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

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Abstract. The continued fraction conjecture claims that the continued fraction defined by the (a,b)-Thue-Morse sequence is algebraic over $\mathbb{F}_2(x)$ for all pairs of distinct elements (a,b) in $\mathbb{F}_2[x]\setminus\mathbb{F}_2$. In this paper we prove the conjecture for $(a,b)=(z^3+z^2,z^4+z^3+z)$.

1. Introduction

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

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

as the limit of the finite continued fractions

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

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

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

admits a continued fraction expansion of form (1.1).

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

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

that we shall denote

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

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Theorem 1.1. *When* $(a,b)=(z^3+z^2, z^4+z^3+z)$*, the two power series* $\mathrm{CF}(a,b)$ *and* $\mathrm{CF}(b,a)$ *are algebraic over* $\mathbb{F}_2(z)$*, with minimal polynomials of the form*

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

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

$$\begin{aligned}
p_0(z)&=z^{17}+z^{15}+z^{14}+z^{12}+z^{11}+z^8+z^5+z+1,\\
p_1(z)&=z^{21}+z^{17}+z^{14}+z^{13}+z^{11}+z^{10}+z^9+z^6+z^4+z^2,\\
p_2(z)&=z^{24}+z^{18}+z^{16}+z^{12}+z^8+z^4,\\
p_3(z)&=z^{21}+z^{17}+z^{14}+z^{13}+z^{11}+z^{10}+z^9+z^6+z^4+z^2,\\
p_4(z)&=z^{18}+z^{17}+z^{15}+z^{14}+z^{11}+z^8+z^5+z,
\end{aligned}$$

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

$$\begin{aligned}
p_0(z)&=z^{17}+z^{15}+z^{14}+z^{11}+z^8+z^5+z^4+z,\\
p_1(z)&=z^{21}+z^{17}+z^{14}+z^{13}+z^{11}+z^{10}+z^9+z^6+z^4+z^2,\\
p_2(z)&=z^{24}+z^{18}+z^{16}+z^{12}+z^8+z^4,\\
p_3(z)&=z^{21}+z^{17}+z^{14}+z^{13}+z^{11}+z^{10}+z^9+z^6+z^4+z^2,\\
p_4(z)&=z^{18}+z^{17}+z^{15}+z^{14}+z^{12}+z^{11}+z^8+z^5+z^4+z+1.
\end{aligned}$$

2. Proof

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

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

By the basic properties of continued fractions, we have

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

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

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

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

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

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

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

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

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

for some positive integer d_n. Hence,

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

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

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

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

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

of the vector

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

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

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

Lemma 2.1. *We have*

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

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

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

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

Proof. We give the proof of the identity

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

the proofs of the others being similar.

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

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

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

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

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

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

Define

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

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

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

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

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

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

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 $u = 2^{2k}$,

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

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

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

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

which can be rewritten as

$$0 = T[[1w]_2] + T[[11w]_2] + T[[100w]_2] + T[[101w]_2] + T[[111w]_2], \tag{2.7}$$

$$0 = T[[w]_2] + T[[10w]_2] + T[[100w]_2] + T[[101w]_2] + T[[110w]_2] + T[[1000w]_2], \tag{2.8}$$

$$0 = T[[w]_2] + T[[100w]_2] + T[[110w]_2] + T[[1001w]_2], \tag{2.9}$$

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

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

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

$$0 = T[[w]_2] + T[[11w]_2] + T[[100w]_2] + T[[101w]_2] + T[[110w]_2] + T[[1101w]_2], \tag{2.13}$$

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

$$0 = T[[1w]_2] + T[[11w]_2] + T[[100w]_2] + T[[101w]_2] + T[[111w]_2], \tag{2.14}$$

$$0 = T[[w]_2] + T[[10w]_2] + T[[100w]_2] + T[[101w]_2] + T[[110w]_2] + T[[1000w]_2], \tag{2.15}$$

$$0 = T[[w]_2] + T[[100w]_2] + T[[110w]_2] + T[[1001w]_2], \tag{2.16}$$

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

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

$$0 = T[[w]_2] + T[[101w]_2] + T[[110w]_2] + T[[1100w]_2], \tag{2.19}$$

$$0 = T[[w]_2] + T[[11w]_2] + T[[100w]_2] + T[[101w]_2] + T[[110w]_2] + T[[1101w]_2], \tag{2.20}$$

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

First we calculate an 2-automaton that generates T from its minimal polynomial and its first terms. This automaton has 4483 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

$$0 = \tau(A(s,1)) + \tau(A(s,11)) + \tau(A(s,100)) + \tau(A(s,101)) + \tau(A(s,111)), \tag{2.21}$$

$$\begin{aligned} 0 = {} & \tau(A(s,\epsilon)) + \tau(A(s,10)) + \tau(A(s,100)) + \tau(A(s,101)) \\ & + \tau(A(s,110)) + \tau(A(s,1000)), \end{aligned} \tag{2.22}$$

$$0 = \tau(A(s,\epsilon)) + \tau(A(s,100)) + \tau(A(s,110)) + \tau(A(s,1001)), \tag{2.23}$$

$$0 = \tau(A(s,11)) + \tau(A(s,100)) + \tau(A(s,1010)), \tag{2.24}$$

$$0 = \tau(A(s,100)) + \tau(A(s,101)) + \tau(A(s,1011)), \tag{2.25}$$

$$0 = \tau(A(s,\epsilon)) + \tau(A(s,101)) + \tau(A(s,110)) + \tau(A(s,1100)), \tag{2.26}$$

$$\begin{aligned} 0 = {} & \tau(A(s,\epsilon)) + \tau(A(s,11)) + \tau(A(s,100)) + \tau(A(s,101)) \\ & + \tau(A(s,110)) + \tau(A(s,1101)), \end{aligned} \tag{2.27}$$

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

$$\begin{aligned} 0 = {} & \tau(A(s,1)) + \tau(A(s,11)) + \tau(A(s,100)) + \tau(A(s,101)) \\ & + \tau(A(s,111)), \end{aligned} \tag{2.28}$$

$$\begin{aligned} 0 = {} & \tau(A(s,\epsilon)) + \tau(A(s,10)) + \tau(A(s,100)) + \tau(A(s,101)) \\ & + \tau(A(s,110)) + \tau(A(s,1000)), \end{aligned} \tag{2.29}$$

$$0 = \tau(A(s,\epsilon)) + \tau(A(s,100)) + \tau(A(s,110)) + \tau(A(s,1001)), \tag{2.30}$$

$$0 = \tau(A(s,11)) + \tau(A(s,100)) + \tau(A(s,1010)), \tag{2.31}$$

$$0 = \tau(A(s,100)) + \tau(A(s,101)) + \tau(A(s,1011)), \tag{2.32}$$

$$0 = \tau(A(s,\epsilon)) + \tau(A(s,101)) + \tau(A(s,110)) + \tau(A(s,1100)), \tag{2.33}$$

$$\begin{aligned} 0 = {} & \tau(A(s,\epsilon)) + \tau(A(s,11)) + \tau(A(s,100)) + \tau(A(s,101)) \\ & + \tau(A(s,110)) + \tau(A(s,1101)), \end{aligned} \tag{2.34}$$

for $s = A(i, 0^{2k})$. We find that $(A(i, 0^{26}), E_{26}) = (A(i, 0^{24}), E_{24})$, so that we only have to verify that identities (2.21) through (2.34) hold for $2 \le k \le 13$, which turns out to be true. $\square$

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

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

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

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

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

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

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

We give the proof of

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Define

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

where

$$\begin{aligned}
q_0(x) &= x^{24} + x^{23} + x^{19} + x^{16} + x^{13} + x^{12} + x^{10} + x^9 + x^7,\\
q_1(x) &= x^{22} + x^{20} + x^{18} + x^{15} + x^{14} + x^{13} + x^{11} + x^{10} + x^7 + x^3,\\
q_2(x) &= x^{20} + x^{16} + x^{12} + x^8 + x^6 + 1,\\
q_3(x) &= x^{22} + x^{20} + x^{18} + x^{15} + x^{14} + x^{13} + x^{11} + x^{10} + x^7 + x^3,\\
q_4(x) &= x^{23} + x^{19} + x^{16} + x^{13} + x^{10} + x^9 + x^7 + x^6.
\end{aligned}$$

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

3. Annexe

All 16 polynomials are of the form

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

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

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

$$\begin{aligned}
p_0(x) &= x^{132} + x^{130} + x^{118} + x^{114} + x^{112} + x^{108} + x^{106} + x^{102} + x^{100} + x^{98}\\
&\quad + x^{96} + x^{94} + x^{84} + x^{78} + x^{76} + x^{72} + x^{70} + x^{64} + x^{52} + x^{50} + x^{48}\\
&\quad + x^{42} + x^{36},\\
p_3(x) &= x^{124} + x^{116} + x^{114} + x^{100} + x^{92} + x^{88} + x^{86} + x^{78} + x^{76} + x^{74} + x^{68}\\
&\quad + x^{64} + x^{62} + x^{58} + x^{56} + x^{48} + x^{40} + x^{32} + x^{28} + x^{26} + x^{22} + x^{20},\\
p_6(x) &= x^{124} + x^{120} + x^{118} + x^{116} + x^{114} + x^{110} + x^{108} + x^{106} + x^{102} + x^{98}\\
&\quad + x^{96} + x^{92} + x^{90} + x^{88} + x^{84} + x^{82} + x^{76} + x^{74} + x^{54} + x^{40} + x^{38}\\
&\quad + x^{36} + x^{34} + x^{30} + x^{16} + x^{12} + x^{10} + x^6 + x^2 + 1,\\
p_9(x) &= x^{122} + x^{120} + x^{118} + x^{116} + x^{106} + x^{102} + x^{100} + x^{96} + x^{92} + x^{90}\\
&\quad + x^{86} + x^{84} + x^{78} + x^{76} + x^{74} + x^{72} + x^{68} + x^{66} + x^{62} + x^{56} + x^{48}\\
&\quad + x^{46} + x^{44} + x^{42} + x^{40} + x^{22} + x^{14} + x^{12} + x^8 + x^6,\\
p_{12}(x) &= x^{122} + x^{120} + x^{98} + x^{96} + x^{82} + x^{80} + x^{74} + x^{72} + x^{66} + x^{64} + x^{58}
\end{aligned}$$

$$+ x^{56} + x^{42} + x^{40} + x^{34} + x^{32} + x^{26} + x^{24} + x^{10} + x^8 + x^2 + 1,$$

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^{127} + x^{126} + x^{125} + x^{124} + x^{119} + x^{118} + x^{117} + x^{116} + x^{115} \\
& + x^{113} + x^{107} + x^{106} + x^{101} + x^{98} + x^{97} + x^{95} + x^{93} + x^{90} + x^{85} \\
& + x^{78} + x^{76} + x^{72} + x^{71} + x^{68} + x^{67} + x^{66} + x^{65} + x^{63} + x^{62} + x^{58} \\
& + x^{51} + x^{49} + x^{47} + x^{46} + x^{44} + x^{41} + x^{40} + x^{39}, \\
p_3(x) = {} & x^{122} + x^{121} + x^{119} + x^{118} + x^{117} + x^{115} + x^{114} + x^{113} + x^{111} + x^{110} \\
& + x^{109} + x^{108} + x^{105} + x^{102} + x^{101} + x^{99} + x^{74} + x^{73} + x^{71} + x^{70} \\
& + x^{69} + x^{67} + x^{66} + x^{65} + x^{63} + x^{62} + x^{61} + x^{60} + x^{57} + x^{54} + x^{53} \\
& + x^{51} + x^{50} + x^{49} + x^{47} + x^{46} + x^{45} + x^{43} + x^{42} + x^{41} + x^{39} + x^{38} \\
& + x^{37} + x^{36} + x^{33} + x^{30} + x^{29} + x^{27}, \\
p_6(x) = {} & x^{120} + x^{119} + x^{118} + x^{116} + x^{112} + x^{111} + x^{110} + x^{108} + x^{106} + x^{105} \\
& + x^{103} + x^{100} + x^{98} + x^{97} + x^{95} + x^{92} + x^{90} + x^{89} + x^{88} + x^{86} + x^{84} \\
& + x^{83} + x^{81} + x^{80} + x^{79} + x^{75} + x^{74} + x^{71} + x^{69} + x^{68} + x^{67} + x^{66} \\
& + x^{65} + x^{64} + x^{63} + x^{62} + x^{61} + x^{57} + x^{56} + x^{53} + x^{51} + x^{50} + x^{49} \\
& + x^{48} + x^{47} + x^{44} + x^{38} + x^{37} + x^{35} + x^{34} + x^{33} + x^{30} + x^{22} + x^{21} \\
& + x^{20} + x^{18}, \\
p_9(x) = {} & x^{118} + x^{117} + x^{115} + x^{106} + x^{105} + x^{103} + x^{102} + x^{101} + x^{100} + x^{97} \\
& + x^{94} + x^{93} + x^{91} + x^{86} + x^{85} + x^{84} + x^{81} + x^{76} + x^{75} + x^{73} + x^{72} \\
& + x^{71} + x^{69} + x^{68} + x^{67} + x^{66} + x^{64} + x^{61} + x^{60} + x^{59} + x^{57} + x^{56} \\
& + x^{55} + x^{54} + x^{52} + x^{50} + x^{47} + x^{46} + x^{45} + x^{44} + x^{41} + x^{40} + x^{39} \\
& + x^{37} + x^{36} + x^{35} + x^{33} + x^{24} + x^{23} + x^{21} + x^{18} + x^{17} + x^{15} + x^{12} \\
& + x^{11} + x^9, \\
p_{12}(x) = {} & x^{116} + x^{115} + x^{114} + x^{111} + x^{110} + x^{107} + x^{106} + x^{104} + x^{96} + x^{95} \\
& + x^{94} + x^{91} + x^{90} + x^{88} + x^{80} + x^{79} + x^{78} + x^{75} + x^{74} + x^{72} + x^{68} \\
& + x^{67} + x^{66} + x^{64} + x^{52} + x^{51} + x^{50} + x^{47} + x^{46} + x^{43} + x^{42} + x^{40} \\
& + x^{36} + x^{35} + x^{34} + x^{32} + x^{20} + x^{19} + x^{18} + x^{15} + x^{14} + x^{11} + x^{10} \\
& + x^8 + x^4 + x^3 + x^2 + 1,
\end{aligned}$$

