015]	2519	[3064, 1868]	3499	[3689, 2046]
560	[933, 934]	1540	[2172, 2173]	2520	[947, 1820]	3500	[3690, 867]
561	[935, 936]	1541	[2174, 1069]	2521	[3065, 914]	3501	[3691, 2958]
562	[937, 938]	1542	[2175, 2176]	2522	[3066, 3067]	3502	[3692, 379]

563	[939, 311]	1543	[2177, 286]	2523	[2156, 3068]	3503	[3693, 725]
564	[340, 940]	1544	[1779, 2178]	2524	[3069, 3070]	3504	[3694, 98]
565	[67, 941]	1545	[2179, 2176]	2525	[1945, 3071]	3505	[3695, 3212]
566	[312, 942]	1546	[1846, 2180]	2526	[1757, 740]	3506	[3696, 1891]
567	[859, 757]	1547	[1125, 2181]	2527	[1963, 2131]	3507	[3697, 1869]
568	[943, 944]	1548	[720, 2140]	2528	[2978, 1785]	3508	[3698, 927]
569	[388, 945]	1549	[1823, 2182]	2529	[3072, 722]	3509	[3699, 1858]
570	[228, 255]	1550	[2183, 87]	2530	[1958, 2226]	3510	[3700, 225]
571	[946, 916]	1551	[2184, 85]	2531	[3073, 2084]	3511	[3701, 1066]
572	[376, 947]	1552	[2185, 707]	2532	[2014, 2272]	3512	[3702, 84]
573	[948, 949]	1553	[1042, 2186]	2533	[3074, 1980]	3513	[3703, 1821]
574	[769, 950]	1554	[2187, 244]	2534	[3075, 2136]	3514	[3704, 1018]
575	[951, 377]	1555	[2176, 733]	2535	[3076, 391]	3515	[3705, 1114]
576	[952, 368]	1556	[2188, 737]	2536	[791, 2297]	3516	[3706, 741]
577	[932, 953]	1557	[2189, 2190]	2537	[3077, 1955]	3517	[3707, 1807]
578	[954, 955]	1558	[2191, 2065]	2538	[2215, 2156]	3518	[3708, 1885]
579	[956, 375]	1559	[2192, 2072]	2539	[3078, 1125]	3519	[3709, 3037]
580	[957, 958]	1560	[798, 1844]	2540	[2257, 296]	3520	[3710, 18]
581	[959, 345]	1561	[2193, 1998]	2541	[3079, 2147]	3521	[3711, 343]
582	[960, 961]	1562	[711, 1030]	2542	[3080, 1933]	3522	[3712, 917]
583	[962, 963]	1563	[2194, 1908]	2543	[888, 3081]	3523	[3713, 2020]
584	[272, 964]	1564	[1930, 2195]	2544	[3082, 2026]	3524	[3714, 4]
585	[965, 25]	1565	[2196, 1092]	2545	[86, 2007]	3525	[3715, 3109]
586	[966, 967]	1566	[993, 227]	2546	[864, 2958]	3526	[3716, 2952]
587	[968, 969]	1567	[1891, 2074]	2547	[2994, 2199]	3527	[3717, 956]
588	[970, 971]	1568	[2197, 2019]	2548	[3083, 841]	3528	[3718, 1794]
589	[972, 973]	1569	[2198, 1864]	2549	[905, 729]	3529	[3719, 321]
590	[974, 722]	1570	[2199, 980]	2550	[3084, 1057]	3530	[3720, 82]
591	[975, 976]	1571	[2200, 986]	2551	[3085, 326]	3531	[3721, 361]
592	[977, 978]	1572	[2201, 2137]	2552	[3086, 990]	3532	[3722, 2208]
593	[979, 371]	1573	[1753, 959]	2553	[2959, 1122]	3533	[3723, 1104]
594	[980, 981]	1574	[2109, 2202]	2554	[3087, 2069]	3534	[3724, 837]
595	[982, 983]	1575	[2203, 910]	2555	[1731, 2261]	3535	[3725, 926]
596	[984, 985]	1576	[2204, 2205]	2556	[3088, 310]	3536	[3726, 1937]
597	[986, 987]	1577	[911, 2206]	2557	[1943, 1034]	3537	[541, 1659]
598	[988, 989]	1578	[2207, 1930]	2558	[3089, 754]	3538	[3727, 505]
599	[990, 991]	1579	[2043, 2208]	2559	[2162, 2083]	3539	[3728, 165]
600	[992, 993]	1580	[2209, 2045]	2560	[3090, 1805]	3540	[3414, 610]
601	[994, 225]	1581	[2151, 2124]	2561	[1087, 836]	3541	[3729, 1513]
602	[777, 995]	1582	[2210, 1835]	2562	[3091, 913]	3542	[3730, 1566]
603	[305, 920]	1583	[278, 2091]	2563	[3067, 2147]	3543	[1439, 1416]
604	[773, 996]	1584	[2211, 2164]	2564	[3092, 288]	3544	[3731, 640]
605	[365, 997]	1585	[753, 993]	2565	[236, 2944]	3545	[3732, 1184]
606	[998, 760]	1586	[1990, 2212]	2566	[263, 277]	3546	[1421, 1628]

607	[999, 1000]	1587	[2213, 931]	2567	[3093, 3038]	3547	[3733, 1414]
608	[1001, 1002]	1588	[2214, 2215]	2568	[3094, 1776]	3548	[3734, 198]
609	[1003, 1004]	1589	[2124, 2086]	2569	[995, 2218]	3549	[2793, 2820]
610	[1005, 887]	1590	[2216, 353]	2570	[3095, 1879]	3550	[2584, 1473]
611	[1006, 1007]	1591	[2006, 1990]	2571	[3037, 2231]	3551	[1137, 1484]
612	[1008, 1009]	1592	[2217, 951]	2572	[3096, 1837]	3552	[3735, 1486]
613	[1010, 1011]	1593	[2218, 883]	2573	[3097, 2259]	3553	[3406, 1305]
614	[1012, 1013]	1594	[765, 309]	2574	[2141, 1807]	3554	[3736, 2465]
615	[1014, 991]	1595	[386, 2219]	2575	[3098, 839]	3555	[2500, 1431]
616	[1015, 1016]	1596	[2220, 255]	2576	[2050, 2134]	3556	[3398, 1723]
617	[1017, 1018]	1597	[2082, 2221]	2577	[3099, 2054]	3557	[3737, 652]
618	[1019, 1020]	1598	[2222, 94]	2578	[3061, 2981]	3558	[444, 564]
619	[1021, 395]	1599	[2223, 2088]	2579	[3100, 1849]	3559	[2608, 1390]
620	[1022, 1023]	1600	[2079, 1976]	2580	[3101, 841]	3560	[2912, 1208]
621	[1024, 25]	1601	[2224, 903]	2581	[3102, 1847]	3561	[3738, 1252]
622	[845, 1025]	1602	[2225, 1786]	2582	[1018, 1963]	3562	[2635, 486]
623	[1000, 1026]	1603	[2046, 1012]	2583	[2935, 936]	3563	[3739, 2332]
624	[1027, 855]	1604	[2226, 317]	2584	[2245, 794]	3564	[2762, 2425]
625	[1028, 948]	1605	[2227, 1816]	2585	[973, 1005]	3565	[2563, 528]
626	[1029, 1030]	1606	[987, 2143]	2586	[3103, 1739]	3566	[3740, 2787]
627	[1031, 72]	1607	[2228, 306]	2587	[3104, 1747]	3567	[2873, 2518]
628	[983, 955]	1608	[832, 1905]	2588	[3105, 712]	3568	[2717, 52]
629	[780, 714]	1609	[2229, 2037]	2589	[3106, 732]	3569	[178, 1182]
630	[945, 1032]	1610	[785, 2230]	2590	[1985, 1768]	3570	[3741, 677]
631	[1033, 1034]	1611	[2231, 2232]	2591	[3107, 2264]	3571	[3742, 53]
632	[1035, 1036]	1612	[1002, 1097]	2592	[3108, 776]	3572	[3743, 2379]
633	[1037, 17]	1613	[2233, 285]	2593	[3109, 3110]	3573	[1675, 2732]
634	[1038, 1039]	1614	[2234, 2077]	2594	[3111, 1039]	3574	[2348, 189]
635	[1040, 64]	1615	[2235, 2060]	2595	[118, 3112]	3575	[2430, 1374]
636	[1041, 1042]	1616	[2236, 1880]	2596	[2202, 968]	3576	[3744, 1155]
637	[1043, 956]	1617	[1896, 2237]	2597	[276, 2938]	3577	[1300, 1563]
638	[1044, 981]	1618	[2238, 112]	2598	[1111, 832]	3578	[2799, 1441]
639	[1045, 1046]	1619	[875, 1767]	2599	[3113, 261]	3579	[468, 1558]
640	[1030, 1047]	1620	[2239, 1742]	2600	[2933, 2049]	3580	[1698, 2713]
641	[1048, 1049]	1621	[985, 1062]	2601	[3114, 1949]	3581	[3745, 1296]
642	[1050, 1051]	1622	[2240, 1068]	2602	[3115, 1020]	3582	[1358, 1519]
643	[850, 810]	1623	[2241, 2045]	2603	[3116, 1101]	3583	[1687, 2902]
644	[818, 1052]	1624	[2242, 2083]	2604	[3117, 884]	3584	[3746, 641]
645	[314, 1053]	1625	[2243, 2244]	2605	[1948, 1089]	3585	[3747, 162]
646	[304, 1054]	1626	[958, 2245]	2606	[1815, 3118]	3586	[1721, 2543]
647	[1032, 1055]	1627	[2246, 768]	2607	[3119, 2091]	3587	[2843, 2870]
648	[283, 1056]	1628	[2247, 97]	2608	[336, 1954]	3588	[42, 503]
649	[1057, 1058]	1629	[1056, 2248]	2609	[3120, 907]	3589	[424, 131]
650	[344, 1007]	1630	[1058, 1741]	2610	[3121, 1853]	3590	[2853, 217]

