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

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

1. Introduction

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

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

as the limit of the finite continued fractions

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

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

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

admits a continued fraction expansion of form (1.1).

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

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

that we shall denote

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

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Theorem 1.1. *When $(a,b)=(z^2, z^5+z^2+z)$, the two power series* $\mathrm{CF}(a,b)$ *and* $\mathrm{CF}(b,a)$ *are algebraic over $\mathbb{F}_2(z)$, with minimal polynomials of the form*

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

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

$$\begin{aligned}
p_0(z)&=z^{17}+z^{16}+z^{14}+z^{11}+z^8+z^7+z^6+z+1,\\
p_1(z)&=z^{22}+z^{19}+z^{18}+z^{16}+z^{13}+z^9+z^8+z^6+z^3+z^2,\\
p_2(z)&=z^{24}+z^{20}+z^{14}+z^{12}+z^8+z^6+z^4,\\
p_3(z)&=z^{22}+z^{19}+z^{18}+z^{16}+z^{13}+z^9+z^8+z^6+z^3+z^2,\\
p_4(z)&=z^{20}+z^{17}+z^{11}+z^8+z^7+z^4+z,
\end{aligned}$$

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

$$\begin{aligned}
p_0(z)&=z^{17}+z^{14}+z^{11}+z^8+z^7+z^6+z,\\
p_1(z)&=z^{22}+z^{19}+z^{18}+z^{16}+z^{13}+z^9+z^8+z^6+z^3+z^2,\\
p_2(z)&=z^{24}+z^{20}+z^{14}+z^{12}+z^8+z^6+z^4,\\
p_3(z)&=z^{22}+z^{19}+z^{18}+z^{16}+z^{13}+z^9+z^8+z^6+z^3+z^2,\\
p_4(z)&=z^{20}+z^{17}+z^{16}+z^{11}+z^8+z^7+z^4+z+1.
\end{aligned}$$

2. Proof

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

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

By the basic properties of continued fractions, we have

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

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

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

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

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

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

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

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

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

for some positive integer d_n. Hence,

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

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

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

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

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

of the vector

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

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

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

Lemma 2.1. *We have*

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

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

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

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

Proof. We give the proof of the identity

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

the proofs of the others being similar.

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

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

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

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

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

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

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

Define

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

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

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

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

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

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

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

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

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

which can be rewritten as

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

$$0 = T[[1w]_2] + T[[101w]_2] + T[[1000w]_2], \tag{2.8}$$

$$0 = T[[10w]_2] + T[[110w]_2] + T[[1001w]_2], \tag{2.9}$$

$$0 = T[[11w]_2] + T[[100w]_2] + T[[1010w]_2], \tag{2.10}$$

$$0 = T[[w]_2] + T[[100w]_2] + T[[101w]_2] + T[[1011w]_2], \tag{2.11}$$

$$0 = T[[1w]_2] + T[[101w]_2] + T[[110w]_2] + T[[1100w]_2], \tag{2.12}$$

$$0 = T[[w]_2] + T[[10w]_2] + T[[100w]_2] + T[[110w]_2] + T[[1101w]_2], \tag{2.13}$$

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

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

$$0 = T[[1w]_2] + T[[101w]_2] + T[[1000w]_2], \tag{2.15}$$

$$0 = T[[10w]_2] + T[[110w]_2] + T[[1001w]_2], \tag{2.16}$$

$$0 = T[[11w]_2] + T[[100w]_2] + T[[1010w]_2], \tag{2.17}$$

$$0 = T[[w]_2] + T[[100w]_2] + T[[101w]_2] + T[[1011w]_2], \tag{2.18}$$

$$0 = T[[1w]_2] + T[[101w]_2] + T[[110w]_2] + T[[1100w]_2], \tag{2.19}$$
$$0 = T[[w]_2] + T[[10w]_2] + T[[100w]_2] + T[[110w]_2] + T[[1101w]_2], \tag{2.20}$$

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

First we calculate an 2-automaton that generates T from its minimal polynomial and its first terms. This automaton has 4736 states; its transition function and output function can be found in the annex. Let $A(s, w)$ denote the state reached after reading w from right to left starting from the state s, and τ the output function. Define

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

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

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

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

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

for $s = A(i, 0^{2k})$. We find that $(A(i, 0^{30}), E_{30}) = (A(i, 0^{22}), E_{22})$, so that we only have to verify that identities (2.21) through (2.34) hold for $2 \leq k \leq 15$, which turns out to be true. □

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

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

$$M_{2k} = M^e[:7u] + x^{3u} M^e[:4u] + x^{7u} R^e,$$
$$W_{2k} = W^e[:7u] + x^{3u} W^e[:4u] + x^{7u} R^e.$$

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

$$M_{2k+1} = M^o[:7u] + x^{3u} M^o[:4u] + x^{7u} R^o,$$
$$W_{2k+1} = W^o[:7u] + x^{3u} W^o[:4u] + x^{7u} R^o.$$

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

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

We give the proof of

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

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

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

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

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

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

$$\begin{aligned}
q_0(x) &= x^{24} + x^{23} + x^{18} + x^{17} + x^{16} + x^{13} + x^{10} + x^8 + x^7,\\
q_1(x) &= x^{22} + x^{21} + x^{18} + x^{16} + x^{15} + x^{11} + x^8 + x^6 + x^5 + x^2,\\
q_2(x) &= x^{20} + x^{18} + x^{16} + x^{12} + x^{10} + x^4 + 1,\\
q_3(x) &= x^{22} + x^{21} + x^{18} + x^{16} + x^{15} + x^{11} + x^8 + x^6 + x^5 + x^2,\\
q_4(x) &= x^{23} + x^{20} + x^{17} + x^{16} + x^{13} + x^7 + x^4.
\end{aligned}$$

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

$$\begin{aligned}
p_0(x) = {} & x^{138} + x^{132} + x^{124} + x^{120} + x^{118} + x^{112} + x^{110} + x^{108} + x^{104} + x^{102}\\
& + x^{96} + x^{92} + x^{90} + x^{88} + x^{86} + x^{84} + x^{82} + x^{76} + x^{74} + x^{72} + x^{68}\\
& + x^{66} + x^{56} + x^{54} + x^{50} + x^{48} + x^{36} + x^{30} + x^{24},\\
p_3(x) = {} & x^{130} + x^{126} + x^{124} + x^{120} + x^{112} + x^{110} + x^{108} + x^{104} + x^{100} + x^{98}\\
& + x^{96} + x^{90} + x^{88} + x^{86} + x^{80} + x^{74} + x^{72} + x^{68} + x^{64} + x^{60} + x^{48}\\
& + x^{44} + x^{34} + x^{30} + x^{18} + x^{16},\\
p_6(x) = {} & x^{130} + x^{124} + x^{118} + x^{116} + x^{112} + x^{110} + x^{90} + x^{88} + x^{72} + x^{66}\\
& + x^{62} + x^{60} + x^{56} + x^{54} + x^{50} + x^{40} + x^{38} + x^{36} + x^{30} + x^{26} + x^{22}\\
& + x^{20} + x^{16} + x^{14} + x^{10} + x^8 + x^4 + 1,\\
p_9(x) = {} & x^{128} + x^{124} + x^{122} + x^{116} + x^{114} + x^{112} + x^{110} + x^{108} + x^{106} + x^{100}\\
& + x^{92} + x^{88} + x^{86} + x^{80} + x^{78} + x^{74} + x^{64} + x^{62} + x^{60} + x^{50} + x^{48}\\
& + x^{46} + x^{42} + x^{40} + x^{38} + x^{36} + x^{32} + x^{30} + x^{28} + x^{26} + x^{24} + x^{22}
\end{aligned}$$

$$
\begin{aligned}
&+ x^{12} + x^{10} + x^8 + x^4,\\
p_{12}(x) &= x^{128} + x^{120} + x^{88} + x^{80} + x^{72} + x^{56} + x^{48} + x^{24} + 1,
\end{aligned}
$$

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

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

$$
\begin{aligned}
p_0(x) &= x^{129} + x^{126} + x^{125} + x^{124} + x^{122} + x^{121} + x^{120} + x^{119} + x^{118} + x^{117}\\
&\quad + x^{116} + x^{113} + x^{112} + x^{111} + x^{106} + x^{105} + x^{102} + x^{101} + x^{100}\\
&\quad + x^{99} + x^{98} + x^{97} + x^{96} + x^{95} + x^{94} + x^{93} + x^{90} + x^{89} + x^{84} + x^{82}\\
&\quad + x^{80} + x^{78} + x^{74} + x^{73} + x^{71} + x^{68} + x^{66} + x^{65} + x^{62} + x^{59} + x^{54}\\
&\quad + x^{53} + x^{52} + x^{50} + x^{49} + x^{48} + x^{46} + x^{44} + x^{43} + x^{42} + x^{39} + x^{37}\\
&\quad + x^{35} + x^{34} + x^{33},\\
p_3(x) &= x^{122} + x^{120} + x^{116} + x^{112} + x^{110} + x^{108} + x^{104} + x^{100} + x^{94} + x^{90}\\
&\quad + x^{88} + x^{86} + x^{84} + x^{74} + x^{66} + x^{64} + x^{60} + x^{58} + x^{54} + x^{50} + x^{48}\\
&\quad + x^{46} + x^{44} + x^{42} + x^{40} + x^{36} + x^{34} + x^{32} + x^{30} + x^{28} + x^{26} + x^{18},\\
p_6(x) &= x^{120} + x^{119} + x^{118} + x^{117} + x^{116} + x^{114} + x^{112} + x^{111} + x^{107} + x^{106}\\
&\quad + x^{105} + x^{104} + x^{102} + x^{98} + x^{97} + x^{96} + x^{95} + x^{93} + x^{91} + x^{90} + x^{88}\\
&\quad + x^{86} + x^{85} + x^{84} + x^{83} + x^{81} + x^{80} + x^{77} + x^{73} + x^{72} + x^{71} + x^{70}\\
&\quad + x^{68} + x^{66} + x^{65} + x^{64} + x^{63} + x^{61} + x^{60} + x^{57} + x^{53} + x^{52} + x^{51}\\
&\quad + x^{50} + x^{48} + x^{46} + x^{45} + x^{44} + x^{43} + x^{41} + x^{39} + x^{38} + x^{36} + x^{34}\\
&\quad + x^{33} + x^{30} + x^{28} + x^{27} + x^{23} + x^{22} + x^{21} + x^{20} + x^{18} + x^{16} + x^{15}\\
&\quad + x^{12},\\
p_9(x) &= x^{118} + x^{114} + x^{112} + x^{106} + x^{104} + x^{100} + x^{98} + x^{92} + x^{86} + x^{84}\\
&\quad + x^{82} + x^{80} + x^{78} + x^{76} + x^{64} + x^{62} + x^{60} + x^{58} + x^{56} + x^{44} + x^{42}\\
&\quad + x^{40} + x^{36} + x^{34} + x^{32} + x^{26} + x^{22} + x^{16} + x^{12} + x^6,\\
p_{12}(x) &= x^{116} + x^{115} + x^{111} + x^{108} + x^{100} + x^{99} + x^{96} + x^{84} + x^{83} + x^{79} + x^{76}\\
&\quad + x^{64} + x^{63} + x^{60} + x^{48} + x^{47} + x^{44} + x^{36} + x^{35} + x^{32} + x^{20} + x^{19}\\
&\quad + x^{15} + x^{12} + x^4 + x^3 + 1,
\end{aligned}
$$

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

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

$$
\begin{aligned}
p_0(x) &= x^{129} + x^{126} + x^{125} + x^{124} + x^{122} + x^{121} + x^{120} + x^{119} + x^{118} + x^{117}\\
&\quad + x^{116} + x^{113} + x^{112} + x^{111} + x^{106} + x^{105} + x^{102} + x^{101} + x^{100}\\
&\quad + x^{99} + x^{98} + x^{97} + x^{96} + x^{95} + x^{94} + x^{93} + x^{90} + x^{89} + x^{84} + x^{82}\\
&\quad + x^{80} + x^{78} + x^{74} + x^{73} + x^{71} + x^{68} + x^{66} + x^{65} + x^{62} + x^{59} + x^{54}\\
&\quad + x^{53} + x^{52} + x^{50} + x^{49} + x^{48} + x^{46} + x^{44} + x^{43} + x^{42} + x^{39} + x^{37}\\
&\quad + x^{35} + x^{34} + x^{33},\\
p_3(x) &= x^{122} + x^{120} + x^{116} + x^{112} + x^{110} + x^{108} + x^{104} + x^{100} + x^{94} + x^{90}
\end{aligned}
$$

$$
\begin{aligned}
&+x^{88}+x^{86}+x^{84}+x^{74}+x^{66}+x^{64}+x^{60}+x^{58}+x^{54}+x^{50}+x^{48}\\
&+x^{46}+x^{44}+x^{42}+x^{40}+x^{36}+x^{34}+x^{32}+x^{30}+x^{28}+x^{26}+x^{18},\\
p_6(x)&=x^{120}+x^{119}+x^{118}+x^{117}+x^{116}+x^{114}+x^{112}+x^{111}+x^{107}+x^{106}\\
&+x^{105}+x^{104}+x^{102}+x^{98}+x^{97}+x^{96}+x^{95}+x^{93}+x^{91}+x^{90}+x^{88}\\
&+x^{86}+x^{85}+x^{84}+x^{83}+x^{81}+x^{80}+x^{77}+x^{73}+x^{72}+x^{71}+x^{70}\\
&+x^{68}+x^{66}+x^{65}+x^{64}+x^{63}+x^{61}+x^{60}+x^{57}+x^{53}+x^{52}+x^{51}\\
&+x^{50}+x^{48}+x^{46}+x^{45}+x^{44}+x^{43}+x^{41}+x^{39}+x^{38}+x^{36}+x^{34}\\
&+x^{33}+x^{30}+x^{28}+x^{27}+x^{23}+x^{22}+x^{21}+x^{20}+x^{18}+x^{16}+x^{15}\\
&+x^{12},\\
p_9(x)&=x^{118}+x^{114}+x^{112}+x^{106}+x^{104}+x^{100}+x^{98}+x^{92}+x^{86}+x^{84}\\
&+x^{82}+x^{80}+x^{78}+x^{76}+x^{64}+x^{62}+x^{60}+x^{58}+x^{56}+x^{44}+x^{42}\\
&+x^{40}+x^{36}+x^{34}+x^{32}+x^{26}+x^{22}+x^{16}+x^{12}+x^{6},\\
p_{12}(x)&=x^{116}+x^{115}+x^{111}+x^{108}+x^{100}+x^{99}+x^{96}+x^{84}+x^{83}+x^{79}+x^{76}\\
&+x^{64}+x^{63}+x^{60}+x^{48}+x^{47}+x^{44}+x^{36}+x^{35}+x^{32}+x^{20}+x^{19}\\
&+x^{15}+x^{12}+x^{4}+x^{3}+1,
\end{aligned}
$$

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

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

$$
\begin{aligned}
p_0(x)&=x^{120}+x^{112}+x^{110}+x^{106}+x^{100}+x^{86}+x^{82}+x^{78}+x^{66}+x^{60}+x^{56}\\
&+x^{54}+x^{52}+x^{48}+x^{46}+x^{44}+x^{42},\\
p_3(x)&=x^{108}+x^{106}+x^{104}+x^{102}+x^{98}+x^{96}+x^{94}+x^{92}+x^{90}+x^{88}+x^{86}\\
&+x^{78}+x^{74}+x^{72}+x^{70}+x^{68}+x^{54}+x^{50}+x^{48}+x^{46}+x^{38}+x^{34}\\
&+x^{32}+x^{30}+x^{26}+x^{24}+x^{22}+x^{18}+x^{16}+x^{12},\\
p_6(x)&=x^{108}+x^{106}+x^{102}+x^{100}+x^{98}+x^{92}+x^{90}+x^{88}+x^{86}+x^{78}+x^{76}\\
&+x^{74}+x^{68}+x^{64}+x^{62}+x^{56}+x^{54}+x^{52}+x^{50}+x^{44}+x^{40}+x^{38}\\
&+x^{36}+x^{34}+x^{26}+x^{24}+x^{20}+x^{18}+x^{16}+x^{14}+x^{8}+x^{6}+x^{4}+1,\\
p_9(x)&=x^{104}+x^{102}+x^{100}+x^{96}+x^{94}+x^{92}+x^{90}+x^{88}+x^{86}+x^{80}+x^{70}\\
&+x^{68}+x^{66}+x^{56}+x^{52}+x^{50}+x^{46}+x^{44}+x^{40}+x^{30}+x^{28}+x^{26}\\
&+x^{24}+x^{22}+x^{20}+x^{14}+x^{8}+x^{4},\\
p_{12}(x)&=x^{104}+x^{102}+x^{96}+x^{72}+x^{70}+x^{64}+x^{56}+x^{54}+x^{48}+x^{40}+x^{38}\\
&+x^{32}+x^{8}+x^{6}+1,
\end{aligned}
$$

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

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

$$
\begin{aligned}
p_0(x)&=x^{120}+x^{106}+x^{92}+x^{88}+x^{78}+x^{60}+x^{56}+x^{42}+x^{24},\\
p_3(x)&=x^{108}+x^{106}+x^{104}+x^{102}+x^{100}+x^{98}+x^{94}+x^{90}+x^{86}+x^{84}+x^{78}\\
&+x^{74}+x^{70}+x^{64}+x^{56}+x^{54}+x^{50}+x^{46}+x^{44}+x^{38}+x^{34}+x^{30}
\end{aligned}
$$

$$
\begin{aligned}
&+ x^{28} + x^{26} + x^{22} + x^{20} + x^{18} + x^{16}, \\
p_6(x) &= x^{108} + x^{106} + x^{102} + x^{98} + x^{94} + x^{92} + x^{88} + x^{86} + x^{80} + x^{76} + x^{74} \\
&+ x^{72} + x^{70} + x^{68} + x^{66} + x^{64} + x^{62} + x^{60} + x^{54} + x^{48} + x^{44} + x^{36} \\
&+ x^{34} + x^{32} + x^{30} + x^{24} + x^{20} + x^{18} + x^{12} + x^{6} + x^{4} + 1, \\
p_9(x) &= x^{104} + x^{102} + x^{100} + x^{96} + x^{94} + x^{92} + x^{90} + x^{88} + x^{86} + x^{80} + x^{70} \\
&+ x^{68} + x^{66} + x^{56} + x^{52} + x^{50} + x^{46} + x^{44} + x^{40} + x^{30} + x^{28} + x^{26} \\
&+ x^{24} + x^{22} + x^{20} + x^{14} + x^{8} + x^{4}, \\
p_{12}(x) &= x^{104} + x^{102} + x^{96} + x^{72} + x^{70} + x^{64} + x^{56} + x^{54} + x^{48} + x^{40} + x^{38} \\
&+ x^{32} + x^{8} + x^{6} + 1,
\end{aligned}
$$

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

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

$$
\begin{aligned}
p_0(x) &= x^{129} + x^{124} + x^{123} + x^{115} + x^{114} + x^{113} + x^{111} + x^{109} + x^{108} + x^{107} \\
&+ x^{105} + x^{104} + x^{103} + x^{102} + x^{101} + x^{100} + x^{99} + x^{98} + x^{95} + x^{92} \\
&+ x^{91} + x^{88} + x^{84} + x^{82} + x^{81} + x^{80} + x^{78} + x^{76} + x^{75} + x^{74} + x^{72} \\
&+ x^{71} + x^{70} + x^{69} + x^{67} + x^{66} + x^{65} + x^{64} + x^{60} + x^{59} + x^{58} + x^{57} \\
&+ x^{55} + x^{54} + x^{51} + x^{50} + x^{49} + x^{45} + x^{44} + x^{43} + x^{42} + x^{36} + x^{33}, \\
p_3(x) &= x^{122} + x^{120} + x^{116} + x^{112} + x^{110} + x^{108} + x^{104} + x^{100} + x^{94} + x^{90} \\
&+ x^{88} + x^{86} + x^{84} + x^{74} + x^{66} + x^{64} + x^{60} + x^{58} + x^{54} + x^{50} + x^{48} \\
&+ x^{46} + x^{44} + x^{42} + x^{40} + x^{36} + x^{34} + x^{32} + x^{30} + x^{28} + x^{26} + x^{18}, \\
p_6(x) &= x^{120} + x^{119} + x^{118} + x^{117} + x^{116} + x^{114} + x^{112} + x^{111} + x^{107} + x^{106} \\
&+ x^{105} + x^{104} + x^{102} + x^{98} + x^{97} + x^{96} + x^{95} + x^{93} + x^{91} + x^{90} + x^{88} \\
&+ x^{86} + x^{85} + x^{84} + x^{83} + x^{81} + x^{80} + x^{77} + x^{73} + x^{72} + x^{71} + x^{70} \\
&+ x^{68} + x^{66} + x^{65} + x^{64} + x^{63} + x^{61} + x^{60} + x^{57} + x^{53} + x^{52} + x^{51} \\
&+ x^{50} + x^{48} + x^{46} + x^{45} + x^{44} + x^{43} + x^{41} + x^{39} + x^{38} + x^{36} + x^{34} \\
&+ x^{33} + x^{30} + x^{28} + x^{27} + x^{23} + x^{22} + x^{21} + x^{20} + x^{18} + x^{16} + x^{15} \\
&+ x^{12}, \\
p_9(x) &= x^{118} + x^{114} + x^{112} + x^{106} + x^{104} + x^{100} + x^{98} + x^{92} + x^{86} + x^{84} \\
&+ x^{82} + x^{80} + x^{78} + x^{76} + x^{64} + x^{62} + x^{60} + x^{58} + x^{56} + x^{44} + x^{42} \\
&+ x^{40} + x^{36} + x^{34} + x^{32} + x^{26} + x^{22} + x^{16} + x^{12} + x^{6}, \\
p_{12}(x) &= x^{116} + x^{115} + x^{111} + x^{108} + x^{100} + x^{99} + x^{96} + x^{84} + x^{83} + x^{79} + x^{76} \\
&+ x^{64} + x^{63} + x^{60} + x^{48} + x^{47} + x^{44} + x^{36} + x^{35} + x^{32} + x^{20} + x^{19} \\
&+ x^{15} + x^{12} + x^{4} + x^{3} + 1,
\end{aligned}
$$

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

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

$$
p_0(x) = x^{129} + x^{124} + x^{123} + x^{115} + x^{114} + x^{113} + x^{111} + x^{109} + x^{108} + x^{107}
$$

$$
\begin{aligned}
&+ x^{105} + x^{104} + x^{103} + x^{102} + x^{101} + x^{100} + x^{99} + x^{98} + x^{95} + x^{92}\\
&+ x^{91} + x^{88} + x^{84} + x^{82} + x^{81} + x^{80} + x^{78} + x^{76} + x^{75} + x^{74} + x^{72}\\
&+ x^{71} + x^{70} + x^{69} + x^{67} + x^{66} + x^{65} + x^{64} + x^{60} + x^{59} + x^{58} + x^{57}\\
&+ x^{55} + x^{54} + x^{51} + x^{50} + x^{49} + x^{45} + x^{44} + x^{43} + x^{42} + x^{36} + x^{33},\\
p_3(x) &= x^{122} + x^{120} + x^{116} + x^{112} + x^{110} + x^{108} + x^{104} + x^{100} + x^{94} + x^{90}\\
&+ x^{88} + x^{86} + x^{84} + x^{74} + x^{66} + x^{64} + x^{60} + x^{58} + x^{54} + x^{50} + x^{48}\\
&+ x^{46} + x^{44} + x^{42} + x^{40} + x^{36} + x^{34} + x^{32} + x^{30} + x^{28} + x^{26} + x^{18},\\
p_6(x) &= x^{120} + x^{119} + x^{118} + x^{117} + x^{116} + x^{114} + x^{112} + x^{111} + x^{107} + x^{106}\\
&+ x^{105} + x^{104} + x^{102} + x^{98} + x^{97} + x^{96} + x^{95} + x^{93} + x^{91} + x^{90} + x^{88}\\
&+ x^{86} + x^{85} + x^{84} + x^{83} + x^{81} + x^{80} + x^{77} + x^{73} + x^{72} + x^{71} + x^{70}\\
&+ x^{68} + x^{66} + x^{65} + x^{64} + x^{63} + x^{61} + x^{60} + x^{57} + x^{53} + x^{52} + x^{51}\\
&+ x^{50} + x^{48} + x^{46} + x^{45} + x^{44} + x^{43} + x^{41} + x^{39} + x^{38} + x^{36} + x^{34}\\
&+ x^{33} + x^{30} + x^{28} + x^{27} + x^{23} + x^{22} + x^{21} + x^{20} + x^{18} + x^{16} + x^{15}\\
&+ x^{12},\\
p_9(x) &= x^{118} + x^{114} + x^{112} + x^{106} + x^{104} + x^{100} + x^{98} + x^{92} + x^{86} + x^{84}\\
&+ x^{82} + x^{80} + x^{78} + x^{76} + x^{64} + x^{62} + x^{60} + x^{58} + x^{56} + x^{44} + x^{42}\\
&+ x^{40} + x^{36} + x^{34} + x^{32} + x^{26} + x^{22} + x^{16} + x^{12} + x^{6},\\
p_{12}(x) &= x^{116} + x^{115} + x^{111} + x^{108} + x^{100} + x^{99} + x^{96} + x^{84} + x^{83} + x^{79} + x^{76}\\
&+ x^{64} + x^{63} + x^{60} + x^{48} + x^{47} + x^{44} + x^{36} + x^{35} + x^{32} + x^{20} + x^{19}\\
&+ x^{15} + x^{12} + x^{4} + x^{3} + 1,
\end{aligned}
$$

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

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

$$
\begin{aligned}
p_0(x) &= x^{138} + x^{128} + x^{126} + x^{124} + x^{114} + x^{112} + x^{110} + x^{108} + x^{102} + x^{98}\\
&+ x^{96} + x^{94} + x^{92} + x^{90} + x^{86} + x^{82} + x^{76} + x^{64} + x^{62} + x^{48} + x^{42},\\
p_3(x) &= x^{130} + x^{126} + x^{122} + x^{120} + x^{116} + x^{112} + x^{110} + x^{106} + x^{104} + x^{100}\\
&+ x^{96} + x^{88} + x^{86} + x^{82} + x^{80} + x^{76} + x^{74} + x^{72} + x^{68} + x^{64} + x^{60}\\
&+ x^{52} + x^{50} + x^{48} + x^{34} + x^{30} + x^{28} + x^{26} + x^{16} + x^{12},\\
p_6(x) &= x^{130} + x^{122} + x^{120} + x^{118} + x^{116} + x^{110} + x^{106} + x^{104} + x^{98} + x^{92}\\
&+ x^{88} + x^{82} + x^{68} + x^{66} + x^{62} + x^{56} + x^{54} + x^{48} + x^{44} + x^{38} + x^{36}\\
&+ x^{30} + x^{28} + x^{24} + x^{22} + x^{18} + x^{16} + x^{14} + x^{12} + x^{10} + x^{4} + 1,\\
p_9(x) &= x^{128} + x^{124} + x^{122} + x^{116} + x^{114} + x^{112} + x^{110} + x^{108} + x^{106} + x^{100}\\
&+ x^{92} + x^{88} + x^{86} + x^{80} + x^{78} + x^{74} + x^{64} + x^{62} + x^{60} + x^{50} + x^{48}\\
&+ x^{46} + x^{42} + x^{40} + x^{38} + x^{36} + x^{32} + x^{30} + x^{28} + x^{26} + x^{24} + x^{22}\\
&+ x^{12} + x^{10} + x^{8} + x^{4},\\
p_{12}(x) &= x^{128} + x^{120} + x^{88} + x^{80} + x^{72} + x^{56} + x^{48} + x^{24} + 1,
\end{aligned}
$$