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

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

$$\begin{aligned}
p_0(x) = {} & x^{129} + x^{127} + x^{126} + x^{125} + x^{124} + x^{119} + x^{118} + x^{117} + x^{116} + x^{115} \\
& + x^{113} + x^{107} + x^{106} + x^{101} + x^{98} + x^{97} + x^{95} + x^{93} + x^{90} + x^{85} \\
& + x^{78} + x^{76} + x^{72} + x^{71} + x^{68} + x^{67} + x^{66} + x^{65} + x^{63} + x^{62} + x^{58} \\
& + x^{51} + x^{49} + x^{47} + x^{46} + x^{44} + x^{41} + x^{40} + x^{39},
\end{aligned}$$

$$\begin{aligned}
p_3(x) &= x^{122} + x^{121} + x^{119} + x^{118} + x^{117} + x^{115} + x^{114} + x^{113} + x^{111} + x^{110} \\
&\quad + x^{109} + x^{108} + x^{105} + x^{102} + x^{101} + x^{99} + x^{74} + x^{73} + x^{71} + x^{70} \\
&\quad + x^{69} + x^{67} + x^{66} + x^{65} + x^{63} + x^{62} + x^{61} + x^{60} + x^{57} + x^{54} + x^{53} \\
&\quad + x^{51} + x^{50} + x^{49} + x^{47} + x^{46} + x^{45} + x^{43} + x^{42} + x^{41} + x^{39} + x^{38} \\
&\quad + x^{37} + x^{36} + x^{33} + x^{30} + x^{29} + x^{27}, \\
p_6(x) &= x^{120} + x^{119} + x^{118} + x^{116} + x^{112} + x^{111} + x^{110} + x^{108} + x^{106} + x^{105} \\
&\quad + x^{103} + x^{100} + x^{98} + x^{97} + x^{95} + x^{92} + x^{90} + x^{89} + x^{88} + x^{86} + x^{84} \\
&\quad + x^{83} + x^{81} + x^{80} + x^{79} + x^{75} + x^{74} + x^{71} + x^{69} + x^{68} + x^{67} + x^{66} \\
&\quad + x^{65} + x^{64} + x^{63} + x^{62} + x^{61} + x^{57} + x^{56} + x^{53} + x^{51} + x^{50} + x^{49} \\
&\quad + x^{48} + x^{47} + x^{44} + x^{38} + x^{37} + x^{35} + x^{34} + x^{33} + x^{30} + x^{22} + x^{21} \\
&\quad + x^{20} + x^{18}, \\
p_9(x) &= x^{118} + x^{117} + x^{115} + x^{106} + x^{105} + x^{103} + x^{102} + x^{101} + x^{100} + x^{97} \\
&\quad + x^{94} + x^{93} + x^{91} + x^{86} + x^{85} + x^{84} + x^{81} + x^{76} + x^{75} + x^{73} + x^{72} \\
&\quad + x^{71} + x^{69} + x^{68} + x^{67} + x^{66} + x^{64} + x^{61} + x^{60} + x^{59} + x^{57} + x^{56} \\
&\quad + x^{55} + x^{54} + x^{52} + x^{50} + x^{47} + x^{46} + x^{45} + x^{44} + x^{41} + x^{40} + x^{39} \\
&\quad + x^{37} + x^{36} + x^{35} + x^{33} + x^{24} + x^{23} + x^{21} + x^{18} + x^{17} + x^{15} + x^{12} \\
&\quad + x^{11} + x^{9}, \\
p_{12}(x) &= x^{116} + x^{115} + x^{114} + x^{111} + x^{110} + x^{107} + x^{106} + x^{104} + x^{96} + x^{95} \\
&\quad + x^{94} + x^{91} + x^{90} + x^{88} + x^{80} + x^{79} + x^{78} + x^{75} + x^{74} + x^{72} + x^{68} \\
&\quad + x^{67} + x^{66} + x^{64} + x^{52} + x^{51} + x^{50} + x^{47} + x^{46} + x^{43} + x^{42} + x^{40} \\
&\quad + x^{36} + x^{35} + x^{34} + x^{32} + x^{20} + x^{19} + x^{18} + x^{15} + x^{14} + x^{11} + x^{10} \\
&\quad + x^{8} + x^{4} + x^{3} + x^{2} + 1,
\end{aligned}$$

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

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

$$\begin{aligned}
p_0(x) &= x^{126} + x^{124} + x^{120} + x^{116} + x^{114} + x^{110} + x^{100} + x^{96} + x^{86} + x^{84} \\
&\quad + x^{82} + x^{78} + x^{72} + x^{70} + x^{66} + x^{60} + x^{50} + x^{48} + x^{46} + x^{44} + x^{42}, \\
p_3(x) &= x^{114} + x^{112} + x^{110} + x^{108} + x^{102} + x^{100} + x^{96} + x^{90} + x^{86} + x^{84} \\
&\quad + x^{82} + x^{80} + x^{76} + x^{74} + x^{72} + x^{70} + x^{68} + x^{62} + x^{60} + x^{54} + x^{50} \\
&\quad + x^{46} + x^{40} + x^{38} + x^{34} + x^{32} + x^{28} + x^{24} + x^{22} + x^{18}, \\
p_6(x) &= x^{114} + x^{112} + x^{106} + x^{98} + x^{94} + x^{92} + x^{90} + x^{86} + x^{84} + x^{82} + x^{76} \\
&\quad + x^{72} + x^{68} + x^{62} + x^{60} + x^{56} + x^{54} + x^{50} + x^{48} + x^{42} + x^{40} + x^{38} \\
&\quad + x^{36} + x^{32} + x^{30} + x^{28} + x^{26} + x^{24} + x^{22} + x^{20} + x^{18} + x^{16} + x^{12} \\
&\quad + x^{10} + x^{2} + 1, \\
p_9(x) &= x^{110} + x^{104} + x^{100} + x^{96} + x^{94} + x^{90} + x^{84} + x^{82} + x^{80} + x^{78} + x^{76} \\
&\quad + x^{74} + x^{72} + x^{68} + x^{66} + x^{64} + x^{54} + x^{50} + x^{48} + x^{42} + x^{40} + x^{38}
\end{aligned}$$

$$
\begin{aligned}
&+x^{36}+x^{34}+x^{28}+x^{22}+x^{18}+x^{14}+x^{8}+x^{6},\\
p_{12}(x) &= x^{110}+x^{106}+x^{104}+x^{102}+x^{98}+x^{96}+x^{94}+x^{90}+x^{88}+x^{86}+x^{82}\\
&\quad+x^{80}+x^{78}+x^{74}+x^{72}+x^{70}+x^{66}+x^{64}+x^{46}+x^{42}+x^{40}+x^{38}\\
&\quad+x^{34}+x^{32}+x^{14}+x^{10}+x^{8}+x^{6}+x^{2}+1,
\end{aligned}
$$

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

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

$$
\begin{aligned}
p_0(x) &= x^{126}+x^{124}+x^{120}+x^{118}+x^{116}+x^{114}+x^{112}+x^{110}+x^{106}+x^{102}\\
&\quad+x^{92}+x^{90}+x^{88}+x^{82}+x^{80}+x^{78}+x^{76}+x^{70}+x^{60}+x^{58}+x^{56}\\
&\quad+x^{54}+x^{46}+x^{44}+x^{36},\\
p_3(x) &= x^{114}+x^{112}+x^{110}+x^{108}+x^{106}+x^{102}+x^{98}+x^{94}+x^{92}+x^{88}\\
&\quad+x^{82}+x^{76}+x^{68}+x^{66}+x^{62}+x^{56}+x^{54}+x^{48}+x^{46}+x^{38}+x^{36}\\
&\quad+x^{32}+x^{30}+x^{28}+x^{22}+x^{20},\\
p_6(x) &= x^{114}+x^{112}+x^{102}+x^{100}+x^{98}+x^{88}+x^{82}+x^{80}+x^{78}+x^{76}+x^{74}\\
&\quad+x^{72}+x^{70}+x^{64}+x^{58}+x^{56}+x^{48}+x^{44}+x^{42}+x^{40}+x^{36}+x^{32}\\
&\quad+x^{30}+x^{20}+x^{18}+x^{16}+x^{14}+x^{10}+x^{2}+1,\\
p_9(x) &= x^{110}+x^{104}+x^{100}+x^{96}+x^{94}+x^{90}+x^{84}+x^{82}+x^{80}+x^{78}+x^{76}\\
&\quad+x^{74}+x^{72}+x^{68}+x^{66}+x^{64}+x^{54}+x^{50}+x^{48}+x^{42}+x^{40}+x^{38}\\
&\quad+x^{36}+x^{34}+x^{28}+x^{22}+x^{18}+x^{14}+x^{8}+x^{6},\\
p_{12}(x) &= x^{110}+x^{106}+x^{104}+x^{102}+x^{98}+x^{96}+x^{94}+x^{90}+x^{88}+x^{86}+x^{82}\\
&\quad+x^{80}+x^{78}+x^{74}+x^{72}+x^{70}+x^{66}+x^{64}+x^{46}+x^{42}+x^{40}+x^{38}\\
&\quad+x^{34}+x^{32}+x^{14}+x^{10}+x^{8}+x^{6}+x^{2}+1,
\end{aligned}
$$

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

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

$$
\begin{aligned}
p_0(x) &= x^{129}+x^{127}+x^{124}+x^{120}+x^{119}+x^{116}+x^{115}+x^{114}+x^{110}+x^{109}\\
&\quad+x^{107}+x^{105}+x^{104}+x^{101}+x^{99}+x^{95}+x^{94}+x^{93}+x^{91}+x^{90}\\
&\quad+x^{88}+x^{81}+x^{80}+x^{79}+x^{77}+x^{76}+x^{75}+x^{74}+x^{72}+x^{70}+x^{69}\\
&\quad+x^{68}+x^{67}+x^{62}+x^{61}+x^{57}+x^{56}+x^{54}+x^{52}+x^{49}+x^{48}+x^{46}\\
&\quad+x^{41}+x^{40}+x^{39},\\
p_3(x) &= x^{122}+x^{121}+x^{119}+x^{118}+x^{117}+x^{115}+x^{114}+x^{113}+x^{111}+x^{110}\\
&\quad+x^{109}+x^{108}+x^{105}+x^{102}+x^{101}+x^{99}+x^{74}+x^{73}+x^{71}+x^{70}\\
&\quad+x^{69}+x^{67}+x^{66}+x^{65}+x^{63}+x^{62}+x^{61}+x^{60}+x^{57}+x^{54}+x^{53}\\
&\quad+x^{51}+x^{50}+x^{49}+x^{47}+x^{46}+x^{45}+x^{43}+x^{42}+x^{41}+x^{39}+x^{38}\\
&\quad+x^{37}+x^{36}+x^{33}+x^{30}+x^{29}+x^{27},\\
p_6(x) &= x^{120}+x^{119}+x^{118}+x^{116}+x^{112}+x^{111}+x^{110}+x^{108}+x^{106}+x^{105}\\
&\quad+x^{103}+x^{100}+x^{98}+x^{97}+x^{95}+x^{92}+x^{90}+x^{89}+x^{88}+x^{86}+x^{84}
\end{aligned}
$$

$$
\begin{aligned}
&+x^{83}+x^{81}+x^{80}+x^{79}+x^{75}+x^{74}+x^{71}+x^{69}+x^{68}+x^{67}+x^{66}\\
&+x^{65}+x^{64}+x^{63}+x^{62}+x^{61}+x^{57}+x^{56}+x^{53}+x^{51}+x^{50}+x^{49}\\
&+x^{48}+x^{47}+x^{44}+x^{38}+x^{37}+x^{35}+x^{34}+x^{33}+x^{30}+x^{22}+x^{21}\\
&+x^{20}+x^{18},\\
p_9(x)=&\,x^{118}+x^{117}+x^{115}+x^{106}+x^{105}+x^{103}+x^{102}+x^{101}+x^{100}+x^{97}\\
&+x^{94}+x^{93}+x^{91}+x^{86}+x^{85}+x^{84}+x^{81}+x^{76}+x^{75}+x^{73}+x^{72}\\
&+x^{71}+x^{69}+x^{68}+x^{67}+x^{66}+x^{64}+x^{61}+x^{60}+x^{59}+x^{57}+x^{56}\\
&+x^{55}+x^{54}+x^{52}+x^{50}+x^{47}+x^{46}+x^{45}+x^{44}+x^{41}+x^{40}+x^{39}\\
&+x^{37}+x^{36}+x^{35}+x^{33}+x^{24}+x^{23}+x^{21}+x^{18}+x^{17}+x^{15}+x^{12}\\
&+x^{11}+x^{9},\\
p_{12}(x)=&\,x^{116}+x^{115}+x^{114}+x^{111}+x^{110}+x^{107}+x^{106}+x^{104}+x^{96}+x^{95}\\
&+x^{94}+x^{91}+x^{90}+x^{88}+x^{80}+x^{79}+x^{78}+x^{75}+x^{74}+x^{72}+x^{68}\\
&+x^{67}+x^{66}+x^{64}+x^{52}+x^{51}+x^{50}+x^{47}+x^{46}+x^{43}+x^{42}+x^{40}\\
&+x^{36}+x^{35}+x^{34}+x^{32}+x^{20}+x^{19}+x^{18}+x^{15}+x^{14}+x^{11}+x^{10}\\
&+x^{8}+x^{4}+x^{3}+x^{2}+1,
\end{aligned}
$$