651	[398, 266]	1631	[2249, 2250]	2611	[826, 1992]	3591	[3748, 426]
652	[955, 245]	1632	[1884, 2251]	2612	[3122, 349]	3592	[1641, 2680]
653	[28, 308]	1633	[750, 2252]	2613	[3123, 234]	3593	[2338, 1251]
654	[30, 1059]	1634	[114, 928]	2614	[3124, 254]	3594	[3749, 2426]
655	[1060, 1061]	1635	[2253, 374]	2615	[3125, 1796]	3595	[2880, 1546]
656	[1062, 1063]	1636	[2254, 854]	2616	[3126, 2162]	3596	[3750, 156]
657	[1064, 1065]	1637	[2168, 726]	2617	[1004, 776]	3597	[1445, 2441]
658	[1066, 250]	1638	[2255, 1797]	2618	[3127, 2160]	3598	[1504, 2341]
659	[1067, 800]	1639	[976, 2175]	2619	[3128, 908]	3599	[3751, 489]
660	[1068, 1069]	1640	[2256, 870]	2620	[3129, 69]	3600	[3752, 1330]
661	[1070, 1071]	1641	[1911, 2158]	2621	[3130, 1032]	3601	[1246, 694]
662	[1072, 1073]	1642	[2212, 2257]	2622	[1900, 1854]	3602	[1427, 1500]
663	[1074, 1075]	1643	[2258, 2181]	2623	[3131, 253]	3603	[2460, 1342]
664	[1076, 105]	1644	[838, 2107]	2624	[3132, 376]	3604	[1399, 2635]
665	[1077, 1078]	1645	[2164, 2241]	2625	[3133, 2975]	3605	[1260, 2665]
666	[1079, 1080]	1646	[2259, 846]	2626	[806, 988]	3606	[590, 2603]
667	[1081, 357]	1647	[2260, 962]	2627	[3134, 92]	3607	[3753, 141]
668	[1082, 383]	1648	[2261, 1936]	2628	[2181, 1846]	3608	[680, 1293]
669	[368, 1083]	1649	[2262, 781]	2629	[2195, 1111]	3609	[488, 632]
670	[953, 1084]	1650	[1996, 258]	2630	[3135, 2044]	3610	[1405, 524]
671	[1085, 91]	1651	[2263, 2134]	2631	[301, 1847]	3611	[2704, 1303]
672	[1086, 1087]	1652	[1965, 1965]	2632	[3136, 2145]	3612	[3754, 1399]
673	[1088, 1089]	1653	[2264, 894]	2633	[3010, 3045]	3613	[1646, 2755]
674	[969, 900]	1654	[2265, 2061]	2634	[3137, 115]	3614	[1437, 2383]
675	[1090, 947]	1655	[2266, 1745]	2635	[3138, 974]	3615	[2770, 1321]
676	[1091, 743]	1656	[2267, 2268]	2636	[3139, 400]	3616	[1279, 1574]
677	[748, 379]	1657	[1998, 2136]	2637	[3140, 2171]	3617	[1524, 1559]
678	[1063, 1092]	1658	[2269, 717]	2638	[923, 387]	3618	[574, 54]
679	[1093, 1094]	1659	[2041, 2190]	2639	[3118, 3141]	3619	[1650, 666]
680	[1095, 790]	1660	[2270, 2041]	2640	[3142, 1997]	3620	[2831, 219]
681	[1096, 1097]	1661	[1113, 881]	2641	[1924, 2191]	3621	[3755, 161]
682	[1098, 1099]	1662	[2271, 1926]	2642	[3143, 1953]	3622	[1501, 2783]
683	[877, 1100]	1663	[2272, 2205]	2643	[3144, 941]	3623	[1591, 2768]
684	[1101, 918]	1664	[2037, 364]	2644	[3145, 1957]	3624	[2605, 1691]
685	[1102, 1103]	1665	[2273, 2243]	2645	[3146, 2307]	3625	[3756, 1375]
686	[1104, 1105]	1666	[907, 2194]	2646	[2983, 876]	3626	[2330, 1610]
687	[1106, 1107]	1667	[2274, 983]	2647	[3110, 224]	3627	[3757, 548]
688	[1108, 1109]	1668	[1054, 79]	2648	[3147, 1911]	3628	[1503, 2545]
689	[1110, 1111]	1669	[997, 2275]	2649	[897, 2026]	3629	[3758, 419]
690	[1112, 1113]	1670	[2276, 1109]	2650	[3148, 327]	3630	[3759, 191]
691	[1013, 1114]	1671	[246, 855]	2651	[783, 1815]	3631	[3760, 595]
692	[1115, 380]	1672	[2277, 720]	2652	[3149, 2291]	3632	[2690, 463]
693	[1116, 352]	1673	[787, 2278]	2653	[3068, 3128]	3633	[684, 2491]
694	[1114, 1117]	1674	[2279, 1793]	2654	[3150, 251]	3634	[1333, 1302]