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

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

$$\begin{aligned}
p_0(x) = {} & x^{129} + x^{126} + x^{120} + x^{116} + x^{115} + x^{114} + x^{112} + x^{111} + x^{110} + x^{109} \\
& + x^{107} + x^{106} + x^{104} + x^{98} + x^{95} + x^{94} + x^{92} + x^{91} + x^{90} + x^{87} + x^{86} \\
& + x^{84} + x^{82} + x^{78} + x^{73} + x^{72} + x^{69} + x^{66} + x^{65} + x^{62} + x^{60} + x^{56} \\
& + x^{52} + x^{51} + x^{50} + x^{48} + x^{46} + x^{45} + x^{43} + x^{42} + x^{37} + x^{33} + x^{30} \\
& + x^{27} + x^{24}, \\
p_3(x) = {} & x^{124} + x^{121} + x^{118} + x^{117} + x^{112} + x^{110} + x^{108} + x^{107} + x^{106} + x^{104} \\
& + x^{102} + x^{100} + x^{99} + x^{98} + x^{97} + x^{94} + x^{92} + x^{89} + x^{88} + x^{82} + x^{81} \\
& + x^{77} + x^{75} + x^{74} + x^{72} + x^{70} + x^{69} + x^{67} + x^{66} + x^{65} + x^{64} + x^{60} \\
& + x^{58} + x^{57} + x^{56} + x^{54} + x^{52} + x^{49} + x^{48} + x^{44} + x^{42} + x^{38} + x^{35} \\
& + x^{34} + x^{29} + x^{28} + x^{25} + x^{22} + x^{19} + x^{16}, \\
p_6(x) = {} & x^{124} + x^{121} + x^{118} + x^{117} + x^{115} + x^{113} + x^{111} + x^{107} + x^{105} + x^{99} \\
& + x^{98} + x^{97} + x^{95} + x^{94} + x^{93} + x^{92} + x^{91} + x^{90} + x^{89} + x^{87} + x^{85} \\
& + x^{84} + x^{83} + x^{82} + x^{78} + x^{77} + x^{76} + x^{75} + x^{71} + x^{70} + x^{68} + x^{63} \\
& + x^{62} + x^{61} + x^{60} + x^{59} + x^{58} + x^{56} + x^{53} + x^{50} + x^{49} + x^{48} + x^{47} \\
& + x^{45} + x^{44} + x^{42} + x^{41} + x^{40} + x^{36} + x^{33} + x^{30} + x^{28} + x^{27} + x^{25} \\
& + x^{23} + x^{22} + x^{21} + x^{20} + x^{17} + x^{16} + x^{15} + x^{14} + x^{12} + x^{11} + x^{8} \\
& + x^{4} + x^{3} + 1, \\
p_9(x) = {} & x^{124} + x^{123} + x^{120} + x^{108} + x^{107} + x^{104} + x^{92} + x^{91} + x^{88} + x^{44} \\
& + x^{43} + x^{40} + x^{28} + x^{27} + x^{24} + x^{12} + x^{11} + x^{8}, \\
p_{12}(x) = {} & x^{124} + x^{123} + x^{120} + x^{116} + x^{115} + x^{111} + x^{107} + x^{104} + x^{100} + x^{99} \\
& + x^{96} + x^{92} + x^{91} + x^{88} + x^{84} + x^{83} + x^{79} + x^{76} + x^{64} + x^{63} + x^{60} \\
& + x^{48} + x^{47} + x^{43} + x^{40} + x^{36} + x^{35} + x^{32} + x^{28} + x^{27} + x^{24} + x^{20} \\
& + x^{19} + x^{15} + x^{11} + x^{8} + x^{4} + x^{3} + 1,
\end{aligned}$$

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

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

$$\begin{aligned}
p_0(x) = {} & x^{128} + x^{126} + x^{124} + x^{123} + x^{122} + x^{121} + x^{120} + x^{118} + x^{117} + x^{116} \\
& + x^{114} + x^{112} + x^{110} + x^{109} + x^{108} + x^{106} + x^{105} + x^{104} + x^{99} + x^{97} \\
& + x^{93} + x^{92} + x^{89} + x^{88} + x^{87} + x^{84} + x^{83} + x^{82} + x^{81} + x^{80} + x^{77} \\
& + x^{74} + x^{72} + x^{71} + x^{68} + x^{67} + x^{66} + x^{64} + x^{63} + x^{58} + x^{57} + x^{55} \\
& + x^{53} + x^{52} + x^{51} + x^{49} + x^{45} + x^{44} + x^{38} + x^{36} + x^{35} + x^{34} + x^{33}, \\
p_3(x) = {} & x^{114} + x^{113} + x^{112} + x^{111} + x^{109} + x^{107} + x^{105} + x^{104} + x^{101} + x^{97} \\
& + x^{96} + x^{95} + x^{93} + x^{91} + x^{90} + x^{87} + x^{83} + x^{82} + x^{81} + x^{80} + x^{77} \\
& + x^{74} + x^{58} + x^{57} + x^{56} + x^{55} + x^{53} + x^{51} + x^{50} + x^{47} + x^{43} + x^{42}
\end{aligned}$$

$$
\begin{aligned}
&+ x^{41} + x^{40} + x^{37} + x^{33} + x^{32} + x^{31} + x^{29} + x^{27} + x^{25} + x^{24} + x^{21} \\
&+ x^{18}, \\
p_6(x) &= x^{116} + x^{114} + x^{108} + x^{104} + x^{102} + x^{94} + x^{92} + x^{90} + x^{88} + x^{82} + x^{80} \\
&+ x^{78} + x^{74} + x^{70} + x^{68} + x^{62} + x^{60} + x^{58} + x^{54} + x^{50} + x^{48} + x^{42} \\
&+ x^{40} + x^{38} + x^{36} + x^{30} + x^{24} + x^{20} + x^{18} + x^{12}, \\
p_9(x) &= x^{118} + x^{117} + x^{113} + x^{109} + x^{105} + x^{102} + x^{86} + x^{85} + x^{81} + x^{77} \\
&+ x^{73} + x^{69} + x^{65} + x^{61} + x^{57} + x^{53} + x^{49} + x^{45} + x^{41} + x^{38} + x^{22} \\
&+ x^{21} + x^{17} + x^{13} + x^{9} + x^{6}, \\
p_{12}(x) &= x^{120} + x^{112} + x^{108} + x^{104} + x^{96} + x^{88} + x^{80} + x^{76} + x^{60} + x^{44} + x^{40} \\
&+ x^{32} + x^{24} + x^{16} + x^{12} + x^{8} + 1,
\end{aligned}
$$

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

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

$$
\begin{aligned}
p_0(x) &= x^{138} + x^{135} + x^{133} + x^{132} + x^{130} + x^{125} + x^{123} + x^{122} + x^{121} + x^{119} \\
&+ x^{118} + x^{117} + x^{115} + x^{114} + x^{110} + x^{108} + x^{106} + x^{105} + x^{104} \\
&+ x^{101} + x^{99} + x^{98} + x^{96} + x^{93} + x^{91} + x^{87} + x^{82} + x^{81} + x^{79} + x^{78} \\
&+ x^{77} + x^{75} + x^{74} + x^{72} + x^{71} + x^{69} + x^{65} + x^{63} + x^{59} + x^{58} + x^{55} \\
&+ x^{54} + x^{52} + x^{51} + x^{49} + x^{47} + x^{45} + x^{44} + x^{43} + x^{42} + x^{33}, \\
p_3(x) &= x^{130} + x^{129} + x^{128} + x^{127} + x^{126} + x^{124} + x^{120} + x^{119} + x^{116} + x^{114} \\
&+ x^{113} + x^{109} + x^{108} + x^{107} + x^{106} + x^{104} + x^{102} + x^{101} + x^{98} + x^{94} \\
&+ x^{93} + x^{92} + x^{91} + x^{89} + x^{87} + x^{86} + x^{83} + x^{82} + x^{81} + x^{80} + x^{77} \\
&+ x^{73} + x^{72} + x^{71} + x^{70} + x^{68} + x^{66} + x^{65} + x^{62} + x^{54} + x^{53} + x^{52} \\
&+ x^{51} + x^{50} + x^{48} + x^{44} + x^{43} + x^{42} + x^{41} + x^{39} + x^{37} + x^{36} + x^{34} \\
&+ x^{32} + x^{31} + x^{30} + x^{29} + x^{27} + x^{25} + x^{24} + x^{21} + x^{18}, \\
p_6(x) &= x^{132} + x^{130} + x^{128} + x^{126} + x^{124} + x^{118} + x^{110} + x^{104} + x^{100} + x^{98} \\
&+ x^{96} + x^{94} + x^{90} + x^{88} + x^{84} + x^{76} + x^{74} + x^{72} + x^{70} + x^{68} + x^{64} \\
&+ x^{56} + x^{54} + x^{46} + x^{38} + x^{36} + x^{34} + x^{32} + x^{28} + x^{20} + x^{18} + x^{12}, \\
p_9(x) &= x^{134} + x^{133} + x^{130} + x^{114} + x^{113} + x^{109} + x^{105} + x^{101} + x^{98} + x^{86} \\
&+ x^{85} + x^{81} + x^{77} + x^{73} + x^{69} + x^{65} + x^{61} + x^{57} + x^{54} + x^{50} + x^{49} \\
&+ x^{45} + x^{41} + x^{37} + x^{34} + x^{18} + x^{17} + x^{13} + x^{9} + x^{6}, \\
p_{12}(x) &= x^{136} + x^{132} + x^{128} + x^{120} + x^{116} + x^{100} + x^{80} + x^{72} + x^{52} + x^{48} \\
&+ x^{36} + x^{24} + x^{20} + x^{8} + 1,
\end{aligned}
$$

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

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

$$
\begin{aligned}
p_0(x) &= x^{129} + x^{125} + x^{123} + x^{120} + x^{119} + x^{117} + x^{111} + x^{109} + x^{108} + x^{107} \\
&+ x^{105} + x^{104} + x^{103} + x^{102} + x^{100} + x^{99} + x^{96} + x^{95} + x^{94} + x^{93}
\end{aligned}
$$

$$
\begin{aligned}
&+ x^{91} + x^{89} + x^{85} + x^{84} + x^{82} + x^{78} + x^{77} + x^{76} + x^{75} + x^{73} + x^{71} \\
&+ x^{68} + x^{67} + x^{66} + x^{65} + x^{64} + x^{60} + x^{59} + x^{56} + x^{50} + x^{49} + x^{46} \\
&+ x^{44} + x^{43} + x^{42}, \\
p_3(x) &= x^{124} + x^{121} + x^{120} + x^{119} + x^{115} + x^{114} + x^{112} + x^{111} + x^{109} + x^{107} \\
&+ x^{104} + x^{101} + x^{100} + x^{99} + x^{97} + x^{94} + x^{91} + x^{89} + x^{86} + x^{85} + x^{84} \\
&+ x^{83} + x^{81} + x^{79} + x^{77} + x^{74} + x^{70} + x^{69} + x^{67} + x^{66} + x^{65} + x^{63} \\
&+ x^{62} + x^{61} + x^{60} + x^{59} + x^{57} + x^{54} + x^{51} + x^{49} + x^{46} + x^{45} + x^{43} \\
&+ x^{40} + x^{37} + x^{35} + x^{32} + x^{31} + x^{30} + x^{26} + x^{25} + x^{24} + x^{23} + x^{22}, \\
p_6(x) &= x^{124} + x^{121} + x^{120} + x^{119} + x^{114} + x^{113} + x^{112} + x^{111} + x^{107} + x^{106} \\
&+ x^{102} + x^{100} + x^{96} + x^{95} + x^{94} + x^{92} + x^{91} + x^{89} + x^{88} + x^{86} + x^{84} \\
&+ x^{82} + x^{81} + x^{80} + x^{78} + x^{73} + x^{68} + x^{67} + x^{66} + x^{65} + x^{62} + x^{59} \\
&+ x^{58} + x^{57} + x^{55} + x^{51} + x^{49} + x^{48} + x^{46} + x^{44} + x^{43} + x^{42} + x^{40} \\
&+ x^{39} + x^{38} + x^{34} + x^{32} + x^{31} + x^{28} + x^{25} + x^{20} + x^{19} + x^{18} + x^{17} \\
&+ x^{16} + x^{14} + x^{12} + x^{4} + x^{3} + 1, \\
p_9(x) &= x^{124} + x^{123} + x^{120} + x^{108} + x^{107} + x^{104} + x^{92} + x^{91} + x^{88} + x^{44} \\
&+ x^{43} + x^{40} + x^{28} + x^{27} + x^{24} + x^{12} + x^{11} + x^{8}, \\
p_{12}(x) &= x^{124} + x^{123} + x^{120} + x^{116} + x^{115} + x^{111} + x^{107} + x^{104} + x^{100} + x^{99} \\
&+ x^{96} + x^{92} + x^{91} + x^{88} + x^{84} + x^{83} + x^{79} + x^{76} + x^{64} + x^{63} + x^{60} \\
&+ x^{48} + x^{47} + x^{43} + x^{40} + x^{36} + x^{35} + x^{32} + x^{28} + x^{27} + x^{24} + x^{20} \\
&+ x^{19} + x^{15} + x^{11} + x^{8} + x^{4} + x^{3} + 1,
\end{aligned}
$$

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

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

$$
\begin{aligned}
p_0(x) &= x^{129} + x^{126} + x^{120} + x^{116} + x^{115} + x^{114} + x^{112} + x^{111} + x^{110} + x^{109} \\
&+ x^{107} + x^{106} + x^{104} + x^{98} + x^{95} + x^{94} + x^{92} + x^{91} + x^{90} + x^{87} + x^{86} \\
&+ x^{84} + x^{82} + x^{78} + x^{73} + x^{72} + x^{69} + x^{66} + x^{65} + x^{62} + x^{60} + x^{56} \\
&+ x^{52} + x^{51} + x^{50} + x^{48} + x^{46} + x^{45} + x^{43} + x^{42} + x^{37} + x^{33} + x^{30} \\
&+ x^{27} + x^{24}, \\
p_3(x) &= x^{124} + x^{121} + x^{118} + x^{117} + x^{112} + x^{110} + x^{108} + x^{107} + x^{106} + x^{104} \\
&+ x^{102} + x^{100} + x^{99} + x^{98} + x^{97} + x^{94} + x^{92} + x^{89} + x^{88} + x^{82} + x^{81} \\
&+ x^{77} + x^{75} + x^{74} + x^{72} + x^{70} + x^{69} + x^{67} + x^{66} + x^{65} + x^{64} + x^{60} \\
&+ x^{58} + x^{57} + x^{56} + x^{54} + x^{52} + x^{49} + x^{48} + x^{44} + x^{42} + x^{38} + x^{35} \\
&+ x^{34} + x^{29} + x^{28} + x^{25} + x^{22} + x^{19} + x^{16}, \\
p_6(x) &= x^{124} + x^{121} + x^{118} + x^{117} + x^{115} + x^{113} + x^{111} + x^{107} + x^{105} + x^{99} \\
&+ x^{98} + x^{97} + x^{95} + x^{94} + x^{93} + x^{92} + x^{91} + x^{90} + x^{89} + x^{87} + x^{85} \\
&+ x^{84} + x^{83} + x^{82} + x^{78} + x^{77} + x^{76} + x^{75} + x^{71} + x^{70} + x^{68} + x^{63}
\end{aligned}
$$

$$
\begin{aligned}
&+ x^{62} + x^{61} + x^{60} + x^{59} + x^{58} + x^{56} + x^{53} + x^{50} + x^{49} + x^{48} + x^{47}\\
&+ x^{45} + x^{44} + x^{42} + x^{41} + x^{40} + x^{36} + x^{33} + x^{30} + x^{28} + x^{27} + x^{25}\\
&+ x^{23} + x^{22} + x^{21} + x^{20} + x^{17} + x^{16} + x^{15} + x^{14} + x^{12} + x^{11} + x^{8}\\
&+ x^{4} + x^{3} + 1,\\
p_9(x) &= x^{124} + x^{123} + x^{120} + x^{108} + x^{107} + x^{104} + x^{92} + x^{91} + x^{88} + x^{44}\\
&+ x^{43} + x^{40} + x^{28} + x^{27} + x^{24} + x^{12} + x^{11} + x^{8},\\
p_{12}(x) &= x^{124} + x^{123} + x^{120} + x^{116} + x^{115} + x^{111} + x^{107} + x^{104} + x^{100} + x^{99}\\
&+ x^{96} + x^{92} + x^{91} + x^{88} + x^{84} + x^{83} + x^{79} + x^{76} + x^{64} + x^{63} + x^{60}\\
&+ x^{48} + x^{47} + x^{43} + x^{40} + x^{36} + x^{35} + x^{32} + x^{28} + x^{27} + x^{24} + x^{20}\\
&+ x^{19} + x^{15} + x^{11} + x^{8} + x^{4} + x^{3} + 1,
\end{aligned}
$$

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

$$
\begin{aligned}
p_0(x) &= x^{138} + x^{135} + x^{133} + x^{132} + x^{130} + x^{125} + x^{123} + x^{122} + x^{121} + x^{119}\\
&+ x^{118} + x^{117} + x^{115} + x^{114} + x^{110} + x^{108} + x^{106} + x^{105} + x^{104}\\
&+ x^{101} + x^{99} + x^{98} + x^{96} + x^{93} + x^{91} + x^{87} + x^{82} + x^{81} + x^{79} + x^{78}\\
&+ x^{77} + x^{75} + x^{74} + x^{72} + x^{71} + x^{69} + x^{65} + x^{63} + x^{59} + x^{58} + x^{55}\\
&+ x^{54} + x^{52} + x^{51} + x^{49} + x^{47} + x^{45} + x^{44} + x^{43} + x^{42} + x^{33},\\
p_3(x) &= x^{130} + x^{129} + x^{128} + x^{127} + x^{126} + x^{124} + x^{120} + x^{119} + x^{116} + x^{114}\\
&+ x^{113} + x^{109} + x^{108} + x^{107} + x^{106} + x^{104} + x^{102} + x^{101} + x^{98} + x^{94}\\
&+ x^{93} + x^{92} + x^{91} + x^{89} + x^{87} + x^{86} + x^{83} + x^{82} + x^{81} + x^{80} + x^{77}\\
&+ x^{73} + x^{72} + x^{71} + x^{70} + x^{68} + x^{66} + x^{65} + x^{62} + x^{54} + x^{53} + x^{52}\\
&+ x^{51} + x^{50} + x^{48} + x^{44} + x^{43} + x^{42} + x^{41} + x^{39} + x^{37} + x^{36} + x^{34}\\
&+ x^{32} + x^{31} + x^{30} + x^{29} + x^{27} + x^{25} + x^{24} + x^{21} + x^{18},\\
p_6(x) &= x^{132} + x^{130} + x^{128} + x^{126} + x^{124} + x^{118} + x^{110} + x^{104} + x^{100} + x^{98}\\
&+ x^{96} + x^{94} + x^{90} + x^{88} + x^{84} + x^{76} + x^{74} + x^{72} + x^{70} + x^{68} + x^{64}\\
&+ x^{56} + x^{54} + x^{46} + x^{38} + x^{36} + x^{34} + x^{32} + x^{28} + x^{20} + x^{18} + x^{12},\\
p_9(x) &= x^{134} + x^{133} + x^{130} + x^{114} + x^{113} + x^{109} + x^{105} + x^{101} + x^{98} + x^{86}\\
&+ x^{85} + x^{81} + x^{77} + x^{73} + x^{69} + x^{65} + x^{61} + x^{57} + x^{54} + x^{50} + x^{49}\\
&+ x^{45} + x^{41} + x^{37} + x^{34} + x^{18} + x^{17} + x^{13} + x^{9} + x^{6},\\
p_{12}(x) &= x^{136} + x^{132} + x^{128} + x^{120} + x^{116} + x^{100} + x^{80} + x^{72} + x^{52} + x^{48}\\
&+ x^{36} + x^{24} + x^{20} + x^{8} + 1,
\end{aligned}
$$

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

$$
\begin{aligned}
p_0(x) &= x^{128} + x^{126} + x^{124} + x^{123} + x^{122} + x^{121} + x^{120} + x^{118} + x^{117} + x^{116}\\
&+ x^{114} + x^{112} + x^{110} + x^{109} + x^{108} + x^{106} + x^{105} + x^{104} + x^{99} + x^{97}
\end{aligned}
$$

$$+ x^{93} + x^{92} + x^{89} + x^{88} + x^{87} + x^{84} + x^{83} + x^{82} + x^{81} + x^{80} + x^{77} + x^{74} + x^{72} + x^{71} + x^{68} + x^{67} + x^{66} + x^{64} + x^{63} + x^{58} + x^{57} + x^{55} + x^{53} + x^{52} + x^{51} + x^{49} + x^{45} + x^{44} + x^{38} + x^{36} + x^{35} + x^{34} + x^{33},$$

$$p_3(x) = x^{114} + x^{113} + x^{112} + x^{111} + x^{109} + x^{107} + x^{105} + x^{104} + x^{101} + x^{97} + x^{96} + x^{95} + x^{93} + x^{91} + x^{90} + x^{87} + x^{83} + x^{82} + x^{81} + x^{80} + x^{77} + x^{74} + x^{58} + x^{57} + x^{56} + x^{55} + x^{53} + x^{51} + x^{50} + x^{47} + x^{43} + x^{42} + x^{41} + x^{40} + x^{37} + x^{33} + x^{32} + x^{31} + x^{29} + x^{27} + x^{25} + x^{24} + x^{21} + x^{18},$$

$$p_6(x) = x^{116} + x^{114} + x^{108} + x^{104} + x^{102} + x^{94} + x^{92} + x^{90} + x^{88} + x^{82} + x^{80} + x^{78} + x^{74} + x^{70} + x^{68} + x^{62} + x^{60} + x^{58} + x^{54} + x^{50} + x^{48} + x^{42} + x^{40} + x^{38} + x^{36} + x^{30} + x^{24} + x^{20} + x^{18} + x^{12},$$

$$p_9(x) = x^{118} + x^{117} + x^{113} + x^{109} + x^{105} + x^{102} + x^{86} + x^{85} + x^{81} + x^{77} + x^{73} + x^{69} + x^{65} + x^{61} + x^{57} + x^{53} + x^{49} + x^{45} + x^{41} + x^{38} + x^{22} + x^{21} + x^{17} + x^{13} + x^{9} + x^{6},$$

$$p_{12}(x) = x^{120} + x^{112} + x^{108} + x^{104} + x^{96} + x^{88} + x^{80} + x^{76} + x^{60} + x^{44} + x^{40} + x^{32} + x^{24} + x^{16} + x^{12} + x^{8} + 1,$$

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

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

$$p_0(x) = x^{129} + x^{125} + x^{123} + x^{120} + x^{119} + x^{117} + x^{111} + x^{109} + x^{108} + x^{107} + x^{105} + x^{104} + x^{103} + x^{102} + x^{100} + x^{99} + x^{96} + x^{95} + x^{94} + x^{93} + x^{91} + x^{89} + x^{85} + x^{84} + x^{82} + x^{78} + x^{77} + x^{76} + x^{75} + x^{73} + x^{71} + x^{68} + x^{67} + x^{66} + x^{65} + x^{64} + x^{60} + x^{59} + x^{56} + x^{50} + x^{49} + x^{46} + x^{44} + x^{43} + x^{42},$$

$$p_3(x) = x^{124} + x^{121} + x^{120} + x^{119} + x^{115} + x^{114} + x^{112} + x^{111} + x^{109} + x^{107} + x^{104} + x^{101} + x^{100} + x^{99} + x^{97} + x^{94} + x^{91} + x^{89} + x^{86} + x^{85} + x^{84} + x^{83} + x^{81} + x^{79} + x^{77} + x^{74} + x^{70} + x^{69} + x^{67} + x^{66} + x^{65} + x^{63} + x^{62} + x^{61} + x^{60} + x^{59} + x^{57} + x^{54} + x^{51} + x^{49} + x^{46} + x^{45} + x^{43} + x^{40} + x^{37} + x^{35} + x^{32} + x^{31} + x^{30} + x^{26} + x^{25} + x^{24} + x^{23} + x^{22},$$

$$p_6(x) = x^{124} + x^{121} + x^{120} + x^{119} + x^{114} + x^{113} + x^{112} + x^{111} + x^{107} + x^{106} + x^{102} + x^{100} + x^{96} + x^{95} + x^{94} + x^{92} + x^{91} + x^{89} + x^{88} + x^{86} + x^{84} + x^{82} + x^{81} + x^{80} + x^{78} + x^{73} + x^{68} + x^{67} + x^{66} + x^{65} + x^{62} + x^{59} + x^{58} + x^{57} + x^{55} + x^{51} + x^{49} + x^{48} + x^{46} + x^{44} + x^{43} + x^{42} + x^{40} + x^{39} + x^{38} + x^{34} + x^{32} + x^{31} + x^{28} + x^{25} + x^{20} + x^{19} + x^{18} + x^{17} + x^{16} + x^{14} + x^{12} + x^{4} + x^{3} + 1,$$

$$p_9(x) = x^{124} + x^{123} + x^{120} + x^{108} + x^{107} + x^{104} + x^{92} + x^{91} + x^{88} + x^{44}$$

$$+ x^{43} + x^{40} + x^{28} + x^{27} + x^{24} + x^{12} + x^{11} + x^{8},$$
$$p_{12}(x) = x^{124} + x^{123} + x^{120} + x^{116} + x^{115} + x^{111} + x^{107} + x^{104} + x^{100} + x^{99} + x^{96} + x^{92} + x^{91} + x^{88} + x^{84} + x^{83} + x^{79} + x^{76} + x^{64} + x^{63} + x^{60} + x^{48} + x^{47} + x^{43} + x^{40} + x^{36} + x^{35} + x^{32} + x^{28} + x^{27} + x^{24} + x^{20} + x^{19} + x^{15} + x^{11} + x^{8} + x^{4} + x^{3} + 1,$$