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

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

$$
\begin{aligned}
p_0(x)=&\,x^{129}+x^{127}+x^{124}+x^{120}+x^{119}+x^{116}+x^{115}+x^{114}+x^{110}+x^{109}\\
&+x^{107}+x^{105}+x^{104}+x^{101}+x^{99}+x^{95}+x^{94}+x^{93}+x^{91}+x^{90}\\
&+x^{88}+x^{81}+x^{80}+x^{79}+x^{77}+x^{76}+x^{75}+x^{74}+x^{72}+x^{70}+x^{69}\\
&+x^{68}+x^{67}+x^{62}+x^{61}+x^{57}+x^{56}+x^{54}+x^{52}+x^{49}+x^{48}+x^{46}\\
&+x^{41}+x^{40}+x^{39},\\
p_3(x)=&\,x^{122}+x^{121}+x^{119}+x^{118}+x^{117}+x^{115}+x^{114}+x^{113}+x^{111}+x^{110}\\
&+x^{109}+x^{108}+x^{105}+x^{102}+x^{101}+x^{99}+x^{74}+x^{73}+x^{71}+x^{70}\\
&+x^{69}+x^{67}+x^{66}+x^{65}+x^{63}+x^{62}+x^{61}+x^{60}+x^{57}+x^{54}+x^{53}\\
&+x^{51}+x^{50}+x^{49}+x^{47}+x^{46}+x^{45}+x^{43}+x^{42}+x^{41}+x^{39}+x^{38}\\
&+x^{37}+x^{36}+x^{33}+x^{30}+x^{29}+x^{27},\\
p_6(x)=&\,x^{120}+x^{119}+x^{118}+x^{116}+x^{112}+x^{111}+x^{110}+x^{108}+x^{106}+x^{105}\\
&+x^{103}+x^{100}+x^{98}+x^{97}+x^{95}+x^{92}+x^{90}+x^{89}+x^{88}+x^{86}+x^{84}\\
&+x^{83}+x^{81}+x^{80}+x^{79}+x^{75}+x^{74}+x^{71}+x^{69}+x^{68}+x^{67}+x^{66}\\
&+x^{65}+x^{64}+x^{63}+x^{62}+x^{61}+x^{57}+x^{56}+x^{53}+x^{51}+x^{50}+x^{49}\\
&+x^{48}+x^{47}+x^{44}+x^{38}+x^{37}+x^{35}+x^{34}+x^{33}+x^{30}+x^{22}+x^{21}\\
&+x^{20}+x^{18},\\
p_9(x)=&\,x^{118}+x^{117}+x^{115}+x^{106}+x^{105}+x^{103}+x^{102}+x^{101}+x^{100}+x^{97}\\
&+x^{94}+x^{93}+x^{91}+x^{86}+x^{85}+x^{84}+x^{81}+x^{76}+x^{75}+x^{73}+x^{72}
\end{aligned}
$$

$$+ x^{71} + x^{69} + x^{68} + x^{67} + x^{66} + x^{64} + x^{61} + x^{60} + x^{59} + x^{57} + x^{56} + x^{55} + x^{54} + x^{52} + x^{50} + x^{47} + x^{46} + x^{45} + x^{44} + x^{41} + x^{40} + x^{39} + x^{37} + x^{36} + x^{35} + x^{33} + x^{24} + x^{23} + x^{21} + x^{18} + x^{17} + x^{15} + x^{12} + x^{11} + x^{9},$$

$$p_{12}(x) = x^{116} + x^{115} + x^{114} + x^{111} + x^{110} + x^{107} + x^{106} + x^{104} + x^{96} + x^{95} + x^{94} + x^{91} + x^{90} + x^{88} + x^{80} + x^{79} + x^{78} + x^{75} + x^{74} + x^{72} + x^{68} + x^{67} + x^{66} + x^{64} + x^{52} + x^{51} + x^{50} + x^{47} + x^{46} + x^{43} + x^{42} + x^{40} + x^{36} + x^{35} + x^{34} + x^{32} + x^{20} + x^{19} + x^{18} + x^{15} + x^{14} + x^{11} + x^{10} + x^{8} + x^{4} + x^{3} + x^{2} + 1,$$

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

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

$$p_0(x) = x^{132} + x^{130} + x^{126} + x^{124} + x^{120} + x^{118} + x^{116} + x^{108} + x^{106} + x^{102} + x^{96} + x^{92} + x^{88} + x^{86} + x^{84} + x^{82} + x^{76} + x^{64} + x^{62} + x^{60} + x^{58} + x^{50} + x^{46} + x^{44} + x^{42},$$

$$p_3(x) = x^{124} + x^{118} + x^{112} + x^{110} + x^{108} + x^{104} + x^{102} + x^{94} + x^{92} + x^{88} + x^{80} + x^{74} + x^{72} + x^{70} + x^{64} + x^{62} + x^{60} + x^{54} + x^{50} + x^{42} + x^{38} + x^{34} + x^{32} + x^{30} + x^{28} + x^{26} + x^{22} + x^{18},$$

$$p_6(x) = x^{124} + x^{120} + x^{114} + x^{100} + x^{98} + x^{96} + x^{94} + x^{92} + x^{90} + x^{88} + x^{76} + x^{70} + x^{68} + x^{60} + x^{54} + x^{52} + x^{46} + x^{44} + x^{40} + x^{36} + x^{30} + x^{28} + x^{22} + x^{18} + x^{16} + x^{14} + x^{10} + x^{6} + x^{2} + 1,$$

$$p_9(x) = x^{122} + x^{120} + x^{118} + x^{116} + x^{106} + x^{102} + x^{100} + x^{96} + x^{92} + x^{90} + x^{86} + x^{84} + x^{78} + x^{76} + x^{74} + x^{72} + x^{68} + x^{66} + x^{62} + x^{56} + x^{48} + x^{46} + x^{44} + x^{42} + x^{40} + x^{22} + x^{14} + x^{12} + x^{8} + x^{6},$$

$$p_{12}(x) = x^{122} + x^{120} + x^{98} + x^{96} + x^{82} + x^{80} + x^{74} + x^{72} + x^{66} + x^{64} + x^{58} + x^{56} + x^{42} + x^{40} + x^{34} + x^{32} + x^{26} + x^{24} + x^{10} + x^{8} + x^{2} + 1,$$

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

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

$$p_0(x) = x^{129} + x^{127} + x^{126} + x^{122} + x^{121} + x^{118} + x^{114} + x^{105} + x^{104} + x^{102} + x^{99} + x^{97} + x^{93} + x^{92} + x^{91} + x^{89} + x^{88} + x^{87} + x^{84} + x^{83} + x^{79} + x^{78} + x^{77} + x^{72} + x^{71} + x^{69} + x^{66} + x^{65} + x^{64} + x^{63} + x^{61} + x^{60} + x^{59} + x^{58} + x^{57} + x^{55} + x^{54} + x^{53} + x^{47} + x^{45} + x^{42} + x^{41} + x^{40} + x^{39} + x^{36},$$

$$p_3(x) = x^{124} + x^{122} + x^{120} + x^{119} + x^{116} + x^{113} + x^{112} + x^{110} + x^{108} + x^{107} + x^{106} + x^{105} + x^{104} + x^{102} + x^{101} + x^{100} + x^{99} + x^{95} + x^{93} + x^{89} + x^{88} + x^{85} + x^{83} + x^{79} + x^{77} + x^{75} + x^{74} + x^{71} + x^{67} + x^{64} + x^{62}$$

$$
\begin{aligned}
&+ x^{61} + x^{59} + x^{58} + x^{56} + x^{55} + x^{54} + x^{53} + x^{50} + x^{49} + x^{47} + x^{45}\\
&+ x^{40} + x^{39} + x^{38} + x^{36} + x^{34} + x^{31} + x^{30} + x^{29} + x^{27} + x^{24},\\
p_6(x) &= x^{124} + x^{122} + x^{120} + x^{119} + x^{116} + x^{115} + x^{113} + x^{108} + x^{106} + x^{103}\\
&+ x^{101} + x^{95} + x^{94} + x^{92} + x^{91} + x^{89} + x^{88} + x^{87} + x^{86} + x^{85} + x^{78}\\
&+ x^{77} + x^{75} + x^{74} + x^{70} + x^{69} + x^{68} + x^{66} + x^{65} + x^{64} + x^{62} + x^{58}\\
&+ x^{55} + x^{48} + x^{47} + x^{44} + x^{43} + x^{38} + x^{37} + x^{36} + x^{35} + x^{34} + x^{32}\\
&+ x^{30} + x^{29} + x^{26} + x^{22} + x^{20} + x^{17} + x^{14} + x^{12} + x^{11} + x^{10} + x^{8}\\
&+ x^{4} + x^{3} + x^{2} + 1,\\
p_9(x) &= x^{124} + x^{123} + x^{122} + x^{119} + x^{118} + x^{116} + x^{112} + x^{111} + x^{110} + x^{107}\\
&+ x^{106} + x^{103} + x^{102} + x^{100} + x^{96} + x^{95} + x^{94} + x^{91} + x^{90} + x^{87}\\
&+ x^{86} + x^{84} + x^{80} + x^{79} + x^{78} + x^{76} + x^{60} + x^{59} + x^{58} + x^{55} + x^{54}\\
&+ x^{52} + x^{48} + x^{47} + x^{46} + x^{44} + x^{28} + x^{27} + x^{26} + x^{23} + x^{22} + x^{20}\\
&+ x^{16} + x^{15} + x^{14} + x^{12},\\
p_{12}(x) &= x^{124} + x^{123} + x^{122} + x^{119} + x^{118} + x^{115} + x^{114} + x^{112} + x^{104} + x^{103}\\
&+ x^{102} + x^{100} + x^{88} + x^{87} + x^{86} + x^{84} + x^{76} + x^{75} + x^{74} + x^{72} + x^{68}\\
&+ x^{67} + x^{66} + x^{64} + x^{60} + x^{59} + x^{58} + x^{55} + x^{54} + x^{51} + x^{50} + x^{48}\\
&+ x^{44} + x^{43} + x^{42} + x^{40} + x^{36} + x^{35} + x^{34} + x^{32} + x^{28} + x^{27} + x^{26}\\
&+ x^{23} + x^{22} + x^{19} + x^{18} + x^{16} + x^{12} + x^{11} + x^{10} + x^{8} + x^{4} + x^{3} + x^{2}\\
&+ 1,
\end{aligned}
$$

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

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

$$
\begin{aligned}
p_0(x) &= x^{132} + x^{130} + x^{127} + x^{126} + x^{124} + x^{119} + x^{114} + x^{112} + x^{109} + x^{108}\\
&+ x^{104} + x^{101} + x^{99} + x^{98} + x^{90} + x^{88} + x^{86} + x^{85} + x^{84} + x^{82} + x^{78}\\
&+ x^{77} + x^{71} + x^{70} + x^{69} + x^{65} + x^{62} + x^{61} + x^{60} + x^{58} + x^{57} + x^{55}\\
&+ x^{54} + x^{51} + x^{47} + x^{46} + x^{45} + x^{44} + x^{43} + x^{40} + x^{39},\\
p_3(x) &= x^{118} + x^{116} + x^{112} + x^{111} + x^{109} + x^{106} + x^{105} + x^{99} + x^{70} + x^{68}\\
&+ x^{64} + x^{63} + x^{61} + x^{58} + x^{57} + x^{51} + x^{46} + x^{44} + x^{40} + x^{39} + x^{37}\\
&+ x^{34} + x^{33} + x^{27},\\
p_6(x) &= x^{120} + x^{116} + x^{112} + x^{108} + x^{106} + x^{104} + x^{102} + x^{100} + x^{98} + x^{96}\\
&+ x^{94} + x^{92} + x^{90} + x^{86} + x^{84} + x^{82} + x^{78} + x^{70} + x^{60} + x^{52} + x^{46}\\
&+ x^{44} + x^{38} + x^{36} + x^{32} + x^{30} + x^{22} + x^{18},\\
p_9(x) &= x^{122} + x^{120} + x^{118} + x^{115} + x^{113} + x^{112} + x^{111} + x^{106} + x^{105} + x^{104}\\
&+ x^{102} + x^{99} + x^{97} + x^{96} + x^{95} + x^{90} + x^{89} + x^{88} + x^{86} + x^{83} + x^{81}\\
&+ x^{80} + x^{79} + x^{73} + x^{58} + x^{56} + x^{54} + x^{51} + x^{49} + x^{48} + x^{47} + x^{41}\\
&+ x^{26} + x^{24} + x^{22} + x^{19} + x^{17} + x^{16} + x^{15} + x^{9},
\end{aligned}
$$

$$\begin{aligned} p_{12}(x) &= x^{124}+x^{112}+x^{104}+x^{100}+x^{88}+x^{84}+x^{76}+x^{72}+x^{68}+x^{64}+x^{60} \\ &\quad +x^{48}+x^{44}+x^{40}+x^{36}+x^{32}+x^{28}+x^{16}+x^{12}+x^{8}+x^{4}+1, \end{aligned}$$