695	[1118, 1119]	1675	[2169, 2149]	2655	[3151, 1820]	3635	[3761, 1587]
696	[1120, 961]	1676	[2280, 2281]	2656	[1799, 2036]	3636	[1446, 175]
697	[1121, 1115]	1677	[964, 2243]	2657	[1853, 2064]	3637	[3762, 1376]
698	[1122, 1123]	1678	[2104, 1091]	2658	[3152, 2098]	3638	[3763, 1458]
699	[1124, 1125]	1679	[2282, 2283]	2659	[3112, 905]	3639	[2840, 2649]
700	[1126, 133]	1680	[2284, 1095]	2660	[3153, 1084]	3640	[3764, 128]
701	[1127, 698]	1681	[2062, 890]	2661	[1863, 295]	3641	[2434, 1233]
702	[1128, 1129]	1682	[2285, 1899]	2662	[3154, 925]	3642	[2661, 1210]
703	[1130, 1131]	1683	[796, 895]	2663	[2299, 1019]	3643	[3765, 1290]
704	[1132, 1133]	1684	[2286, 1992]	2664	[3155, 1852]	3644	[3766, 622]
705	[1134, 1135]	1685	[1007, 1070]	2665	[936, 3156]	3645	[3767, 1626]
706	[1136, 1137]	1686	[2287, 1046]	2666	[1802, 783]	3646	[1360, 1272]
707	[1138, 521]	1687	[1080, 2082]	2667	[3157, 1977]	3647	[1308, 1721]
708	[1139, 1140]	1688	[2288, 1951]	2668	[2252, 2068]	3648	[676, 562]
709	[1141, 1142]	1689	[256, 2250]	2669	[3158, 317]	3649	[3768, 185]
710	[1143, 1144]	1690	[2289, 909]	2670	[2281, 1115]	3650	[2651, 184]
711	[450, 1145]	1691	[2074, 2290]	2671	[3159, 3104]	3651	[2723, 529]
712	[446, 1143]	1692	[2291, 330]	2672	[3160, 330]	3652	[2549, 2789]
713	[222, 1146]	1693	[2292, 1876]	2673	[1986, 866]	3653	[2582, 3395]
714	[1147, 1148]	1694	[1829, 1811]	2674	[3161, 3156]	3654	[2850, 1262]
715	[1149, 152]	1695	[2293, 1028]	2675	[3162, 1823]	3655	[3769, 431]
716	[678, 1150]	1696	[1925, 1736]	2676	[3163, 826]	3656	[2628, 583]
717	[1151, 1152]	1697	[2294, 1986]	2677	[3164, 807]	3657	[3770, 661]
718	[1153, 648]	1698	[2119, 1975]	2678	[3165, 3166]	3658	[2699, 2673]
719	[1154, 445]	1699	[2295, 2132]	2679	[1856, 1738]	3659	[1419, 2484]
720	[664, 1155]	1700	[2296, 2297]	2680	[293, 957]	3660	[2362, 2694]
721	[8, 44]	1701	[2137, 2105]	2681	[3167, 882]	3661	[2381, 1544]
722	[1156, 1157]	1702	[2180, 807]	2682	[3168, 387]	3662	[2745, 2597]
723	[1158, 1159]	1703	[2298, 880]	2683	[3169, 2132]	3663	[3771, 1229]
724	[1160, 1161]	1704	[378, 2299]	2684	[3170, 289]	3664	[464, 2690]
725	[1162, 177]	1705	[1073, 962]	2685	[2975, 1926]	3665	[2705, 1409]
726	[1163, 423]	1706	[2300, 2028]	2686	[3166, 80]	3666	[417, 146]
727	[1164, 415]	1707	[2301, 2194]	2687	[2000, 869]	3667	[3772, 1595]
728	[1165, 1166]	1708	[754, 298]	2688	[1016, 1017]	3668	[2707, 1241]
729	[1167, 161]	1709	[2302, 293]	2689	[3171, 918]	3669	[1495, 140]
730	[431, 1168]	1710	[2158, 1983]	2690	[2148, 792]	3670	[3773, 678]
731	[45, 437]	1711	[2303, 892]	2691	[3172, 26]	3671	[3774, 181]
732	[1169, 1170]	1712	[360, 760]	2692	[2020, 2004]	3672	[3775, 2639]
733	[1171, 1172]	1713	[2304, 2232]	2693	[3173, 80]	3673	[544, 2853]
734	[1173, 1174]	1714	[2305, 758]	2694	[2931, 2259]	3674	[3776, 567]
735	[1175, 550]	1715	[1851, 1004]	2695	[3174, 2203]	3675	[3777, 1]
736	[1176, 56]	1716	[2306, 1799]	2696	[3175, 1763]	3676	[3778, 500]
737	[542, 60]	1717	[2307, 1778]	2697	[2009, 1103]	3677	[2350, 410]
738	[1177, 1178]	1718	[248, 339]	2698	[3176, 1043]	3678	[3779, 657]

739	[1179, 1180]	1719	[2066, 1822]	2699	[2069, 925]	3679	[3780, 662]
740	[1181, 1182]	1720	[2308, 2066]	2700	[3177, 2039]	3680	[1630, 2460]
741	[1183, 1184]	1721	[961, 2309]	2701	[1751, 2931]	3681	[3781, 2587]
742	[1185, 1186]	1722	[2310, 1903]	2702	[3178, 2101]	3682	[3782, 2591]
743	[1187, 1188]	1723	[743, 2311]	2703	[3179, 2005]	3683	[3783, 605]
744	[1189, 1190]	1724	[1786, 967]	2704	[2101, 3061]	3684	[3784, 1353]
745	[1191, 1192]	1725	[756, 2011]	2705	[1009, 1993]	3685	[3785, 1556]
746	[1193, 124]	1726	[342, 1045]	2706	[3180, 271]	3686	[1604, 2837]
747	[1194, 1193]	1727	[1712, 445]	2707	[1078, 2203]	3687	[1710, 1300]
748	[1195, 1153]	1728	[186, 1725]	2708	[1039, 1079]	3688	[534, 150]
749	[1196, 1197]	1729	[2312, 2313]	2709	[3181, 1022]	3689	[1133, 1335]
750	[1198, 1199]	1730	[2314, 2315]	2710	[3182, 704]	3690	[2611, 2390]
751	[550, 1162]	1731	[1519, 2316]	2711	[2133, 1961]	3691	[1393, 2707]
752	[38, 489]	1732	[2317, 2318]	2712	[3183, 2052]	3692	[123, 569]
753	[176, 1200]	1733	[2319, 2320]	2713	[804, 2283]	3693	[546, 449]
754	[180, 1201]	1734	[2321, 2322]	2714	[3184, 2984]	3694	[1182, 1625]
755	[1202, 1203]	1735	[2323, 1718]	2715	[3185, 2188]	3695	[3786, 1354]
756	[1204, 1205]	1736	[2324, 2325]	2716	[3186, 896]	3696	[2503, 2720]
757	[1206, 1207]	1737	[2326, 472]	2717	[1052, 319]	3697	[2465, 2815]
758	[1208, 1204]	1738	[2327, 2328]	2718	[849, 2990]	3698	[514, 1344]
759	[1209, 1210]	1739	[2329, 2330]	2719	[3187, 2016]	3699	[618, 2530]
760	[1211, 54]	1740	[2331, 42]	2720	[1105, 3042]	3700	[3787, 1197]
761	[630, 412]	1741	[1632, 2332]	2721	[3049, 1790]	3701	[1203, 1161]
762	[1212, 422]	1742	[1356, 2333]	2722	[3188, 101]	3702	[209, 1347]
763	[132, 187]	1743	[2334, 2335]	2723	[2011, 898]	3703	[57, 696]
764	[1213, 602]	1744	[2336, 1396]	2724	[3189, 263]	3704	[3788, 2316]
765	[1214, 547]	1745	[2337, 2338]	2725	[3190, 2963]	3705	[3789, 1242]
766	[146, 1215]	1746	[2339, 2340]	2726	[3191, 3141]	3706	[1294, 594]
767	[197, 1216]	1747	[2341, 1317]	2727	[734, 259]	3707	[3790, 1540]
768	[1217, 201]	1748	[2342, 2343]	2728	[3192, 1900]	3708	[3791, 2743]
769	[1218, 646]	1749	[2344, 545]	2729	[3193, 2086]	3709	[2328, 1279]
770	[1219, 1220]	1750	[2345, 449]	2730	[3194, 708]	3710	[3792, 50]
771	[191, 1221]	1751	[1353, 2346]	2731	[3195, 1859]	3711	[3793, 602]
772	[1222, 14]	1752	[2347, 2348]	2732	[1092, 3116]	3712	[1433, 2367]
773	[1223, 1224]	1753	[200, 604]	2733	[3196, 358]	3713	[3794, 2708]
774	[1225, 1226]	1754	[138, 2349]	2734	[3197, 313]	3714	[501, 136]
775	[1227, 559]	1755	[643, 1594]	2735	[3198, 2933]	3715	[3795, 407]
776	[1228, 1229]	1756	[506, 2350]	2736	[3199, 980]	3716	[3796, 2757]
777	[1230, 1231]	1757	[508, 567]	2737	[3200, 2071]	3717	[1452, 1170]
778	[156, 1232]	1758	[1166, 629]	2738	[3081, 3031]	3718	[3797, 2809]
779	[1226, 1147]	1759	[2351, 2352]	2739	[3201, 1053]	3719	[645, 2559]
780	[1233, 1149]	1760	[14, 653]	2740	[1987, 336]	3720	[3798, 2509]
781	[1142, 1234]	1761	[2353, 1633]	2741	[3202, 312]	3721	[3799, 633]
782	[1235, 1236]	1762	[2354, 1218]	2742	[3203, 930]	3722	[692, 2925]