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

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

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

n	$\Lambda(n)$	n	$\Lambda(n)$	n	$\Lambda(n)$	n	$\Lambda(n)$
0	[1, 2]	1185	[1821, 1359]	2370	[3098, 1466]	3555	[1935, 1484]
1	[3, 4]	1186	[1521, 1767]	2371	[2921, 1599]	3556	[4055, 497]
2	[5, 6]	1187	[1822, 1823]	2372	[3099, 610]	3557	[4056, 1477]
3	[7, 8]	1188	[1824, 492]	2373	[1781, 1898]	3558	[1709, 217]
4	[9, 10]	1189	[1825, 1826]	2374	[1630, 191]	3559	[4057, 697]
5	[11, 12]	1190	[1827, 621]	2375	[3100, 446]	3560	[2905, 3996]
6	[13, 14]	1191	[1828, 1829]	2376	[3083, 1711]	3561	[4058, 3022]
7	[15, 16]	1192	[1830, 1701]	2377	[1434, 3101]	3562	[4059, 3250]
8	[17, 18]	1193	[1831, 1606]	2378	[1832, 1503]	3563	[2952, 1868]
9	[19, 20]	1194	[1832, 1833]	2379	[1700, 2856]	3564	[4060, 3015]
10	[6, 21]	1195	[1834, 1772]	2380	[3102, 1403]	3565	[4061, 37]
11	[22, 23]	1196	[1662, 39]	2381	[3103, 2962]	3566	[3321, 453]
12	[24, 25]	1197	[1835, 548]	2382	[1570, 3087]	3567	[4062, 609]
13	[26, 27]	1198	[1836, 1837]	2383	[1480, 458]	3568	[4063, 218]
14	[28, 29]	1199	[1838, 148]	2384	[1708, 1826]	3569	[4064, 2851]
15	[30, 31]	1200	[1839, 1840]	2385	[548, 3104]	3570	[590, 3005]
16	[32, 33]	1201	[1536, 1841]	2386	[625, 192]	3571	[4065, 36]
17	[34, 35]	1202	[1842, 1415]	2387	[3105, 1654]	3572	[4066, 2901]
18	[36, 37]	1203	[1356, 749]	2388	[3106, 3107]	3573	[4067, 665]
19	[38, 39]	1204	[1843, 1844]	2389	[1385, 723]	3574	[4068, 3090]
20	[40, 41]	1205	[1845, 690]	2390	[485, 3108]	3575	[1425, 734]
21	[12, 42]	1206	[1846, 1326]	2391	[1624, 2899]	3576	[4069, 536]
22	[43, 44]	1207	[599, 1847]	2392	[3109, 3110]	3577	[1464, 3314]
23	[45, 46]	1208	[1848, 478]	2393	[1914, 1655]	3578	[4070, 618]
24	[47, 48]	1209	[1849, 1850]	2394	[203, 1368]	3579	[4071, 165]
25	[49, 50]	1210	[1661, 586]	2395	[3111, 631]	3580	[4072, 1917]
26	[51, 52]	1211	[1851, 532]	2396	[3112, 597]	3581	[1561, 4073]
27	[53, 54]	1212	[1715, 1397]	2397	[3113, 1482]	3582	[3106, 1690]
28	[55, 56]	1213	[1391, 1852]	2398	[3114, 458]	3583	[4074, 544]
29	[57, 58]	1214	[747, 1853]	2399	[1912, 1565]	3584	[4075, 12]
30	[59, 60]	1215	[691, 1390]	2400	[3115, 1772]	3585	[1765, 1897]
31	[61, 62]	1216	[1854, 1855]	2401	[671, 3081]	3586	[4076, 1438]

32	[63, 64]	1217	[1391, 747]	2402	[3116, 544]	3587	[4077, 3999]
33	[65, 66]	1218	[1852, 1853]	2403	[573, 3117]	3588	[4078, 1666]
34	[67, 68]	1219	[689, 693]	2404	[3118, 697]	3589	[499, 3008]
35	[69, 70]	1220	[514, 1594]	2405	[1878, 1841]	3590	[4079, 3110]
36	[71, 72]	1221	[693, 198]	2406	[3119, 1438]	3591	[4080, 3296]
37	[73, 74]	1222	[1594, 690]	2407	[1890, 1873]	3592	[3243, 1673]
38	[75, 76]	1223	[1856, 1857]	2408	[31, 463]	3593	[2965, 4081]
39	[77, 78]	1224	[706, 1655]	2409	[3120, 433]	3594	[439, 1561]
40	[79, 80]	1225	[1508, 1589]	2410	[1487, 1473]	3595	[4082, 491]
41	[81, 82]	1226	[1858, 1859]	2411	[1650, 655]	3596	[3059, 1794]
42	[23, 83]	1227	[1860, 1861]	2412	[3121, 3122]	3597	[4083, 2816]
43	[84, 85]	1228	[1385, 1818]	2413	[3123, 1386]	3598	[1538, 1537]
44	[86, 87]	1229	[1862, 1863]	2414	[3042, 1433]	3599	[4077, 2851]
45	[88, 89]	1230	[1864, 580]	2415	[213, 3060]	3600	[4084, 652]
46	[90, 91]	1231	[1865, 1866]	2416	[3124, 150]	3601	[2820, 2938]
47	[92, 93]	1232	[1867, 1868]	2417	[733, 1745]	3602	[4085, 1478]
48	[94, 95]	1233	[1418, 516]	2418	[662, 1822]	3603	[4086, 2962]
49	[96, 97]	1234	[1869, 1870]	2419	[3125, 1389]	3604	[654, 3246]
50	[98, 99]	1235	[1807, 590]	2420	[3126, 1479]	3605	[187, 1443]
51	[100, 101]	1236	[533, 548]	2421	[211, 3095]	3606	[139, 1370]
52	[102, 103]	1237	[1647, 1871]	2422	[741, 1495]	3607	[1425, 2850]
53	[104, 69]	1238	[1822, 1872]	2423	[3127, 588]	3608	[700, 178]
54	[105, 106]	1239	[1632, 443]	2424	[3128, 1804]	3609	[51, 711]
55	[107, 108]	1240	[1453, 1371]	2425	[3129, 1726]	3610	[4087, 1534]
56	[109, 110]	1241	[1529, 429]	2426	[2843, 2809]	3611	[1798, 615]
57	[111, 112]	1242	[1497, 544]	2427	[3130, 3131]	3612	[4088, 1335]
58	[113, 114]	1243	[522, 1873]	2428	[3132, 1689]	3613	[4089, 700]
59	[115, 116]	1244	[1874, 1507]	2429	[1788, 3133]	3614	[1499, 3005]
60	[117, 118]	1245	[1875, 718]	2430	[2950, 1465]	3615	[3179, 146]
61	[119, 120]	1246	[1876, 1741]	2431	[2974, 2909]	3616	[3987, 3077]
62	[121, 122]	1247	[136, 1806]	2432	[3134, 1374]	3617	[4090, 696]
63	[123, 124]	1248	[1877, 1593]	2433	[1664, 1769]	3618	[1821, 637]
64	[125, 126]	1249	[199, 1878]	2434	[1564, 1913]	3619	[4091, 3250]
65	[127, 128]	1250	[1879, 187]	2435	[1847, 2869]	3620	[4092, 1458]
66	[129, 130]	1251	[542, 751]	2436	[3135, 433]	3621	[1901, 1734]
67	[31, 131]	1252	[575, 1524]	2437	[3136, 1576]	3622	[3141, 3984]
68	[132, 133]	1253	[1880, 1881]	2438	[1576, 200]	3623	[4093, 158]
69	[134, 135]	1254	[1537, 1537]	2439	[2837, 3137]	3624	[1366, 2908]
70	[136, 137]	1255	[1882, 1883]	2440	[3134, 3022]	3625	[4094, 1456]
71	[138, 139]	1256	[1884, 1885]	2441	[2813, 3138]	3626	[3061, 3131]
72	[140, 141]	1257	[1886, 542]	2442	[3139, 1358]	3627	[1351, 1517]
73	[40, 142]	1258	[711, 523]	2443	[495, 3140]	3628	[4095, 613]
74	[143, 144]	1259	[1887, 214]	2444	[709, 2935]	3629	[4096, 1676]
75	[145, 146]	1260	[1888, 1715]	2445	[2972, 3090]	3630	[4097, 1816]

76	[147, 148]	1261	[1889, 1890]	2446	[3141, 1414]	3631	[4098, 705]
77	[149, 150]	1262	[1352, 684]	2447	[748, 1603]	3632	[3293, 2924]
78	[151, 152]	1263	[1891, 206]	2448	[707, 3142]	3633	[4099, 2916]
79	[153, 154]	1264	[1636, 1744]	2449	[500, 3009]	3634	[1927, 149]
80	[155, 156]	1265	[1892, 1741]	2450	[595, 3137]	3635	[50, 3074]
81	[157, 158]	1266	[1837, 1685]	2451	[184, 2874]	3636	[4100, 1599]
82	[159, 160]	1267	[1893, 50]	2452	[3143, 1323]	3637	[4101, 1330]
83	[44, 161]	1268	[1894, 215]	2453	[1583, 3144]	3638	[3143, 3948]
84	[162, 163]	1269	[593, 1895]	2454	[3145, 3146]	3639	[216, 3075]
85	[164, 165]	1270	[1896, 646]	2455	[3147, 3148]	3640	[4102, 497]
86	[166, 167]	1271	[1897, 1898]	2456	[1495, 1818]	3641	[1611, 506]
87	[168, 154]	1272	[1899, 1604]	2457	[1826, 134]	3642	[4103, 3151]
88	[169, 170]	1273	[1900, 452]	2458	[437, 3149]	3643	[1524, 1555]
89	[171, 172]	1274	[572, 663]	2459	[3150, 3151]	3644	[4104, 4105]
90	[173, 174]	1275	[1901, 1363]	2460	[1324, 2975]	3645	[4090, 1696]
91	[175, 176]	1276	[1602, 1902]	2461	[3152, 753]	3646	[4106, 565]
92	[177, 178]	1277	[1903, 712]	2462	[148, 124]	3647	[4107, 539]
93	[179, 180]	1278	[537, 1904]	2463	[1355, 3153]	3648	[505, 488]
94	[181, 182]	1279	[1905, 1906]	2464	[3154, 3053]	3649	[2914, 1774]
95	[183, 184]	1280	[1728, 1907]	2465	[1334, 3155]	3650	[4108, 1812]
96	[185, 186]	1281	[1852, 688]	2466	[3156, 14]	3651	[1929, 3002]
97	[187, 188]	1282	[1908, 1536]	2467	[1928, 2868]	3652	[3147, 3240]
98	[189, 190]	1283	[1536, 694]	2468	[1923, 482]	3653	[4109, 1666]
99	[191, 192]	1284	[1665, 1909]	2469	[3157, 3158]	3654	[4054, 4110]
100	[193, 50]	1285	[1910, 490]	2470	[3159, 1330]	3655	[3020, 1708]
101	[194, 195]	1286	[56, 433]	2471	[3160, 508]	3656	[4111, 462]
102	[196, 197]	1287	[1911, 1404]	2472	[3161, 1393]	3657	[186, 137]
103	[198, 199]	1288	[1912, 1913]	2473	[1580, 3162]	3658	[139, 1453]
104	[172, 200]	1289	[749, 1562]	2474	[3163, 1601]	3659	[4026, 1857]
105	[201, 202]	1290	[1914, 707]	2475	[3164, 1812]	3660	[4112, 3226]
106	[203, 204]	1291	[150, 1915]	2476	[444, 3023]	3661	[1453, 1405]
107	[205, 206]	1292	[1916, 1917]	2477	[3165, 536]	3662	[1736, 3265]
108	[207, 208]	1293	[1790, 1378]	2478	[1773, 1816]	3663	[2951, 442]
109	[209, 210]	1294	[1918, 1358]	2479	[2983, 495]	3664	[4113, 575]
110	[211, 212]	1295	[1919, 509]	2480	[1907, 1610]	3665	[522, 1693]
111	[213, 214]	1296	[1336, 1920]	2481	[1614, 1361]	3666	[610, 729]
112	[215, 216]	1297	[1808, 1921]	2482	[1411, 3166]	3667	[1674, 1823]
113	[217, 218]	1298	[1922, 1822]	2483	[3167, 3168]	3668	[1584, 4114]
114	[219, 220]	1299	[1923, 720]	2484	[207, 13]	3669	[4115, 2814]
115	[221, 222]	1300	[1924, 1614]	2485	[3169, 3170]	3670	[4116, 1731]
116	[223, 224]	1301	[1925, 1926]	2486	[3171, 1863]	3671	[1582, 639]
117	[225, 226]	1302	[691, 728]	2487	[567, 161]	3672	[3185, 4117]
118	[227, 228]	1303	[1927, 1433]	2488	[1583, 640]	3673	[1894, 665]
119	[229, 230]	1304	[1928, 1847]	2489	[144, 1344]	3674	[3994, 202]

120	[231, 232]	1305	[1929, 1930]	2490	[3164, 658]	3675	[4021, 1681]
121	[233, 234]	1306	[1352, 1931]	2491	[677, 431]	3676	[4118, 4119]
122	[235, 236]	1307	[1932, 1375]	2492	[3008, 3172]	3677	[1403, 1416]
123	[237, 238]	1308	[1933, 1617]	2493	[3121, 180]	3678	[1404, 2941]
124	[239, 240]	1309	[1390, 746]	2494	[1670, 3173]	3679	[4120, 1906]
125	[241, 242]	1310	[747, 688]	2495	[3174, 504]	3680	[736, 3133]
126	[243, 244]	1311	[1934, 680]	2496	[3035, 2]	3681	[4121, 643]
127	[245, 246]	1312	[1935, 135]	2497	[693, 1628]	3682	[1884, 2848]
128	[247, 248]	1313	[1837, 1729]	2498	[3175, 36]	3683	[3259, 742]
129	[249, 250]	1314	[1452, 1370]	2499	[1809, 639]	3684	[4122, 1719]
130	[251, 252]	1315	[1546, 1339]	2500	[3176, 1724]	3685	[1398, 2944]
131	[60, 253]	1316	[1674, 1872]	2501	[3112, 3177]	3686	[1616, 4123]
132	[254, 255]	1317	[1936, 533]	2502	[3178, 147]	3687	[4124, 3257]
133	[256, 257]	1318	[1937, 1647]	2503	[3179, 3031]	3688	[552, 516]
134	[258, 259]	1319	[454, 154]	2504	[639, 3144]	3689	[4125, 645]
135	[260, 261]	1320	[1728, 183]	2505	[1556, 3030]	3690	[4126, 4127]
136	[262, 263]	1321	[1938, 1939]	2506	[3180, 471]	3691	[2967, 149]
137	[264, 265]	1322	[1940, 1941]	2507	[1851, 3181]	3692	[3297, 615]
138	[266, 267]	1323	[1942, 1136]	2508	[3182, 1830]	3693	[4128, 565]
139	[268, 269]	1324	[238, 1943]	2509	[1660, 3183]	3694	[4129, 1432]
140	[270, 271]	1325	[1944, 902]	2510	[3184, 1478]	3695	[3176, 1575]
141	[272, 273]	1326	[1945, 1946]	2511	[3185, 3186]	3696	[2910, 3029]
142	[274, 275]	1327	[1947, 1948]	2512	[514, 1845]	3697	[4083, 4130]
143	[276, 277]	1328	[1949, 1950]	2513	[2961, 478]	3698	[163, 42]
144	[278, 279]	1329	[1951, 1952]	2514	[3187, 1589]	3699	[4131, 646]
145	[280, 281]	1330	[1953, 1954]	2515	[3188, 2993]	3700	[3161, 1681]
146	[282, 283]	1331	[1252, 1955]	2516	[3189, 1657]	3701	[3993, 1713]
147	[284, 239]	1332	[1956, 1957]	2517	[536, 2939]	3702	[2840, 1599]
148	[285, 286]	1333	[1958, 1959]	2518	[3085, 1507]	3703	[4132, 1857]
149	[287, 288]	1334	[1960, 1310]	2519	[2935, 49]	3704	[1641, 4044]
150	[289, 290]	1335	[1961, 1962]	2520	[3190, 1870]	3705	[4133, 1546]
151	[291, 292]	1336	[1963, 1964]	2521	[733, 3096]	3706	[1934, 3088]
152	[293, 294]	1337	[1965, 1966]	2522	[3191, 3170]	3707	[4134, 1493]
153	[295, 296]	1338	[1962, 1967]	2523	[1370, 1405]	3708	[4135, 1479]
154	[297, 298]	1339	[1968, 1969]	2524	[3192, 2829]	3709	[4136, 3291]
155	[299, 28]	1340	[1970, 1971]	2525	[1473, 3193]	3710	[4137, 1340]
156	[300, 301]	1341	[370, 1972]	2526	[3132, 3106]	3711	[4138, 1752]
157	[302, 303]	1342	[1955, 1973]	2527	[35, 3101]	3712	[4139, 1703]
158	[304, 305]	1343	[924, 1179]	2528	[547, 2945]	3713	[1361, 1670]
159	[306, 307]	1344	[1974, 1975]	2529	[3194, 1503]	3714	[4140, 1608]
160	[308, 309]	1345	[1976, 1977]	2530	[3195, 654]	3715	[3139, 3158]
161	[85, 310]	1346	[1137, 1978]	2531	[3196, 3019]	3716	[1359, 1426]
162	[311, 312]	1347	[1979, 369]	2532	[2939, 3197]	3717	[4141, 2995]
163	[313, 314]	1348	[1980, 1251]	2533	[3198, 182]	3718	[1805, 1421]

164	[315, 316]	1349	[1981, 1982]	2534	[1689, 3107]	3719	[4142, 697]
165	[317, 318]	1350	[815, 386]	2535	[1522, 3104]	3720	[208, 591]
166	[319, 320]	1351	[1983, 1984]	2536	[3199, 52]	3721	[1753, 1692]
167	[321, 322]	1352	[1985, 1217]	2537	[1632, 1793]	3722	[4143, 1346]
168	[323, 324]	1353	[1986, 1987]	2538	[433, 2837]	3723	[3136, 172]
169	[325, 326]	1354	[392, 1988]	2539	[3200, 571]	3724	[3999, 3294]
170	[327, 328]	1355	[1989, 1990]	2540	[1325, 3056]	3725	[4144, 1477]
171	[329, 330]	1356	[831, 1991]	2541	[3201, 1500]	3726	[1502, 1833]
172	[331, 332]	1357	[1992, 405]	2542	[3202, 2924]	3727	[4145, 600]
173	[333, 334]	1358	[1993, 1058]	2543	[3203, 1883]	3728	[1704, 3166]
174	[335, 336]	1359	[1141, 1994]	2544	[1411, 1705]	3729	[4095, 4146]
175	[337, 338]	1360	[771, 1995]	2545	[3204, 1930]	3730	[4147, 2819]
176	[339, 340]	1361	[1996, 1997]	2546	[1570, 3090]	3731	[3961, 4148]
177	[341, 68]	1362	[1998, 1999]	2547	[3051, 2929]	3732	[2922, 1780]
178	[342, 343]	1363	[2000, 2001]	2548	[1816, 144]	3733	[608, 3152]
179	[344, 345]	1364	[2002, 2003]	2549	[3205, 1833]	3734	[1362, 3173]
180	[346, 347]	1365	[2004, 2005]	2550	[201, 1473]	3735	[4149, 4150]
181	[348, 349]	1366	[2006, 2007]	2551	[3206, 2886]	3736	[4151, 1549]
182	[350, 351]	1367	[2008, 2009]	2552	[3119, 3085]	3737	[1590, 132]
183	[352, 353]	1368	[2010, 2011]	2553	[3207, 1354]	3738	[4146, 1779]
184	[354, 355]	1369	[2012, 2013]	2554	[2985, 3208]	3739	[533, 1522]
185	[356, 264]	1370	[2014, 2015]	2555	[3209, 134]	3740	[4152, 518]
186	[357, 358]	1371	[269, 2016]	2556	[2873, 2883]	3741	[425, 1597]
187	[246, 359]	1372	[2017, 231]	2557	[3210, 3211]	3742	[3271, 1910]
188	[360, 361]	1373	[2018, 2019]	2558	[1908, 1878]	3743	[634, 3133]
189	[362, 363]	1374	[2020, 2021]	2559	[3212, 143]	3744	[4153, 2886]
190	[364, 365]	1375	[1011, 2022]	2560	[2849, 3162]	3745	[616, 3954]
191	[366, 337]	1376	[2023, 2024]	2561	[1363, 1735]	3746	[4154, 189]
192	[367, 368]	1377	[2025, 973]	2562	[3213, 559]	3747	[2935, 475]
193	[369, 370]	1378	[2026, 2027]	2563	[3177, 2865]	3748	[2933, 714]
194	[371, 372]	1379	[2028, 2029]	2564	[614, 1783]	3749	[4155, 2966]
195	[373, 374]	1380	[2030, 2031]	2565	[129, 3214]	3750	[1369, 2897]
196	[375, 16]	1381	[888, 2032]	2566	[3215, 183]	3751	[4156, 2837]
197	[376, 377]	1382	[2033, 1086]	2567	[1444, 593]	3752	[4157, 1881]
198	[378, 379]	1383	[1147, 2034]	2568	[1402, 494]	3753	[1483, 3029]
199	[380, 381]	1384	[2035, 2036]	2569	[3216, 3217]	3754	[4158, 1634]
200	[382, 383]	1385	[2037, 2038]	2570	[3218, 2959]	3755	[2832, 124]
201	[384, 385]	1386	[417, 2039]	2571	[1766, 3219]	3756	[4159, 3107]
202	[386, 387]	1387	[2040, 2041]	2572	[3046, 1468]	3757	[4160, 1913]
203	[388, 389]	1388	[2042, 2043]	2573	[3099, 580]	3758	[3338, 3008]
204	[292, 390]	1389	[2044, 2045]	2574	[3220, 2829]	3759	[1587, 2968]
205	[391, 392]	1390	[2046, 2047]	2575	[3221, 2867]	3760	[3325, 748]
206	[393, 394]	1391	[2048, 2049]	2576	[618, 2892]	3761	[4078, 702]
207	[395, 396]	1392	[2050, 2051]	2577	[587, 3222]	3762	[1898, 1476]

208	[397, 398]	1393	[2052, 2053]	2578	[500, 3172]	3763	[4161, 539]
209	[399, 400]	1394	[870, 2054]	2579	[3223, 1644]	3764	[4162, 3003]
210	[401, 402]	1395	[907, 2055]	2580	[3224, 3080]	3765	[740, 1494]
211	[403, 404]	1396	[2056, 2057]	2581	[3225, 1888]	3766	[3269, 559]
212	[405, 406]	1397	[2058, 2059]	2582	[1339, 1663]	3767	[4163, 1371]
213	[407, 408]	1398	[2060, 2061]	2583	[3216, 3226]	3768	[2855, 646]
214	[409, 410]	1399	[2062, 793]	2584	[1677, 1361]	3769	[4164, 1375]
215	[411, 412]	1400	[2063, 1156]	2585	[3227, 1456]	3770	[2857, 4017]
216	[64, 413]	1401	[2064, 2065]	2586	[2962, 479]	3771	[4165, 697]
217	[414, 415]	1402	[2066, 2067]	2587	[3228, 3229]	3772	[56, 2836]
218	[416, 417]	1403	[2068, 2069]	2588	[452, 1654]	3773	[1707, 1825]
219	[418, 76]	1404	[2070, 2071]	2589	[133, 1434]	3774	[1603, 1572]
220	[419, 420]	1405	[915, 1240]	2590	[3230, 527]	3775	[4166, 1701]
221	[421, 422]	1406	[263, 2072]	2591	[2973, 432]	3776	[4097, 143]
222	[423, 424]	1407	[2073, 2074]	2592	[3231, 1710]	3777	[545, 3286]
223	[425, 175]	1408	[2075, 2076]	2593	[3202, 1755]	3778	[3150, 4127]
224	[426, 427]	1409	[2077, 2078]	2594	[700, 1761]	3779	[4167, 1720]
225	[428, 429]	1410	[1203, 2079]	2595	[3232, 1691]	3780	[3205, 1503]
226	[430, 431]	1411	[2080, 2081]	2596	[3233, 3017]	3781	[1646, 1440]
227	[432, 433]	1412	[2082, 1008]	2597	[572, 643]	3782	[1916, 4110]
228	[434, 435]	1413	[2083, 2084]	2598	[687, 1822]	3783	[3300, 2922]
229	[436, 437]	1414	[2085, 2086]	2599	[3234, 3235]	3784	[164, 4168]
230	[438, 439]	1415	[2087, 1242]	2600	[3236, 539]	3785	[4048, 462]
231	[440, 441]	1416	[1313, 113]	2601	[3002, 2978]	3786	[4023, 3085]
232	[442, 443]	1417	[2088, 2089]	2602	[3237, 1657]	3787	[540, 3149]
233	[444, 445]	1418	[2090, 2091]	2603	[1491, 3093]	3788	[2893, 4169]
234	[446, 447]	1419	[2057, 2092]	2604	[502, 657]	3789	[4170, 1324]
235	[448, 142]	1420	[2093, 85]	2605	[2901, 204]	3790	[1629, 546]
236	[195, 449]	1421	[2094, 2095]	2606	[1899, 3083]	3791	[4171, 2850]
237	[32, 450]	1422	[2096, 2097]	2607	[3238, 1920]	3792	[4172, 2886]
238	[451, 452]	1423	[2098, 2099]	2608	[3239, 3240]	3793	[3221, 661]
239	[453, 454]	1424	[2100, 1124]	2609	[3241, 477]	3794	[4149, 1456]
240	[455, 456]	1425	[2101, 2102]	2610	[1858, 3242]	3795	[4173, 566]
241	[457, 458]	1426	[2103, 2104]	2611	[3243, 46]	3796	[3249, 4174]
242	[459, 460]	1427	[2105, 795]	2612	[3004, 208]	3797	[2915, 1554]
243	[461, 462]	1428	[2106, 2107]	2613	[1340, 2946]	3798	[1907, 184]
244	[463, 464]	1429	[2108, 1981]	2614	[3167, 3244]	3799	[4175, 218]
245	[465, 466]	1430	[2109, 768]	2615	[3128, 1765]	3800	[4176, 1534]
246	[467, 468]	1431	[2110, 2111]	2616	[3245, 134]	3801	[4177, 36]
247	[469, 470]	1432	[1162, 2112]	2617	[1650, 3246]	3802	[4178, 1582]
248	[471, 472]	1433	[2113, 2114]	2618	[3247, 158]	3803	[3039, 3007]
249	[473, 474]	1434	[2115, 2116]	2619	[739, 3108]	3804	[1608, 633]
250	[475, 50]	1435	[68, 2117]	2620	[1692, 3082]	3805	[3100, 1910]
251	[476, 477]	1436	[2118, 69]	2621	[488, 3248]	3806	[4179, 42]