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

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

$$\begin{aligned} p_0(x) &= x^{134}+x^{131}+x^{130}+x^{128}+x^{125}+x^{121}+x^{120}+x^{118}+x^{116}+x^{115} \\ &\quad +x^{114}+x^{112}+x^{111}+x^{109}+x^{107}+x^{105}+x^{104}+x^{103}+x^{99}+x^{95} \\ &\quad +x^{89}+x^{88}+x^{87}+x^{86}+x^{83}+x^{82}+x^{81}+x^{79}+x^{78}+x^{76}+x^{75} \\ &\quad +x^{74}+x^{72}+x^{71}+x^{70}+x^{67}+x^{62}+x^{61}+x^{60}+x^{59}+x^{57}+x^{55} \\ &\quad +x^{53}+x^{51}+x^{49}+x^{47}+x^{45}+x^{43}+x^{40}+x^{39}, \\ p_3(x) &= x^{126}+x^{124}+x^{122}+x^{119}+x^{117}+x^{116}+x^{115}+x^{112}+x^{109}+x^{106} \\ &\quad +x^{105}+x^{99}+x^{78}+x^{76}+x^{74}+x^{71}+x^{69}+x^{68}+x^{67}+x^{64}+x^{61} \\ &\quad +x^{58}+x^{57}+x^{54}+x^{52}+x^{51}+x^{50}+x^{47}+x^{45}+x^{44}+x^{43}+x^{40} \\ &\quad +x^{37}+x^{34}+x^{33}+x^{27}, \\ p_6(x) &= x^{128}+x^{116}+x^{114}+x^{108}+x^{102}+x^{100}+x^{96}+x^{94}+x^{88}+x^{86} \\ &\quad +x^{82}+x^{80}+x^{76}+x^{74}+x^{72}+x^{66}+x^{62}+x^{58}+x^{56}+x^{52}+x^{42} \\ &\quad +x^{38}+x^{36}+x^{32}+x^{22}+x^{18}, \\ p_9(x) &= x^{130}+x^{128}+x^{124}+x^{123}+x^{122}+x^{121}+x^{120}+x^{118}+x^{117}+x^{115} \\ &\quad +x^{114}+x^{113}+x^{111}+x^{108}+x^{107}+x^{106}+x^{104}+x^{102}+x^{101} \\ &\quad +x^{99}+x^{98}+x^{97}+x^{95}+x^{92}+x^{91}+x^{90}+x^{88}+x^{86}+x^{85}+x^{83} \\ &\quad +x^{81}+x^{80}+x^{79}+x^{73}+x^{66}+x^{64}+x^{60}+x^{59}+x^{58}+x^{57}+x^{56} \\ &\quad +x^{54}+x^{53}+x^{51}+x^{49}+x^{48}+x^{47}+x^{41}+x^{34}+x^{32}+x^{28}+x^{27} \\ &\quad +x^{26}+x^{25}+x^{24}+x^{22}+x^{21}+x^{19}+x^{17}+x^{16}+x^{15}+x^{9}, \\ p_{12}(x) &= x^{132}+x^{128}+x^{104}+x^{100}+x^{96}+x^{88}+x^{72}+x^{52}+x^{48}+x^{40}+x^{20} \\ &\quad +x^{16}+x^{8}+x^{4}+1, \end{aligned}$$

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

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

$$\begin{aligned} p_0(x) &= x^{129}+x^{127}+x^{125}+x^{120}+x^{118}+x^{116}+x^{113}+x^{111}+x^{109}+x^{103} \\ &\quad +x^{102}+x^{101}+x^{96}+x^{93}+x^{92}+x^{91}+x^{90}+x^{89}+x^{87}+x^{86}+x^{85} \\ &\quad +x^{84}+x^{82}+x^{81}+x^{76}+x^{74}+x^{73}+x^{72}+x^{71}+x^{70}+x^{69}+x^{68} \\ &\quad +x^{67}+x^{65}+x^{64}+x^{59}+x^{58}+x^{57}+x^{55}+x^{54}+x^{53}+x^{51}+x^{49} \\ &\quad +x^{47}+x^{45}+x^{44}+x^{42}, \\ p_3(x) &= x^{124}+x^{122}+x^{118}+x^{116}+x^{115}+x^{114}+x^{113}+x^{112}+x^{111}+x^{108} \\ &\quad +x^{106}+x^{104}+x^{101}+x^{98}+x^{96}+x^{95}+x^{93}+x^{89}+x^{88}+x^{85}+x^{83} \\ &\quad +x^{79}+x^{77}+x^{75}+x^{74}+x^{72}+x^{70}+x^{66}+x^{64}+x^{63}+x^{61}+x^{58} \\ &\quad +x^{57}+x^{56}+x^{55}+x^{53}+x^{52}+x^{51}+x^{49}+x^{46}+x^{45}+x^{43}+x^{42} \end{aligned}$$

$$
\begin{aligned}
&+ x^{40} + x^{36} + x^{35} + x^{34} + x^{33} + x^{31} + x^{29} + x^{28} + x^{26},\\
p_6(x) &= x^{124} + x^{122} + x^{118} + x^{116} + x^{114} + x^{113} + x^{112} + x^{108} + x^{105} + x^{104}\\
&+ x^{103} + x^{102} + x^{101} + x^{100} + x^{99} + x^{97} + x^{95} + x^{86} + x^{85} + x^{83}\\
&+ x^{81} + x^{77} + x^{75} + x^{74} + x^{66} + x^{64} + x^{63} + x^{61} + x^{58} + x^{57} + x^{54}\\
&+ x^{53} + x^{52} + x^{51} + x^{50} + x^{49} + x^{44} + x^{42} + x^{40} + x^{35} + x^{34} + x^{33}\\
&+ x^{29} + x^{26} + x^{24} + x^{23} + x^{22} + x^{21} + x^{20} + x^{18} + x^{17} + x^{16} + x^{15}\\
&+ x^{11} + x^{10} + x^{8} + x^{4} + x^{3} + x^{2} + 1,\\
p_9(x) &= x^{124} + x^{123} + x^{122} + x^{119} + x^{118} + x^{116} + x^{112} + x^{111} + x^{110} + x^{107}\\
&+ x^{106} + x^{103} + x^{102} + x^{100} + x^{96} + x^{95} + x^{94} + x^{91} + x^{90} + x^{87}\\
&+ x^{86} + x^{84} + x^{80} + x^{79} + x^{78} + x^{76} + x^{60} + x^{59} + x^{58} + x^{55} + x^{54}\\
&+ x^{52} + x^{48} + x^{47} + x^{46} + x^{44} + x^{28} + x^{27} + x^{26} + x^{23} + x^{22} + x^{20}\\
&+ x^{16} + x^{15} + x^{14} + x^{12},\\
p_{12}(x) &= x^{124} + x^{123} + x^{122} + x^{119} + x^{118} + x^{115} + x^{114} + x^{112} + x^{104} + x^{103}\\
&+ x^{102} + x^{100} + x^{88} + x^{87} + x^{86} + x^{84} + x^{76} + x^{75} + x^{74} + x^{72} + x^{68}\\
&+ x^{67} + x^{66} + x^{64} + x^{60} + x^{59} + x^{58} + x^{55} + x^{54} + x^{51} + x^{50} + x^{48}\\
&+ x^{44} + x^{43} + x^{42} + x^{40} + x^{36} + x^{35} + x^{34} + x^{32} + x^{28} + x^{27} + x^{26}\\
&+ x^{23} + x^{22} + x^{19} + x^{18} + x^{16} + x^{12} + x^{11} + x^{10} + x^{8} + x^{4} + x^{3} + x^{2}\\
&+ 1,
\end{aligned}
$$

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

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

$$
\begin{aligned}
p_0(x) &= x^{129} + x^{127} + x^{126} + x^{122} + x^{121} + x^{118} + x^{114} + x^{105} + x^{104} + x^{102}\\
&+ x^{99} + x^{97} + x^{93} + x^{92} + x^{91} + x^{89} + x^{88} + x^{87} + x^{84} + x^{83} + x^{79}\\
&+ x^{78} + x^{77} + x^{72} + x^{71} + x^{69} + x^{66} + x^{65} + x^{64} + x^{63} + x^{61} + x^{60}\\
&+ x^{59} + x^{58} + x^{57} + x^{55} + x^{54} + x^{53} + x^{47} + x^{45} + x^{42} + x^{41} + x^{40}\\
&+ x^{39} + x^{36},\\
p_3(x) &= x^{124} + x^{122} + x^{120} + x^{119} + x^{116} + x^{113} + x^{112} + x^{110} + x^{108} + x^{107}\\
&+ x^{106} + x^{105} + x^{104} + x^{102} + x^{101} + x^{100} + x^{99} + x^{95} + x^{93} + x^{89}\\
&+ x^{88} + x^{85} + x^{83} + x^{79} + x^{77} + x^{75} + x^{74} + x^{71} + x^{67} + x^{64} + x^{62}\\
&+ x^{61} + x^{59} + x^{58} + x^{56} + x^{55} + x^{54} + x^{53} + x^{50} + x^{49} + x^{47} + x^{45}\\
&+ x^{40} + x^{39} + x^{38} + x^{36} + x^{34} + x^{31} + x^{30} + x^{29} + x^{27} + x^{24},\\
p_6(x) &= x^{124} + x^{122} + x^{120} + x^{119} + x^{116} + x^{115} + x^{113} + x^{108} + x^{106} + x^{103}\\
&+ x^{101} + x^{95} + x^{94} + x^{92} + x^{91} + x^{89} + x^{88} + x^{87} + x^{86} + x^{85} + x^{78}\\
&+ x^{77} + x^{75} + x^{74} + x^{70} + x^{69} + x^{68} + x^{66} + x^{65} + x^{64} + x^{62} + x^{58}\\
&+ x^{55} + x^{48} + x^{47} + x^{44} + x^{43} + x^{38} + x^{37} + x^{36} + x^{35} + x^{34} + x^{32}\\
&+ x^{30} + x^{29} + x^{26} + x^{22} + x^{20} + x^{17} + x^{14} + x^{12} + x^{11} + x^{10} + x^{8}
\end{aligned}
$$

$$
\begin{aligned}
&+ x^4 + x^3 + x^2 + 1, \\
p_9(x) &= x^{124} + x^{123} + x^{122} + x^{119} + x^{118} + x^{116} + x^{112} + x^{111} + x^{110} + x^{107} \\
&+ x^{106} + x^{103} + x^{102} + x^{100} + x^{96} + x^{95} + x^{94} + x^{91} + x^{90} + x^{87} \\
&+ x^{86} + x^{84} + x^{80} + x^{79} + x^{78} + x^{76} + x^{60} + x^{59} + x^{58} + x^{55} + x^{54} \\
&+ x^{52} + x^{48} + x^{47} + x^{46} + x^{44} + x^{28} + x^{27} + x^{26} + x^{23} + x^{22} + x^{20} \\
&+ x^{16} + x^{15} + x^{14} + x^{12}, \\
p_{12}(x) &= x^{124} + x^{123} + x^{122} + x^{119} + x^{118} + x^{115} + x^{114} + x^{112} + x^{104} + x^{103} \\
&+ x^{102} + x^{100} + x^{88} + x^{87} + x^{86} + x^{84} + x^{76} + x^{75} + x^{74} + x^{72} + x^{68} \\
&+ x^{67} + x^{66} + x^{64} + x^{60} + x^{59} + x^{58} + x^{55} + x^{54} + x^{51} + x^{50} + x^{48} \\
&+ x^{44} + x^{43} + x^{42} + x^{40} + x^{36} + x^{35} + x^{34} + x^{32} + x^{28} + x^{27} + x^{26} \\
&+ x^{23} + x^{22} + x^{19} + x^{18} + x^{16} + x^{12} + x^{11} + x^{10} + x^{8} + x^{4} + x^{3} + x^{2} \\
&+ 1,
\end{aligned}
$$

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

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

$$
\begin{aligned}
p_0(x) &= x^{134} + x^{131} + x^{130} + x^{128} + x^{125} + x^{121} + x^{120} + x^{118} + x^{116} + x^{115} \\
&+ x^{114} + x^{112} + x^{111} + x^{109} + x^{107} + x^{105} + x^{104} + x^{103} + x^{99} + x^{95} \\
&+ x^{89} + x^{88} + x^{87} + x^{86} + x^{83} + x^{82} + x^{81} + x^{79} + x^{78} + x^{76} + x^{75} \\
&+ x^{74} + x^{72} + x^{71} + x^{70} + x^{67} + x^{62} + x^{61} + x^{60} + x^{59} + x^{57} + x^{55} \\
&+ x^{53} + x^{51} + x^{49} + x^{47} + x^{45} + x^{43} + x^{40} + x^{39}, \\
p_3(x) &= x^{126} + x^{124} + x^{122} + x^{119} + x^{117} + x^{116} + x^{115} + x^{112} + x^{109} + x^{106} \\
&+ x^{105} + x^{99} + x^{78} + x^{76} + x^{74} + x^{71} + x^{69} + x^{68} + x^{67} + x^{64} + x^{61} \\
&+ x^{58} + x^{57} + x^{54} + x^{52} + x^{51} + x^{50} + x^{47} + x^{45} + x^{44} + x^{43} + x^{40} \\
&+ x^{37} + x^{34} + x^{33} + x^{27}, \\
p_6(x) &= x^{128} + x^{116} + x^{114} + x^{108} + x^{102} + x^{100} + x^{96} + x^{94} + x^{88} + x^{86} \\
&+ x^{82} + x^{80} + x^{76} + x^{74} + x^{72} + x^{66} + x^{62} + x^{58} + x^{56} + x^{52} + x^{42} \\
&+ x^{38} + x^{36} + x^{32} + x^{22} + x^{18}, \\
p_9(x) &= x^{130} + x^{128} + x^{124} + x^{123} + x^{122} + x^{121} + x^{120} + x^{118} + x^{117} + x^{115} \\
&+ x^{114} + x^{113} + x^{111} + x^{108} + x^{107} + x^{106} + x^{104} + x^{102} + x^{101} \\
&+ x^{99} + x^{98} + x^{97} + x^{95} + x^{92} + x^{91} + x^{90} + x^{88} + x^{86} + x^{85} + x^{83} \\
&+ x^{81} + x^{80} + x^{79} + x^{73} + x^{66} + x^{64} + x^{60} + x^{59} + x^{58} + x^{57} + x^{56} \\
&+ x^{54} + x^{53} + x^{51} + x^{49} + x^{48} + x^{47} + x^{41} + x^{34} + x^{32} + x^{28} + x^{27} \\
&+ x^{26} + x^{25} + x^{24} + x^{22} + x^{21} + x^{19} + x^{17} + x^{16} + x^{15} + x^{9}, \\
p_{12}(x) &= x^{132} + x^{128} + x^{104} + x^{100} + x^{96} + x^{88} + x^{72} + x^{52} + x^{48} + x^{40} + x^{20} \\
&+ x^{16} + x^{8} + x^{4} + 1,
\end{aligned}
$$