783	[1237, 1238]	1763	[1655, 1423]	2743	[2973, 1852]	3723	[3800, 3425]
784	[1239, 1240]	1764	[2355, 2356]	2744	[3204, 260]	3724	[1258, 2670]
785	[1241, 1242]	1765	[2357, 2358]	2745	[353, 271]	3725	[3801, 1457]
786	[1243, 1244]	1766	[2359, 1313]	2746	[3205, 2936]	3726	[1692, 2663]
787	[1245, 1246]	1767	[2360, 2341]	2747	[3206, 2279]	3727	[3802, 759]
788	[1247, 1248]	1768	[2361, 2362]	2748	[73, 3207]	3728	[3803, 77]
789	[1249, 1250]	1769	[2363, 2364]	2749	[3208, 2178]	3729	[3804, 2272]
790	[1251, 1252]	1770	[2365, 1482]	2750	[3209, 2075]	3730	[3805, 240]
791	[1253, 1254]	1771	[2332, 2347]	2751	[306, 2188]	3731	[3806, 1048]
792	[1255, 1212]	1772	[2366, 2367]	2752	[3156, 3011]	3732	[3807, 104]
793	[1256, 1257]	1773	[2368, 1215]	2753	[3210, 806]	3733	[3808, 2299]
794	[1172, 1258]	1774	[2369, 669]	2754	[3211, 729]	3734	[3809, 757]
795	[1259, 1260]	1775	[2370, 537]	2755	[3212, 802]	3735	[3810, 737]
796	[1261, 1262]	1776	[1178, 2371]	2756	[3213, 1056]	3736	[3811, 1100]
797	[1263, 603]	1777	[2372, 123]	2757	[2221, 1865]	3737	[3812, 965]
798	[455, 1213]	1778	[2373, 1186]	2758	[3214, 280]	3738	[3813, 788]
799	[1264, 1265]	1779	[2374, 2375]	2759	[3215, 710]	3739	[3814, 1064]
800	[1266, 1267]	1780	[1708, 2376]	2760	[3216, 21]	3740	[3815, 1803]
801	[1268, 1269]	1781	[2377, 1668]	2761	[3217, 2278]	3741	[3816, 365]
802	[1270, 1271]	1782	[2378, 2379]	2762	[2173, 787]	3742	[3817, 116]
803	[1272, 1273]	1783	[2380, 2381]	2763	[3218, 2264]	3743	[3818, 1734]
804	[1274, 1275]	1784	[2382, 2383]	2764	[3219, 1818]	3744	[3819, 66]
805	[1276, 1277]	1785	[1131, 1508]	2765	[325, 103]	3745	[3820, 764]
806	[1278, 1279]	1786	[2384, 2385]	2766	[778, 3212]	3746	[3821, 1025]
807	[1280, 1244]	1787	[2386, 623]	2767	[3220, 1764]	3747	[3822, 931]
808	[1281, 1282]	1788	[2387, 210]	2768	[351, 2022]	3748	[3823, 241]
809	[1283, 573]	1789	[1155, 2388]	2769	[3221, 1893]	3749	[3824, 2290]
810	[1207, 1284]	1790	[2389, 1379]	2770	[295, 2028]	3750	[3825, 1843]
811	[1285, 1286]	1791	[2390, 1597]	2771	[3222, 73]	3751	[3826, 81]
812	[1287, 442]	1792	[2391, 1293]	2772	[3223, 2944]	3752	[3827, 1042]
813	[1288, 189]	1793	[2392, 2393]	2773	[3224, 1016]	3753	[3828, 262]
814	[1289, 1290]	1794	[2394, 2395]	2774	[3225, 1954]	3754	[3829, 2230]
815	[1291, 1292]	1795	[2396, 1203]	2775	[2084, 821]	3755	[3830, 1812]
816	[171, 644]	1796	[2318, 2397]	2776	[3226, 2057]	3756	[3831, 272]
817	[1293, 130]	1797	[2398, 2399]	2777	[3227, 3083]	3757	[3832, 318]
818	[448, 1294]	1798	[2400, 1233]	2778	[1083, 859]	3758	[3833, 848]
819	[1295, 163]	1799	[1556, 2401]	2779	[3228, 3010]	3759	[3834, 1836]
820	[1296, 1297]	1800	[2402, 2343]	2780	[3229, 963]	3760	[3835, 948]
821	[589, 1298]	1801	[2403, 1570]	2781	[2064, 1929]	3761	[3836, 739]
822	[1299, 1300]	1802	[2404, 2405]	2782	[3230, 76]	3762	[3837, 1071]
823	[1301, 1302]	1803	[2406, 1251]	2783	[2952, 1781]	3763	[3838, 345]
824	[1303, 1304]	1804	[1248, 2407]	2784	[3231, 359]	3764	[3839, 315]
825	[1305, 1306]	1805	[2408, 2409]	2785	[3232, 2115]	3765	[3840, 2221]
826	[1307, 1308]	1806	[2410, 2411]	2786	[3233, 1919]	3766	[3841, 1000]