252	[478, 479]	1437	[2119, 2023]	2622	[1930, 1776]	3807	[1379, 3152]
253	[116, 480]	1438	[2120, 2121]	2623	[3249, 3250]	3808	[4100, 1512]
254	[481, 482]	1439	[2122, 2123]	2624	[469, 1728]	3809	[1382, 580]
255	[204, 483]	1440	[2124, 2125]	2625	[138, 1452]	3810	[534, 1752]
256	[484, 485]	1441	[2126, 2127]	2626	[3251, 1658]	3811	[4180, 460]
257	[486, 487]	1442	[2116, 2128]	2627	[1796, 1352]	3812	[4181, 150]
258	[488, 489]	1443	[248, 2129]	2628	[2883, 2920]	3813	[4034, 2900]
259	[446, 490]	1444	[2130, 2131]	2629	[3252, 133]	3814	[4182, 593]
260	[491, 492]	1445	[2132, 2133]	2630	[1842, 526]	3815	[1543, 3304]
261	[493, 494]	1446	[2134, 2135]	2631	[3103, 478]	3816	[1827, 748]
262	[495, 496]	1447	[2136, 355]	2632	[591, 730]	3817	[2923, 1755]
263	[497, 498]	1448	[2137, 1152]	2633	[3253, 1415]	3818	[4005, 3331]
264	[499, 500]	1449	[2138, 2126]	2634	[3254, 599]	3819	[4183, 1410]
265	[501, 502]	1450	[2139, 2140]	2635	[1601, 1418]	3820	[1523, 1727]
266	[503, 504]	1451	[400, 2141]	2636	[3130, 3062]	3821	[2804, 3160]
267	[505, 506]	1452	[1165, 2142]	2637	[3255, 1378]	3822	[4184, 439]
268	[507, 508]	1453	[2143, 1238]	2638	[3256, 3257]	3823	[612, 4146]
269	[509, 510]	1454	[2144, 1955]	2639	[1445, 1895]	3824	[4185, 2819]
270	[511, 512]	1455	[2145, 2146]	2640	[3152, 1486]	3825	[1461, 1696]
271	[513, 514]	1456	[2147, 898]	2641	[2872, 632]	3826	[4186, 3062]
272	[515, 121]	1457	[2148, 339]	2642	[494, 1416]	3827	[749, 4073]
273	[516, 151]	1458	[2149, 1269]	2643	[3258, 3211]	3828	[4187, 670]
274	[517, 518]	1459	[2150, 2151]	2644	[1845, 1595]	3829	[1933, 4123]
275	[519, 520]	1460	[1994, 2152]	2645	[1393, 206]	3830	[3092, 215]
276	[521, 522]	1461	[2153, 900]	2646	[3259, 1639]	3831	[4188, 2897]
277	[52, 523]	1462	[2154, 1060]	2647	[1372, 3183]	3832	[4189, 3296]
278	[524, 525]	1463	[2155, 2156]	2648	[3260, 425]	3833	[4190, 180]
279	[526, 527]	1464	[2157, 2158]	2649	[3261, 733]	3834	[4191, 165]
280	[528, 529]	1465	[2159, 2160]	2650	[3245, 1935]	3835	[3024, 3146]
281	[530, 531]	1466	[764, 2161]	2651	[3262, 659]	3836	[4146, 1504]
282	[532, 533]	1467	[2162, 2163]	2652	[3255, 1791]	3837	[4192, 1468]
283	[534, 535]	1468	[2164, 864]	2653	[2809, 1325]	3838	[1356, 1561]
284	[536, 455]	1469	[2165, 2166]	2654	[1873, 1694]	3839	[1743, 650]
285	[537, 538]	1470	[1114, 2167]	2655	[1756, 44]	3840	[1769, 1909]
286	[539, 540]	1471	[2168, 2169]	2656	[2850, 440]	3841	[4193, 1737]
287	[541, 542]	1472	[2170, 2171]	2657	[3263, 1822]	3842	[128, 1442]
288	[543, 544]	1473	[2172, 2173]	2658	[2834, 665]	3843	[4194, 3336]
289	[545, 126]	1474	[2174, 2175]	2659	[586, 2939]	3844	[1405, 703]
290	[546, 547]	1475	[2176, 2177]	2660	[423, 3264]	3845	[3163, 1547]
291	[548, 549]	1476	[2178, 2179]	2661	[3239, 3148]	3846	[4135, 1560]
292	[550, 551]	1477	[234, 2180]	2662	[3066, 2995]	3847	[4195, 1507]
293	[552, 553]	1478	[2181, 2182]	2663	[3071, 3265]	3848	[4196, 1720]
294	[554, 555]	1479	[2183, 820]	2664	[3266, 1557]	3849	[1508, 2858]
295	[556, 557]	1480	[2184, 931]	2665	[3267, 1700]	3850	[4197, 1701]

296	[215, 558]	1481	[2185, 2186]	2666	[1495, 723]	3851	[4198, 439]
297	[559, 560]	1482	[2187, 2188]	2667	[3268, 1698]	3852	[4199, 1510]
298	[561, 562]	1483	[2189, 2190]	2668	[3269, 1505]	3853	[3076, 4168]
299	[563, 564]	1484	[858, 2191]	2669	[3270, 2922]	3854	[2930, 3023]
300	[565, 566]	1485	[2192, 2193]	2670	[3271, 446]	3855	[686, 130]
301	[567, 568]	1486	[2029, 2194]	2671	[3272, 493]	3856	[4200, 2842]
302	[569, 477]	1487	[2195, 2174]	2672	[3273, 426]	3857	[455, 3197]
303	[570, 571]	1488	[2196, 985]	2673	[3274, 1475]	3858	[4201, 1368]
304	[1, 189]	1489	[2197, 2198]	2674	[1330, 1568]	3859	[4202, 643]
305	[561, 572]	1490	[2199, 2200]	2675	[3275, 3186]	3860	[1819, 3980]
306	[573, 574]	1491	[2201, 2202]	2676	[694, 1854]	3861	[4203, 1694]
307	[575, 480]	1492	[2203, 2204]	2677	[1732, 1541]	3862	[4131, 1691]
308	[426, 449]	1493	[2205, 2206]	2678	[3276, 3053]	3863	[4204, 1371]
309	[576, 577]	1494	[2207, 1273]	2679	[2962, 3277]	3864	[4205, 216]
310	[163, 578]	1495	[2208, 2157]	2680	[3278, 2829]	3865	[4047, 149]
311	[579, 580]	1496	[2209, 2210]	2681	[717, 2984]	3866	[4206, 1335]
312	[581, 582]	1497	[2211, 380]	2682	[3279, 608]	3867	[3978, 3229]
313	[583, 584]	1498	[2212, 2213]	2683	[732, 1722]	3868	[4109, 702]
314	[585, 586]	1499	[2214, 1158]	2684	[1490, 1824]	3869	[1684, 1421]
315	[587, 588]	1500	[1057, 2215]	2685	[3280, 712]	3870	[3188, 4207]
316	[589, 590]	1501	[368, 2216]	2686	[3281, 1510]	3871	[4182, 1445]
317	[591, 592]	1502	[2217, 2218]	2687	[1378, 608]	3872	[4208, 1816]
318	[593, 594]	1503	[2219, 2220]	2688	[692, 1535]	3873	[196, 4209]
319	[595, 596]	1504	[2221, 2222]	2689	[3282, 1363]	3874	[4210, 1647]
320	[597, 598]	1505	[2223, 2048]	2690	[3283, 2876]	3875	[3345, 1560]
321	[508, 599]	1506	[2224, 2225]	2691	[3284, 1404]	3876	[4211, 4119]
322	[480, 600]	1507	[2226, 2227]	2692	[3285, 195]	3877	[190, 1885]
323	[601, 602]	1508	[2228, 2229]	2693	[125, 3286]	3878	[4112, 3217]
324	[603, 57]	1509	[2230, 2231]	2694	[2858, 3094]	3879	[3967, 1718]
325	[604, 605]	1510	[2232, 2233]	2695	[3177, 598]	3880	[2926, 1766]
326	[606, 607]	1511	[2234, 2235]	2696	[3270, 1469]	3881	[541, 750]
327	[608, 609]	1512	[2236, 875]	2697	[3287, 130]	3882	[4212, 4213]
328	[610, 611]	1513	[2237, 2238]	2698	[3288, 1737]	3883	[4214, 1386]
329	[612, 613]	1514	[2239, 2240]	2699	[1472, 1747]	3884	[1829, 132]
330	[614, 615]	1515	[2241, 2242]	2700	[3289, 659]	3885	[4208, 143]
331	[616, 617]	1516	[2243, 1225]	2701	[689, 1535]	3886	[4215, 2842]
332	[618, 458]	1517	[2244, 2245]	2702	[198, 1908]	3887	[3016, 4216]
333	[619, 518]	1518	[2210, 781]	2703	[3290, 3291]	3888	[1380, 3140]
334	[620, 621]	1519	[2246, 2116]	2704	[3292, 603]	3889	[563, 4217]
335	[485, 622]	1520	[2247, 2248]	2705	[554, 160]	3890	[3305, 738]
336	[586, 455]	1521	[857, 2249]	2706	[3293, 1755]	3891	[194, 426]
337	[502, 623]	1522	[2250, 2251]	2707	[2851, 3294]	3892	[1349, 429]
338	[624, 551]	1523	[2252, 229]	2708	[3295, 1779]	3893	[4218, 3146]
339	[625, 425]	1524	[2253, 2254]	2709	[1510, 3296]	3894	[3276, 4219]

340	[626, 627]	1525	[2255, 2256]	2710	[734, 1612]	3895	[1633, 4119]
341	[628, 629]	1526	[301, 2257]	2711	[3297, 1783]	3896	[3191, 4220]
342	[630, 631]	1527	[2258, 2226]	2712	[3298, 1669]	3897	[4221, 3168]
343	[632, 633]	1528	[2259, 2260]	2713	[576, 3299]	3898	[1597, 176]
344	[634, 635]	1529	[1308, 2261]	2714	[3300, 1469]	3899	[4094, 4150]
345	[636, 637]	1530	[2262, 1214]	2715	[2976, 3208]	3900	[4222, 670]
346	[638, 588]	1531	[2263, 1097]	2716	[3301, 635]	3901	[3030, 1730]
347	[639, 640]	1532	[1320, 2264]	2717	[3302, 3019]	3902	[4115, 1630]
348	[641, 642]	1533	[2265, 2266]	2718	[3303, 42]	3903	[3275, 4117]
349	[562, 643]	1534	[2267, 2268]	2719	[3241, 3304]	3904	[1388, 4223]
350	[644, 645]	1535	[2269, 2270]	2720	[3005, 656]	3905	[1721, 733]
351	[646, 647]	1536	[2271, 2272]	2721	[3305, 3306]	3906	[4190, 3122]
352	[648, 649]	1537	[2273, 2274]	2722	[3212, 1816]	3907	[4160, 1565]
353	[527, 650]	1538	[1538, 1538]	2723	[1615, 1670]	3908	[4224, 189]
354	[651, 468]	1539	[2275, 2276]	2724	[1620, 1718]	3909	[4225, 1781]
355	[140, 652]	1540	[2277, 859]	2725	[686, 3214]	3910	[3261, 1722]
356	[653, 501]	1541	[2278, 2279]	2726	[607, 1753]	3911	[4226, 187]
357	[654, 655]	1542	[2280, 995]	2727	[3064, 3083]	3912	[3200, 1800]
358	[656, 657]	1543	[2281, 2282]	2728	[440, 1613]	3913	[4177, 603]
359	[466, 658]	1544	[2283, 2284]	2729	[1828, 1590]	3914	[4227, 3168]
360	[659, 660]	1545	[2285, 2286]	2730	[3307, 1407]	3915	[4228, 637]
361	[661, 662]	1546	[2287, 2288]	2731	[3308, 2995]	3916	[1496, 543]
362	[663, 664]	1547	[305, 2289]	2732	[3309, 1451]	3917	[1539, 526]
363	[665, 558]	1548	[1079, 1085]	2733	[2866, 661]	3918	[4229, 2810]
364	[666, 667]	1549	[2290, 2291]	2734	[3310, 684]	3919	[4230, 1549]
365	[668, 190]	1550	[2292, 2293]	2735	[2831, 3117]	3920	[4231, 1644]
366	[669, 624]	1551	[2294, 782]	2736	[3311, 1769]	3921	[432, 2836]
367	[670, 671]	1552	[2295, 2296]	2737	[1825, 3245]	3922	[3288, 3265]
368	[585, 536]	1553	[2297, 2298]	2738	[3312, 631]	3923	[1521, 3219]
369	[672, 673]	1554	[2299, 2300]	2739	[669, 550]	3924	[4120, 434]
370	[184, 674]	1555	[2074, 2301]	2740	[3313, 1430]	3925	[4232, 3062]
371	[675, 676]	1556	[2302, 2303]	2741	[1557, 1730]	3926	[3985, 3077]
372	[677, 678]	1557	[2304, 2305]	2742	[8, 626]	3927	[4233, 4105]
373	[679, 680]	1558	[1131, 2306]	2743	[2950, 3314]	3928	[2882, 1590]
374	[681, 682]	1559	[2307, 1144]	2744	[3315, 184]	3929	[4234, 1673]
375	[683, 684]	1560	[2308, 2309]	2745	[3316, 3177]	3930	[4235, 1900]
376	[685, 686]	1561	[2310, 2311]	2746	[3317, 1397]	3931	[3088, 3066]
377	[661, 687]	1562	[788, 2312]	2747	[1717, 1621]	3932	[1423, 1763]
378	[688, 689]	1563	[2313, 968]	2748	[3318, 2814]	3933	[4236, 1404]
379	[690, 691]	1564	[2314, 2315]	2749	[3022, 2846]	3934	[459, 1770]
380	[692, 693]	1565	[2316, 2317]	2750	[3319, 440]	3935	[4161, 436]
381	[694, 513]	1566	[2318, 2319]	2751	[422, 1568]	3936	[1723, 1575]
382	[695, 696]	1567	[2320, 2321]	2752	[3318, 1630]	3937	[4237, 1698]
383	[697, 698]	1568	[2322, 98]	2753	[3320, 553]	3938	[2919, 2972]

384	[699, 700]	1569	[2323, 2324]	2754	[1392, 1681]	3939	[1439, 4209]
385	[701, 702]	1570	[2325, 2273]	2755	[481, 720]	3940	[4238, 1647]
386	[703, 704]	1571	[2326, 2327]	2756	[3321, 1326]	3941	[581, 3235]
387	[527, 705]	1572	[903, 2328]	2757	[3322, 1468]	3942	[3050, 546]
388	[706, 707]	1573	[2329, 2330]	2758	[1814, 3296]	3943	[4239, 3327]
389	[37, 58]	1574	[2331, 2332]	2759	[3323, 2851]	3944	[2832, 4030]
390	[708, 652]	1575	[2333, 2030]	2760	[2940, 702]	3945	[3273, 195]
391	[709, 710]	1576	[2334, 2335]	2761	[543, 1518]	3946	[4240, 1644]
392	[711, 712]	1577	[2336, 2337]	2762	[3324, 1781]	3947	[4241, 1608]
393	[556, 713]	1578	[2338, 2057]	2763	[149, 2974]	3948	[2045, 4242]
394	[714, 715]	1579	[2043, 2289]	2764	[3325, 621]	3949	[2293, 2188]
395	[716, 454]	1580	[2339, 2340]	2765	[3326, 3327]	3950	[4243, 3648]
396	[717, 718]	1581	[2341, 2342]	2766	[3258, 3328]	3951	[2315, 1129]
397	[719, 140]	1582	[970, 2343]	2767	[3077, 3329]	3952	[4244, 874]
398	[720, 721]	1583	[2344, 2345]	2768	[3330, 654]	3953	[4245, 4246]
399	[722, 723]	1584	[2346, 982]	2769	[1862, 3331]	3954	[1091, 4247]
400	[724, 195]	1585	[2032, 2347]	2770	[628, 1850]	3955	[4248, 1999]
401	[725, 726]	1586	[2348, 2349]	2771	[2978, 1582]	3956	[4249, 2378]
402	[727, 728]	1587	[2350, 2351]	2772	[3146, 3242]	3957	[4250, 922]
403	[580, 729]	1588	[1224, 890]	2773	[1843, 1926]	3958	[4251, 4252]
404	[730, 731]	1589	[2352, 2353]	2774	[3332, 172]	3959	[4253, 3732]
405	[732, 733]	1590	[2354, 256]	2775	[3333, 1669]	3960	[2051, 2291]
406	[734, 440]	1591	[2355, 2115]	2776	[3334, 1658]	3961	[4254, 1986]
407	[735, 154]	1592	[2356, 2357]	2777	[2826, 607]	3962	[3601, 1007]
408	[736, 635]	1593	[2358, 2004]	2778	[3335, 3336]	3963	[4255, 1110]
409	[737, 738]	1594	[2359, 2360]	2779	[3337, 3208]	3964	[4256, 871]
410	[739, 622]	1595	[2361, 2046]	2780	[3338, 500]	3965	[4257, 2207]
411	[740, 741]	1596	[2362, 2363]	2781	[3339, 1430]	3966	[4258, 790]
412	[742, 743]	1597	[2364, 2365]	2782	[649, 128]	3967	[4259, 1147]
413	[744, 491]	1598	[281, 2366]	2783	[1799, 3340]	3968	[4260, 4261]
414	[745, 2]	1599	[1116, 2367]	2784	[3341, 1585]	3969	[2166, 1051]
415	[746, 747]	1600	[2368, 2369]	2785	[484, 739]	3970	[4262, 1296]
416	[620, 748]	1601	[2161, 992]	2786	[3342, 1508]	3971	[2735, 935]
417	[439, 749]	1602	[2370, 2371]	2787	[1676, 1349]	3972	[4263, 278]
418	[750, 751]	1603	[2111, 308]	2788	[3343, 1493]	3973	[4264, 1941]
419	[752, 467]	1604	[1226, 2364]	2789	[3344, 1510]	3974	[4265, 1221]
420	[609, 753]	1605	[2372, 2373]	2790	[718, 3187]	3975	[4266, 3813]
421	[754, 755]	1606	[2177, 2374]	2791	[3345, 1479]	3976	[4267, 3419]
422	[756, 757]	1607	[2375, 2376]	2792	[2981, 3346]	3977	[3750, 4268]
423	[758, 393]	1608	[2377, 1106]	2793	[220, 119]	3978	[4269, 2143]
424	[759, 760]	1609	[2378, 1115]	2794	[3347, 609]	3979	[1093, 2125]
425	[761, 762]	1610	[1972, 2379]	2795	[3348, 121]	3980	[3507, 3738]
426	[763, 764]	1611	[2380, 2381]	2796	[2999, 3349]	3981	[3777, 1939]
427	[372, 765]	1612	[2102, 2382]	2797	[3350, 622]	3982	[4270, 4271]

428	[766, 767]	1613	[2383, 2384]	2798	[3351, 134]	3983	[2286, 2305]
429	[768, 769]	1614	[1957, 2385]	2799	[1876, 1492]	3984	[4272, 3383]
430	[770, 771]	1615	[1959, 2386]	2800	[3352, 686]	3985	[4273, 3564]
431	[772, 773]	1616	[2387, 944]	2801	[3353, 2787]	3986	[3770, 1315]
432	[774, 775]	1617	[1286, 2388]	2802	[3354, 2715]	3987	[4274, 3592]
433	[108, 776]	1618	[2389, 2390]	2803	[3355, 3356]	3988	[4275, 378]
434	[777, 778]	1619	[2391, 2112]	2804	[3357, 2755]	3989	[4276, 3376]
435	[779, 780]	1620	[2392, 2393]	2805	[3358, 2534]	3990	[4277, 4278]
436	[781, 782]	1621	[2394, 1062]	2806	[1077, 3359]	3991	[2319, 1187]
437	[783, 784]	1622	[2395, 2396]	2807	[3360, 3361]	3992	[4279, 1016]
438	[785, 786]	1623	[2397, 1006]	2808	[3362, 2394]	3993	[4280, 3634]
439	[787, 788]	1624	[2398, 2399]	2809	[3363, 3364]	3994	[4281, 408]
440	[789, 790]	1625	[2400, 2401]	2810	[3365, 3366]	3995	[4282, 4283]
441	[791, 792]	1626	[2402, 2403]	2811	[3367, 2489]	3996	[2538, 2438]
442	[793, 794]	1627	[2404, 965]	2812	[3368, 3369]	3997	[4284, 2421]
443	[795, 327]	1628	[2405, 2271]	2813	[1952, 2694]	3998	[4285, 4253]
444	[796, 797]	1629	[2406, 2073]	2814	[3370, 367]	3999	[4286, 1133]
445	[798, 799]	1630	[2407, 2408]	2815	[3371, 994]	4000	[4287, 771]
446	[800, 801]	1631	[2409, 2410]	2816	[3372, 3373]	4001	[3415, 810]
447	[802, 803]	1632	[2411, 1172]	2817	[3374, 2142]	4002	[4288, 254]
448	[804, 805]	1633	[2412, 797]	2818	[3375, 1038]	4003	[3463, 2173]
449	[806, 77]	1634	[2413, 798]	2819	[3376, 2449]	4004	[4289, 4290]
450	[807, 808]	1635	[2414, 2415]	2820	[3377, 2391]	4005	[4291, 2683]
451	[809, 810]	1636	[2416, 1290]	2821	[3378, 3379]	4006	[927, 2439]
452	[811, 812]	1637	[2417, 1944]	2822	[3380, 2705]	4007	[4292, 2353]
453	[813, 297]	1638	[855, 2418]	2823	[1185, 3381]	4008	[4293, 1035]
454	[814, 815]	1639	[2419, 2405]	2824	[3382, 101]	4009	[3488, 1182]
455	[816, 789]	1640	[2420, 867]	2825	[3383, 2287]	4010	[4294, 910]
456	[817, 818]	1641	[2091, 2421]	2826	[3384, 2575]	4011	[4295, 2408]
457	[819, 757]	1642	[1073, 2422]	2827	[3385, 1015]	4012	[4296, 1268]
458	[820, 821]	1643	[2423, 2424]	2828	[3386, 863]	4013	[4297, 2151]
459	[822, 823]	1644	[2425, 2426]	2829	[3387, 3388]	4014	[4298, 1968]
460	[824, 825]	1645	[2427, 396]	2830	[3389, 2253]	4015	[4299, 1313]
461	[826, 827]	1646	[2428, 2429]	2831	[3390, 806]	4016	[4300, 2702]
462	[828, 829]	1647	[2430, 2431]	2832	[3391, 3363]	4017	[1189, 3525]
463	[830, 831]	1648	[2432, 2158]	2833	[2745, 839]	4018	[4301, 2055]
464	[832, 833]	1649	[2433, 2434]	2834	[3392, 3393]	4019	[4302, 2437]
465	[834, 835]	1650	[2435, 2034]	2835	[3394, 2784]	4020	[4303, 1183]
466	[836, 837]	1651	[2436, 2437]	2836	[2061, 3395]	4021	[4304, 3473]
467	[838, 839]	1652	[2438, 2439]	2837	[2345, 3396]	4022	[4278, 1063]
468	[840, 841]	1653	[2403, 799]	2838	[3397, 2793]	4023	[4305, 2313]
469	[842, 352]	1654	[810, 2132]	2839	[3398, 3399]	4024	[4306, 3790]
470	[843, 354]	1655	[2440, 2441]	2840	[3400, 352]	4025	[4307, 4283]
471	[844, 845]	1656	[2442, 2443]	2841	[3401, 2658]	4026	[4308, 2420]

472	[846, 847]	1657	[2444, 2445]	2842	[2140, 3402]	4027	[1241, 4309]
473	[848, 849]	1658	[2446, 2447]	2843	[972, 3403]	4028	[4310, 2585]
474	[850, 851]	1659	[389, 2448]	2844	[2107, 2598]	4029	[4311, 4312]
475	[852, 853]	1660	[2449, 2450]	2845	[3404, 3405]	4030	[945, 4313]
476	[854, 855]	1661	[797, 2451]	2846	[2156, 2653]	4031	[2652, 2031]
477	[856, 857]	1662	[2452, 2181]	2847	[3406, 3407]	4032	[3793, 1121]
478	[309, 858]	1663	[2288, 2453]	2848	[1179, 889]	4033	[2123, 1959]
479	[859, 860]	1664	[2454, 849]	2849	[3408, 3409]	4034	[4314, 2615]
480	[222, 861]	1665	[2455, 2456]	2850	[1293, 791]	4035	[4315, 951]
481	[862, 863]	1666	[2457, 104]	2851	[3410, 3411]	4036	[4316, 3461]
482	[864, 865]	1667	[230, 2458]	2852	[3412, 3413]	4037	[4317, 2256]
483	[866, 65]	1668	[2459, 1005]	2853	[3414, 3415]	4038	[4318, 1034]
484	[867, 868]	1669	[1973, 2460]	2854	[3416, 3417]	4039	[4319, 2654]
485	[869, 870]	1670	[2461, 2352]	2855	[3418, 2192]	4040	[4320, 785]
486	[871, 872]	1671	[25, 2462]	2856	[3419, 1031]	4041	[4321, 817]
487	[873, 874]	1672	[2463, 257]	2857	[3420, 2294]	4042	[4322, 2612]
488	[875, 876]	1673	[2464, 2430]	2858	[3421, 2241]	4043	[4323, 4324]
489	[877, 878]	1674	[1167, 2465]	2859	[890, 3422]	4044	[2662, 3457]
490	[879, 880]	1675	[2466, 2018]	2860	[3423, 3424]	4045	[4325, 2570]
491	[881, 882]	1676	[2467, 296]	2861	[3425, 2452]	4046	[4326, 783]
492	[883, 884]	1677	[2468, 2461]	2862	[3426, 1965]	4047	[4327, 289]
493	[885, 886]	1678	[2469, 2303]	2863	[3427, 3428]	4048	[4328, 2745]
494	[887, 888]	1679	[2470, 2471]	2864	[3429, 3430]	4049	[4329, 4330]
495	[889, 890]	1680	[2472, 2473]	2865	[3431, 3432]	4050	[4331, 846]
496	[891, 892]	1681	[2474, 2475]	2866	[3433, 1168]	4051	[4332, 230]
497	[232, 893]	1682	[420, 2169]	2867	[3434, 3435]	4052	[4333, 946]
498	[894, 895]	1683	[2476, 2241]	2868	[911, 3436]	4053	[4334, 2761]
499	[896, 897]	1684	[2477, 2478]	2869	[2771, 3437]	4054	[4335, 1984]
500	[898, 899]	1685	[2479, 2480]	2870	[3438, 2524]	4055	[3553, 332]
501	[900, 901]	1686	[1262, 2407]	2871	[3439, 1173]	4056	[226, 2039]
502	[902, 903]	1687	[2481, 2482]	2872	[3440, 3441]	4057	[4336, 4337]
503	[326, 899]	1688	[2483, 2484]	2873	[3442, 3443]	4058	[4338, 1011]
504	[886, 904]	1689	[2485, 2481]	2874	[2034, 3444]	4059	[4339, 400]
505	[905, 906]	1690	[2486, 2487]	2875	[3445, 1213]	4060	[4340, 3431]
506	[252, 907]	1691	[2488, 2489]	2876	[3446, 17]	4061	[4341, 113]
507	[908, 909]	1692	[338, 2490]	2877	[2384, 3447]	4062	[2624, 1319]
508	[910, 911]	1693	[2396, 319]	2878	[3448, 779]	4063	[4342, 2688]
509	[912, 913]	1694	[935, 2389]	2879	[3449, 281]	4064	[4343, 4344]
510	[914, 915]	1695	[2491, 2079]	2880	[3450, 2757]	4065	[4345, 1964]
511	[916, 917]	1696	[95, 2492]	2881	[3451, 3452]	4066	[4346, 292]
512	[918, 919]	1697	[2493, 2037]	2882	[3453, 3454]	4067	[4347, 64]
513	[920, 921]	1698	[236, 2494]	2883	[2222, 1312]	4068	[4348, 1538]
514	[415, 922]	1699	[2495, 2208]	2884	[2256, 3455]	4069	[267, 404]
515	[923, 924]	1700	[2496, 2497]	2885	[3456, 2210]	4070	[4349, 2382]