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

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

$$\begin{aligned}
p_0(x) &= x^{132} + x^{130} + x^{127} + x^{126} + x^{124} + x^{119} + x^{114} + x^{112} + x^{109} + x^{108} \\
&\quad + x^{104} + x^{101} + x^{99} + x^{98} + x^{90} + x^{88} + x^{86} + x^{85} + x^{84} + x^{82} + x^{78} \\
&\quad + x^{77} + x^{71} + x^{70} + x^{69} + x^{65} + x^{62} + x^{61} + x^{60} + x^{58} + x^{57} + x^{55} \\
&\quad + x^{54} + x^{51} + x^{47} + x^{46} + x^{45} + x^{44} + x^{43} + x^{40} + x^{39}, \\
p_3(x) &= x^{118} + x^{116} + x^{112} + x^{111} + x^{109} + x^{106} + x^{105} + x^{99} + x^{70} + x^{68} \\
&\quad + x^{64} + x^{63} + x^{61} + x^{58} + x^{57} + x^{51} + x^{46} + x^{44} + x^{40} + x^{39} + x^{37} \\
&\quad + x^{34} + x^{33} + x^{27}, \\
p_6(x) &= x^{120} + x^{116} + x^{112} + x^{108} + x^{106} + x^{104} + x^{102} + x^{100} + x^{98} + x^{96} \\
&\quad + x^{94} + x^{92} + x^{90} + x^{86} + x^{84} + x^{82} + x^{78} + x^{70} + x^{60} + x^{52} + x^{46} \\
&\quad + x^{44} + x^{38} + x^{36} + x^{32} + x^{30} + x^{22} + x^{18}, \\
p_9(x) &= x^{122} + x^{120} + x^{118} + x^{115} + x^{113} + x^{112} + x^{111} + x^{106} + x^{105} + x^{104} \\
&\quad + x^{102} + x^{99} + x^{97} + x^{96} + x^{95} + x^{90} + x^{89} + x^{88} + x^{86} + x^{83} + x^{81} \\
&\quad + x^{80} + x^{79} + x^{73} + x^{58} + x^{56} + x^{54} + x^{51} + x^{49} + x^{48} + x^{47} + x^{41} \\
&\quad + x^{26} + x^{24} + x^{22} + x^{19} + x^{17} + x^{16} + x^{15} + x^{9}, \\
p_{12}(x) &= x^{124} + x^{112} + x^{104} + x^{100} + x^{88} + x^{84} + x^{76} + x^{72} + x^{68} + x^{64} + x^{60} \\
&\quad + x^{48} + x^{44} + x^{40} + x^{36} + x^{32} + x^{28} + x^{16} + x^{12} + x^{8} + x^{4} + 1,
\end{aligned}$$

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

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

$$\begin{aligned}
p_0(x) &= x^{129} + x^{127} + x^{125} + x^{120} + x^{118} + x^{116} + x^{113} + x^{111} + x^{109} + x^{103} \\
&\quad + x^{102} + x^{101} + x^{96} + x^{93} + x^{92} + x^{91} + x^{90} + x^{89} + x^{87} + x^{86} + x^{85} \\
&\quad + x^{84} + x^{82} + x^{81} + x^{76} + x^{74} + x^{73} + x^{72} + x^{71} + x^{70} + x^{69} + x^{68} \\
&\quad + x^{67} + x^{65} + x^{64} + x^{59} + x^{58} + x^{57} + x^{55} + x^{54} + x^{53} + x^{51} + x^{49} \\
&\quad + x^{47} + x^{45} + x^{44} + x^{42}, \\
p_3(x) &= x^{124} + x^{122} + x^{118} + x^{116} + x^{115} + x^{114} + x^{113} + x^{112} + x^{111} + x^{108} \\
&\quad + x^{106} + x^{104} + x^{101} + x^{98} + x^{96} + x^{95} + x^{93} + x^{89} + x^{88} + x^{85} + x^{83} \\
&\quad + x^{79} + x^{77} + x^{75} + x^{74} + x^{72} + x^{70} + x^{66} + x^{64} + x^{63} + x^{61} + x^{58} \\
&\quad + x^{57} + x^{56} + x^{55} + x^{53} + x^{52} + x^{51} + x^{49} + x^{46} + x^{45} + x^{43} + x^{42} \\
&\quad + x^{40} + x^{36} + x^{35} + x^{34} + x^{33} + x^{31} + x^{29} + x^{28} + x^{26}, \\
p_6(x) &= x^{124} + x^{122} + x^{118} + x^{116} + x^{114} + x^{113} + x^{112} + x^{108} + x^{105} + x^{104} \\
&\quad + x^{103} + x^{102} + x^{101} + x^{100} + x^{99} + x^{97} + x^{95} + x^{86} + x^{85} + x^{83} \\
&\quad + x^{81} + x^{77} + x^{75} + x^{74} + x^{66} + x^{64} + x^{63} + x^{61} + x^{58} + x^{57} + x^{54} \\
&\quad + x^{53} + x^{52} + x^{51} + x^{50} + x^{49} + x^{44} + x^{42} + x^{40} + x^{35} + x^{34} + x^{33} \\
&\quad + x^{29} + x^{26} + x^{24} + x^{23} + x^{22} + x^{21} + x^{20} + x^{18} + x^{17} + x^{16} + x^{15} \\
&\quad + x^{11} + x^{10} + x^{8} + x^{4} + x^{3} + x^{2} + 1,
\end{aligned}$$

$$
\begin{aligned}
p_9(x) = {} & x^{124} + x^{123} + x^{122} + x^{119} + x^{118} + x^{116} + x^{112} + x^{111} + x^{110} + x^{107} \\
& + x^{106} + x^{103} + x^{102} + x^{100} + x^{96} + x^{95} + x^{94} + x^{91} + x^{90} + x^{87} \\
& + x^{86} + x^{84} + x^{80} + x^{79} + x^{78} + x^{76} + x^{60} + x^{59} + x^{58} + x^{55} + x^{54} \\
& + x^{52} + x^{48} + x^{47} + x^{46} + x^{44} + x^{28} + x^{27} + x^{26} + x^{23} + x^{22} + x^{20} \\
& + x^{16} + x^{15} + x^{14} + x^{12}, \\
p_{12}(x) = {} & x^{124} + x^{123} + x^{122} + x^{119} + x^{118} + x^{115} + x^{114} + x^{112} + x^{104} + x^{103} \\
& + x^{102} + x^{100} + x^{88} + x^{87} + x^{86} + x^{84} + x^{76} + x^{75} + x^{74} + x^{72} + x^{68} \\
& + x^{67} + x^{66} + x^{64} + x^{60} + x^{59} + x^{58} + x^{55} + x^{54} + x^{51} + x^{50} + x^{48} \\
& + x^{44} + x^{43} + x^{42} + x^{40} + x^{36} + x^{35} + x^{34} + x^{32} + x^{28} + x^{27} + x^{26} \\
& + x^{23} + x^{22} + x^{19} + x^{18} + x^{16} + x^{12} + x^{11} + x^{10} + x^{8} + x^{4} + x^{3} + x^{2} \\
& + 1,
\end{aligned}
$$

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

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

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

n	$\Lambda(n)$	n	$\Lambda(n)$	n	$\Lambda(n)$	n	$\Lambda(n)$
0	[1, 2]	1121	[1496, 726]	2242	[3010, 1993]	3363	[1466, 1641]
1	[3, 4]	1122	[1787, 491]	2243	[1559, 1606]	3364	[783, 643]
2	[5, 6]	1123	[700, 1788]	2244	[3011, 38]	3365	[3040, 603]
3	[7, 8]	1124	[1441, 1789]	2245	[1909, 3012]	3366	[3293, 1874]
4	[9, 10]	1125	[1790, 1791]	2246	[1668, 791]	3367	[3006, 1732]
5	[11, 12]	1126	[1653, 1509]	2247	[1497, 3013]	3368	[3835, 648]
6	[13, 14]	1127	[1792, 1793]	2248	[2911, 3014]	3369	[3836, 1983]
7	[15, 16]	1128	[207, 58]	2249	[3015, 1676]	3370	[3837, 565]
8	[17, 18]	1129	[779, 1794]	2250	[2006, 2917]	3371	[3109, 1660]
9	[19, 20]	1130	[1551, 651]	2251	[2022, 140]	3372	[1600, 3838]
10	[21, 22]	1131	[1795, 475]	2252	[3016, 1790]	3373	[3839, 1470]
11	[23, 24]	1132	[1796, 1797]	2253	[514, 3017]	3374	[3094, 1928]
12	[25, 26]	1133	[1798, 612]	2254	[3018, 3019]	3375	[3840, 36]
13	[27, 28]	1134	[1799, 1800]	2255	[667, 1950]	3376	[2971, 3841]
14	[29, 30]	1135	[1801, 639]	2256	[3020, 1589]	3377	[519, 2922]
15	[31, 32]	1136	[1802, 1803]	2257	[1858, 3021]	3378	[1548, 1501]
16	[33, 34]	1137	[503, 681]	2258	[3022, 1566]	3379	[3842, 1809]
17	[35, 36]	1138	[190, 496]	2259	[3023, 1668]	3380	[1834, 785]
18	[37, 38]	1139	[587, 150]	2260	[3024, 1784]	3381	[3226, 1527]
19	[39, 40]	1140	[1804, 1805]	2261	[643, 1785]	3382	[3843, 809]
20	[41, 42]	1141	[1576, 1525]	2262	[1687, 60]	3383	[3230, 3208]
21	[43, 44]	1142	[1806, 675]	2263	[1900, 152]	3384	[3844, 1706]
22	[45, 46]	1143	[1807, 1808]	2264	[3025, 3026]	3385	[3845, 545]
23	[47, 48]	1144	[51, 1670]	2265	[1497, 3027]	3386	[3101, 3828]
24	[49, 50]	1145	[1809, 1460]	2266	[2960, 1447]	3387	[1978, 2035]

25	[51, 52]	1146	[1810, 1811]	2267	[3028, 215]	3388	[3846, 3012]
26	[53, 54]	1147	[1812, 1813]	2268	[3029, 2042]	3389	[3122, 1479]
27	[55, 56]	1148	[1814, 1507]	2269	[578, 517]	3390	[3847, 162]
28	[57, 58]	1149	[1801, 1815]	2270	[3030, 3031]	3391	[795, 218]
29	[59, 60]	1150	[1816, 1817]	2271	[1799, 2043]	3392	[3225, 709]
30	[61, 62]	1151	[1818, 1575]	2272	[2957, 195]	3393	[3848, 1550]
31	[63, 64]	1152	[1819, 1820]	2273	[133, 1935]	3394	[3849, 1939]
32	[65, 66]	1153	[1821, 1822]	2274	[1674, 1636]	3395	[3850, 3092]
33	[67, 68]	1154	[1685, 586]	2275	[3032, 1874]	3396	[3851, 762]
34	[69, 70]	1155	[1823, 1824]	2276	[228, 1675]	3397	[3279, 671]
35	[71, 72]	1156	[1825, 1603]	2277	[747, 14]	3398	[579, 1803]
36	[73, 74]	1157	[1826, 1827]	2278	[2964, 3033]	3399	[3852, 1679]
37	[75, 76]	1158	[711, 1825]	2279	[636, 224]	3400	[3853, 1504]
38	[77, 78]	1159	[1828, 647]	2280	[1662, 1834]	3401	[705, 1807]
39	[79, 80]	1160	[1829, 1830]	2281	[1877, 1681]	3402	[3300, 1819]
40	[81, 82]	1161	[1831, 1832]	2282	[3034, 1658]	3403	[3854, 1947]
41	[83, 84]	1162	[1484, 1833]	2283	[3035, 3028]	3404	[3855, 1608]
42	[85, 86]	1163	[1834, 1835]	2284	[3036, 3037]	3405	[1999, 3825]
43	[87, 88]	1164	[1836, 1729]	2285	[795, 2034]	3406	[3850, 1968]
44	[89, 90]	1165	[1837, 1838]	2286	[207, 1584]	3407	[3856, 3260]
45	[91, 92]	1166	[1823, 477]	2287	[3038, 1750]	3408	[1584, 1781]
46	[93, 94]	1167	[1462, 479]	2288	[601, 558]	3409	[2891, 1640]
47	[95, 96]	1168	[1839, 576]	2289	[2004, 563]	3410	[3857, 202]
48	[97, 98]	1169	[242, 592]	2290	[1844, 2929]	3411	[39, 1576]
49	[99, 100]	1170	[1804, 1840]	2291	[3039, 2927]	3412	[3858, 57]
50	[101, 102]	1171	[651, 519]	2292	[3040, 3041]	3413	[3859, 544]
51	[103, 104]	1172	[669, 1515]	2293	[3042, 2940]	3414	[1715, 572]
52	[105, 106]	1173	[503, 1522]	2294	[3043, 1766]	3415	[1771, 3260]
53	[107, 108]	1174	[1674, 1519]	2295	[3044, 1642]	3416	[3860, 764]
54	[109, 110]	1175	[1841, 1519]	2296	[3045, 156]	3417	[2898, 493]
55	[111, 112]	1176	[1520, 669]	2297	[3046, 3047]	3418	[2938, 1755]
56	[113, 114]	1177	[1514, 503]	2298	[1526, 3048]	3419	[1859, 1542]
57	[115, 116]	1178	[650, 1778]	2299	[3049, 3050]	3420	[48, 1944]
58	[117, 118]	1179	[216, 683]	2300	[1554, 3051]	3421	[3861, 215]
59	[119, 120]	1180	[1842, 11]	2301	[1891, 3052]	3422	[1933, 1840]
60	[121, 122]	1181	[1843, 1573]	2302	[1946, 3053]	3423	[636, 713]
61	[123, 124]	1182	[695, 1844]	2303	[3054, 1699]	3424	[3233, 1987]
62	[125, 126]	1183	[693, 1845]	2304	[3055, 158]	3425	[3862, 198]
63	[127, 128]	1184	[675, 1846]	2305	[657, 1564]	3426	[2913, 790]
64	[129, 130]	1185	[1847, 812]	2306	[653, 3056]	3427	[3863, 1927]
65	[131, 132]	1186	[515, 1848]	2307	[3042, 1791]	3428	[3864, 1761]
66	[133, 134]	1187	[496, 517]	2308	[1553, 2992]	3429	[652, 2922]
67	[135, 136]	1188	[1671, 1819]	2309	[652, 520]	3430	[3213, 3865]
68	[137, 138]	1189	[767, 1849]	2310	[788, 141]	3431	[1520, 498]