827	[1309, 1310]	1807	[2412, 2413]	2787	[2938, 1124]	3767	[3842, 1761]
828	[627, 1311]	1808	[2414, 2415]	2788	[3234, 846]	3768	[3843, 341]
829	[1312, 1313]	1809	[2416, 1285]	2789	[2275, 1805]	3769	[3844, 2212]
830	[144, 1314]	1810	[2417, 138]	2790	[3235, 1073]	3770	[3845, 2169]
831	[1315, 1316]	1811	[2418, 2419]	2791	[1026, 3138]	3771	[3846, 287]
832	[1317, 1318]	1812	[2420, 1132]	2792	[2946, 3109]	3772	[3847, 852]
833	[1319, 1320]	1813	[2421, 2422]	2793	[2219, 886]	3773	[3848, 746]
834	[1321, 1322]	1814	[2423, 1699]	2794	[3236, 740]	3774	[3849, 333]
835	[1323, 1324]	1815	[2424, 2425]	2795	[1955, 1862]	3775	[3850, 1898]
836	[1325, 1236]	1816	[1657, 2426]	2796	[1860, 1942]	3776	[3851, 723]
837	[1326, 1327]	1817	[2427, 2428]	2797	[3237, 301]	3777	[3852, 750]
838	[1328, 1329]	1818	[577, 669]	2798	[3238, 2180]	3778	[3853, 816]
839	[1269, 1330]	1819	[1330, 1296]	2799	[1817, 2120]	3779	[3854, 731]
840	[1331, 538]	1820	[2429, 2430]	2800	[800, 2017]	3780	[3855, 302]
841	[1332, 1333]	1821	[1311, 50]	2801	[3239, 957]	3781	[3856, 1908]
842	[1334, 1335]	1822	[2431, 691]	2802	[390, 2076]	3782	[3857, 1890]
843	[1336, 1202]	1823	[2432, 2433]	2803	[3240, 795]	3783	[3858, 1760]
844	[1337, 1145]	1824	[641, 2434]	2804	[3241, 937]	3784	[3859, 934]
845	[1338, 420]	1825	[570, 137]	2805	[3033, 1897]	3785	[3860, 2032]
846	[1339, 1340]	1826	[2435, 2436]	2806	[3242, 1005]	3786	[3861, 1771]
847	[1341, 1342]	1827	[2437, 1238]	2807	[24, 982]	3787	[3862, 300]
848	[1343, 1344]	1828	[2438, 2439]	2808	[3243, 1023]	3788	[3863, 3042]
849	[1340, 1345]	1829	[2440, 2441]	2809	[2309, 2061]	3789	[3864, 2027]
850	[1161, 1285]	1830	[2442, 203]	2810	[3244, 833]	3790	[3865, 2105]
851	[1271, 38]	1831	[2443, 171]	2811	[3245, 1058]	3791	[3866, 398]
852	[1, 416]	1832	[2444, 409]	2812	[3246, 1059]	3792	[3867, 856]
853	[1346, 418]	1833	[2445, 2333]	2813	[3247, 1019]	3793	[3868, 305]
854	[1347, 414]	1834	[2446, 2447]	2814	[3248, 380]	3794	[3869, 1969]
855	[1348, 1347]	1835	[2448, 2449]	2815	[2936, 3070]	3795	[3870, 105]
856	[442, 56]	1836	[2450, 1470]	2816	[3249, 1865]	3796	[3871, 388]
857	[1157, 1349]	1837	[1464, 2451]	2817	[3250, 1783]	3797	[3872, 2024]
858	[1350, 1206]	1838	[2452, 176]	2818	[3251, 749]	3798	[3873, 707]
859	[1351, 175]	1839	[2453, 1629]	2819	[3252, 2040]	3799	[3874, 1038]
860	[1352, 1353]	1840	[2454, 643]	2820	[3071, 2075]	3800	[3875, 3081]
861	[1354, 1355]	1841	[2455, 205]	2821	[3253, 2994]	3801	[3876, 1917]
862	[682, 1356]	1842	[2456, 2457]	2822	[3254, 964]	3802	[3877, 1157]
863	[1357, 1358]	1843	[2458, 2361]	2823	[1794, 2014]	3803	[3878, 637]
864	[1359, 1360]	1844	[2459, 2460]	2824	[3255, 1910]	3804	[1190, 1696]
865	[1250, 1352]	1845	[2461, 2462]	2825	[3256, 1051]	3805	[3879, 664]
866	[1361, 1362]	1846	[2463, 1559]	2826	[3257, 1752]	3806	[3880, 215]
867	[1363, 1364]	1847	[2464, 2465]	2827	[3258, 1747]	3807	[51, 154]
868	[1365, 1366]	1848	[2466, 2467]	2828	[2077, 2019]	3808	[3881, 1675]
869	[1367, 1368]	1849	[510, 2411]	2829	[3259, 106]	3809	[1489, 549]
870	[1369, 1370]	1850	[2468, 1642]	2830	[3260, 248]	3810	[413, 2513]

871	[1371, 1372]	1851	[2469, 2470]	2831	[1957, 1907]	3811	[3882, 2775]
872	[1373, 1374]	1852	[2471, 2472]	2832	[3261, 1943]	3812	[3883, 36]
873	[1375, 1376]	1853	[536, 2473]	2833	[3262, 2012]	3813	[2426, 2576]
874	[1377, 1378]	1854	[2474, 2475]	2834	[3070, 2098]	3814	[3884, 220]
875	[1379, 1129]	1855	[2476, 2477]	2835	[3263, 2076]	3815	[1621, 1403]
876	[1380, 1381]	1856	[2478, 2479]	2836	[3264, 994]	3816	[3885, 148]
877	[1382, 1383]	1857	[184, 1419]	2837	[3207, 3251]	3817	[3886, 425]
878	[1384, 1385]	1858	[2480, 2478]	2838	[3265, 3031]	3818	[1664, 2605]
879	[1386, 1387]	1859	[2481, 2482]	2839	[3266, 284]	3819	[670, 468]
880	[1388, 1389]	1860	[2483, 1577]	2840	[1977, 2005]	3820	[2349, 2661]
881	[1390, 1391]	1861	[2484, 1387]	2841	[3267, 796]	3821	[457, 1166]
882	[1392, 1393]	1862	[2485, 1698]	2842	[232, 2213]	3822	[572, 2358]
883	[1394, 1395]	1863	[2486, 587]	2843	[1069, 1826]	3823	[12, 514]
884	[1396, 425]	1864	[2487, 1454]	2844	[3268, 2144]	3824	[3887, 1306]
885	[1397, 1398]	1865	[2488, 1257]	2845	[3269, 2219]	3825	[2809, 1139]
886	[674, 1399]	1866	[2411, 1370]	2846	[3270, 901]	3826	[3888, 1637]
887	[1400, 1401]	1867	[2489, 1413]	2847	[1913, 1918]	3827	[2479, 698]
888	[1402, 1403]	1868	[2490, 2491]	2848	[3271, 3118]	3828	[1702, 471]
889	[1404, 1405]	1869	[2492, 1305]	2849	[3272, 2241]	3829	[3889, 1575]
890	[1406, 491]	1870	[1484, 1694]	2850	[1781, 860]	3830	[2316, 1652]
891	[1407, 1408]	1871	[2493, 2494]	2851	[3273, 3251]	3831	[1575, 2633]
892	[1409, 1410]	1872	[2495, 1539]	2852	[3274, 1913]	3832	[3890, 1291]
893	[1411, 1412]	1873	[2496, 1516]	2853	[1094, 291]	3833	[3891, 1340]
894	[1413, 1414]	1874	[2497, 1324]	2854	[3275, 933]	3834	[2393, 1464]
895	[1415, 1409]	1875	[2498, 1190]	2855	[3276, 3033]	3835	[3892, 1485]
896	[1416, 1417]	1876	[2499, 2500]	2856	[3277, 273]	3836	[2591, 2653]
897	[1418, 1419]	1877	[1606, 2501]	2857	[3278, 719]	3837	[440, 2740]
898	[1420, 1421]	1878	[2502, 2503]	2858	[3279, 1101]	3838	[647, 2651]
899	[1422, 1423]	1879	[2399, 1237]	2859	[3280, 853]	3839	[172, 559]
900	[1424, 1425]	1880	[2504, 2505]	2860	[3281, 953]	3840	[1306, 2488]
901	[1426, 1427]	1881	[2506, 522]	2861	[3282, 3207]	3841	[3893, 581]
902	[1428, 1144]	1882	[2507, 2508]	2862	[3283, 876]	3842	[438, 2583]
903	[1429, 1430]	1883	[2333, 1585]	2863	[3284, 803]	3843	[1391, 598]
904	[1431, 1339]	1884	[2376, 2509]	2864	[2248, 728]	3844	[1322, 484]
905	[1432, 1433]	1885	[2510, 1719]	2865	[3285, 864]	3845	[1513, 537]
906	[1434, 1435]	1886	[2511, 2512]	2866	[3286, 83]	3846	[2787, 2471]
907	[1436, 1437]	1887	[2513, 160]	2867	[3287, 1848]	3847	[125, 1650]
908	[1438, 1439]	1888	[2514, 2515]	2868	[3288, 1842]	3848	[1150, 420]
909	[1440, 1441]	1889	[2516, 2486]	2869	[3289, 701]	3849	[1310, 579]
910	[1442, 1443]	1890	[2517, 2518]	2870	[394, 3107]	3850	[2647, 1715]
911	[1444, 1445]	1891	[2519, 2520]	2871	[3290, 71]	3851	[3894, 1204]
912	[668, 196]	1892	[2521, 2513]	2872	[3291, 2185]	3852	[3895, 406]
913	[623, 1446]	1893	[2522, 2523]	2873	[1767, 3104]	3853	[61, 429]
914	[607, 595]	1894	[2524, 2525]	2874	[3292, 338]	3854	[658, 642]