516	[925, 293]	1701	[2498, 2499]	2886	[3457, 2290]	4071	[4350, 956]
517	[926, 927]	1702	[2500, 2501]	2887	[1964, 1032]	4072	[4351, 4352]
518	[928, 929]	1703	[2502, 418]	2888	[3458, 1272]	4073	[2597, 4353]
519	[755, 930]	1704	[2503, 1996]	2889	[2645, 3459]	4074	[4354, 1220]
520	[931, 331]	1705	[112, 2504]	2890	[3460, 3461]	4075	[4355, 4356]
521	[932, 933]	1706	[2505, 1083]	2891	[3462, 3463]	4076	[4357, 2294]
522	[934, 935]	1707	[2506, 2507]	2892	[790, 2252]	4077	[4358, 3833]
523	[936, 937]	1708	[2508, 2509]	2893	[3464, 2149]	4078	[4359, 2507]
524	[938, 939]	1709	[2510, 1050]	2894	[2388, 3465]	4079	[4360, 2498]
525	[940, 941]	1710	[2511, 2512]	2895	[1318, 1236]	4080	[4361, 993]
526	[942, 943]	1711	[2513, 2514]	2896	[1278, 2674]	4081	[4362, 4363]
527	[944, 945]	1712	[1016, 1300]	2897	[845, 3466]	4082	[4364, 883]
528	[946, 947]	1713	[2515, 1219]	2898	[3467, 2336]	4083	[4365, 3860]
529	[948, 949]	1714	[2516, 2517]	2899	[3468, 3469]	4084	[4366, 381]
530	[950, 951]	1715	[2186, 2518]	2900	[3470, 2010]	4085	[3663, 231]
531	[952, 953]	1716	[2445, 2519]	2901	[2637, 3471]	4086	[4367, 2542]
532	[954, 955]	1717	[2520, 2134]	2902	[3472, 3473]	4087	[4368, 3361]
533	[956, 957]	1718	[406, 2521]	2903	[2327, 1994]	4088	[4369, 1283]
534	[958, 959]	1719	[2522, 2523]	2904	[2363, 3359]	4089	[4370, 4371]
535	[960, 961]	1720	[2524, 2525]	2905	[3474, 3475]	4090	[4372, 2652]
536	[962, 817]	1721	[2526, 1069]	2906	[3476, 3477]	4091	[4373, 1202]
537	[963, 964]	1722	[2527, 2528]	2907	[3478, 1314]	4092	[4374, 368]
538	[965, 966]	1723	[2529, 2530]	2908	[2518, 2124]	4093	[4375, 4376]
539	[967, 968]	1724	[2531, 2532]	2909	[288, 3479]	4094	[4377, 2567]
540	[969, 970]	1725	[2533, 2221]	2910	[3480, 2780]	4095	[4378, 2221]
541	[971, 972]	1726	[2534, 300]	2911	[1066, 3481]	4096	[4379, 3406]
542	[973, 238]	1727	[303, 2535]	2912	[2415, 2288]	4097	[4380, 226]
543	[974, 975]	1728	[2536, 2537]	2913	[3482, 3483]	4098	[3622, 2684]
544	[976, 977]	1729	[2437, 2538]	2914	[3484, 2282]	4099	[4381, 1299]
545	[978, 979]	1730	[2539, 2310]	2915	[3485, 2208]	4100	[4382, 2240]
546	[980, 981]	1731	[757, 2540]	2916	[3486, 3370]	4101	[4383, 3770]
547	[982, 983]	1732	[2541, 2542]	2917	[3487, 3488]	4102	[3813, 2335]
548	[984, 883]	1733	[2543, 2544]	2918	[3489, 2490]	4103	[4384, 3649]
549	[985, 986]	1734	[2545, 2546]	2919	[3490, 3491]	4104	[4385, 3912]
550	[987, 370]	1735	[2547, 2548]	2920	[3492, 2219]	4105	[4386, 4387]
551	[988, 989]	1736	[2549, 2550]	2921	[3493, 2733]	4106	[4388, 2365]
552	[990, 991]	1737	[2551, 2435]	2922	[3494, 3495]	4107	[4389, 2735]
553	[992, 993]	1738	[2552, 2186]	2923	[3496, 2228]	4108	[4390, 1215]
554	[994, 925]	1739	[2553, 2554]	2924	[3497, 3498]	4109	[4391, 2671]
555	[995, 996]	1740	[2555, 2556]	2925	[3499, 1239]	4110	[2544, 4392]
556	[997, 998]	1741	[2557, 2558]	2926	[3500, 2593]	4111	[4393, 972]
557	[999, 1000]	1742	[2559, 2109]	2927	[3501, 3391]	4112	[4394, 4395]
558	[1001, 1002]	1743	[2560, 2561]	2928	[3502, 1273]	4113	[4396, 3374]
559	[1003, 1004]	1744	[2562, 2563]	2929	[3503, 3504]	4114	[4397, 4398]

560	[1005, 809]	1745	[2564, 2565]	2930	[3505, 3506]	4115	[4399, 366]
561	[1006, 1007]	1746	[2566, 2567]	2931	[1059, 3507]	4116	[4400, 3510]
562	[1008, 1009]	1747	[1247, 2025]	2932	[62, 1039]	4117	[4401, 2077]
563	[1010, 1011]	1748	[332, 2568]	2933	[3508, 1259]	4118	[4402, 1046]
564	[410, 1012]	1749	[2569, 1066]	2934	[3509, 2501]	4119	[4403, 4404]
565	[1013, 1014]	1750	[2570, 2571]	2935	[1975, 3510]	4120	[4405, 4395]
566	[1015, 1016]	1751	[2572, 2573]	2936	[3511, 1282]	4121	[3477, 794]
567	[1017, 1018]	1752	[2574, 838]	2937	[3512, 323]	4122	[4406, 2719]
568	[1019, 1020]	1753	[2575, 2576]	2938	[2129, 94]	4123	[2687, 4407]
569	[1021, 1022]	1754	[2577, 1264]	2939	[404, 3417]	4124	[4408, 3517]
570	[1023, 1024]	1755	[265, 2578]	2940	[3513, 3514]	4125	[4409, 2631]
571	[1025, 291]	1756	[2579, 1019]	2941	[93, 3515]	4126	[4410, 3454]
572	[1026, 1027]	1757	[2580, 2581]	2942	[3516, 3517]	4127	[4411, 1958]
573	[1028, 819]	1758	[349, 2582]	2943	[3518, 2681]	4128	[4412, 338]
574	[1029, 1030]	1759	[2200, 908]	2944	[2418, 3519]	4129	[4413, 994]
575	[1031, 1032]	1760	[2583, 2584]	2945	[1192, 2304]	4130	[4414, 3358]
576	[1033, 1034]	1761	[2585, 2586]	2946	[2128, 3520]	4131	[4415, 1144]
577	[1035, 1036]	1762	[2587, 2478]	2947	[1299, 1944]	4132	[4416, 4417]
578	[312, 403]	1763	[2588, 2589]	2948	[2792, 239]	4133	[4418, 2452]
579	[1037, 1038]	1764	[2590, 2591]	2949	[3521, 3522]	4134	[4419, 920]
580	[1039, 866]	1765	[2592, 2176]	2950	[1151, 984]	4135	[4420, 1097]
581	[1040, 105]	1766	[240, 1319]	2951	[3523, 795]	4136	[4421, 2727]
582	[1041, 1042]	1767	[2593, 2594]	2952	[3524, 2524]	4137	[4422, 2128]
583	[1043, 1044]	1768	[2595, 1990]	2953	[3525, 2457]	4138	[4423, 1048]
584	[1020, 1045]	1769	[2596, 2597]	2954	[3526, 3367]	4139	[4424, 96]
585	[1046, 816]	1770	[2598, 1186]	2955	[3527, 2795]	4140	[4425, 2371]
586	[1047, 1048]	1771	[2599, 1008]	2956	[3528, 1229]	4141	[4376, 865]
587	[1049, 1050]	1772	[2600, 2601]	2957	[1995, 3529]	4142	[4426, 1229]
588	[1051, 1052]	1773	[2602, 2603]	2958	[3530, 877]	4143	[4427, 2591]
589	[1053, 900]	1774	[2220, 2604]	2959	[3531, 3532]	4144	[2603, 2349]
590	[1054, 1055]	1775	[1022, 2605]	2960	[3533, 3534]	4145	[3638, 1170]
591	[396, 1056]	1776	[2606, 2344]	2961	[3535, 3536]	4146	[4428, 4429]
592	[27, 1057]	1777	[2607, 1047]	2962	[347, 3537]	4147	[4430, 1991]
593	[1058, 1059]	1778	[2608, 1095]	2963	[3356, 3538]	4148	[4431, 2334]
594	[1060, 1061]	1779	[2609, 2610]	2964	[3539, 2486]	4149	[4432, 2018]
595	[110, 846]	1780	[2611, 2417]	2965	[3540, 1957]	4150	[4433, 4434]
596	[387, 759]	1781	[2612, 2613]	2966	[3541, 3542]	4151	[4435, 1947]
597	[1062, 1063]	1782	[2614, 2615]	2967	[3543, 3544]	4152	[4436, 2606]
598	[1064, 1065]	1783	[2616, 2617]	2968	[2039, 1289]	4153	[4437, 4438]
599	[365, 1066]	1784	[2618, 1961]	2969	[3545, 3546]	4154	[4439, 364]
600	[1032, 1067]	1785	[250, 2619]	2970	[3547, 247]	4155	[4440, 2468]
601	[1068, 1069]	1786	[2620, 2621]	2971	[3548, 2574]	4156	[316, 387]
602	[1070, 1071]	1787	[2546, 2622]	2972	[3549, 3550]	4157	[4441, 969]
603	[1072, 1073]	1788	[2623, 2624]	2973	[3551, 3367]	4158	[4442, 3506]

604	[1074, 1075]	1789	[2625, 2251]	2974	[3544, 832]	4159	[4443, 1943]
605	[1076, 1077]	1790	[2626, 2028]	2975	[1316, 3534]	4160	[4444, 2327]
606	[1078, 1079]	1791	[2627, 2628]	2976	[3552, 3553]	4161	[4445, 969]
607	[1080, 1081]	1792	[2629, 2630]	2977	[2514, 3554]	4162	[917, 367]
608	[823, 1082]	1793	[2631, 2632]	2978	[3522, 3555]	4163	[3506, 358]
609	[1034, 1083]	1794	[2215, 1170]	2979	[3556, 2096]	4164	[4446, 379]
610	[1084, 1085]	1795	[2633, 814]	2980	[2357, 269]	4165	[4447, 4448]
611	[1086, 1087]	1796	[2634, 1206]	2981	[3557, 2564]	4166	[4449, 2359]
612	[1088, 1089]	1797	[2475, 2635]	2982	[3558, 70]	4167	[4450, 1274]
613	[1090, 1091]	1798	[2636, 2637]	2983	[3559, 3560]	4168	[3432, 262]
614	[1092, 1093]	1799	[2638, 2159]	2984	[3561, 3421]	4169	[1157, 3798]
615	[878, 1025]	1800	[2639, 2640]	2985	[3562, 1211]	4170	[2298, 2604]
616	[1027, 1094]	1801	[2641, 2642]	2986	[3563, 321]	4171	[4451, 789]
617	[1095, 1096]	1802	[2643, 2644]	2987	[3564, 2212]	4172	[4452, 2630]
618	[1097, 1098]	1803	[2473, 2645]	2988	[3565, 388]	4173	[2615, 2431]
619	[1099, 1100]	1804	[2646, 2647]	2989	[3566, 881]	4174	[3481, 2280]
620	[1101, 1102]	1805	[2648, 2099]	2990	[3567, 419]	4175	[4453, 1222]
621	[1103, 1104]	1806	[2649, 2650]	2991	[1941, 363]	4176	[4454, 960]
622	[413, 1105]	1807	[2651, 2652]	2992	[3568, 3502]	4177	[4455, 111]
623	[1106, 1107]	1808	[2653, 2366]	2993	[3569, 3570]	4178	[2556, 3762]
624	[1108, 1109]	1809	[1948, 2654]	2994	[3571, 295]	4179	[4456, 1997]
625	[1110, 1111]	1810	[2655, 2656]	2995	[2041, 1035]	4180	[4457, 2028]
626	[16, 67]	1811	[2657, 2143]	2996	[3572, 1022]	4181	[4458, 2011]
627	[18, 1112]	1812	[2658, 2659]	2997	[1100, 1998]	4182	[4459, 2757]
628	[1113, 1114]	1813	[2660, 229]	2998	[3573, 844]	4183	[4460, 4461]
629	[1115, 1116]	1814	[2661, 2662]	2999	[3574, 2607]	4184	[2369, 1312]
630	[1117, 1118]	1815	[2663, 2639]	3000	[1014, 3575]	4185	[4462, 788]
631	[1119, 1120]	1816	[2664, 1974]	3001	[3576, 2516]	4186	[4463, 4464]
632	[949, 1121]	1817	[2665, 1972]	3002	[1243, 1948]	4187	[4465, 2403]
633	[939, 1122]	1818	[1982, 2666]	3003	[1182, 3577]	4188	[4461, 256]
634	[1123, 1124]	1819	[2667, 2547]	3004	[3578, 326]	4189	[4466, 293]
635	[1125, 1126]	1820	[2668, 232]	3005	[2424, 1160]	4190	[4467, 2641]
636	[1127, 1128]	1821	[2669, 2103]	3006	[3579, 3492]	4191	[4468, 3463]
637	[1067, 1129]	1822	[1239, 2058]	3007	[3580, 3581]	4192	[4469, 2575]
638	[1130, 1131]	1823	[1212, 282]	3008	[78, 2088]	4193	[4470, 2372]
639	[1063, 1132]	1824	[2198, 948]	3009	[2084, 3582]	4194	[4471, 2755]
640	[1133, 1134]	1825	[2670, 258]	3010	[3583, 2006]	4195	[4472, 893]
641	[1135, 312]	1826	[2671, 260]	3011	[3584, 3585]	4196	[4473, 2666]
642	[1136, 1137]	1827	[2672, 2111]	3012	[3586, 2056]	4197	[4474, 921]
643	[861, 1095]	1828	[2673, 2355]	3013	[3587, 242]	4198	[4312, 2257]
644	[1138, 1139]	1829	[2471, 2674]	3014	[3588, 3589]	4199	[4475, 1044]
645	[1140, 1141]	1830	[2675, 2676]	3015	[3590, 2377]	4200	[4476, 4477]
646	[1142, 1143]	1831	[2677, 224]	3016	[3591, 3592]	4201	[2163, 866]
647	[1144, 1145]	1832	[2678, 2170]	3017	[2758, 2616]	4202	[3912, 1172]

648	[1146, 1147]	1833	[851, 2679]	3018	[3593, 1152]	4203	[3454, 907]
649	[1148, 1149]	1834	[2680, 1026]	3019	[1096, 3594]	4204	[4478, 263]
650	[355, 1150]	1835	[2681, 1143]	3020	[3595, 2671]	4205	[4479, 1057]
651	[1126, 1151]	1836	[2682, 2683]	3021	[3596, 359]	4206	[4480, 2047]
652	[1152, 756]	1837	[780, 1998]	3022	[3597, 3598]	4207	[4481, 3378]
653	[1153, 902]	1838	[880, 2684]	3023	[2635, 962]	4208	[4482, 278]
654	[1154, 1155]	1839	[2685, 1296]	3024	[3599, 2706]	4209	[4483, 4484]
655	[1156, 1157]	1840	[2686, 2687]	3025	[3600, 3601]	4210	[4485, 2126]
656	[1158, 1159]	1841	[1249, 2688]	3026	[3602, 2420]	4211	[4486, 4478]
657	[1160, 1161]	1842	[2689, 2560]	3027	[3603, 2330]	4212	[4487, 2381]
658	[835, 1162]	1843	[2690, 60]	3028	[1987, 3604]	4213	[4488, 2488]
659	[1102, 1163]	1844	[2691, 807]	3029	[3498, 3605]	4214	[4489, 4490]
660	[1164, 1165]	1845	[2676, 1215]	3030	[3606, 787]	4215	[4491, 835]
661	[1166, 1167]	1846	[2692, 2693]	3031	[3607, 3608]	4216	[2347, 4492]
662	[1168, 1169]	1847	[2694, 2695]	3032	[3609, 320]	4217	[1134, 967]
663	[1170, 1171]	1848	[2696, 859]	3033	[3610, 3611]	4218	[4493, 3409]
664	[1172, 1173]	1849	[2697, 2698]	3034	[3483, 787]	4219	[244, 2187]
665	[1174, 1175]	1850	[966, 2699]	3035	[3612, 3406]	4220	[3608, 4494]
666	[1176, 289]	1851	[2700, 956]	3036	[3613, 3614]	4221	[4495, 4496]
667	[1161, 1177]	1852	[2047, 2701]	3037	[3615, 1252]	4222	[4497, 3686]
668	[1178, 1179]	1853	[1309, 2269]	3038	[3616, 979]	4223	[4498, 4499]
669	[1180, 988]	1854	[2558, 2359]	3039	[3617, 3618]	4224	[4500, 3502]
670	[1181, 1182]	1855	[1222, 2702]	3040	[3619, 1084]	4225	[4501, 3436]
671	[1183, 761]	1856	[2703, 2704]	3041	[3620, 2585]	4226	[2240, 2528]
672	[1184, 1185]	1857	[2705, 1938]	3042	[3621, 3622]	4227	[4502, 2205]
673	[1186, 1187]	1858	[1042, 2383]	3043	[3623, 3624]	4228	[4503, 1194]
674	[1188, 1189]	1859	[2706, 2707]	3044	[2276, 62]	4229	[4504, 1318]
675	[1190, 982]	1860	[2708, 1231]	3045	[3625, 2118]	4230	[4505, 869]
676	[1191, 1192]	1861	[2709, 2710]	3046	[3626, 1079]	4231	[4506, 4507]
677	[1193, 1194]	1862	[2711, 2479]	3047	[3627, 2072]	4232	[4508, 3673]
678	[1195, 1196]	1863	[2712, 2713]	3048	[3628, 891]	4233	[4509, 366]
679	[1197, 1198]	1864	[2714, 2715]	3049	[3629, 2357]	4234	[4510, 264]
680	[114, 1199]	1865	[2716, 840]	3050	[3630, 2491]	4235	[4511, 4295]
681	[1200, 1201]	1866	[2717, 2172]	3051	[3631, 3632]	4236	[4512, 4271]
682	[1202, 1203]	1867	[2718, 2719]	3052	[3633, 3634]	4237	[4513, 1199]
683	[1204, 1205]	1868	[2337, 2720]	3053	[2462, 3635]	4238	[4514, 2554]
684	[1206, 1207]	1869	[2721, 2722]	3054	[3636, 2009]	4239	[4515, 3753]
685	[1208, 251]	1870	[82, 2723]	3055	[3637, 3638]	4240	[4516, 2442]
686	[1209, 1210]	1871	[2724, 2725]	3056	[1943, 2588]	4241	[4517, 939]
687	[1211, 1212]	1872	[87, 2726]	3057	[2296, 3639]	4242	[1906, 435]
688	[103, 1213]	1873	[2727, 2728]	3058	[2076, 18]	4243	[4518, 3015]
689	[1205, 378]	1874	[2729, 2025]	3059	[3640, 3641]	4244	[1860, 4519]
690	[922, 1214]	1875	[2730, 2228]	3060	[3642, 3643]	4245	[4158, 4119]
691	[1215, 1216]	1876	[2731, 2205]	3061	[3644, 2324]	4246	[3012, 1734]

692	[1217, 1218]	1877	[2732, 222]	3062	[1071, 1178]	4247	[159, 555]
693	[1219, 1220]	1878	[2021, 920]	3063	[3645, 2284]	4248	[3213, 1505]
694	[1221, 1222]	1879	[2733, 360]	3064	[3646, 2550]	4249	[4520, 1534]
695	[1223, 1224]	1880	[2734, 2735]	3065	[3647, 766]	4250	[2835, 4521]
696	[1225, 1226]	1881	[2736, 2737]	3066	[3648, 2620]	4251	[1864, 610]
697	[1227, 1228]	1882	[2738, 2739]	3067	[3649, 876]	4252	[3220, 4522]
698	[1229, 1108]	1883	[2740, 2741]	3068	[3650, 2080]	4253	[1791, 608]
699	[1230, 1231]	1884	[4, 2742]	3069	[3651, 904]	4254	[4523, 1399]
700	[1232, 1233]	1885	[279, 2743]	3070	[3652, 762]	4255	[4234, 46]
701	[1234, 1235]	1886	[2744, 2745]	3071	[3653, 2513]	4256	[4037, 3040]
702	[1236, 1237]	1887	[2746, 2747]	3072	[3654, 3655]	4257	[4524, 1900]
703	[1238, 1239]	1888	[2748, 2749]	3073	[3656, 936]	4258	[3266, 3030]
704	[1240, 1241]	1889	[2750, 2727]	3074	[97, 3657]	4259	[4012, 4525]
705	[1242, 1243]	1890	[2059, 2751]	3075	[1175, 3658]	4260	[4194, 1348]
706	[1244, 1245]	1891	[2752, 259]	3076	[3659, 2196]	4261	[2917, 744]
707	[1246, 1247]	1892	[2753, 2754]	3077	[3660, 3661]	4262	[4526, 1808]
708	[1248, 1249]	1893	[2755, 1109]	3078	[2693, 995]	4263	[4527, 160]
709	[1250, 96]	1894	[2756, 1001]	3079	[3662, 3663]	4264	[4065, 603]
710	[1251, 1252]	1895	[2757, 2758]	3080	[3664, 3665]	4265	[2815, 4130]
711	[1253, 1254]	1896	[2759, 2760]	3081	[2227, 1154]	4266	[3052, 4219]
712	[101, 912]	1897	[1977, 2178]	3082	[2431, 1942]	4267	[4528, 3306]
713	[1255, 1256]	1898	[2695, 2761]	3083	[3666, 3667]	4268	[2809, 2975]
714	[1257, 1258]	1899	[2762, 2372]	3084	[3668, 909]	4269	[1427, 4529]
715	[1259, 1260]	1900	[336, 2763]	3085	[3669, 2237]	4270	[4530, 2987]
716	[1261, 1262]	1901	[2764, 2003]	3086	[3670, 3622]	4271	[630, 4148]
717	[1263, 1264]	1902	[2765, 335]	3087	[3491, 3671]	4272	[4531, 1567]
718	[1265, 1266]	1903	[2766, 2049]	3088	[3542, 873]	4273	[4000, 637]
719	[1267, 1268]	1904	[895, 2767]	3089	[3672, 2274]	4274	[3330, 1650]
720	[1269, 1033]	1905	[2768, 2769]	3090	[3673, 362]	4275	[3010, 4532]
721	[1270, 1271]	1906	[2770, 2771]	3091	[3674, 3412]	4276	[4533, 500]
722	[1272, 1151]	1907	[2235, 1188]	3092	[3675, 3415]	4277	[4534, 3015]
723	[1273, 1274]	1908	[1220, 1221]	3093	[3676, 1076]	4278	[2996, 1774]
724	[1275, 1276]	1909	[849, 2772]	3094	[2229, 2782]	4279	[1332, 1924]
725	[1277, 1278]	1910	[2773, 2361]	3095	[2780, 3677]	4280	[4535, 425]
726	[1279, 1280]	1911	[2774, 93]	3096	[1288, 3678]	4281	[3223, 1457]
727	[1281, 1282]	1912	[2775, 2068]	3097	[1235, 2133]	4282	[4238, 1440]
728	[1201, 1283]	1913	[2656, 2017]	3098	[20, 1967]	4283	[4125, 4529]
729	[1038, 1284]	1914	[2776, 2777]	3099	[3679, 3680]	4284	[3199, 711]
730	[1094, 1285]	1915	[390, 2354]	3100	[3681, 2722]	4285	[4536, 2922]
731	[29, 1286]	1916	[2778, 1206]	3101	[2584, 3682]	4286	[4537, 584]
732	[1287, 1288]	1917	[322, 2338]	3102	[3683, 2311]	4287	[4045, 434]
733	[1289, 360]	1918	[2779, 2780]	3103	[3684, 3685]	4288	[4538, 2959]
734	[1290, 1291]	1919	[2781, 914]	3104	[2489, 227]	4289	[4539, 147]
735	[964, 768]	1920	[2782, 2783]	3105	[3686, 962]	4290	[1890, 1693]

736	[1292, 1293]	1921	[2784, 2785]	3106	[3687, 3688]	4291	[1754, 2924]
737	[1294, 990]	1922	[2218, 1018]	3107	[3689, 3666]	4292	[1886, 750]
738	[1295, 268]	1923	[2786, 2243]	3108	[2291, 1142]	4293	[641, 4540]
739	[1296, 1297]	1924	[2622, 2787]	3109	[3690, 3691]	4294	[4541, 1575]
740	[1298, 1299]	1925	[2788, 75]	3110	[818, 2348]	4295	[3086, 2805]
741	[1300, 767]	1926	[2789, 2790]	3111	[3692, 988]	4296	[3224, 3965]
742	[1301, 1302]	1927	[2791, 2792]	3112	[3693, 1064]	4297	[4191, 4168]
743	[1303, 1304]	1928	[909, 2793]	3113	[3694, 830]	4298	[4542, 1900]
744	[1305, 1306]	1929	[2794, 1100]	3114	[1276, 1954]	4299	[3231, 217]
745	[1307, 1308]	1930	[829, 947]	3115	[3695, 3696]	4300	[3025, 4532]
746	[1216, 1309]	1931	[2795, 61]	3116	[3697, 2270]	4301	[719, 708]
747	[1310, 1205]	1932	[2796, 2271]	3117	[2191, 3698]	4302	[4523, 2944]
748	[1311, 1164]	1933	[2797, 2276]	3118	[3699, 350]	4303	[421, 1330]
749	[1312, 1313]	1934	[2798, 871]	3119	[3700, 2226]	4304	[4543, 453]
750	[1314, 1315]	1935	[320, 392]	3120	[3701, 1132]	4305	[4543, 1326]
751	[827, 1316]	1936	[2799, 984]	3121	[3702, 2655]	4306	[4544, 4081]
752	[1317, 1318]	1937	[2800, 2724]	3122	[3703, 3704]	4307	[4545, 1780]
753	[1319, 1320]	1938	[1394, 166]	3123	[3705, 2040]	4308	[4040, 1679]
754	[7, 1321]	1939	[526, 1743]	3124	[3706, 390]	4309	[1371, 703]
755	[1322, 1323]	1940	[2801, 1705]	3125	[3707, 2350]	4310	[1848, 2962]
756	[1324, 1325]	1941	[2802, 2803]	3126	[3708, 2184]	4311	[4212, 2959]
757	[1326, 454]	1942	[1765, 1781]	3127	[3709, 416]	4312	[1631, 442]
758	[1327, 529]	1943	[1591, 133]	3128	[3710, 2612]	4313	[1847, 2911]
759	[590, 501]	1944	[1747, 498]	3129	[3711, 1089]	4314	[4546, 216]
760	[1328, 1329]	1945	[2804, 507]	3130	[3712, 3491]	4315	[699, 1760]
761	[1330, 519]	1946	[1492, 1742]	3131	[3682, 3713]	4316	[4547, 4004]
762	[49, 1331]	1947	[666, 2805]	3132	[3714, 3715]	4317	[4192, 3028]
763	[1332, 1333]	1948	[2806, 1704]	3133	[3381, 3716]	4318	[3001, 1713]
764	[1334, 1335]	1949	[2807, 2808]	3134	[3717, 3546]	4319	[3169, 4220]
765	[676, 547]	1950	[751, 2809]	3135	[3718, 2345]	4320	[4538, 4213]
766	[1336, 1337]	1951	[1865, 2810]	3136	[3719, 382]	4321	[2971, 4548]
767	[1338, 1339]	1952	[1647, 1441]	3137	[776, 3720]	4322	[3190, 4549]
768	[143, 1340]	1953	[723, 1464]	3138	[2530, 3721]	4323	[4104, 2907]
769	[1341, 1342]	1954	[744, 1824]	3139	[3722, 3723]	4324	[1635, 1560]
770	[1343, 1344]	1955	[751, 1324]	3140	[242, 3724]	4325	[4550, 1766]
771	[1345, 1346]	1956	[2811, 548]	3141	[3725, 3726]	4326	[4551, 509]
772	[1347, 1348]	1957	[2812, 2813]	3142	[1245, 894]	4327	[675, 546]
773	[1349, 1350]	1958	[2814, 625]	3143	[3727, 1259]	4328	[4552, 3122]
774	[1351, 1352]	1959	[1410, 1704]	3144	[2654, 3728]	4329	[4553, 1330]
775	[550, 1353]	1960	[2815, 2816]	3145	[3729, 2340]	4330	[1924, 1677]
776	[206, 1354]	1961	[1680, 1393]	3146	[3466, 3639]	4331	[1811, 1452]
777	[1355, 474]	1962	[1615, 1362]	3147	[3730, 3731]	4332	[3041, 4519]
778	[438, 1356]	1963	[2817, 1419]	3148	[3732, 3733]	4333	[4554, 1812]
779	[1357, 1358]	1964	[2818, 2803]	3149	[782, 3734]	4334	[2934, 710]