69	[139, 140]	1190	[1498, 1697]	2311	[531, 2008]	3432	[3866, 1878]
70	[141, 142]	1191	[1788, 186]	2312	[801, 1722]	3433	[1705, 3867]
71	[143, 144]	1192	[1850, 1851]	2313	[1908, 750]	3434	[683, 1875]
72	[145, 146]	1193	[1852, 1853]	2314	[1437, 1668]	3435	[3868, 155]
73	[147, 148]	1194	[1710, 786]	2315	[3057, 132]	3436	[3869, 1808]
74	[149, 150]	1195	[1521, 681]	2316	[3058, 613]	3437	[1575, 40]
75	[151, 152]	1196	[1517, 501]	2317	[3059, 1910]	3438	[3870, 42]
76	[153, 144]	1197	[1854, 1855]	2318	[2936, 1798]	3439	[2947, 3170]
77	[154, 155]	1198	[1458, 1486]	2319	[741, 2998]	3440	[1746, 3089]
78	[61, 156]	1199	[49, 1856]	2320	[32, 756]	3441	[3871, 1879]
79	[157, 158]	1200	[1578, 1857]	2321	[3060, 549]	3442	[3256, 620]
80	[159, 160]	1201	[682, 1858]	2322	[3061, 1600]	3443	[3029, 1799]
81	[161, 162]	1202	[1859, 1642]	2323	[2025, 175]	3444	[2996, 3872]
82	[163, 164]	1203	[1578, 1860]	2324	[1994, 3062]	3445	[1638, 1638]
83	[165, 166]	1204	[1446, 649]	2325	[497, 518]	3446	[1981, 1882]
84	[167, 168]	1205	[1861, 1742]	2326	[3063, 1587]	3447	[765, 685]
85	[169, 170]	1206	[1744, 1862]	2327	[1734, 566]	3448	[3873, 1948]
86	[171, 172]	1207	[1863, 663]	2328	[2981, 3064]	3449	[3874, 1968]
87	[173, 174]	1208	[806, 1864]	2329	[2924, 1862]	3450	[1965, 1618]
88	[175, 176]	1209	[1865, 784]	2330	[3065, 1656]	3451	[588, 1827]
89	[177, 178]	1210	[1866, 1713]	2331	[750, 1658]	3452	[148, 754]
90	[179, 180]	1211	[1867, 1481]	2332	[213, 3066]	3453	[3264, 3172]
91	[181, 182]	1212	[1868, 1869]	2333	[717, 1825]	3454	[3875, 1716]
92	[183, 184]	1213	[1870, 1871]	2334	[3022, 3067]	3455	[1704, 1590]
93	[185, 186]	1214	[1872, 1663]	2335	[3068, 133]	3456	[672, 1596]
94	[187, 188]	1215	[479, 1873]	2336	[604, 2902]	3457	[552, 1670]
95	[189, 190]	1216	[816, 1874]	2337	[1544, 2917]	3458	[1920, 1956]
96	[191, 2]	1217	[1858, 1875]	2338	[618, 1807]	3459	[1439, 3304]
97	[192, 193]	1218	[1876, 586]	2339	[3069, 590]	3460	[576, 3222]
98	[194, 195]	1219	[1877, 1878]	2340	[3070, 2956]	3461	[3876, 1984]
99	[196, 197]	1220	[173, 1879]	2341	[3071, 605]	3462	[3877, 3290]
100	[198, 199]	1221	[583, 1627]	2342	[2993, 3072]	3463	[3201, 3003]
101	[200, 201]	1222	[1880, 771]	2343	[764, 2966]	3464	[3878, 3879]
102	[202, 203]	1223	[237, 1881]	2344	[684, 766]	3465	[3302, 3880]
103	[204, 205]	1224	[1784, 1851]	2345	[1526, 819]	3466	[567, 3027]
104	[206, 207]	1225	[1882, 1883]	2346	[3073, 3074]	3467	[736, 1550]
105	[33, 208]	1226	[810, 1740]	2347	[152, 3075]	3468	[3881, 3879]
106	[209, 210]	1227	[1787, 1684]	2348	[660, 3076]	3469	[3882, 1536]
107	[211, 49]	1228	[1654, 1884]	2349	[3077, 666]	3470	[2906, 1570]
108	[130, 212]	1229	[1885, 227]	2350	[574, 57]	3471	[3883, 205]
109	[213, 214]	1230	[1886, 527]	2351	[165, 1731]	3472	[3253, 3884]
110	[215, 216]	1231	[1887, 1888]	2352	[1868, 3078]	3473	[3885, 1571]
111	[217, 218]	1232	[1453, 1889]	2353	[3079, 2901]	3474	[1754, 2939]
112	[219, 220]	1233	[485, 1890]	2354	[1509, 3080]	3475	[1649, 188]

113	[221, 222]	1234	[1891, 1892]	2355	[728, 593]	3476	[3043, 1527]
114	[223, 224]	1235	[1447, 1672]	2356	[1719, 1860]	3477	[3886, 1721]
115	[225, 226]	1236	[1893, 1714]	2357	[1721, 1787]	3478	[3887, 2922]
116	[227, 210]	1237	[743, 1811]	2358	[1522, 670]	3479	[3888, 37]
117	[153, 228]	1238	[1598, 1532]	2359	[54, 737]	3480	[3102, 3237]
118	[229, 230]	1239	[1894, 1878]	2360	[3081, 2933]	3481	[3275, 749]
119	[231, 232]	1240	[694, 202]	2361	[3082, 3083]	3482	[3889, 3218]
120	[233, 234]	1241	[1895, 1896]	2362	[1522, 190]	3483	[3890, 61]
121	[235, 236]	1242	[1897, 1701]	2363	[1992, 1602]	3484	[3891, 1554]
122	[237, 238]	1243	[1898, 1434]	2364	[1447, 650]	3485	[1538, 591]
123	[239, 240]	1244	[1587, 1899]	2365	[2028, 627]	3486	[3892, 1541]
124	[174, 241]	1245	[704, 618]	2366	[1610, 1831]	3487	[3298, 804]
125	[200, 242]	1246	[723, 1896]	2367	[1901, 1846]	3488	[3893, 1839]
126	[198, 32]	1247	[1430, 576]	2368	[1759, 666]	3489	[3894, 2963]
127	[243, 244]	1248	[1900, 1562]	2369	[3084, 1683]	3490	[3895, 1901]
128	[245, 246]	1249	[1806, 1901]	2370	[3085, 194]	3491	[3152, 3143]
129	[247, 248]	1250	[1633, 1902]	2371	[162, 1811]	3492	[3261, 3293]
130	[249, 250]	1251	[1903, 1764]	2372	[1432, 132]	3493	[3896, 3897]
131	[251, 252]	1252	[1904, 1905]	2373	[662, 3086]	3494	[1783, 3898]
132	[253, 254]	1253	[1649, 1906]	2374	[1606, 201]	3495	[1729, 1670]
133	[255, 256]	1254	[475, 735]	2375	[3087, 1797]	3496	[2995, 1515]
134	[257, 258]	1255	[1907, 1908]	2376	[1680, 1878]	3497	[3899, 703]
135	[259, 260]	1256	[1909, 1910]	2377	[3088, 632]	3498	[3900, 1662]
136	[261, 262]	1257	[174, 61]	2378	[2976, 3089]	3499	[2889, 3901]
137	[263, 264]	1258	[1911, 794]	2379	[1460, 534]	3500	[3902, 505]
138	[265, 266]	1259	[1912, 215]	2380	[1825, 1490]	3501	[3903, 495]
139	[267, 268]	1260	[1913, 1914]	2381	[1733, 1847]	3502	[3904, 2030]
140	[269, 270]	1261	[753, 744]	2382	[199, 756]	3503	[3198, 1717]
141	[271, 272]	1262	[1714, 542]	2383	[743, 1964]	3504	[1907, 529]
142	[273, 274]	1263	[1915, 1504]	2384	[1948, 796]	3505	[3905, 1632]
143	[275, 276]	1264	[489, 719]	2385	[158, 1977]	3506	[3906, 1778]
144	[277, 278]	1265	[1686, 59]	2386	[3090, 1710]	3507	[3870, 1583]
145	[279, 280]	1266	[208, 1916]	2387	[3091, 146]	3508	[3907, 2982]
146	[281, 282]	1267	[1917, 487]	2388	[204, 1470]	3509	[758, 634]
147	[283, 284]	1268	[1648, 187]	2389	[2990, 1538]	3510	[1960, 1592]
148	[285, 286]	1269	[1918, 585]	2390	[1669, 1941]	3511	[659, 1461]
149	[287, 288]	1270	[221, 484]	2391	[1870, 511]	3512	[3908, 1522]
150	[289, 290]	1271	[1507, 1919]	2392	[541, 815]	3513	[137, 3127]
151	[291, 292]	1272	[1815, 780]	2393	[3075, 1975]	3514	[3909, 1783]
152	[258, 293]	1273	[730, 128]	2394	[1695, 792]	3515	[3910, 627]
153	[294, 295]	1274	[1715, 543]	2395	[3007, 3092]	3516	[1836, 51]
154	[296, 297]	1275	[523, 1783]	2396	[1908, 1976]	3517	[1470, 1870]
155	[298, 299]	1276	[1920, 1921]	2397	[501, 1841]	3518	[1590, 1981]
156	[300, 301]	1277	[1922, 1532]	2398	[3028, 2985]	3519	[3133, 732]

157	[302, 109]	1278	[1923, 223]	2399	[1946, 1553]	3520	[3149, 232]
158	[303, 304]	1279	[1915, 1924]	2400	[1767, 3093]	3521	[3282, 3911]
159	[305, 306]	1280	[1511, 49]	2401	[58, 1781]	3522	[1937, 3010]
160	[307, 308]	1281	[1876, 544]	2402	[2967, 1458]	3523	[41, 1583]
161	[309, 310]	1282	[1925, 630]	2403	[3094, 1621]	3524	[3912, 618]
162	[311, 312]	1283	[622, 549]	2404	[1449, 3095]	3525	[3913, 1948]
163	[313, 314]	1284	[1926, 1927]	2405	[758, 805]	3526	[3142, 662]
164	[315, 316]	1285	[1620, 1928]	2406	[3096, 3097]	3527	[1753, 1474]
165	[317, 318]	1286	[10, 1730]	2407	[3098, 776]	3528	[3914, 1743]
166	[319, 320]	1287	[1929, 1930]	2408	[483, 222]	3529	[3186, 1778]
167	[321, 322]	1288	[1931, 692]	2409	[1971, 3099]	3530	[3915, 3078]
168	[323, 324]	1289	[1569, 1932]	2410	[1478, 3037]	3531	[3916, 36]
169	[325, 326]	1290	[715, 13]	2411	[3100, 181]	3532	[1861, 3313]
170	[327, 328]	1291	[1933, 1805]	2412	[3101, 1854]	3533	[3883, 1470]
171	[329, 330]	1292	[1670, 1934]	2413	[233, 1820]	3534	[1456, 3917]
172	[331, 332]	1293	[1935, 1726]	2414	[2902, 2932]	3535	[40, 1645]
173	[333, 334]	1294	[1854, 1471]	2415	[2917, 1588]	3536	[3053, 2992]
174	[335, 125]	1295	[761, 1936]	2416	[1786, 570]	3537	[3194, 787]
175	[336, 337]	1296	[1937, 1601]	2417	[3102, 237]	3538	[3895, 675]
176	[338, 339]	1297	[1938, 1939]	2418	[181, 609]	3539	[3297, 3918]
177	[340, 341]	1298	[1940, 626]	2419	[787, 1883]	3540	[697, 3160]
178	[342, 343]	1299	[610, 1941]	2420	[1552, 652]	3541	[3104, 2976]
179	[344, 345]	1300	[1942, 628]	2421	[3103, 782]	3542	[1982, 200]
180	[346, 347]	1301	[474, 1943]	2422	[2950, 2929]	3543	[3919, 1879]
181	[348, 349]	1302	[721, 1944]	2423	[3104, 1746]	3544	[3077, 1622]
182	[350, 351]	1303	[1945, 1787]	2424	[1819, 234]	3545	[3846, 1910]
183	[24, 352]	1304	[1879, 61]	2425	[716, 711]	3546	[3278, 1713]
184	[353, 354]	1305	[35, 1946]	2426	[602, 3041]	3547	[3814, 512]
185	[355, 356]	1306	[1947, 1948]	2427	[3015, 521]	3548	[3920, 1559]
186	[357, 358]	1307	[154, 1560]	2428	[3105, 3106]	3549	[3864, 3193]
187	[359, 360]	1308	[1935, 1534]	2429	[1678, 3107]	3550	[1843, 749]
188	[361, 362]	1309	[1949, 1950]	2430	[1788, 1597]	3551	[3921, 758]
189	[363, 364]	1310	[1951, 1952]	2431	[1580, 501]	3552	[2987, 1815]
190	[365, 366]	1311	[1433, 1953]	2432	[196, 620]	3553	[3922, 38]
191	[367, 368]	1312	[554, 1954]	2433	[202, 1844]	3554	[3923, 3827]
192	[369, 370]	1313	[1624, 1948]	2434	[1926, 3108]	3555	[3924, 767]
193	[371, 372]	1314	[1865, 1834]	2435	[696, 2032]	3556	[1679, 1943]
194	[373, 374]	1315	[1656, 505]	2436	[1752, 1839]	3557	[3281, 1955]
195	[375, 376]	1316	[1955, 1789]	2437	[3087, 1920]	3558	[3925, 609]
196	[377, 378]	1317	[1797, 1956]	2438	[3109, 702]	3559	[3926, 1853]
197	[379, 380]	1318	[470, 779]	2439	[3017, 539]	3560	[3927, 1936]
198	[381, 382]	1319	[1957, 1652]	2440	[1780, 228]	3561	[747, 1735]
199	[383, 384]	1320	[128, 531]	2441	[205, 1870]	3562	[3008, 1499]
200	[385, 386]	1321	[1958, 1627]	2442	[3110, 1844]	3563	[3928, 701]