915	[1447, 57]	1895	[524, 2526]	2875	[1835, 1041]	3855	[204, 1495]
916	[1448, 585]	1896	[2527, 2528]	2876	[3293, 778]	3856	[2473, 2415]
917	[198, 1449]	1897	[2529, 2530]	2877	[3294, 2050]	3857	[2834, 2593]
918	[1304, 185]	1898	[2531, 2532]	2878	[3295, 2125]	3858	[628, 651]
919	[1450, 642]	1899	[2533, 2474]	2879	[3296, 2244]	3859	[2407, 2546]
920	[195, 1451]	1900	[462, 1673]	2880	[1046, 1893]	3860	[2379, 2436]
921	[1314, 1452]	1901	[2534, 1692]	2881	[3297, 1927]	3861	[166, 2831]
922	[1451, 577]	1902	[2535, 2536]	2882	[3298, 2191]	3862	[2775, 2538]
923	[656, 677]	1903	[2537, 2538]	2883	[3141, 2104]	3863	[2617, 2659]
924	[1453, 585]	1904	[1677, 1192]	2884	[3299, 810]	3864	[494, 3414]
925	[1454, 1375]	1905	[2539, 2483]	2885	[3300, 108]	3865	[522, 2916]
926	[1455, 1456]	1906	[2540, 1623]	2886	[3301, 920]	3866	[1146, 2430]
927	[1457, 1458]	1907	[2541, 2497]	2887	[3302, 1009]	3867	[603, 163]
928	[212, 540]	1908	[2542, 2543]	2888	[1812, 1949]	3868	[1449, 195]
929	[1459, 173]	1909	[2544, 2545]	2889	[3303, 19]	3869	[3896, 1221]
930	[566, 1460]	1910	[2546, 2547]	2890	[3304, 716]	3870	[134, 1608]
931	[1201, 555]	1911	[2548, 2549]	2891	[3305, 1008]	3871	[1284, 488]
932	[1461, 1462]	1912	[167, 1224]	2892	[3306, 1863]	3872	[2818, 2330]
933	[1463, 1464]	1913	[436, 2353]	2893	[2205, 1804]	3873	[3425, 2457]
934	[1465, 1466]	1914	[2550, 126]	2894	[2145, 2012]	3874	[1364, 1611]
935	[1467, 1368]	1915	[2551, 177]	2895	[3307, 2218]	3875	[2686, 2723]
936	[1468, 1469]	1916	[2552, 2553]	2896	[3308, 790]	3876	[1252, 2508]
937	[1470, 1471]	1917	[2554, 2555]	2897	[922, 114]	3877	[3897, 1935]
938	[1472, 1473]	1918	[2556, 2557]	2898	[3309, 3045]	3878	[3898, 1894]
939	[1474, 551]	1919	[2558, 2559]	2899	[3310, 1940]	3879	[3899, 399]
940	[1475, 1151]	1920	[2560, 1189]	2900	[3311, 815]	3880	[3900, 958]
941	[1476, 1477]	1921	[2553, 2561]	2901	[3312, 2120]	3881	[3901, 274]
942	[164, 1218]	1922	[422, 482]	2902	[1034, 2047]	3882	[3902, 2085]
943	[1478, 1286]	1923	[2562, 540]	2903	[3313, 1856]	3883	[3903, 761]
944	[1479, 1480]	1924	[2523, 2563]	2904	[3314, 995]	3884	[3904, 1075]
945	[1481, 575]	1925	[2564, 1536]	2905	[3315, 3043]	3885	[3905, 2008]
946	[1482, 544]	1926	[2565, 1677]	2906	[3316, 1012]	3886	[3906, 733]
947	[477, 640]	1927	[1681, 2462]	2907	[3317, 3107]	3887	[3907, 1112]
948	[1483, 1484]	1928	[2566, 2364]	2908	[3318, 2266]	3888	[3908, 1072]
949	[1485, 1486]	1929	[2567, 2471]	2909	[3319, 2015]	3889	[3909, 972]
950	[1224, 1448]	1930	[2568, 2569]	2910	[1099, 3083]	3890	[3910, 1920]
951	[1487, 661]	1931	[1705, 2467]	2911	[3320, 2023]	3891	[3911, 1976]
952	[1488, 481]	1932	[2570, 2571]	2912	[371, 1765]	3892	[3912, 348]
953	[1184, 1489]	1933	[2572, 2319]	2913	[3321, 366]	3893	[3913, 386]
954	[1490, 475]	1934	[2367, 451]	2914	[3322, 1076]	3894	[3914, 1822]
955	[1480, 668]	1935	[2573, 2574]	2915	[3323, 364]	3895	[3915, 2973]
956	[1234, 657]	1936	[2575, 2576]	2916	[2990, 3166]	3896	[3916, 270]
957	[1491, 1492]	1937	[2577, 2578]	2917	[3324, 3071]	3897	[1273, 1492]
958	[1493, 463]	1938	[2579, 2404]	2918	[3325, 1769]	3898	[2587, 1655]

959	[1494, 1495]	1939	[2580, 1471]	2919	[3326, 785]	3899	[1410, 1615]
960	[1496, 1497]	1940	[2581, 2582]	2920	[763, 813]	3900	[2639, 2571]
961	[1498, 1499]	1941	[2583, 433]	2921	[3327, 977]	3901	[552, 676]
962	[1500, 1501]	1942	[2482, 2584]	2922	[3328, 726]	3902	[1471, 1529]
963	[1502, 1503]	1943	[1547, 2585]	2923	[3329, 1808]	3903	[556, 33]
964	[484, 1504]	1944	[2586, 2336]	2924	[3330, 2247]	3904	[1564, 2523]
965	[1505, 52]	1945	[2518, 2587]	2925	[1864, 2291]	3905	[1417, 1178]
966	[1506, 1507]	1946	[474, 212]	2926	[3331, 2213]	3906	[2528, 1173]
967	[1508, 1509]	1947	[2588, 186]	2927	[3332, 2261]	3907	[530, 1427]
968	[1510, 1511]	1948	[2589, 214]	2928	[3333, 2119]	3908	[2721, 2419]
969	[1512, 1513]	1949	[2419, 1524]	2929	[3334, 2009]	3909	[1525, 1593]
970	[1514, 1515]	1950	[1355, 2590]	2930	[3335, 142]	3910	[1383, 2553]
971	[1516, 1517]	1951	[1683, 2591]	2931	[3336, 1339]	3911	[1581, 2619]
972	[1518, 1519]	1952	[2352, 1527]	2932	[1159, 2395]	3912	[1540, 2626]
973	[1520, 1431]	1953	[2592, 2593]	2933	[2335, 2373]	3913	[1242, 2356]
974	[1521, 1522]	1954	[2594, 2595]	2934	[2383, 2527]	3914	[2752, 2432]
975	[1523, 1524]	1955	[2596, 2486]	2935	[1577, 2893]	3915	[1435, 510]
976	[1180, 1525]	1956	[2597, 1539]	2936	[3337, 1228]	3916	[1216, 1619]
977	[1526, 1527]	1957	[2598, 1661]	2937	[1174, 1188]		
978	[1528, 1529]	1958	[2599, 560]	2938	[3338, 1444]		
979	[1530, 658]	1959	[2600, 690]	2939	[219, 3339]		