780	[1359, 1360]	1965	[493, 1403]	3150	[3735, 2355]	4335	[4555, 4556]
781	[1361, 1362]	1966	[1769, 2819]	3151	[3736, 3737]	4336	[4557, 3008]
782	[1363, 471]	1967	[1393, 1803]	3152	[2628, 1262]	4337	[1357, 3158]
783	[1364, 1365]	1968	[2820, 2821]	3153	[3738, 3739]	4338	[4558, 553]
784	[509, 1366]	1969	[1900, 1777]	3154	[3740, 3446]	4339	[1771, 4556]
785	[1367, 467]	1970	[530, 2822]	3155	[2099, 3741]	4340	[4559, 1718]
786	[1368, 483]	1971	[36, 57]	3156	[3742, 1094]	4341	[2990, 219]
787	[8, 1369]	1972	[673, 2823]	3157	[3743, 2190]	4342	[4052, 4560]
788	[1370, 1371]	1973	[1524, 600]	3158	[3744, 3745]	4343	[4561, 1521]
789	[1372, 1373]	1974	[1910, 447]	3159	[3746, 2322]	4344	[1455, 4150]
790	[1374, 1375]	1975	[1557, 438]	3160	[3747, 3407]	4345	[4076, 3085]
791	[1376, 1377]	1976	[2824, 2825]	3161	[3748, 393]	4346	[1448, 708]
792	[1378, 1379]	1977	[2826, 2827]	3162	[3749, 3750]	4347	[2989, 744]
793	[1380, 496]	1978	[1440, 1871]	3163	[3751, 2090]	4348	[745, 3036]
794	[504, 1381]	1979	[2828, 2829]	3164	[3752, 1281]	4349	[521, 1890]
795	[1382, 610]	1980	[2830, 575]	3165	[3753, 3605]	4350	[4215, 4562]
796	[1383, 184]	1981	[2831, 574]	3166	[3359, 1017]	4351	[3290, 1623]
797	[1384, 624]	1982	[147, 2832]	3167	[3754, 2754]	4352	[1437, 3085]
798	[741, 1385]	1983	[2833, 723]	3168	[3755, 1953]	4353	[1921, 3003]
799	[1386, 1387]	1984	[2834, 215]	3169	[3756, 2486]	4354	[2861, 4563]
800	[1388, 1389]	1985	[2835, 1627]	3170	[2193, 2062]	4355	[4140, 632]
801	[1390, 1391]	1986	[1649, 654]	3171	[3757, 3758]	4356	[3014, 4564]
802	[1392, 1393]	1987	[2836, 2837]	3172	[897, 2709]	4357	[2879, 744]
803	[1394, 1395]	1988	[710, 49]	3173	[1997, 3759]	4358	[4565, 1650]
804	[1396, 1397]	1989	[2838, 1750]	3174	[2484, 2088]	4359	[4024, 4566]
805	[1398, 1399]	1990	[2839, 1866]	3175	[3760, 2677]	4360	[4139, 1567]
806	[1400, 1401]	1991	[1422, 1928]	3176	[3761, 3369]	4361	[4567, 4568]
807	[1402, 1403]	1992	[2840, 1512]	3177	[2586, 3762]	4362	[4569, 8]
808	[1404, 1329]	1993	[2841, 2842]	3178	[3763, 285]	4363	[1601, 552]
809	[1405, 1406]	1994	[715, 1477]	3179	[3764, 881]	4364	[1699, 1494]
810	[676, 1407]	1995	[434, 1750]	3180	[3765, 3396]	4365	[4570, 1640]
811	[1408, 1409]	1996	[1386, 1587]	3181	[3766, 2250]	4366	[2913, 4563]
812	[1410, 1411]	1997	[2843, 1324]	3182	[3767, 3691]	4367	[1768, 1665]
813	[1412, 561]	1998	[1612, 441]	3183	[3768, 2236]	4368	[4571, 593]
814	[1413, 1414]	1999	[1498, 2844]	3184	[1198, 2450]	4369	[511, 3349]
815	[1415, 527]	2000	[2845, 1523]	3185	[3769, 3770]	4370	[4035, 44]
816	[1416, 1417]	2001	[1374, 2846]	3186	[3771, 3772]	4371	[179, 3122]
817	[1418, 553]	2002	[2847, 2848]	3187	[3773, 3774]	4372	[4036, 4562]
818	[510, 1419]	2003	[2849, 1581]	3188	[3775, 364]	4373	[4136, 1623]
819	[1420, 531]	2004	[1744, 2850]	3189	[3776, 3777]	4374	[3233, 4216]
820	[1421, 1335]	2005	[2851, 2852]	3190	[3778, 879]	4375	[4572, 3007]
821	[507, 1422]	2006	[2853, 33]	3191	[3779, 3715]	4376	[1384, 550]
822	[1423, 174]	2007	[2806, 1411]	3192	[3780, 3781]	4377	[1782, 615]
823	[1424, 1425]	2008	[2854, 2850]	3193	[408, 850]	4378	[4533, 3008]

824	[1403, 504]	2009	[2855, 1691]	3194	[3782, 1245]	4379	[4573, 1321]
825	[637, 1426]	2010	[1774, 1638]	3195	[3783, 3784]	4380	[3285, 426]
826	[1427, 645]	2011	[1830, 2856]	3196	[3785, 3786]	4381	[4574, 4529]
827	[1428, 53]	2012	[2857, 1528]	3197	[2268, 3787]	4382	[1869, 4549]
828	[1429, 1430]	2013	[670, 1921]	3198	[3788, 1240]	4383	[4107, 436]
829	[445, 585]	2014	[1836, 1652]	3199	[3789, 3790]	4384	[3157, 1358]
830	[1431, 538]	2015	[2858, 2859]	3200	[3791, 2655]	4385	[2828, 4522]
831	[1432, 554]	2016	[508, 1928]	3201	[3473, 868]	4386	[4575, 1432]
832	[1433, 150]	2017	[44, 568]	3202	[3792, 3793]	4387	[1930, 2978]
833	[1434, 1435]	2018	[2860, 1858]	3203	[3794, 2539]	4388	[1792, 543]
834	[1436, 133]	2019	[14, 730]	3204	[3795, 2606]	4389	[4576, 31]
835	[1437, 1438]	2020	[2861, 2862]	3205	[3796, 2777]	4390	[3210, 3328]
836	[1439, 197]	2021	[1628, 199]	3206	[3797, 976]	4391	[3018, 4525]
837	[688, 692]	2022	[553, 151]	3207	[3393, 2763]	4392	[119, 1682]
838	[1440, 1441]	2023	[2802, 2863]	3208	[3798, 987]	4393	[4229, 1866]
839	[1442, 1443]	2024	[121, 715]	3209	[2591, 3537]	4394	[4577, 3294]
840	[1444, 1445]	2025	[1741, 1493]	3210	[3799, 3391]	4395	[644, 4529]
841	[1446, 1442]	2026	[2864, 210]	3211	[3800, 2259]	4396	[4578, 1410]
842	[1447, 527]	2027	[597, 2865]	3212	[3801, 1970]	4397	[2867, 687]
843	[1448, 140]	2028	[2866, 2867]	3213	[3802, 1075]	4398	[1719, 3340]
844	[1449, 1450]	2029	[1658, 1397]	3214	[3803, 3804]	4399	[4579, 502]
845	[665, 216]	2030	[2868, 2869]	3215	[3805, 3657]	4400	[2902, 3264]
846	[210, 1451]	2031	[1735, 1787]	3216	[3806, 2570]	4401	[4580, 613]
847	[1452, 1453]	2032	[1499, 501]	3217	[2707, 3807]	4402	[4019, 1863]
848	[1454, 130]	2033	[2870, 1719]	3218	[3808, 3809]	4403	[4581, 1482]
849	[1455, 1456]	2034	[427, 1466]	3219	[805, 3810]	4404	[219, 1727]
850	[1457, 1458]	2035	[2871, 14]	3220	[3811, 1270]	4405	[4582, 1473]
851	[1446, 187]	2036	[2872, 1608]	3221	[3812, 3813]	4406	[4561, 1766]
852	[1459, 53]	2037	[2873, 1526]	3222	[3469, 2467]	4407	[1510, 1815]
853	[730, 1460]	2038	[1610, 2874]	3223	[3814, 2149]	4408	[4583, 3107]
854	[1461, 696]	2039	[748, 659]	3224	[3815, 1198]	4409	[4584, 1913]
855	[1462, 1445]	2040	[1531, 10]	3225	[3816, 2446]	4410	[3312, 4148]
856	[1463, 564]	2041	[1546, 1662]	3226	[21, 1125]	4411	[4585, 1410]
857	[1464, 1465]	2042	[2875, 2876]	3227	[3817, 3768]	4412	[465, 3164]
858	[449, 1466]	2043	[1408, 2877]	3228	[3818, 267]	4413	[4129, 1542]
859	[1467, 1468]	2044	[2878, 1906]	3229	[3819, 3820]	4414	[4586, 1689]
860	[1469, 1470]	2045	[607, 565]	3230	[3821, 2379]	4415	[4142, 181]
861	[422, 519]	2046	[1853, 689]	3231	[3822, 416]	4416	[4555, 1772]
862	[1471, 1472]	2047	[727, 1390]	3232	[3823, 998]	4417	[3189, 1888]
863	[1462, 593]	2048	[1841, 1854]	3233	[3824, 3564]	4418	[4133, 1338]
864	[1473, 1474]	2049	[1595, 691]	3234	[3825, 2107]	4419	[4157, 3998]
865	[1475, 1476]	2050	[2879, 1490]	3235	[3826, 3827]	4420	[3282, 1734]
866	[122, 1477]	2051	[2880, 2881]	3236	[3828, 3829]	4421	[1918, 3158]
867	[1478, 120]	2052	[2882, 1829]	3237	[3830, 2076]	4422	[2979, 3160]

868	[1479, 1480]	2053	[1639, 743]	3238	[3831, 111]	4423	[4025, 4169]
869	[1481, 1409]	2054	[562, 663]	3239	[3832, 3833]	4424	[3278, 4522]
870	[1482, 131]	2055	[2883, 2884]	3240	[3678, 317]	4425	[3027, 163]
871	[1483, 211]	2056	[1559, 557]	3241	[3834, 3835]	4426	[4587, 1722]
872	[134, 1484]	2057	[1888, 1658]	3242	[2340, 3836]	4427	[3109, 3977]
873	[539, 437]	2058	[681, 1451]	3243	[3837, 2649]	4428	[4567, 2957]
874	[475, 1331]	2059	[1547, 1418]	3244	[1000, 3838]	4429	[1873, 1394]
875	[646, 1485]	2060	[2885, 2886]	3245	[3514, 3839]	4430	[3129, 4588]
876	[609, 1486]	2061	[606, 2827]	3246	[2434, 3840]	4431	[4589, 3168]
877	[1487, 202]	2062	[494, 504]	3247	[3841, 419]	4432	[4584, 1565]
878	[1488, 548]	2063	[2887, 1606]	3248	[906, 3842]	4433	[4590, 3250]
879	[1489, 1490]	2064	[2888, 462]	3249	[3843, 3430]	4434	[1786, 3299]
880	[1371, 1406]	2065	[1777, 2889]	3250	[3452, 3844]	4435	[4591, 1386]
881	[1491, 1401]	2066	[2890, 466]	3251	[3845, 2058]	4436	[4518, 4564]
882	[453, 168]	2067	[482, 721]	3252	[933, 2213]	4437	[3228, 3327]
883	[1492, 1493]	2068	[2891, 532]	3253	[3846, 944]	4438	[724, 426]
884	[1494, 1495]	2069	[1480, 2892]	3254	[2501, 2694]	4439	[4154, 668]
885	[1496, 1497]	2070	[2893, 2894]	3255	[3847, 3655]	4440	[4193, 3265]
886	[1498, 54]	2071	[191, 425]	3256	[3848, 3803]	4441	[4592, 560]
887	[589, 1499]	2072	[651, 2895]	3257	[3698, 3849]	4442	[3054, 1866]
888	[216, 1500]	2073	[1420, 2822]	3258	[3850, 3615]	4443	[4537, 4593]
889	[175, 1501]	2074	[1438, 1507]	3259	[3851, 2704]	4444	[2969, 4217]
890	[1340, 1344]	2075	[2896, 2897]	3260	[3696, 2364]	4445	[4594, 1586]
891	[1502, 1503]	2076	[2898, 2899]	3261	[3852, 3853]	4446	[1592, 4595]
892	[613, 1504]	2077	[2900, 2901]	3262	[3854, 1159]	4447	[4218, 1858]
893	[1505, 1506]	2078	[613, 1779]	3263	[2777, 87]	4448	[3218, 4213]
894	[1507, 1377]	2079	[1415, 1743]	3264	[377, 3855]	4449	[1839, 4560]
895	[718, 1508]	2080	[2902, 424]	3265	[3856, 3857]	4450	[583, 4593]
896	[1509, 1510]	2081	[1578, 1366]	3266	[3858, 785]	4451	[4058, 1374]
897	[1511, 1512]	2082	[2903, 592]	3267	[3859, 3419]	4452	[619, 4596]
898	[1395, 167]	2083	[2904, 58]	3268	[3860, 873]	4453	[3068, 4597]
899	[1376, 1513]	2084	[2905, 1346]	3269	[3861, 2224]	4454	[3332, 1576]
900	[1514, 470]	2085	[2906, 2907]	3270	[3862, 1114]	4455	[4067, 215]
901	[449, 1515]	2086	[510, 2908]	3271	[3863, 879]	4456	[3256, 4598]
902	[720, 1516]	2087	[1889, 522]	3272	[3864, 887]	4457	[4059, 4174]
903	[1517, 684]	2088	[150, 2909]	3273	[3865, 806]	4458	[1740, 1924]
904	[1497, 1518]	2089	[13, 591]	3274	[2507, 1059]	4459	[1509, 1814]
905	[1519, 128]	2090	[2910, 211]	3275	[3866, 755]	4460	[4576, 1482]
906	[1520, 1521]	2091	[2837, 596]	3276	[3867, 2516]	4461	[3972, 3959]
907	[1522, 549]	2092	[2868, 2911]	3277	[3536, 3362]	4462	[2956, 4568]
908	[1523, 220]	2093	[2912, 1466]	3278	[3868, 2243]	4463	[4126, 3151]
909	[116, 1524]	2094	[2913, 2862]	3279	[3869, 2621]	4464	[1795, 453]
910	[1525, 1526]	2095	[1853, 692]	3280	[3870, 1309]	4465	[4578, 2806]
911	[656, 623]	2096	[2914, 1637]	3281	[3871, 2663]	4466	[1725, 4588]

912	[50, 1341]	2097	[497, 1748]	3282	[3872, 2547]	4467	[3337, 2977]
913	[195, 427]	2098	[2915, 2916]	3283	[3873, 2269]	4468	[4172, 2963]
914	[1527, 1528]	2099	[2917, 1490]	3284	[3874, 1951]	4469	[3333, 605]
915	[1430, 1529]	2100	[2918, 122]	3285	[3875, 819]	4470	[4180, 1770]
916	[1530, 1451]	2101	[2919, 1570]	3286	[3876, 3877]	4471	[4013, 3235]
917	[1531, 1532]	2102	[1526, 2920]	3287	[3878, 99]	4472	[1600, 1547]
918	[1533, 1534]	2103	[2921, 1512]	3288	[3879, 3880]	4473	[47, 4599]
919	[649, 1446]	2104	[2922, 1470]	3289	[3881, 903]	4474	[725, 4597]
920	[1535, 198]	2105	[2923, 2924]	3290	[3882, 933]	4475	[4600, 172]
921	[199, 1536]	2106	[2925, 687]	3291	[3883, 3884]	4476	[4099, 1554]
922	[1537, 1538]	2107	[2926, 1521]	3292	[3885, 73]	4477	[1846, 453]
923	[1539, 1415]	2108	[2927, 147]	3293	[3886, 3773]	4478	[752, 651]
924	[1540, 1541]	2109	[1331, 1341]	3294	[3833, 2411]	4479	[3204, 3002]
925	[1542, 554]	2110	[2928, 429]	3295	[3887, 1171]	4480	[1877, 4595]
926	[1543, 477]	2111	[2880, 2929]	3296	[2231, 3888]	4481	[4601, 2986]
927	[1544, 136]	2112	[1438, 1376]	3297	[3889, 388]	4482	[3253, 526]
928	[1545, 1546]	2113	[2930, 445]	3298	[3890, 3891]	4483	[4602, 1689]
929	[1547, 552]	2114	[1710, 1558]	3299	[2071, 3892]	4484	[470, 1907]
930	[1321, 626]	2115	[1475, 2931]	3300	[3893, 2698]	4485	[1911, 1328]
931	[1479, 618]	2116	[2813, 2823]	3301	[3894, 1290]	4486	[4574, 645]
932	[1548, 1368]	2117	[131, 2932]	3302	[3895, 272]	4487	[3975, 3208]
933	[1459, 1498]	2118	[185, 136]	3303	[3896, 2386]	4488	[4603, 1870]
934	[1494, 1385]	2119	[2933, 121]	3304	[3897, 3898]	4489	[4604, 1432]
935	[1549, 485]	2120	[2934, 2935]	3305	[3899, 2369]	4490	[3238, 1337]
936	[1550, 1415]	2121	[1517, 1931]	3306	[3900, 3901]	4491	[4152, 4596]
937	[487, 576]	2122	[2936, 560]	3307	[3902, 2177]	4492	[501, 656]
938	[1551, 492]	2123	[2937, 2938]	3308	[3405, 1033]	4493	[4057, 181]
939	[1552, 460]	2124	[2939, 456]	3309	[3903, 2046]	4494	[2850, 1612]
940	[1553, 1554]	2125	[1507, 1513]	3310	[3904, 2701]	4495	[4544, 2966]
941	[480, 1555]	2126	[2940, 1666]	3311	[3905, 3906]	4496	[1489, 744]
942	[1556, 1557]	2127	[1328, 2941]	3312	[3907, 2036]	4497	[4096, 1430]
943	[217, 1558]	2128	[742, 1640]	3313	[3908, 3668]	4498	[4605, 1719]
944	[1559, 713]	2129	[470, 183]	3314	[2666, 3755]	4499	[532, 1488]
945	[1560, 618]	2130	[2942, 686]	3315	[2393, 1155]	4500	[4606, 1838]
946	[9, 1532]	2131	[2943, 2944]	3316	[3909, 3910]	4501	[2890, 3164]
947	[1430, 1349]	2132	[1406, 704]	3317	[2003, 913]	4502	[4111, 4049]
948	[1490, 491]	2133	[1407, 2945]	3318	[3911, 3912]	4503	[4122, 1799]
949	[1561, 1562]	2134	[1764, 1804]	3319	[3655, 2383]	4504	[4042, 3996]
950	[1563, 492]	2135	[144, 2946]	3320	[2303, 2640]	4505	[30, 1482]
951	[1564, 1565]	2136	[1412, 1794]	3321	[3913, 323]	4506	[4600, 1576]
952	[1566, 1567]	2137	[2947, 1324]	3322	[3914, 1013]	4507	[3171, 3331]
953	[1568, 520]	2138	[2948, 705]	3323	[3915, 3731]	4508	[4528, 738]
954	[1569, 1570]	2139	[2949, 518]	3324	[3916, 2695]	4509	[4541, 1724]
955	[624, 1353]	2140	[437, 529]	3325	[3917, 964]	4510	[4071, 4168]

956	[1571, 493]	2141	[723, 2950]	3326	[3918, 2014]	4511	[4607, 1549]
957	[659, 1572]	2142	[1586, 1387]	3327	[3919, 934]	4512	[3038, 1380]
958	[1573, 642]	2143	[2951, 1632]	3328	[3920, 3921]	4513	[3341, 4114]
959	[132, 34]	2144	[2952, 2953]	3329	[3922, 3923]	4514	[4199, 1814]
960	[1574, 1575]	2145	[2954, 1399]	3330	[3924, 2202]	4515	[4552, 180]
961	[1576, 1577]	2146	[1937, 1440]	3331	[3925, 86]	4516	[3013, 495]
962	[1578, 510]	2147	[2955, 1917]	3332	[3926, 2336]	4517	[4028, 1760]
963	[1579, 160]	2148	[2956, 2957]	3333	[3927, 2224]	4518	[4608, 1064]
964	[1580, 1581]	2149	[2958, 2959]	3334	[3928, 2465]	4519	[1966, 824]
965	[707, 1472]	2150	[2960, 501]	3335	[3929, 2096]	4520	[4609, 2574]
966	[697, 182]	2151	[2961, 2962]	3336	[3930, 3931]	4521	[4610, 4611]
967	[1582, 1583]	2152	[2900, 203]	3337	[3932, 1168]	4522	[4612, 2527]
968	[1560, 1480]	2153	[2885, 2963]	3338	[3933, 3934]	4523	[4613, 108]
969	[1584, 1585]	2154	[2964, 1689]	3339	[3935, 1308]	4524	[4614, 811]
970	[1586, 1587]	2155	[2965, 2966]	3340	[3936, 357]	4525	[1196, 1181]
971	[1588, 1589]	2156	[2967, 1433]	3341	[3937, 2491]	4526	[4615, 2784]
972	[1544, 186]	2157	[504, 1417]	3342	[3938, 2352]	4527	[4490, 992]
973	[1590, 1591]	2158	[1637, 1775]	3343	[3939, 2272]	4528	[4616, 2090]
974	[1592, 1593]	2159	[1422, 599]	3344	[3940, 3941]	4529	[4617, 4618]
975	[1594, 1595]	2160	[1387, 2968]	3345	[3942, 20]	4530	[4619, 2054]
976	[1596, 676]	2161	[1333, 1614]	3346	[3943, 3944]	4531	[4620, 852]
977	[192, 1597]	2162	[2969, 564]	3347	[1124, 2249]	4532	[4621, 3607]
978	[1598, 1377]	2163	[2970, 127]	3348	[3945, 235]	4533	[4622, 2084]
979	[1511, 1599]	2164	[1897, 1475]	3349	[3946, 1029]	4534	[4623, 3910]
980	[1600, 1601]	2165	[2971, 2808]	3350	[3829, 2751]	4535	[3641, 3667]
981	[708, 141]	2166	[220, 1478]	3351	[3475, 858]	4536	[4624, 2611]
982	[1602, 525]	2167	[1691, 647]	3352	[3947, 3803]	4537	[4625, 2231]
983	[621, 1603]	2168	[1569, 2972]	3353	[1322, 3948]	4538	[4626, 906]
984	[1604, 1605]	2169	[467, 2895]	3354	[3949, 2909]	4539	[4627, 4400]
985	[547, 1606]	2170	[2973, 56]	3355	[3950, 3080]	4540	[2127, 4628]
986	[1607, 203]	2171	[2974, 1915]	3356	[1339, 39]	4541	[4629, 1185]
987	[1608, 1609]	2172	[2975, 1687]	3357	[3951, 592]	4542	[4630, 2607]
988	[636, 1359]	2173	[1824, 1759]	3358	[2827, 565]	4543	[4631, 2391]
989	[183, 1610]	2174	[2976, 2977]	3359	[603, 37]	4544	[4632, 2556]
990	[1611, 488]	2175	[12, 578]	3360	[3952, 2941]	4545	[4633, 2182]
991	[1612, 1613]	2176	[506, 489]	3361	[476, 3304]	4546	[4634, 1285]
992	[1321, 1369]	2177	[1710, 218]	3362	[1906, 1750]	4547	[4635, 3405]
993	[1614, 1615]	2178	[1735, 472]	3363	[1838, 2832]	4548	[3855, 4636]
994	[1616, 1617]	2179	[2827, 1753]	3364	[3066, 487]	4549	[3892, 223]
995	[621, 659]	2180	[445, 1661]	3365	[3953, 2825]	4550	[4637, 805]
996	[166, 1618]	2181	[1338, 1662]	3366	[664, 3954]	4551	[4638, 2006]
997	[1619, 660]	2182	[2978, 1809]	3367	[55, 432]	4552	[4639, 1024]
998	[1620, 1621]	2183	[2979, 507]	3368	[3955, 1508]	4553	[4640, 237]
999	[1622, 1623]	2184	[2818, 2863]	3369	[3956, 1608]	4554	[4641, 2360]