201	[387, 323]	1322	[1839, 1696]	2443	[3111, 2968]	3564	[3020, 1704]
202	[388, 389]	1323	[1959, 1781]	2444	[3112, 783]	3565	[818, 3048]
203	[390, 391]	1324	[1960, 1961]	2445	[3113, 589]	3566	[2961, 674]
204	[392, 393]	1325	[1619, 1962]	2446	[3114, 2956]	3567	[1866, 2033]
205	[384, 394]	1326	[227, 1963]	2447	[1945, 490]	3568	[3312, 1947]
206	[395, 396]	1327	[162, 1964]	2448	[3047, 3115]	3569	[1942, 3223]
207	[397, 398]	1328	[1965, 527]	2449	[708, 44]	3570	[3175, 1871]
208	[399, 400]	1329	[1966, 1576]	2450	[3116, 3031]	3571	[1774, 3310]
209	[401, 402]	1330	[1967, 1968]	2451	[3117, 160]	3572	[209, 1963]
210	[403, 404]	1331	[1969, 1970]	2452	[3118, 553]	3573	[3826, 654]
211	[405, 406]	1332	[645, 1958]	2453	[47, 721]	3574	[3299, 691]
212	[407, 408]	1333	[1971, 1972]	2454	[3119, 2999]	3575	[3284, 3002]
213	[409, 410]	1334	[1973, 1634]	2455	[3120, 3121]	3576	[3289, 1971]
214	[411, 412]	1335	[1974, 677]	2456	[3122, 3037]	3577	[3929, 1504]
215	[413, 414]	1336	[1767, 1975]	2457	[1677, 2037]	3578	[3930, 3163]
216	[415, 416]	1337	[1976, 1724]	2458	[623, 550]	3579	[1779, 153]
217	[417, 418]	1338	[1977, 1550]	2459	[3018, 3123]	3580	[1545, 2918]
218	[419, 420]	1339	[591, 1978]	2460	[3053, 2894]	3581	[3931, 646]
219	[421, 422]	1340	[1979, 1801]	2461	[3124, 8]	3582	[3890, 241]
220	[423, 424]	1341	[1459, 1980]	2462	[547, 3125]	3583	[3932, 162]
221	[425, 426]	1342	[1981, 787]	2463	[3126, 1514]	3584	[3914, 794]
222	[84, 427]	1343	[1558, 1982]	2464	[774, 3127]	3585	[2991, 2894]
223	[428, 429]	1344	[1983, 140]	2465	[3050, 487]	3586	[3896, 1952]
224	[430, 431]	1345	[44, 1984]	2466	[3128, 1678]	3587	[3910, 1942]
225	[432, 433]	1346	[778, 1985]	2467	[1880, 1499]	3588	[3221, 577]
226	[434, 435]	1347	[717, 1609]	2468	[1792, 3129]	3589	[759, 3125]
227	[436, 437]	1348	[1986, 1987]	2469	[241, 156]	3590	[3073, 3933]
228	[438, 439]	1349	[1988, 1989]	2470	[1765, 1541]	3591	[3016, 3042]
229	[440, 441]	1350	[53, 1977]	2471	[489, 791]	3592	[1542, 1923]
230	[442, 443]	1351	[1616, 1990]	2472	[3130, 1603]	3593	[1929, 3934]
231	[444, 445]	1352	[1536, 1991]	2473	[229, 641]	3594	[3290, 3099]
232	[446, 447]	1353	[1992, 1993]	2474	[11, 643]	3595	[3068, 726]
233	[448, 449]	1354	[1994, 1995]	2475	[151, 1562]	3596	[3090, 1590]
234	[450, 451]	1355	[1716, 1996]	2476	[1589, 1710]	3597	[1852, 1536]
235	[452, 379]	1356	[731, 587]	2477	[3004, 3131]	3598	[760, 2936]
236	[453, 454]	1357	[135, 1516]	2478	[529, 1976]	3599	[3935, 534]
237	[455, 456]	1358	[1997, 2]	2479	[1684, 3132]	3600	[3169, 1840]
238	[457, 458]	1359	[1611, 1686]	2480	[1844, 2951]	3601	[3032, 817]
239	[459, 411]	1360	[1894, 1681]	2481	[3128, 2037]	3602	[3936, 1447]
240	[460, 461]	1361	[545, 1640]	2482	[3133, 687]	3603	[1947, 508]
241	[462, 463]	1362	[1724, 1659]	2483	[3134, 1800]	3604	[3829, 1962]
242	[464, 465]	1363	[1998, 1723]	2484	[3135, 1450]	3605	[3937, 785]
243	[466, 43]	1364	[1999, 2000]	2485	[2952, 2907]	3606	[3187, 3292]
244	[467, 468]	1365	[2001, 2002]	2486	[1559, 200]	3607	[3079, 3938]

245	[469, 470]	1366	[572, 2003]	2487	[3136, 1772]	3608	[587, 3224]
246	[471, 472]	1367	[2004, 1466]	2488	[3137, 745]	3609	[3939, 2015]
247	[473, 474]	1368	[180, 532]	2489	[1785, 2953]	3610	[3940, 1961]
248	[475, 476]	1369	[1537, 2005]	2490	[3138, 1454]	3611	[1830, 3823]
249	[477, 478]	1370	[558, 2006]	2491	[3139, 1532]	3612	[3307, 699]
250	[479, 480]	1371	[1684, 2007]	2492	[3024, 1646]	3613	[3941, 1578]
251	[481, 482]	1372	[180, 2008]	2493	[491, 2007]	3614	[746, 3243]
252	[483, 484]	1373	[2009, 529]	2494	[3140, 1528]	3615	[230, 642]
253	[485, 486]	1374	[674, 747]	2495	[3141, 1454]	3616	[3942, 1662]
254	[487, 130]	1375	[593, 2010]	2496	[3142, 1863]	3617	[45, 3188]
255	[488, 489]	1376	[2011, 524]	2497	[3050, 129]	3618	[235, 3898]
256	[490, 491]	1377	[1539, 769]	2498	[1969, 3143]	3619	[3943, 10]
257	[492, 493]	1378	[1481, 611]	2499	[802, 2999]	3620	[3192, 1860]
258	[494, 495]	1379	[2012, 2013]	2500	[3144, 3145]	3621	[3113, 1827]
259	[496, 497]	1380	[1841, 1636]	2501	[683, 3021]	3622	[3944, 180]
260	[498, 499]	1381	[1734, 812]	2502	[3146, 3147]	3623	[3945, 226]
261	[500, 501]	1382	[2012, 1666]	2503	[3148, 1839]	3624	[3946, 1846]
262	[502, 503]	1383	[501, 1674]	2504	[1593, 3149]	3625	[3863, 3108]
263	[504, 505]	1384	[147, 753]	2505	[567, 3013]	3626	[3947, 1511]
264	[506, 507]	1385	[2014, 2015]	2506	[3150, 728]	3627	[1721, 490]
265	[508, 509]	1386	[590, 1539]	2507	[3151, 482]	3628	[3948, 1916]
266	[510, 511]	1387	[8, 1538]	2508	[1493, 202]	3629	[3949, 1745]
267	[512, 513]	1388	[10, 2016]	2509	[1769, 468]	3630	[3305, 2917]
268	[514, 471]	1389	[1828, 1985]	2510	[3152, 1970]	3631	[3950, 528]
269	[515, 516]	1390	[2017, 2018]	2511	[3153, 3154]	3632	[3196, 1467]
270	[517, 518]	1391	[2019, 1762]	2512	[3149, 3155]	3633	[3171, 1622]
271	[519, 520]	1392	[1465, 1895]	2513	[2892, 3156]	3634	[3828, 1855]
272	[521, 522]	1393	[1837, 1813]	2514	[3144, 1551]	3635	[3951, 3051]
273	[523, 235]	1394	[488, 1668]	2515	[3157, 494]	3636	[3141, 1889]
274	[524, 525]	1395	[2020, 767]	2516	[3158, 651]	3637	[2019, 1435]
275	[526, 527]	1396	[176, 1845]	2517	[1810, 1964]	3638	[3893, 1430]
276	[528, 529]	1397	[781, 2021]	2518	[3159, 1566]	3639	[3151, 240]
277	[530, 139]	1398	[144, 1675]	2519	[3046, 1567]	3640	[1991, 1524]
278	[531, 532]	1399	[2022, 581]	2520	[722, 1895]	3641	[3150, 1532]
279	[533, 534]	1400	[1737, 2023]	2521	[509, 759]	3642	[3894, 585]
280	[535, 536]	1401	[2024, 1756]	2522	[2032, 3160]	3643	[3952, 178]
281	[537, 538]	1402	[2025, 727]	2523	[134, 1726]	3644	[3953, 3880]
282	[539, 540]	1403	[2026, 601]	2524	[1766, 1528]	3645	[3220, 1793]
283	[541, 494]	1404	[1463, 1873]	2525	[3161, 1653]	3646	[3816, 532]
284	[542, 543]	1405	[1821, 2018]	2526	[1831, 1686]	3647	[3954, 1746]
285	[239, 482]	1406	[2020, 2027]	2527	[52, 1671]	3648	[3263, 3183]
286	[544, 163]	1407	[2028, 1942]	2528	[3162, 1667]	3649	[1914, 3051]
287	[545, 546]	1408	[2029, 2030]	2529	[3025, 3163]	3650	[3955, 1513]
288	[547, 548]	1409	[1471, 1462]	2530	[2916, 3028]	3651	[3956, 36]

289	[549, 550]	1410	[1756, 2031]	2531	[2904, 1782]	3652	[3957, 648]
290	[549, 551]	1411	[678, 2032]	2532	[3164, 3005]	3653	[3958, 3193]
291	[552, 52]	1412	[1712, 2033]	2533	[3165, 1970]	3654	[2037, 3107]
292	[55, 553]	1413	[808, 2034]	2534	[789, 142]	3655	[1539, 1978]
293	[554, 555]	1414	[1818, 1966]	2535	[1931, 1770]	3656	[1940, 703]
294	[556, 557]	1415	[769, 2035]	2536	[3166, 1612]	3657	[3162, 1652]
295	[159, 558]	1416	[2036, 1600]	2537	[3167, 2987]	3658	[1646, 1851]
296	[559, 560]	1417	[2037, 2038]	2538	[1725, 1534]	3659	[3959, 511]
297	[561, 562]	1418	[2039, 1667]	2539	[3168, 3047]	3660	[3960, 3072]
298	[563, 564]	1419	[2040, 1506]	2540	[3169, 1805]	3661	[3961, 2005]
299	[565, 471]	1420	[471, 539]	2541	[1776, 3170]	3662	[3962, 500]
300	[566, 567]	1421	[2041, 1885]	2542	[1982, 1606]	3663	[561, 3872]
301	[211, 568]	1422	[129, 1439]	2543	[568, 1856]	3664	[3963, 3237]
302	[569, 215]	1423	[784, 1835]	2544	[2959, 568]	3665	[3964, 623]
303	[570, 571]	1424	[216, 1858]	2545	[3171, 666]	3666	[3965, 479]
304	[572, 573]	1425	[1720, 1945]	2546	[1489, 783]	3667	[3966, 1535]
305	[9, 507]	1426	[699, 1808]	2547	[226, 3002]	3668	[3967, 1950]
306	[574, 207]	1427	[2042, 2043]	2548	[52, 1934]	3669	[3084, 1899]
307	[575, 192]	1428	[158, 54]	2549	[1830, 1455]	3670	[143, 228]
308	[576, 577]	1429	[2044, 1012]	2550	[12, 183]	3671	[2909, 2958]
309	[578, 497]	1430	[1154, 2045]	2551	[495, 3172]	3672	[1885, 209]
310	[579, 580]	1431	[2046, 2047]	2552	[1429, 1839]	3673	[3205, 227]
311	[139, 581]	1432	[2048, 2049]	2553	[1678, 2038]	3674	[3103, 2021]
312	[582, 583]	1433	[2050, 2051]	2554	[1565, 3067]	3675	[1441, 3271]
313	[584, 585]	1434	[2052, 2053]	2555	[1988, 3173]	3676	[3968, 40]
314	[586, 163]	1435	[2054, 2055]	2556	[1809, 659]	3677	[3216, 3934]
315	[142, 587]	1436	[2056, 2057]	2557	[3174, 206]	3678	[3861, 2985]
316	[470, 571]	1437	[2058, 2059]	2558	[3175, 511]	3679	[3969, 1450]
317	[588, 589]	1438	[2060, 2061]	2559	[1594, 220]	3680	[3921, 633]
318	[590, 591]	1439	[2062, 2063]	2560	[169, 3176]	3681	[194, 1700]
319	[201, 592]	1440	[2064, 2065]	2561	[201, 3177]	3682	[2943, 1650]
320	[593, 594]	1441	[2066, 2067]	2562	[3178, 229]	3683	[1486, 1980]
321	[595, 596]	1442	[2068, 2069]	2563	[3179, 3173]	3684	[808, 218]
322	[597, 598]	1443	[2070, 267]	2564	[3180, 1865]	3685	[3288, 1707]
323	[599, 600]	1444	[278, 311]	2565	[3181, 3052]	3686	[3259, 810]
324	[601, 160]	1445	[2071, 2072]	2566	[1986, 3182]	3687	[504, 1657]
325	[602, 603]	1446	[2073, 2074]	2567	[3183, 678]	3688	[3970, 205]
326	[604, 605]	1447	[2075, 2076]	2568	[3082, 3184]	3689	[650, 1673]
327	[606, 607]	1448	[2077, 2078]	2569	[3185, 766]	3690	[141, 731]
328	[608, 609]	1449	[2079, 2080]	2570	[157, 53]	3691	[36, 3053]
329	[610, 611]	1450	[2081, 1058]	2571	[215, 682]	3692	[3971, 1764]
330	[612, 600]	1451	[2082, 2068]	2572	[1619, 1608]	3693	[3972, 470]
331	[613, 614]	1452	[2083, 2084]	2573	[3186, 1673]	3694	[3114, 3973]
332	[615, 616]	1453	[2085, 965]	2574	[3187, 168]	3695	[1584, 2904]