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	0	1959	1	2612	1	3265	1
1	0	654	1	1307	0	1960	1	2613	1	3266	1
2	0	655	1	1308	1	1961	0	2614	1	3267	0
3	0	656	0	1309	0	1962	1	2615	1	3268	0
4	0	657	1	1310	0	1963	1	2616	1	3269	1
5	0	658	1	1311	0	1964	1	2617	1	3270	1
6	0	659	0	1312	1	1965	0	2618	1	3271	1
7	0	660	1	1313	0	1966	0	2619	0	3272	0
8	0	661	0	1314	1	1967	1	2620	0	3273	1
9	0	662	0	1315	1	1968	1	2621	0	3274	0
10	1	663	0	1316	1	1969	1	2622	1	3275	1
11	0	664	1	1317	0	1970	0	2623	0	3276	1
12	0	665	1	1318	1	1971	1	2624	0	3277	1
13	0	666	0	1319	1	1972	1	2625	1	3278	1
14	0	667	0	1320	1	1973	1	2626	0	3279	1
15	0	668	1	1321	0	1974	1	2627	1	3280	1
16	1	669	0	1322	1	1975	1	2628	1	3281	1
17	0	670	0	1323	1	1976	1	2629	1	3282	0
18	0	671	1	1324	0	1977	0	2630	0	3283	1
19	0	672	1	1325	0	1978	0	2631	0	3284	0

20	0	673	0	1326	1	1979	0	2632	0	3285	0
21	1	674	0	1327	0	1980	0	2633	0	3286	1
22	1	675	0	1328	1	1981	0	2634	1	3287	1
23	0	676	0	1329	1	1982	0	2635	0	3288	1
24	0	677	1	1330	1	1983	1	2636	0	3289	0
25	0	678	0	1331	1	1984	1	2637	0	3290	1
26	1	679	0	1332	0	1985	0	2638	0	3291	1
27	0	680	0	1333	1	1986	0	2639	0	3292	1
28	1	681	1	1334	1	1987	1	2640	0	3293	1
29	0	682	1	1335	1	1988	1	2641	0	3294	1
30	1	683	0	1336	0	1989	0	2642	0	3295	1
31	0	684	0	1337	1	1990	0	2643	1	3296	0
32	0	685	1	1338	1	1991	1	2644	1	3297	0
33	1	686	0	1339	1	1992	1	2645	0	3298	1
34	1	687	1	1340	0	1993	0	2646	0	3299	1
35	0	688	1	1341	1	1994	1	2647	1	3300	0
36	1	689	0	1342	0	1995	0	2648	1	3301	0
37	0	690	0	1343	1	1996	0	2649	1	3302	0
38	0	691	0	1344	1	1997	0	2650	0	3303	1
39	0	692	0	1345	1	1998	0	2651	1	3304	0
40	0	693	0	1346	0	1999	0	2652	0	3305	0
41	0	694	1	1347	0	2000	1	2653	0	3306	1
42	1	695	1	1348	0	2001	0	2654	0	3307	0
43	0	696	1	1349	1	2002	1	2655	0	3308	1
44	1	697	1	1350	0	2003	1	2656	1	3309	1
45	0	698	0	1351	0	2004	0	2657	1	3310	0
46	0	699	0	1352	1	2005	0	2658	0	3311	0
47	0	700	0	1353	1	2006	1	2659	0	3312	1
48	0	701	0	1354	0	2007	0	2660	1	3313	1
49	0	702	0	1355	0	2008	0	2661	1	3314	1
50	0	703	0	1356	0	2009	0	2662	0	3315	1
51	0	704	1	1357	1	2010	0	2663	0	3316	1
52	1	705	0	1358	0	2011	0	2664	0	3317	1
53	1	706	1	1359	0	2012	1	2665	0	3318	0
54	0	707	0	1360	0	2013	1	2666	0	3319	1
55	1	708	1	1361	1	2014	0	2667	0	3320	0
56	1	709	0	1362	0	2015	1	2668	0	3321	0
57	0	710	1	1363	1	2016	0	2669	1	3322	0
58	0	711	0	1364	0	2017	0	2670	0	3323	1
59	1	712	0	1365	1	2018	0	2671	1	3324	0
60	1	713	1	1366	0	2019	1	2672	0	3325	0
61	1	714	0	1367	0	2020	0	2673	0	3326	1
62	0	715	1	1368	0	2021	1	2674	1	3327	0
63	0	716	0	1369	0	2022	0	2675	0	3328	1

64	0	717	0	1370	1	2023	1	2676	1	3329	1
65	0	718	0	1371	1	2024	1	2677	1	3330	1
66	1	719	1	1372	1	2025	1	2678	0	3331	0
67	0	720	1	1373	1	2026	0	2679	1	3332	1
68	1	721	0	1374	0	2027	1	2680	1	3333	1
69	0	722	1	1375	0	2028	0	2681	1	3334	1
70	0	723	0	1376	0	2029	1	2682	1	3335	0
71	0	724	0	1377	0	2030	0	2683	0	3336	0
72	1	725	1	1378	1	2031	1	2684	0	3337	1
73	1	726	0	1379	1	2032	0	2685	0	3338	1
74	0	727	1	1380	1	2033	1	2686	0	3339	1
75	1	728	1	1381	0	2034	1	2687	1	3340	1
76	0	729	0	1382	0	2035	1	2688	1	3341	1
77	1	730	0	1383	0	2036	1	2689	1	3342	0
78	0	731	0	1384	0	2037	0	2690	0	3343	0
79	1	732	1	1385	1	2038	0	2691	1	3344	0
80	0	733	1	1386	1	2039	0	2692	0	3345	0
81	0	734	1	1387	1	2040	1	2693	1	3346	1
82	0	735	0	1388	1	2041	1	2694	0	3347	1
83	0	736	0	1389	1	2042	1	2695	0	3348	0
84	1	737	0	1390	0	2043	1	2696	1	3349	1
85	1	738	0	1391	0	2044	1	2697	0	3350	1
86	0	739	0	1392	1	2045	1	2698	1	3351	0
87	0	740	0	1393	1	2046	0	2699	1	3352	0
88	1	741	1	1394	0	2047	1	2700	1	3353	0
89	0	742	1	1395	1	2048	1	2701	1	3354	1
90	1	743	1	1396	1	2049	1	2702	1	3355	0
91	0	744	1	1397	1	2050	1	2703	1	3356	0
92	1	745	0	1398	0	2051	0	2704	1	3357	0
93	0	746	0	1399	0	2052	0	2705	1	3358	1
94	0	747	1	1400	1	2053	0	2706	0	3359	1
95	0	748	1	1401	0	2054	1	2707	1	3360	1
96	1	749	0	1402	1	2055	0	2708	1	3361	1
97	0	750	0	1403	1	2056	1	2709	0	3362	1
98	0	751	1	1404	0	2057	1	2710	0	3363	0
99	0	752	0	1405	0	2058	1	2711	0	3364	1
100	1	753	1	1406	0	2059	0	2712	1	3365	1
101	1	754	1	1407	1	2060	0	2713	1	3366	0
102	1	755	1	1408	1	2061	0	2714	1	3367	0
103	1	756	1	1409	1	2062	1	2715	1	3368	0
104	1	757	1	1410	1	2063	0	2716	1	3369	1
105	0	758	1	1411	1	2064	0	2717	1	3370	1
106	1	759	0	1412	1	2065	1	2718	0	3371	1
107	1	760	0	1413	0	2066	1	2719	1	3372	0