1000	[131, 464]	2185	[2980, 1419]	3370	[3023, 585]	4555	[4642, 3641]
1001	[1624, 1625]	2186	[2981, 602]	3371	[3957, 447]	4556	[4643, 3606]
1002	[1326, 168]	2187	[487, 1786]	3372	[3958, 686]	4557	[4644, 3726]
1003	[1626, 1627]	2188	[1681, 1803]	3373	[3181, 1488]	4558	[2739, 291]
1004	[1535, 1628]	2189	[2982, 128]	3374	[117, 3959]	4559	[4645, 247]
1005	[1629, 676]	2190	[2983, 1380]	3375	[3960, 1500]	4560	[4646, 4647]
1006	[1630, 625]	2191	[2984, 1508]	3376	[3961, 631]	4561	[4648, 80]
1007	[1482, 463]	2192	[2985, 2977]	3377	[3962, 600]	4562	[2216, 284]
1008	[1631, 1632]	2193	[2986, 2987]	3378	[208, 14]	4563	[4649, 4650]
1009	[592, 1460]	2194	[2867, 662]	3379	[2986, 3329]	4564	[4651, 4652]
1010	[1633, 1634]	2195	[162, 12]	3380	[3963, 2907]	4565	[4653, 1156]
1011	[1635, 1479]	2196	[2988, 1607]	3381	[1472, 497]	4566	[4353, 4654]
1012	[663, 616]	2197	[2989, 1490]	3382	[3964, 3965]	4567	[4655, 4337]
1013	[1636, 1425]	2198	[430, 678]	3383	[540, 529]	4568	[66, 3497]
1014	[558, 1500]	2199	[2990, 1523]	3384	[3966, 618]	4569	[4656, 3353]
1015	[1637, 1638]	2200	[1713, 2876]	3385	[3026, 1639]	4570	[4657, 1218]
1016	[1639, 1640]	2201	[2991, 1344]	3386	[3967, 1621]	4571	[4658, 3632]
1017	[1641, 152]	2202	[1643, 1696]	3387	[3968, 588]	4572	[4659, 3443]
1018	[37, 1642]	2203	[2992, 2993]	3388	[1682, 3969]	4573	[4660, 2123]
1019	[1643, 696]	2204	[1854, 514]	3389	[3970, 1549]	4574	[4661, 2410]
1020	[1644, 1458]	2205	[2994, 748]	3390	[3971, 622]	4575	[4662, 4513]
1021	[1645, 156]	2206	[2995, 576]	3391	[3972, 118]	4576	[4663, 75]
1022	[1646, 1647]	2207	[1794, 572]	3392	[3973, 121]	4577	[4664, 2343]
1023	[1648, 533]	2208	[2996, 1637]	3393	[601, 3346]	4578	[4665, 1278]
1024	[1649, 1650]	2209	[2997, 1361]	3394	[3974, 652]	4579	[1264, 1106]
1025	[202, 1474]	2210	[2998, 1363]	3395	[427, 1515]	4580	[4666, 2609]
1026	[1651, 1652]	2211	[2999, 512]	3396	[1421, 3155]	4581	[4667, 2660]
1027	[1442, 188]	2212	[637, 1360]	3397	[1867, 2953]	4582	[4668, 2747]
1028	[1653, 1654]	2213	[1692, 3000]	3398	[3975, 2977]	4583	[4669, 3364]
1029	[1655, 1472]	2214	[3001, 1802]	3399	[2860, 3146]	4584	[4670, 887]
1030	[1644, 1656]	2215	[3002, 1776]	3400	[3976, 3977]	4585	[4671, 2503]
1031	[643, 664]	2216	[671, 3003]	3401	[3978, 3327]	4586	[4672, 3689]
1032	[1657, 1658]	2217	[1762, 174]	3402	[34, 1434]	4587	[4673, 2564]
1033	[204, 1659]	2218	[3004, 13]	3403	[1589, 2859]	4588	[1087, 4674]
1034	[1660, 1373]	2219	[3005, 502]	3404	[3979, 566]	4589	[4675, 2559]
1035	[1661, 536]	2220	[632, 1609]	3405	[1675, 1660]	4590	[4676, 4677]
1036	[1662, 1663]	2221	[3006, 3007]	3406	[1364, 3980]	4591	[4678, 2043]
1037	[1664, 1665]	2222	[3008, 3009]	3407	[1432, 159]	4592	[4679, 1216]
1038	[701, 1666]	2223	[3010, 3011]	3408	[3981, 472]	4593	[2078, 2316]
1039	[120, 1667]	2224	[3012, 1363]	3409	[1688, 156]	4594	[4680, 2350]
1040	[1645, 170]	2225	[1694, 1395]	3410	[3982, 48]	4595	[4681, 4682]
1041	[1668, 1669]	2226	[1540, 1733]	3411	[1730, 1356]	4596	[4683, 3747]
1042	[1670, 1671]	2227	[1681, 206]	3412	[2839, 2810]	4597	[4684, 4397]
1043	[1672, 178]	2228	[2970, 649]	3413	[202, 3193]	4598	[3724, 2164]

1044	[45, 1673]	2229	[1407, 1606]	3414	[3983, 464]	4599	[3810, 4685]
1045	[662, 1674]	2230	[3013, 1380]	3415	[1413, 3984]	4600	[4686, 2399]
1046	[1675, 1372]	2231	[3014, 3015]	3416	[1892, 1492]	4601	[4687, 3922]
1047	[1676, 1529]	2232	[3016, 3017]	3417	[506, 3248]	4602	[4688, 4689]
1048	[1677, 1615]	2233	[1591, 34]	3418	[3985, 2986]	4603	[4690, 802]
1049	[1678, 1679]	2234	[3018, 3019]	3419	[3225, 1657]	4604	[4691, 3860]
1050	[1680, 1681]	2235	[3020, 1825]	3420	[3986, 124]	4605	[4692, 4693]
1051	[1366, 1419]	2236	[1379, 609]	3421	[571, 1801]	4606	[4694, 3615]
1052	[1478, 1682]	2237	[1802, 2876]	3422	[1655, 3142]	4607	[4695, 946]
1053	[1683, 449]	2238	[2814, 191]	3423	[3987, 2986]	4608	[3194, 1833]
1054	[1684, 1334]	2239	[3021, 1340]	3424	[3322, 3028]	4609	[4210, 1440]
1055	[1652, 1685]	2240	[1424, 1744]	3425	[3988, 1640]	4610	[4696, 613]
1056	[454, 1686]	2241	[3022, 1375]	3426	[3989, 1769]	4611	[127, 1446]
1057	[52, 712]	2242	[3023, 1661]	3427	[3990, 2966]	4612	[4697, 1857]
1058	[1325, 1687]	2243	[3024, 1858]	3428	[1529, 1350]	4613	[3127, 3222]
1059	[1603, 660]	2244	[3025, 3011]	3429	[3991, 599]	4614	[4698, 1410]
1060	[1688, 170]	2245	[1855, 1845]	3430	[1596, 546]	4615	[3970, 484]
1061	[1689, 1690]	2246	[3026, 742]	3431	[3048, 495]	4616	[3111, 4148]
1062	[1691, 1485]	2247	[3027, 12]	3432	[3142, 497]	4617	[4699, 3053]
1063	[1368, 1659]	2248	[1467, 3028]	3433	[3992, 122]	4618	[703, 1758]
1064	[171, 1576]	2249	[57, 1642]	3434	[3993, 1802]	4619	[1849, 629]
1065	[565, 1692]	2250	[3029, 212]	3435	[673, 3138]	4620	[3234, 582]
1066	[1693, 1694]	2251	[559, 1506]	3436	[1526, 2884]	4621	[4700, 700]
1067	[664, 617]	2252	[3030, 438]	3437	[463, 2932]	4622	[2964, 3106]
1068	[1695, 58]	2253	[145, 3031]	3438	[3994, 1473]	4623	[3072, 1770]
1069	[695, 1696]	2254	[1549, 739]	3439	[3182, 1700]	4624	[4587, 733]
1070	[1697, 1554]	2255	[3032, 1826]	3440	[3995, 1644]	4625	[4701, 2987]
1071	[1387, 1698]	2256	[3033, 44]	3441	[1345, 3996]	4626	[3301, 3133]
1072	[1699, 741]	2257	[566, 3000]	3442	[3997, 2901]	4627	[4573, 8]
1073	[1700, 1701]	2258	[3034, 464]	3443	[3195, 1650]	4628	[3187, 2858]
1074	[1702, 1703]	2259	[1607, 2901]	3444	[1791, 1379]	4629	[4559, 1621]
1075	[1550, 526]	2260	[1534, 535]	3445	[1880, 3998]	4630	[3339, 1676]
1076	[1704, 1705]	2261	[436, 540]	3446	[3292, 36]	4631	[3237, 1888]
1077	[516, 1641]	2262	[3035, 3036]	3447	[3999, 2852]	4632	[4572, 3040]
1078	[1706, 454]	2263	[3037, 1731]	3448	[4000, 1359]	4633	[1573, 4540]
1079	[1707, 1708]	2264	[1457, 1656]	3449	[3973, 714]	4634	[2845, 219]
1080	[1709, 1710]	2265	[3038, 495]	3450	[4001, 1354]	4635	[4534, 4564]
1081	[1604, 1711]	2266	[3039, 3040]	3451	[4002, 3151]	4636	[687, 1674]
1082	[715, 1712]	2267	[3041, 1861]	3452	[1587, 1698]	4637	[4520, 534]
1083	[1713, 1714]	2268	[486, 2995]	3453	[4003, 2837]	4638	[4698, 2806]
1084	[1362, 1671]	2269	[1855, 1594]	3454	[1525, 2883]	4639	[4143, 3996]
1085	[1715, 1716]	2270	[746, 1852]	3455	[1826, 1935]	4640	[4606, 147]
1086	[1717, 1718]	2271	[728, 746]	3456	[3247, 4004]	4641	[2992, 4207]
1087	[1719, 1720]	2272	[1841, 513]	3457	[1568, 1731]	4642	[3063, 1673]

1088	[1721, 1722]	2273	[690, 727]	3458	[4005, 1863]	4643	[4702, 8]
1089	[1723, 1724]	2274	[1628, 1908]	3459	[3074, 1342]	4644	[2942, 129]
1090	[1725, 1726]	2275	[3042, 149]	3460	[4006, 1361]	4645	[2824, 4566]
1091	[1727, 1478]	2276	[1449, 3043]	3461	[3348, 714]	4646	[4703, 1404]
1092	[604, 1669]	2277	[3044, 2909]	3462	[4007, 449]	4647	[1708, 3245]
1093	[1514, 1728]	2278	[3045, 1623]	3463	[2891, 3181]	4648	[3995, 1457]
1094	[1652, 1729]	2279	[452, 2889]	3464	[4008, 2941]	4649	[4704, 2922]
1095	[1730, 439]	2280	[1694, 166]	3465	[433, 595]	4650	[2984, 3187]
1096	[519, 1731]	2281	[3046, 3028]	3466	[1682, 1667]	4651	[4705, 1870]
1097	[1732, 1733]	2282	[1896, 1691]	3467	[4009, 1377]	4652	[120, 3969]
1098	[1734, 1735]	2283	[3047, 687]	3468	[4010, 1348]	4653	[2870, 1799]
1099	[1736, 1737]	2284	[3048, 1380]	3469	[626, 2897]	4654	[643, 616]
1100	[1428, 1498]	2285	[3049, 575]	3470	[3267, 1830]	4655	[4706, 182]
1101	[1738, 1657]	2286	[2853, 450]	3471	[168, 1686]	4656	[4707, 509]
1102	[1739, 1450]	2287	[1809, 1583]	3472	[4011, 3003]	4657	[1626, 4521]
1103	[1740, 1333]	2288	[714, 122]	3473	[1739, 3043]	4658	[4236, 1328]
1104	[1741, 1742]	2289	[189, 1884]	3474	[4012, 3019]	4659	[169, 156]
1105	[1395, 1618]	2290	[2995, 1786]	3475	[1875, 2984]	4660	[4591, 1586]
1106	[1743, 705]	2291	[1734, 471]	3476	[4013, 582]	4661	[2954, 2944]
1107	[1744, 734]	2292	[3050, 676]	3477	[1367, 651]	4662	[4708, 1900]
1108	[1722, 1745]	2293	[3051, 2881]	3478	[4014, 1546]	4663	[4708, 451]
1109	[1416, 1381]	2294	[448, 41]	3479	[542, 2843]	4664	[4124, 4598]
1110	[1746, 1372]	2295	[3052, 3053]	3480	[4015, 1403]	4665	[4187, 1808]
1111	[1747, 1748]	2296	[648, 127]	3481	[190, 2848]	4666	[3145, 1858]
1112	[35, 1435]	2297	[3054, 2810]	3482	[4016, 447]	4667	[4709, 1546]
1113	[1749, 1750]	2298	[2812, 673]	3483	[1527, 4017]	4668	[4087, 534]
1114	[1751, 582]	2299	[3055, 509]	3484	[4018, 1826]	4669	[3982, 4599]
1115	[1534, 1752]	2300	[1333, 1677]	3485	[4019, 3331]	4670	[4227, 3244]
1116	[1753, 566]	2301	[2975, 3056]	3486	[4020, 670]	4671	[4594, 1386]
1117	[1754, 1755]	2302	[3057, 440]	3487	[4021, 1393]	4672	[579, 610]
1118	[1756, 567]	2303	[1746, 1660]	3488	[524, 1902]	4673	[3352, 129]
1119	[1757, 564]	2304	[1829, 1591]	3489	[679, 3088]	4674	[3142, 1747]
1120	[1406, 1758]	2305	[668, 1884]	3490	[4022, 1582]	4675	[3964, 3080]
1121	[491, 1759]	2306	[1818, 2950]	3491	[4023, 1438]	4676	[1678, 1883]
1122	[1760, 1761]	2307	[3058, 472]	3492	[3956, 632]	4677	[2998, 1734]
1123	[1762, 1763]	2308	[3059, 561]	3493	[4024, 2825]	4678	[3049, 116]
1124	[1764, 1765]	2309	[210, 682]	3494	[4025, 2894]	4679	[3125, 4223]
1125	[14, 592]	2310	[1898, 2931]	3495	[1693, 1394]	4680	[4542, 451]
1126	[1766, 1767]	2311	[571, 1810]	3496	[4026, 4027]	4681	[4710, 2986]
1127	[1768, 1769]	2312	[1369, 627]	3497	[128, 187]	4682	[1804, 1897]
1128	[1552, 1770]	2313	[1887, 3060]	3498	[3146, 1859]	4683	[4711, 1432]
1129	[1658, 1716]	2314	[3061, 3062]	3499	[209, 681]	4684	[4712, 1719]
1130	[1771, 1772]	2315	[1571, 1402]	3500	[4028, 700]	4685	[2836, 595]
1131	[1773, 143]	2316	[2901, 1368]	3501	[2927, 1838]	4686	[3323, 3999]

1132	[1774, 1775]	2317	[580, 611]	3502	[1481, 2877]	4687	[4550, 1521]
1133	[1776, 1582]	2318	[3063, 46]	3503	[4029, 738]	4688	[4086, 478]
1134	[1777, 1654]	2319	[3064, 1604]	3504	[148, 4030]	4689	[2958, 4213]
1135	[1778, 1779]	2320	[3065, 189]	3505	[4031, 1589]	4690	[4233, 2907]
1136	[1469, 1780]	2321	[680, 3066]	3506	[570, 1800]	4691	[4709, 1338]
1137	[1781, 1475]	2322	[2937, 2821]	3507	[3181, 533]	4692	[4228, 1359]
1138	[1782, 1783]	2323	[3067, 1694]	3508	[1738, 1888]	4693	[3006, 3040]
1139	[1520, 1766]	2324	[515, 714]	3509	[4032, 502]	4694	[4224, 668]
1140	[1784, 174]	2325	[3068, 726]	3510	[1542, 159]	4695	[4707, 1578]
1141	[1341, 1785]	2326	[3069, 37]	3511	[1925, 1844]	4696	[4713, 4714]
1142	[1786, 577]	2327	[2988, 2900]	3512	[4033, 1705]	4697	[4715, 1303]
1143	[471, 1787]	2328	[750, 2843]	3513	[3976, 3110]	4698	[4716, 2080]
1144	[1788, 635]	2329	[3070, 1458]	3514	[4034, 1607]	4699	[4717, 4718]
1145	[181, 698]	2330	[3071, 1737]	3515	[172, 1577]	4700	[4719, 342]
1146	[1789, 491]	2331	[3072, 460]	3516	[4035, 567]	4701	[4720, 2389]
1147	[1790, 1791]	2332	[3033, 567]	3517	[1574, 1724]	4702	[4721, 2012]
1148	[1792, 1497]	2333	[3073, 2825]	3518	[4036, 2842]	4703	[4722, 4723]
1149	[442, 1793]	2334	[3074, 1785]	3519	[1445, 594]	4704	[4724, 4725]
1150	[1794, 562]	2335	[558, 3075]	3520	[3160, 1422]	4705	[4726, 4727]
1151	[592, 731]	2336	[3076, 165]	3521	[4037, 3007]	4706	[4728, 2016]
1152	[1795, 1326]	2337	[3077, 2987]	3522	[3316, 597]	4707	[4729, 3601]
1153	[1796, 1517]	2338	[599, 2868]	3523	[4038, 608]	4708	[4730, 917]
1154	[1597, 1501]	2339	[3078, 660]	3524	[4039, 3294]	4709	[4731, 3483]
1155	[206, 1797]	2340	[2943, 1399]	3525	[1760, 178]	4710	[4732, 4733]
1156	[1798, 1783]	2341	[3079, 3080]	3526	[1856, 4027]	4711	[4734, 306]
1157	[1799, 1720]	2342	[1921, 3081]	3527	[4040, 1883]	4712	[4735, 3936]
1158	[1800, 1801]	2343	[1727, 119]	3528	[4041, 1752]	4713	[3232, 646]
1159	[1802, 1714]	2344	[566, 3082]	3529	[1488, 1522]	4714	[3192, 4522]
1160	[1803, 1354]	2345	[3083, 1605]	3530	[4042, 1346]	4715	[3335, 1348]
1161	[1804, 1781]	2346	[3084, 2848]	3531	[4043, 3110]	4716	[4551, 1578]
1162	[133, 35]	2347	[1665, 2819]	3532	[151, 4044]	4717	[4547, 158]
1163	[1657, 1715]	2348	[553, 1641]	3533	[2864, 681]	4718	[3126, 1560]
1164	[1505, 560]	2349	[3085, 1376]	3534	[53, 2844]	4719	[4241, 632]
1165	[680, 486]	2350	[3086, 667]	3535	[4045, 1906]	4720	[473, 3153]
1166	[1805, 1334]	2351	[451, 1777]	3536	[155, 170]	4721	[4526, 670]
1167	[186, 1806]	2352	[482, 1516]	3537	[1803, 1797]	4722	[4571, 1445]
1168	[1807, 1499]	2353	[2972, 3087]	3538	[1331, 3074]	4723	[3227, 4150]
1169	[122, 1712]	2354	[3088, 486]	3539	[43, 567]	4724	[4557, 500]
1170	[1808, 671]	2355	[672, 2813]	3540	[569, 3304]	4725	[4060, 4564]
1171	[1776, 1809]	2356	[3089, 3090]	3541	[4046, 539]	4726	[1702, 1567]
1172	[1610, 674]	2357	[1431, 1904]	3542	[710, 475]	4727	[2994, 621]
1173	[1800, 1810]	2358	[3091, 2851]	3543	[4047, 1433]	4728	[2807, 4548]
1174	[1811, 139]	2359	[513, 1855]	3544	[2898, 1625]	4729	[4607, 484]
1175	[466, 1812]	2360	[1878, 694]	3545	[4048, 4049]	4730	[4101, 422]

1176	[1813, 39]	2361	[1595, 727]	3546	[3175, 603]	4731	[4604, 1542]
1177	[1814, 1815]	2362	[3092, 665]	3547	[4050, 471]	4732	[4582, 202]
1178	[192, 175]	2363	[1400, 3093]	3548	[4051, 1780]	4733	[1751, 3235]
1179	[1816, 1340]	2364	[1589, 3094]	3549	[4052, 1840]	4734	[115, 575]
1180	[1817, 183]	2365	[3029, 3095]	3550	[728, 1391]	4735	[4565, 654]
1181	[1818, 1464]	2366	[1433, 2974]	3551	[4053, 1407]		
1182	[546, 1407]	2367	[1722, 3096]	3552	[4054, 1917]		
1183	[1819, 1365]	2368	[3097, 1475]	3553	[3272, 1402]		
1184	[1820, 1472]	2369	[1651, 1837]	3554	[478, 3277]		

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	790	1	1580	1	2370	0	3160	1	3950	1
1	0	791	0	1581	0	2371	0	3161	0	3951	1
2	0	792	1	1582	1	2372	1	3162	1	3952	0
3	0	793	0	1583	1	2373	1	3163	0	3953	0
4	0	794	0	1584	1	2374	1	3164	1	3954	1
5	0	795	0	1585	0	2375	1	3165	1	3955	1
6	0	796	0	1586	1	2376	0	3166	0	3956	0
7	0	797	1	1587	0	2377	1	3167	0	3957	1
8	0	798	1	1588	0	2378	1	3168	1	3958	1
9	0	799	0	1589	0	2379	0	3169	1	3959	0
10	0	800	0	1590	0	2380	1	3170	1	3960	1
11	0	801	0	1591	0	2381	1	3171	0	3961	1
12	1	802	1	1592	0	2382	1	3172	1	3962	0
13	0	803	1	1593	0	2383	1	3173	1	3963	1
14	0	804	1	1594	1	2384	1	3174	0	3964	1
15	0	805	1	1595	0	2385	1	3175	1	3965	0
16	1	806	1	1596	1	2386	1	3176	0	3966	0
17	0	807	1	1597	0	2387	1	3177	0	3967	0
18	1	808	1	1598	0	2388	0	3178	0	3968	0
19	0	809	0	1599	1	2389	1	3179	1	3969	0
20	0	810	0	1600	1	2390	1	3180	1	3970	0
21	1	811	0	1601	0	2391	0	3181	0	3971	1
22	0	812	1	1602	0	2392	0	3182	1	3972	1
23	0	813	0	1603	1	2393	1	3183	0	3973	1
24	1	814	1	1604	1	2394	0	3184	1	3974	1
25	0	815	0	1605	1	2395	1	3185	0	3975	0
26	0	816	1	1606	0	2396	0	3186	1	3976	1
27	1	817	0	1607	1	2397	0	3187	1	3977	0
28	0	818	1	1608	1	2398	0	3188	1	3978	1
29	1	819	1	1609	1	2399	1	3189	1	3979	1
30	0	820	0	1610	0	2400	0	3190	1	3980	0
31	0	821	0	1611	1	2401	1	3191	0	3981	0

32	1	822	1	1612	0	2402	0	3192	0	3982	0
33	0	823	1	1613	1	2403	0	3193	1	3983	0
34	0	824	1	1614	1	2404	0	3194	1	3984	1
35	0	825	0	1615	1	2405	0	3195	1	3985	0
36	1	826	1	1616	1	2406	0	3196	0	3986	0
37	0	827	0	1617	0	2407	1	3197	1	3987	1
38	0	828	0	1618	1	2408	0	3198	1	3988	1
39	0	829	1	1619	0	2409	1	3199	1	3989	0
40	0	830	1	1620	0	2410	0	3200	0	3990	0
41	1	831	1	1621	0	2411	1	3201	0	3991	1
42	0	832	1	1622	1	2412	1	3202	0	3992	0
43	0	833	1	1623	0	2413	0	3203	1	3993	1
44	1	834	0	1624	0	2414	1	3204	0	3994	0
45	0	835	0	1625	0	2415	1	3205	0	3995	1
46	0	836	0	1626	0	2416	0	3206	1	3996	0
47	1	837	1	1627	0	2417	1	3207	0	3997	1
48	1	838	0	1628	0	2418	1	3208	0	3998	0
49	0	839	1	1629	0	2419	1	3209	1	3999	1
50	1	840	1	1630	1	2420	0	3210	1	4000	0
51	0	841	1	1631	1	2421	1	3211	0	4001	1
52	1	842	0	1632	1	2422	1	3212	0	4002	1
53	1	843	0	1633	1	2423	1	3213	1	4003	1
54	1	844	1	1634	0	2424	0	3214	0	4004	1
55	0	845	0	1635	1	2425	0	3215	1	4005	0
56	0	846	0	1636	0	2426	1	3216	1	4006	1
57	1	847	1	1637	1	2427	1	3217	0	4007	1
58	1	848	1	1638	0	2428	1	3218	0	4008	1
59	0	849	0	1639	1	2429	0	3219	1	4009	1
60	0	850	1	1640	0	2430	1	3220	1	4010	1
61	0	851	1	1641	0	2431	1	3221	1	4011	0
62	0	852	1	1642	0	2432	1	3222	1	4012	0
63	1	853	0	1643	1	2433	0	3223	0	4013	0
64	1	854	1	1644	0	2434	0	3224	0	4014	0
65	0	855	0	1645	1	2435	1	3225	0	4015	0
66	1	856	1	1646	1	2436	0	3226	1	4016	0
67	0	857	0	1647	1	2437	0	3227	1	4017	0
68	1	858	1	1648	1	2438	0	3228	0	4018	1
69	0	859	0	1649	0	2439	0	3229	1	4019	1
70	1	860	1	1650	1	2440	1	3230	1	4020	0
71	1	861	0	1651	0	2441	1	3231	0	4021	1
72	0	862	1	1652	0	2442	0	3232	1	4022	0
73	0	863	0	1653	0	2443	1	3233	1	4023	1
74	1	864	0	1654	0	2444	0	3234	1	4024	0
75	0	865	1	1655	1	2445	0	3235	0	4025	0

76	0	866	1	1656	0	2446	0	3236	1	4026	1
77	0	867	1	1657	0	2447	0	3237	1	4027	0
78	1	868	0	1658	0	2448	0	3238	1	4028	0
79	0	869	1	1659	0	2449	0	3239	1	4029	0
80	1	870	1	1660	0	2450	1	3240	1	4030	1
81	1	871	1	1661	1	2451	1	3241	0	4031	1
82	0	872	0	1662	1	2452	1	3242	0	4032	1
83	1	873	1	1663	1	2453	1	3243	1	4033	1
84	0	874	1	1664	0	2454	0	3244	0	4034	1
85	0	875	0	1665	0	2455	0	3245	1	4035	1
86	1	876	0	1666	0	2456	0	3246	0	4036	0
87	0	877	0	1667	1	2457	0	3247	1	4037	1
88	0	878	0	1668	1	2458	0	3248	1	4038	0
89	1	879	0	1669	0	2459	1	3249	0	4039	1
90	0	880	1	1670	1	2460	0	3250	0	4040	1
91	1	881	0	1671	0	2461	1	3251	0	4041	1
92	1	882	0	1672	0	2462	0	3252	1	4042	1
93	0	883	0	1673	1	2463	0	3253	0	4043	0
94	1	884	0	1674	0	2464	1	3254	0	4044	0
95	1	885	0	1675	0	2465	1	3255	1	4045	0
96	0	886	0	1676	1	2466	0	3256	1	4046	0
97	0	887	0	1677	0	2467	1	3257	0	4047	0
98	1	888	1	1678	0	2468	0	3258	0	4048	0
99	0	889	1	1679	0	2469	0	3259	1	4049	1
100	0	890	0	1680	0	2470	0	3260	0	4050	0
101	0	891	0	1681	0	2471	1	3261	1	4051	1
102	1	892	1	1682	0	2472	0	3262	1	4052	0
103	1	893	1	1683	0	2473	1	3263	0	4053	1
104	1	894	1	1684	1	2474	0	3264	0	4054	0
105	1	895	1	1685	1	2475	1	3265	0	4055	0
106	0	896	0	1686	1	2476	0	3266	0	4056	1
107	0	897	1	1687	1	2477	1	3267	0	4057	1
108	0	898	0	1688	0	2478	1	3268	1	4058	0
109	0	899	0	1689	1	2479	1	3269	0	4059	1
110	1	900	1	1690	0	2480	0	3270	0	4060	1
111	1	901	1	1691	1	2481	1	3271	0	4061	0
112	1	902	1	1692	0	2482	0	3272	0	4062	0
113	1	903	0	1693	0	2483	0	3273	0	4063	0
114	1	904	1	1694	0	2484	0	3274	0	4064	1
115	0	905	0	1695	0	2485	1	3275	1	4065	1
116	1	906	1	1696	1	2486	0	3276	1	4066	0
117	0	907	0	1697	1	2487	0	3277	1	4067	0
118	1	908	0	1698	1	2488	1	3278	1	4068	1
119	0	909	1	1699	0	2489	1	3279	1	4069	0

120	1	910	0	1700	0	2490	1	3280	1	4070	1
121	0	911	0	1701	1	2491	0	3281	0	4071	1
122	1	912	1	1702	0	2492	1	3282	0	4072	0
123	1	913	1	1703	0	2493	1	3283	1	4073	0
124	0	914	1	1704	1	2494	1	3284	0	4074	1
125	1	915	0	1705	1	2495	0	3285	1	4075	1
126	1	916	0	1706	1	2496	0	3286	0	4076	1
127	0	917	1	1707	1	2497	0	3287	0	4077	0
128	0	918	1	1708	1	2498	1	3288	0	4078	0
129	1	919	1	1709	1	2499	0	3289	0	4079	1
130	1	920	1	1710	0	2500	0	3290	0	4080	0
131	0	921	1	1711	0	2501	0	3291	1	4081	1
132	1	922	1	1712	1	2502	0	3292	0	4082	0
133	1	923	1	1713	1	2503	1	3293	1	4083	0
134	0	924	1	1714	1	2504	0	3294	1	4084	0
135	0	925	0	1715	1	2505	1	3295	0	4085	0
136	1	926	0	1716	0	2506	1	3296	0	4086	1
137	0	927	1	1717	1	2507	0	3297	1	4087	1
138	1	928	1	1718	1	2508	1	3298	0	4088	0
139	0	929	1	1719	0	2509	0	3299	0	4089	1
140	0	930	1	1720	0	2510	1	3300	1	4090	0
141	1	931	0	1721	1	2511	0	3301	1	4091	1
142	0	932	1	1722	0	2512	0	3302	1	4092	1
143	1	933	1	1723	1	2513	0	3303	0	4093	0
144	1	934	0	1724	0	2514	1	3304	0	4094	0
145	0	935	0	1725	1	2515	1	3305	0	4095	0
146	1	936	1	1726	1	2516	1	3306	1	4096	1
147	0	937	1	1727	1	2517	0	3307	0	4097	1
148	0	938	1	1728	1	2518	0	3308	0	4098	0
149	0	939	0	1729	0	2519	1	3309	1	4099	0
150	0	940	0	1730	0	2520	1	3310	0	4100	0
151	1	941	1	1731	1	2521	1	3311	1	4101	1
152	1	942	1	1732	0	2522	0	3312	0	4102	1
153	0	943	1	1733	1	2523	1	3313	1	4103	0
154	0	944	1	1734	0	2524	0	3314	0	4104	0
155	1	945	1	1735	0	2525	0	3315	1	4105	1
156	0	946	0	1736	0	2526	1	3316	1	4106	1
157	1	947	0	1737	1	2527	0	3317	0	4107	1
158	0	948	0	1738	0	2528	0	3318	1	4108	1
159	0	949	0	1739	0	2529	1	3319	0	4109	1
160	0	950	0	1740	1	2530	1	3320	1	4110	0
161	0	951	0	1741	1	2531	0	3321	0	4111	1
162	0	952	0	1742	0	2532	0	3322	1	4112	0
163	0	953	1	1743	0	2533	1	3323	1	4113	1

164	0	954	1	1744	1	2534	1	3324	0	4114	1
165	1	955	0	1745	0	2535	0	3325	1	4115	0
166	1	956	1	1746	1	2536	1	3326	1	4116	0
167	0	957	0	1747	1	2537	1	3327	0	4117	0
168	0	958	0	1748	0	2538	0	3328	1	4118	1
169	0	959	1	1749	1	2539	0	3329	0	4119	1
170	1	960	0	1750	0	2540	1	3330	1	4120	1
171	1	961	0	1751	0	2541	0	3331	1	4121	1
172	1	962	0	1752	1	2542	0	3332	0	4122	1
173	0	963	0	1753	1	2543	1	3333	1	4123	1
174	1	964	1	1754	0	2544	0	3334	1	4124	0
175	1	965	0	1755	1	2545	0	3335	1	4125	1
176	1	966	0	1756	0	2546	1	3336	1	4126	0
177	1	967	1	1757	0	2547	0	3337	1	4127	0
178	0	968	1	1758	1	2548	0	3338	1	4128	0
179	0	969	1	1759	1	2549	0	3339	0	4129	0
180	1	970	1	1760	1	2550	1	3340	1	4130	0
181	1	971	0	1761	1	2551	1	3341	0	4131	0
182	0	972	1	1762	0	2552	0	3342	0	4132	0
183	1	973	0	1763	0	2553	0	3343	0	4133	0
184	1	974	0	1764	1	2554	1	3344	1	4134	1
185	0	975	1	1765	0	2555	1	3345	1	4135	0
186	0	976	1	1766	1	2556	1	3346	0	4136	1
187	0	977	0	1767	0	2557	1	3347	1	4137	0
188	0	978	0	1768	1	2558	0	3348	0	4138	0
189	1	979	1	1769	1	2559	0	3349	0	4139	1
190	1	980	1	1770	0	2560	0	3350	0	4140	1
191	0	981	1	1771	1	2561	1	3351	0	4141	1
192	0	982	0	1772	1	2562	1	3352	0	4142	0
193	0	983	1	1773	1	2563	0	3353	0	4143	0
194	0	984	1	1774	0	2564	0	3354	0	4144	0
195	1	985	0	1775	1	2565	1	3355	1	4145	1
196	1	986	1	1776	0	2566	1	3356	0	4146	0
197	0	987	1	1777	1	2567	1	3357	1	4147	0
198	1	988	1	1778	1	2568	1	3358	0	4148	1
199	1	989	1	1779	0	2569	1	3359	0	4149	1
200	0	990	1	1780	1	2570	0	3360	0	4150	0
201	1	991	0	1781	1	2571	1	3361	1	4151	1
202	1	992	1	1782	0	2572	0	3362	1	4152	1
203	0	993	1	1783	1	2573	1	3363	1	4153	0
204	1	994	1	1784	1	2574	1	3364	0	4154	0
205	0	995	1	1785	1	2575	1	3365	0	4155	1
206	0	996	1	1786	0	2576	0	3366	0	4156	0
207	0	997	0	1787	1	2577	0	3367	0	4157	1

208	1	998	0	1788	0	2578	0	3368	1	4158	0
209	0	999	1	1789	1	2579	0	3369	0	4159	1
210	0	1000	0	1790	0	2580	0	3370	0	4160	0
211	1	1001	0	1791	0	2581	0	3371	1	4161	0
212	0	1002	1	1792	1	2582	0	3372	1	4162	1
213	1	1003	0	1793	1	2583	1	3373	0	4163	1
214	1	1004	1	1794	0	2584	0	3374	0	4164	0
215	1	1005	0	1795	0	2585	1	3375	1	4165	1
216	1	1006	1	1796	0	2586	0	3376	1	4166	1
217	1	1007	1	1797	1	2587	0	3377	0	4167	0
218	0	1008	1	1798	1	2588	0	3378	1	4168	0
219	1	1009	1	1799	1	2589	1	3379	1	4169	1
220	0	1010	1	1800	0	2590	1	3380	1	4170	1
221	0	1011	1	1801	1	2591	1	3381	1	4171	0
222	1	1012	1	1802	0	2592	0	3382	1	4172	0
223	1	1013	0	1803	1	2593	0	3383	1	4173	0
224	0	1014	0	1804	1	2594	0	3384	0	4174	1
225	0	1015	1	1805	0	2595	1	3385	0	4175	1
226	1	1016	1	1806	1	2596	1	3386	0	4176	0
227	1	1017	0	1807	1	2597	0	3387	0	4177	0
228	0	1018	0	1808	1	2598	0	3388	0	4178	1
229	0	1019	1	1809	0	2599	1	3389	0	4179	1
230	1	1020	0	1810	0	2600	1	3390	1	4180	1
231	1	1021	1	1811	0	2601	0	3391	1	4181	1
232	0	1022	1	1812	1	2602	1	3392	1	4182	0
233	0	1023	1	1813	1	2603	0	3393	0	4183	1
234	0	1024	0	1814	1	2604	1	3394	1	4184	0
235	1	1025	1	1815	1	2605	1	3395	0	4185	1
236	1	1026	0	1816	0	2606	0	3396	0	4186	0
237	1	1027	1	1817	0	2607	1	3397	0	4187	1
238	0	1028	0	1818	0	2608	1	3398	0	4188	1
239	0	1029	1	1819	1	2609	0	3399	1	4189	1
240	1	1030	0	1820	0	2610	1	3400	1	4190	1
241	1	1031	0	1821	0	2611	1	3401	1	4191	0
242	1	1032	0	1822	1	2612	1	3402	0	4192	1
243	1	1033	1	1823	1	2613	0	3403	0	4193	1
244	1	1034	0	1824	1	2614	0	3404	1	4194	0
245	0	1035	1	1825	0	2615	0	3405	0	4195	1
246	0	1036	1	1826	0	2616	1	3406	0	4196	1
247	0	1037	0	1827	0	2617	1	3407	1	4197	0
248	1	1038	0	1828	0	2618	1	3408	0	4198	1
249	1	1039	1	1829	1	2619	0	3409	0	4199	1
250	1	1040	1	1830	1	2620	0	3410	0	4200	0
251	1	1041	1	1831	0	2621	0	3411	0	4201	0

252	1	1042	1	1832	1	2622	1	3412	0	4202	0
253	1	1043	0	1833	1	2623	0	3413	1	4203	0
254	1	1044	0	1834	1	2624	0	3414	0	4204	0
255	1	1045	1	1835	1	2625	1	3415	1	4205	0
256	1	1046	0	1836	1	2626	0	3416	1	4206	1
257	1	1047	1	1837	1	2627	0	3417	1	4207	0
258	0	1048	0	1838	1	2628	1	3418	0	4208	0
259	0	1049	0	1839	1	2629	1	3419	0	4209	1
260	0	1050	0	1840	0	2630	0	3420	0	4210	0
261	0	1051	0	1841	1	2631	1	3421	1	4211	0
262	1	1052	1	1842	0	2632	1	3422	1	4212	0
263	0	1053	0	1843	1	2633	0	3423	1	4213	1
264	0	1054	1	1844	0	2634	0	3424	1	4214	1
265	1	1055	0	1845	0	2635	0	3425	1	4215	1
266	1	1056	1	1846	1	2636	1	3426	0	4216	0
267	0	1057	1	1847	1	2637	1	3427	0	4217	1
268	0	1058	1	1848	0	2638	1	3428	0	4218	1
269	1	1059	1	1849	0	2639	0	3429	1	4219	1
270	0	1060	0	1850	0	2640	1	3430	1	4220	0
271	1	1061	1	1851	0	2641	1	3431	0	4221	0
272	1	1062	1	1852	1	2642	0	3432	0	4222	1
273	0	1063	0	1853	0	2643	0	3433	0	4223	1
274	0	1064	1	1854	0	2644	0	3434	1	4224	1
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276	1	1066	0	1856	0	2646	1	3436	0	4226	1
277	1	1067	0	1857	1	2647	1	3437	1	4227	1
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279	1	1069	0	1859	1	2649	1	3439	1	4229	1
280	0	1070	1	1860	0	2650	1	3440	1	4230	0
281	0	1071	1	1861	0	2651	1	3441	1	4231	1
282	1	1072	0	1862	1	2652	1	3442	1	4232	1
283	0	1073	0	1863	0	2653	1	3443	1	4233	1
284	0	1074	0	1864	1	2654	1	3444	0	4234	1
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286	1	1076	1	1866	1	2656	0	3446	0	4236	1
287	0	1077	0	1867	0	2657	0	3447	1	4237	0
288	0	1078	1	1868	0	2658	1	3448	0	4238	1
289	0	1079	1	1869	0	2659	1	3449	1	4239	0
290	1	1080	1	1870	0	2660	1	3450	1	4240	0
291	1	1081	1	1871	0	2661	1	3451	1	4241	0
292	1	1082	0	1872	0	2662	0	3452	0	4242	1
293	1	1083	1	1873	1	2663	1	3453	1	4243	1
294	1	1084	0	1874	0	2664	0	3454	0	4244	0
295	0	1085	1	1875	0	2665	0	3455	0	4245	0

296	1	1086	1	1876	0	2666	0	3456	1	4246	1
297	0	1087	0	1877	1	2667	1	3457	1	4247	0
298	1	1088	1	1878	0	2668	0	3458	0	4248	1
299	1	1089	1	1879	0	2669	0	3459	0	4249	0
300	0	1090	1	1880	0	2670	0	3460	1	4250	1
301	0	1091	1	1881	1	2671	0	3461	0	4251	1
302	1	1092	0	1882	0	2672	0	3462	1	4252	1
303	1	1093	1	1883	1	2673	0	3463	1	4253	0
304	0	1094	0	1884	0	2674	1	3464	1	4254	1
305	1	1095	0	1885	1	2675	1	3465	0	4255	1
306	0	1096	0	1886	1	2676	0	3466	0	4256	1
307	0	1097	0	1887	0	2677	0	3467	1	4257	0
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309	1	1099	0	1889	0	2679	0	3469	1	4259	0
310	0	1100	0	1890	1	2680	1	3470	0	4260	0
311	0	1101	0	1891	1	2681	1	3471	0	4261	1
312	1	1102	0	1892	1	2682	1	3472	0	4262	0
313	0	1103	1	1893	1	2683	0	3473	0	4263	1
314	0	1104	1	1894	0	2684	0	3474	0	4264	1
315	0	1105	0	1895	1	2685	1	3475	0	4265	1
316	0	1106	0	1896	1	2686	0	3476	0	4266	0
317	1	1107	1	1897	0	2687	1	3477	1	4267	1
318	1	1108	0	1898	0	2688	1	3478	0	4268	1
319	1	1109	1	1899	0	2689	0	3479	0	4269	1
320	1	1110	1	1900	1	2690	1	3480	0	4270	0
321	0	1111	1	1901	1	2691	0	3481	1	4271	0
322	1	1112	0	1902	1	2692	1	3482	0	4272	1
323	0	1113	1	1903	0	2693	1	3483	1	4273	0
324	0	1114	0	1904	1	2694	1	3484	1	4274	1
325	0	1115	1	1905	1	2695	0	3485	1	4275	1
326	1	1116	1	1906	1	2696	0	3486	0	4276	0
327	1	1117	0	1907	0	2697	0	3487	1	4277	0
328	0	1118	0	1908	0	2698	0	3488	1	4278	0
329	1	1119	0	1909	0	2699	1	3489	1	4279	0
330	0	1120	0	1910	1	2700	0	3490	0	4280	1
331	1	1121	0	1911	0	2701	0	3491	1	4281	0
332	0	1122	1	1912	1	2702	1	3492	0	4282	1
333	0	1123	0	1913	0	2703	0	3493	0	4283	1
334	0	1124	1	1914	1	2704	0	3494	0	4284	1
335	1	1125	0	1915	1	2705	1	3495	0	4285	0
336	1	1126	1	1916	1	2706	1	3496	1	4286	1
337	1	1127	1	1917	1	2707	0	3497	0	4287	0
338	0	1128	0	1918	1	2708	0	3498	0	4288	1
339	1	1129	0	1919	0	2709	0	3499	0	4289	1

340	1	1130	1	1920	1	2710	1	3500	0	4290	1
341	1	1131	1	1921	0	2711	1	3501	0	4291	0
342	0	1132	0	1922	1	2712	0	3502	1	4292	1
343	0	1133	0	1923	0	2713	1	3503	0	4293	1
344	0	1134	1	1924	1	2714	1	3504	0	4294	1
345	1	1135	1	1925	0	2715	0	3505	1	4295	0
346	1	1136	1	1926	1	2716	1	3506	1	4296	0
347	0	1137	1	1927	1	2717	1	3507	0	4297	0
348	1	1138	0	1928	1	2718	0	3508	0	4298	0
349	1	1139	1	1929	1	2719	0	3509	1	4299	0
350	0	1140	1	1930	1	2720	0	3510	0	4300	0
351	0	1141	1	1931	0	2721	0	3511	0	4301	1
352	1	1142	0	1932	1	2722	0	3512	1	4302	1
353	1	1143	1	1933	0	2723	1	3513	1	4303	0
354	1	1144	0	1934	0	2724	0	3514	1	4304	1
355	0	1145	1	1935	1	2725	0	3515	1	4305	1
356	0	1146	1	1936	0	2726	1	3516	1	4306	0
357	0	1147	0	1937	0	2727	1	3517	0	4307	0
358	0	1148	1	1938	1	2728	1	3518	0	4308	1
359	0	1149	0	1939	1	2729	0	3519	0	4309	1
360	0	1150	0	1940	0	2730	0	3520	1	4310	0
361	0	1151	1	1941	0	2731	0	3521	1	4311	0
362	1	1152	0	1942	0	2732	1	3522	1	4312	1
363	0	1153	0	1943	0	2733	0	3523	0	4313	1
364	1	1154	0	1944	1	2734	0	3524	1	4314	1
365	0	1155	0	1945	1	2735	1	3525	1	4315	1
366	0	1156	1	1946	0	2736	1	3526	0	4316	0
367	0	1157	1	1947	1	2737	0	3527	1	4317	1
368	0	1158	0	1948	0	2738	0	3528	1	4318	0
369	0	1159	0	1949	0	2739	0	3529	0	4319	1
370	1	1160	1	1950	0	2740	1	3530	1	4320	1
371	0	1161	1	1951	1	2741	1	3531	0	4321	1
372	0	1162	1	1952	1	2742	0	3532	1	4322	1
373	1	1163	0	1953	1	2743	1	3533	1	4323	0
374	1	1164	1	1954	1	2744	1	3534	1	4324	1
375	1	1165	1	1955	0	2745	1	3535	0	4325	0
376	0	1166	0	1956	0	2746	0	3536	1	4326	0
377	0	1167	0	1957	1	2747	1	3537	1	4327	0
378	1	1168	1	1958	0	2748	1	3538	0	4328	0
379	1	1169	1	1959	1	2749	0	3539	0	4329	1
380	1	1170	1	1960	1	2750	0	3540	1	4330	1
381	0	1171	0	1961	0	2751	0	3541	0	4331	0
382	0	1172	0	1962	1	2752	1	3542	0	4332	1
383	0	1173	0	1963	0	2753	1	3543	0	4333	0

384	1	1174	0	1964	1	2754	1	3544	1	4334	1
385	0	1175	0	1965	0	2755	1	3545	0	4335	0
386	1	1176	1	1966	1	2756	0	3546	1	4336	1
387	1	1177	1	1967	1	2757	1	3547	0	4337	1
388	0	1178	0	1968	0	2758	1	3548	1	4338	0
389	0	1179	0	1969	1	2759	1	3549	0	4339	1
390	1	1180	0	1970	0	2760	1	3550	1	4340	1
391	0	1181	0	1971	1	2761	0	3551	1	4341	0
392	0	1182	1	1972	0	2762	0	3552	0	4342	0
393	0	1183	1	1973	0	2763	0	3553	0	4343	1
394	1	1184	0	1974	1	2764	1	3554	1	4344	0
395	0	1185	0	1975	1	2765	1	3555	1	4345	1
396	1	1186	0	1976	1	2766	0	3556	0	4346	0
397	1	1187	1	1977	0	2767	0	3557	1	4347	0
398	1	1188	1	1978	0	2768	1	3558	1	4348	1
399	0	1189	0	1979	0	2769	1	3559	1	4349	1
400	1	1190	0	1980	0	2770	1	3560	0	4350	1
401	0	1191	0	1981	1	2771	1	3561	0	4351	0
402	1	1192	1	1982	0	2772	0	3562	1	4352	0
403	1	1193	0	1983	1	2773	1	3563	1	4353	0
404	0	1194	1	1984	1	2774	0	3564	1	4354	1
405	0	1195	1	1985	1	2775	1	3565	0	4355	1
406	1	1196	1	1986	0	2776	1	3566	0	4356	0
407	1	1197	1	1987	1	2777	0	3567	0	4357	1
408	1	1198	1	1988	0	2778	1	3568	0	4358	0
409	1	1199	1	1989	0	2779	1	3569	1	4359	0
410	0	1200	1	1990	0	2780	1	3570	1	4360	1
411	1	1201	1	1991	1	2781	0	3571	1	4361	0
412	0	1202	0	1992	1	2782	1	3572	0	4362	1
413	1	1203	1	1993	1	2783	1	3573	0	4363	0
414	1	1204	1	1994	0	2784	0	3574	1	4364	0
415	0	1205	0	1995	0	2785	1	3575	0	4365	0
416	0	1206	1	1996	0	2786	0	3576	0	4366	0
417	0	1207	0	1997	1	2787	1	3577	0	4367	1
418	1	1208	0	1998	0	2788	0	3578	1	4368	1
419	0	1209	0	1999	0	2789	1	3579	1	4369	0
420	0	1210	1	2000	1	2790	1	3580	0	4370	1
421	0	1211	0	2001	1	2791	1	3581	0	4371	0
422	0	1212	1	2002	0	2792	1	3582	0	4372	0
423	1	1213	1	2003	0	2793	0	3583	1	4373	1
424	1	1214	0	2004	1	2794	1	3584	1	4374	1
425	1	1215	0	2005	0	2795	0	3585	0	4375	0
426	0	1216	0	2006	0	2796	1	3586	1	4376	1
427	0	1217	1	2007	0	2797	0	3587	0	4377	0

428	0	1218	1	2008	1	2798	0	3588	0	4378	0
429	1	1219	0	2009	0	2799	0	3589	0	4379	1
430	1	1220	0	2010	0	2800	0	3590	1	4380	1
431	0	1221	0	2011	1	2801	0	3591	0	4381	0
432	1	1222	1	2012	0	2802	0	3592	1	4382	0
433	0	1223	0	2013	0	2803	1	3593	1	4383	1
434	0	1224	0	2014	1	2804	1	3594	0	4384	0
435	1	1225	0	2015	1	2805	0	3595	0	4385	0
436	0	1226	1	2016	0	2806	0	3596	1	4386	1
437	0	1227	0	2017	1	2807	0	3597	0	4387	1
438	1	1228	1	2018	1	2808	1	3598	0	4388	1
439	0	1229	1	2019	0	2809	1	3599	0	4389	1
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442	0	1232	0	2022	1	2812	1	3602	0	4392	0
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444	0	1234	0	2024	0	2814	0	3604	0	4394	0
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456	0	1246	0	2036	1	2826	0	3616	1	4406	1
457	1	1247	1	2037	1	2827	0	3617	0	4407	0
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699	1	1489	0	2279	0	3069	1	3859	0	4649	1
700	0	1490	0	2280	0	3070	0	3860	1	4650	0
701	0	1491	0	2281	0	3071	1	3861	0	4651	0
702	1	1492	0	2282	1	3072	0	3862	0	4652	1
703	1	1493	1	2283	1	3073	1	3863	0	4653	0
704	0	1494	0	2284	0	3074	0	3864	0	4654	0
705	1	1495	0	2285	1	3075	0	3865	0	4655	0
706	0	1496	0	2286	0	3076	1	3866	1	4656	1
707	0	1497	1	2287	0	3077	0	3867	1	4657	0
708	1	1498	0	2288	1	3078	1	3868	1	4658	1
709	0	1499	0	2289	1	3079	0	3869	1	4659	0
710	0	1500	1	2290	0	3080	1	3870	1	4660	1
711	0	1501	0	2291	0	3081	0	3871	0	4661	0
712	0	1502	0	2292	1	3082	1	3872	0	4662	1
713	0	1503	0	2293	0	3083	0	3873	1	4663	1
714	1	1504	1	2294	1	3084	1	3874	0	4664	0
715	0	1505	1	2295	0	3085	0	3875	1	4665	1
716	0	1506	1	2296	1	3086	0	3876	0	4666	0
717	1	1507	1	2297	0	3087	1	3877	1	4667	1
718	1	1508	0	2298	1	3088	0	3878	0	4668	1
719	1	1509	0	2299	1	3089	0	3879	0	4669	0
720	1	1510	0	2300	0	3090	0	3880	0	4670	1
721	1	1511	1	2301	0	3091	0	3881	0	4671	0
722	0	1512	0	2302	1	3092	1	3882	0	4672	0
723	1	1513	0	2303	1	3093	1	3883	1	4673	0
724	1	1514	1	2304	1	3094	1	3884	1	4674	0
725	0	1515	0	2305	0	3095	1	3885	0	4675	1
726	1	1516	0	2306	0	3096	1	3886	1	4676	0
727	1	1517	0	2307	1	3097	1	3887	0	4677	0
728	1	1518	0	2308	1	3098	0	3888	0	4678	1
729	0	1519	0	2309	0	3099	1	3889	1	4679	1
730	0	1520	1	2310	0	3100	1	3890	0	4680	0
731	1	1521	0	2311	1	3101	0	3891	0	4681	1
732	0	1522	0	2312	0	3102	1	3892	1	4682	1
733	1	1523	0	2313	0	3103	1	3893	1	4683	0
734	1	1524	0	2314	0	3104	1	3894	1	4684	0
735	1	1525	0	2315	1	3105	1	3895	1	4685	1

736	1	1526	0	2316	1	3106	0	3896	0	4686	1
737	1	1527	1	2317	1	3107	1	3897	0	4687	0
738	0	1528	1	2318	0	3108	0	3898	0	4688	1
739	0	1529	0	2319	1	3109	0	3899	0	4689	1
740	1	1530	0	2320	1	3110	1	3900	1	4690	1
741	1	1531	1	2321	1	3111	1	3901	0	4691	1
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743	1	1533	1	2323	1	3113	0	3903	1	4693	1
744	1	1534	1	2324	1	3114	0	3904	0	4694	1
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747	0	1537	1	2327	0	3117	0	3907	0	4697	1
748	0	1538	0	2328	1	3118	0	3908	1	4698	0
749	1	1539	1	2329	0	3119	0	3909	1	4699	0
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752	0	1542	0	2332	1	3122	0	3912	0	4702	0
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754	0	1544	1	2334	0	3124	0	3914	1	4704	1
755	0	1545	1	2335	0	3125	1	3915	1	4705	0
756	0	1546	0	2336	1	3126	0	3916	0	4706	0
757	1	1547	1	2337	0	3127	1	3917	1	4707	1
758	1	1548	1	2338	0	3128	0	3918	1	4708	1
759	1	1549	0	2339	1	3129	0	3919	0	4709	1
760	0	1550	1	2340	0	3130	1	3920	1	4710	1
761	1	1551	1	2341	0	3131	0	3921	1	4711	0
762	0	1552	0	2342	0	3132	1	3922	0	4712	0
763	0	1553	0	2343	1	3133	1	3923	0	4713	1
764	1	1554	1	2344	1	3134	1	3924	1	4714	0
765	0	1555	1	2345	0	3135	0	3925	1	4715	1
766	0	1556	1	2346	1	3136	0	3926	0	4716	0
767	1	1557	1	2347	0	3137	0	3927	1	4717	0
768	1	1558	1	2348	1	3138	1	3928	1	4718	0
769	1	1559	1	2349	0	3139	0	3929	1	4719	0
770	1	1560	1	2350	0	3140	1	3930	1	4720	1
771	1	1561	0	2351	0	3141	0	3931	0	4721	0
772	0	1562	1	2352	0	3142	0	3932	1	4722	1
773	1	1563	0	2353	0	3143	1	3933	1	4723	1
774	1	1564	0	2354	0	3144	1	3934	1	4724	1
775	1	1565	1	2355	0	3145	0	3935	0	4725	1
776	0	1566	0	2356	0	3146	0	3936	1	4726	0
777	0	1567	1	2357	1	3147	0	3937	0	4727	1
778	1	1568	1	2358	0	3148	0	3938	0	4728	0
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780	1	1570	1	2360	0	3150	1	3940	1	4730	1
781	0	1571	1	2361	0	3151	1	3941	1	4731	1
782	1	1572	0	2362	1	3152	1	3942	1	4732	1
783	0	1573	0	2363	1	3153	0	3943	0	4733	0
784	1	1574	0	2364	0	3154	1	3944	1	4734	0
785	1	1575	1	2365	0	3155	1	3945	0	4735	0
786	0	1576	0	2366	1	3156	0	3946	0		
787	0	1577	1	2367	0	3157	0	3947	0		
788	1	1578	0	2368	1	3158	0	3948	1		
789	1	1579	0	2369	0	3159	0	3949	0		

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