108	0	761	1	1414	0	2067	0	2720	0	3373	0
109	1	762	0	1415	0	2068	1	2721	1	3374	1
110	0	763	0	1416	0	2069	1	2722	1	3375	1
111	0	764	1	1417	1	2070	0	2723	0	3376	0
112	0	765	0	1418	1	2071	0	2724	1	3377	0
113	0	766	0	1419	1	2072	1	2725	0	3378	0
114	1	767	1	1420	1	2073	1	2726	1	3379	0
115	1	768	1	1421	0	2074	0	2727	1	3380	1
116	0	769	1	1422	0	2075	1	2728	1	3381	0
117	1	770	1	1423	0	2076	1	2729	1	3382	0
118	1	771	1	1424	0	2077	0	2730	1	3383	0
119	1	772	1	1425	1	2078	0	2731	0	3384	0
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121	0	774	0	1427	1	2080	0	2733	0	3386	1
122	0	775	1	1428	0	2081	1	2734	0	3387	0
123	0	776	0	1429	0	2082	1	2735	0	3388	1
124	0	777	0	1430	1	2083	1	2736	1	3389	1
125	1	778	1	1431	1	2084	1	2737	1	3390	0
126	0	779	0	1432	1	2085	0	2738	0	3391	1
127	1	780	0	1433	0	2086	0	2739	0	3392	1
128	0	781	0	1434	1	2087	0	2740	1	3393	0
129	0	782	1	1435	1	2088	1	2741	0	3394	1
130	0	783	1	1436	0	2089	0	2742	0	3395	1
131	1	784	0	1437	0	2090	0	2743	1	3396	1
132	0	785	0	1438	0	2091	0	2744	1	3397	1
133	0	786	0	1439	0	2092	1	2745	1	3398	0
134	0	787	0	1440	1	2093	1	2746	1	3399	1
135	0	788	1	1441	1	2094	0	2747	0	3400	1
136	1	789	1	1442	0	2095	0	2748	1	3401	1
137	0	790	0	1443	0	2096	0	2749	0	3402	1
138	0	791	0	1444	0	2097	0	2750	0	3403	1
139	1	792	0	1445	1	2098	1	2751	0	3404	1
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141	1	794	1	1447	0	2100	1	2753	0	3406	0
142	0	795	1	1448	1	2101	1	2754	0	3407	1
143	0	796	0	1449	0	2102	1	2755	1	3408	0
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146	0	799	1	1452	0	2105	0	2758	1	3411	1
147	0	800	1	1453	0	2106	0	2759	1	3412	0
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149	1	802	1	1455	1	2108	0	2761	1	3414	1
150	0	803	0	1456	0	2109	0	2762	1	3415	1
151	0	804	1	1457	0	2110	0	2763	0	3416	0

152	1	805	1	1458	0	2111	1	2764	0	3417	1
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154	0	807	1	1460	1	2113	1	2766	1	3419	0
155	0	808	0	1461	0	2114	1	2767	0	3420	1
156	1	809	0	1462	1	2115	1	2768	0	3421	0
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158	0	811	0	1464	1	2117	0	2770	1	3423	1
159	0	812	1	1465	1	2118	1	2771	0	3424	0
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161	0	814	1	1467	1	2120	0	2773	0	3426	1
162	1	815	0	1468	0	2121	0	2774	0	3427	0
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165	1	818	0	1471	1	2124	0	2777	0	3430	0
166	0	819	0	1472	0	2125	0	2778	1	3431	1
167	0	820	0	1473	1	2126	0	2779	1	3432	1
168	0	821	1	1474	0	2127	1	2780	1	3433	1
169	1	822	1	1475	1	2128	0	2781	0	3434	1
170	1	823	0	1476	1	2129	0	2782	1	3435	0
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172	0	825	0	1478	1	2131	0	2784	0	3437	0
173	1	826	0	1479	1	2132	0	2785	0	3438	0
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178	1	831	1	1484	1	2137	1	2790	1	3443	1
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181	1	834	0	1487	0	2140	0	2793	0	3446	1
182	0	835	1	1488	0	2141	1	2794	0	3447	0
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185	0	838	1	1491	1	2144	1	2797	0	3450	1
186	0	839	0	1492	0	2145	1	2798	0	3451	0
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189	1	842	1	1495	0	2148	0	2801	0	3454	0
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191	1	844	1	1497	0	2150	1	2803	0	3456	0
192	1	845	1	1498	0	2151	0	2804	0	3457	0
193	0	846	1	1499	0	2152	0	2805	1	3458	1
194	1	847	1	1500	0	2153	1	2806	0	3459	0
195	1	848	1	1501	0	2154	1	2807	0	3460	1

196	1	849	0	1502	1	2155	0	2808	0	3461	0
197	1	850	0	1503	1	2156	0	2809	1	3462	1
198	0	851	1	1504	1	2157	0	2810	1	3463	1
199	1	852	0	1505	0	2158	0	2811	1	3464	1
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202	1	855	0	1508	0	2161	0	2814	1	3467	1
203	0	856	1	1509	0	2162	1	2815	1	3468	1
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207	1	860	1	1513	1	2166	1	2819	1	3472	1
208	0	861	0	1514	1	2167	1	2820	1	3473	0
209	1	862	1	1515	1	2168	0	2821	1	3474	1
210	0	863	1	1516	0	2169	1	2822	0	3475	0
211	0	864	0	1517	1	2170	0	2823	0	3476	1
212	1	865	1	1518	1	2171	1	2824	0	3477	1
213	1	866	1	1519	0	2172	0	2825	0	3478	0
214	1	867	1	1520	1	2173	1	2826	0	3479	0
215	0	868	1	1521	1	2174	0	2827	0	3480	0
216	0	869	0	1522	0	2175	1	2828	0	3481	1
217	0	870	0	1523	0	2176	1	2829	1	3482	1
218	1	871	1	1524	0	2177	1	2830	1	3483	0
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220	1	873	0	1526	0	2179	0	2832	0	3485	1
221	1	874	0	1527	1	2180	0	2833	0	3486	1
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224	0	877	0	1530	0	2183	0	2836	1	3489	1
225	0	878	0	1531	0	2184	0	2837	0	3490	0
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228	0	881	0	1534	1	2187	1	2840	0	3493	0
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231	1	884	1	1537	0	2190	0	2843	1	3496	0
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242	1	895	0	1548	1	2201	0	2854	1	3507	0
243	0	896	0	1549	0	2202	0	2855	1	3508	0
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245	0	898	1	1551	0	2204	0	2857	1	3510	1
246	0	899	0	1552	0	2205	1	2858	1	3511	1
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248	1	901	0	1554	1	2207	1	2860	1	3513	0
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296	0	949	1	1602	1	2255	0	2908	0	3561	1
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Université de Strasbourg, CNRS, IRMA UMR 7501, F-67000 Strasbourg, France
Email address: guoniu.han@unistra.fr

School of Mathematics and Statistics, Huazhong University of Science and Technology, Wuhan, PR China
Email address: huyining@hust.edu.cn