333	[617, 618]	1454	[2086, 2087]	2575	[1896, 3188]	3696	[3902, 1657]
334	[619, 620]	1455	[2088, 2089]	2576	[559, 1520]	3697	[3974, 1637]
335	[621, 198]	1456	[2090, 2091]	2577	[3189, 3190]	3698	[3975, 210]
336	[622, 623]	1457	[2092, 2093]	2578	[1611, 1832]	3699	[3139, 728]
337	[474, 624]	1458	[2094, 2095]	2579	[191, 3191]	3700	[3976, 1502]
338	[625, 626]	1459	[2096, 2097]	2580	[502, 1521]	3701	[1872, 37]
339	[627, 628]	1460	[979, 2098]	2581	[3192, 1857]	3702	[595, 720]
340	[629, 630]	1461	[2099, 1326]	2582	[1760, 3193]	3703	[3977, 1863]
341	[631, 632]	1462	[1294, 848]	2583	[2933, 1508]	3704	[533, 1461]
342	[633, 634]	1463	[2100, 2101]	2584	[3194, 1882]	3705	[3978, 3901]
343	[635, 636]	1464	[2102, 2103]	2585	[3137, 760]	3706	[3925, 182]
344	[637, 638]	1465	[2104, 2105]	2586	[3058, 1629]	3707	[3885, 801]
345	[639, 554]	1466	[2106, 2107]	2587	[3195, 782]	3708	[3979, 10]
346	[131, 640]	1467	[2108, 440]	2588	[2920, 1757]	3709	[3980, 3917]
347	[638, 148]	1468	[1029, 2109]	2589	[3196, 163]	3710	[3835, 1944]
348	[641, 642]	1469	[2110, 984]	2590	[646, 1985]	3711	[3904, 2958]
349	[643, 183]	1470	[1322, 2111]	2591	[2985, 682]	3712	[3981, 1799]
350	[644, 645]	1471	[2112, 2100]	2592	[3197, 1613]	3713	[3982, 1831]
351	[646, 647]	1472	[2113, 2114]	2593	[2915, 3198]	3714	[3983, 3003]
352	[48, 648]	1473	[2115, 2116]	2594	[3199, 727]	3715	[3057, 640]
353	[649, 650]	1474	[2117, 2118]	2595	[3200, 1466]	3716	[586, 1467]
354	[651, 652]	1475	[2119, 2120]	2596	[509, 547]	3717	[524, 3838]
355	[653, 654]	1476	[2121, 1315]	2597	[3112, 11]	3718	[3250, 518]
356	[655, 656]	1477	[2122, 2123]	2598	[205, 510]	3719	[1795, 734]
357	[657, 658]	1478	[2124, 2125]	2599	[3201, 1524]	3720	[3984, 1788]
358	[557, 659]	1479	[991, 342]	2600	[3202, 738]	3721	[3985, 202]
359	[660, 661]	1480	[2126, 2127]	2601	[631, 3203]	3722	[3832, 698]
360	[662, 663]	1481	[1018, 2128]	2602	[693, 2928]	3723	[3238, 1884]
361	[664, 665]	1482	[2129, 2130]	2603	[226, 2973]	3724	[2040, 3311]
362	[666, 667]	1483	[2131, 2132]	2604	[3204, 759]	3725	[3986, 3019]
363	[517, 668]	1484	[2133, 2134]	2605	[2944, 528]	3726	[3951, 1555]
364	[669, 499]	1485	[2135, 2136]	2606	[3075, 3093]	3727	[3258, 1822]
365	[560, 498]	1486	[2137, 2138]	2607	[1824, 478]	3728	[3987, 179]
366	[670, 671]	1487	[282, 2139]	2608	[1440, 1955]	3729	[3919, 174]
367	[672, 522]	1488	[2140, 23]	2609	[187, 1906]	3730	[3981, 2042]
368	[673, 674]	1489	[2141, 1130]	2610	[3205, 209]	3731	[3988, 1847]
369	[675, 676]	1490	[1261, 2142]	2611	[3206, 1641]	3732	[3198, 1996]
370	[677, 678]	1491	[2143, 2144]	2612	[3207, 1615]	3733	[3989, 2963]
371	[679, 680]	1492	[2145, 1289]	2613	[1642, 1923]	3734	[3990, 3295]
372	[681, 190]	1493	[2146, 2147]	2614	[1605, 708]	3735	[1711, 3286]
373	[682, 683]	1494	[2148, 2149]	2615	[195, 741]	3736	[526, 1618]
374	[684, 685]	1495	[1333, 2150]	2616	[1625, 3208]	3737	[3991, 1980]
375	[686, 687]	1496	[2151, 2152]	2617	[242, 3177]	3738	[3992, 1691]
376	[615, 688]	1497	[2153, 2154]	2618	[3209, 1975]	3739	[527, 1607]

377	[481, 240]	1498	[2155, 2156]	2619	[3210, 2000]	3740	[3993, 599]
378	[689, 690]	1499	[2157, 2158]	2620	[623, 551]	3741	[3994, 3828]
379	[691, 692]	1500	[2159, 2143]	2621	[1581, 3211]	3742	[3995, 661]
380	[175, 693]	1501	[2160, 2161]	2622	[2027, 1849]	3743	[3996, 638]
381	[694, 695]	1502	[420, 2162]	2623	[1552, 519]	3744	[2016, 166]
382	[696, 697]	1503	[2163, 2164]	2624	[3049, 1917]	3745	[3997, 1701]
383	[467, 698]	1504	[2165, 2166]	2625	[3081, 3161]	3746	[3995, 3076]
384	[618, 699]	1505	[2167, 2168]	2626	[3117, 558]	3747	[3998, 211]
385	[700, 185]	1506	[2169, 338]	2627	[3212, 3129]	3748	[786, 1882]
386	[701, 702]	1507	[2170, 2171]	2628	[2032, 1574]	3749	[2884, 1512]
387	[625, 703]	1508	[2172, 2173]	2629	[2997, 1571]	3750	[3836, 139]
388	[704, 705]	1509	[2174, 2175]	2630	[777, 646]	3751	[3999, 1465]
389	[678, 697]	1510	[2176, 2177]	2631	[729, 2010]	3752	[3833, 3051]
390	[706, 707]	1511	[1394, 2178]	2632	[3213, 3214]	3753	[3887, 520]
391	[708, 709]	1512	[360, 2179]	2633	[495, 1902]	3754	[4000, 159]
392	[710, 711]	1513	[2091, 2180]	2634	[3060, 623]	3755	[1973, 226]
393	[712, 42]	1514	[913, 2181]	2635	[3215, 1499]	3756	[4001, 1917]
394	[223, 713]	1515	[987, 2182]	2636	[3216, 1930]	3757	[4002, 1521]
395	[714, 715]	1516	[2183, 261]	2637	[1814, 655]	3758	[2930, 1629]
396	[716, 717]	1517	[880, 2184]	2638	[3217, 3218]	3759	[4003, 734]
397	[575, 718]	1518	[1019, 2185]	2639	[1722, 2999]	3760	[4004, 1526]
398	[719, 720]	1519	[2185, 1174]	2640	[3219, 1940]	3761	[1710, 1981]
399	[721, 648]	1520	[2186, 2187]	2641	[726, 1935]	3762	[3236, 1442]
400	[722, 723]	1521	[2188, 2189]	2642	[1509, 752]	3763	[58, 2904]
401	[724, 725]	1522	[2181, 1177]	2643	[3220, 3129]	3764	[1850, 1647]
402	[726, 134]	1523	[2190, 2191]	2644	[3200, 563]	3765	[4005, 1978]
403	[727, 693]	1524	[2192, 2193]	2645	[3221, 3222]	3766	[3314, 620]
404	[728, 729]	1525	[80, 1428]	2646	[1829, 598]	3767	[3088, 3203]
405	[730, 179]	1526	[320, 2194]	2647	[627, 3223]	3768	[3986, 3123]
406	[731, 149]	1527	[2195, 2196]	2648	[3091, 3121]	3769	[1690, 4006]
407	[732, 733]	1528	[2197, 260]	2649	[1855, 1462]	3770	[4007, 1735]
408	[734, 735]	1529	[2198, 2199]	2650	[149, 3224]	3771	[3202, 607]
409	[736, 737]	1530	[2200, 2201]	2651	[163, 1468]	3772	[667, 1557]
410	[606, 738]	1531	[341, 2202]	2652	[3225, 44]	3773	[3961, 1531]
411	[739, 740]	1532	[2203, 1042]	2653	[3226, 1766]	3774	[4008, 557]
412	[741, 742]	1533	[2204, 2205]	2654	[3227, 3199]	3775	[4008, 1809]
413	[161, 743]	1534	[2166, 2206]	2655	[718, 2986]	3776	[3287, 1443]
414	[148, 744]	1535	[2207, 2208]	2656	[1855, 1472]	3777	[4009, 147]
415	[745, 746]	1536	[2206, 2209]	2657	[3228, 708]	3778	[3853, 1924]
416	[715, 747]	1537	[2210, 2211]	2658	[2965, 1698]	3779	[3976, 1444]
417	[748, 749]	1538	[16, 2212]	2659	[3229, 1698]	3780	[3927, 762]
418	[529, 750]	1539	[2213, 2214]	2660	[3230, 1626]	3781	[230, 1764]
419	[751, 752]	1540	[1086, 2215]	2661	[1567, 3115]	3782	[1718, 1578]
420	[753, 754]	1541	[2205, 985]	2662	[1895, 45]	3783	[3899, 626]

421	[755, 756]	1542	[2216, 2217]	2663	[1922, 728]	3784	[3153, 4010]
422	[757, 758]	1543	[2218, 2219]	2664	[1832, 1687]	3785	[2027, 768]
423	[759, 548]	1544	[306, 2220]	2665	[3055, 53]	3786	[4011, 144]
424	[760, 746]	1545	[983, 2221]	2666	[1748, 3231]	3787	[3070, 3973]
425	[761, 762]	1546	[2222, 1020]	2667	[1562, 3075]	3788	[4012, 521]
426	[763, 764]	1547	[2223, 2195]	2668	[718, 193]	3789	[3957, 1944]
427	[765, 766]	1548	[2224, 2225]	2669	[1832, 59]	3790	[4013, 3147]
428	[767, 768]	1549	[2226, 442]	2670	[2041, 1513]	3791	[4014, 1858]
429	[769, 770]	1550	[304, 2227]	2671	[3017, 472]	3792	[4015, 574]
430	[771, 772]	1551	[2228, 1144]	2672	[3232, 590]	3793	[4016, 148]
431	[732, 773]	1552	[2229, 917]	2673	[3118, 56]	3794	[4017, 512]
432	[189, 670]	1553	[2230, 2231]	2674	[3233, 3182]	3795	[3923, 3218]
433	[774, 138]	1554	[2194, 2232]	2675	[3234, 43]	3796	[4018, 3293]
434	[155, 775]	1555	[2233, 2234]	2676	[3219, 625]	3797	[605, 2903]
435	[645, 583]	1556	[2235, 2236]	2677	[3063, 3084]	3798	[687, 773]
436	[706, 776]	1557	[2237, 2238]	2678	[3183, 696]	3799	[4019, 1696]
437	[705, 699]	1558	[2239, 2240]	2679	[3124, 2990]	3800	[4020, 1637]
438	[777, 778]	1559	[2241, 2242]	2680	[1724, 2945]	3801	[4021, 3214]
439	[568, 50]	1560	[1346, 2243]	2681	[3146, 3097]	3802	[3975, 1963]
440	[570, 779]	1561	[2244, 2245]	2682	[3235, 1879]	3803	[1912, 2985]
441	[780, 555]	1562	[2246, 2247]	2683	[3236, 2943]	3804	[3010, 1602]
442	[781, 782]	1563	[2248, 63]	2684	[1976, 1658]	3805	[3944, 531]
443	[783, 12]	1564	[2249, 2250]	2685	[2011, 1600]	3806	[4022, 208]
444	[784, 785]	1565	[2251, 1284]	2686	[1503, 1924]	3807	[1934, 1819]
445	[786, 787]	1566	[2252, 2253]	2687	[2036, 524]	3808	[3843, 630]
446	[788, 789]	1567	[2254, 2255]	2688	[3237, 1881]	3809	[3822, 3176]
447	[155, 790]	1568	[2256, 2257]	2689	[231, 3155]	3810	[4023, 4024]
448	[791, 720]	1569	[2258, 2259]	2690	[1978, 770]	3811	[4025, 3539]
449	[792, 793]	1570	[2260, 2261]	2691	[3238, 1655]	3812	[4026, 4027]
450	[794, 795]	1571	[2109, 2262]	2692	[2883, 2885]	3813	[4028, 2736]
451	[508, 796]	1572	[2263, 1067]	2693	[3239, 3064]	3814	[4029, 4030]
452	[797, 798]	1573	[2264, 2265]	2694	[3174, 574]	3815	[4031, 4032]
453	[799, 800]	1574	[1223, 430]	2695	[787, 3240]	3816	[4033, 3672]
454	[801, 802]	1575	[2266, 2267]	2696	[3241, 651]	3817	[4034, 858]
455	[803, 804]	1576	[2268, 1426]	2697	[3242, 214]	3818	[4035, 2374]
456	[633, 805]	1577	[2269, 2270]	2698	[3199, 175]	3819	[4036, 4037]
457	[806, 807]	1578	[2271, 2272]	2699	[2936, 3243]	3820	[4038, 4039]
458	[794, 808]	1579	[2118, 2273]	2700	[3244, 594]	3821	[4040, 4041]
459	[629, 809]	1580	[1196, 2274]	2701	[3245, 1451]	3822	[4042, 4043]
460	[810, 811]	1581	[2275, 75]	2702	[3246, 3247]	3823	[2605, 3589]
461	[812, 567]	1582	[2276, 2277]	2703	[527, 1619]	3824	[4044, 3346]
462	[813, 814]	1583	[2278, 2279]	2704	[2989, 2968]	3825	[2501, 4045]
463	[815, 495]	1584	[1009, 2280]	2705	[1533, 1765]	3826	[4046, 2066]
464	[816, 817]	1585	[2281, 126]	2706	[3248, 14]	3827	[2567, 4047]

465	[818, 819]	1586	[2282, 2283]	2707	[1938, 3249]	3828	[4048, 4049]
466	[820, 821]	1587	[2284, 2285]	2708	[472, 540]	3829	[3422, 2286]
467	[822, 823]	1588	[2220, 2286]	2709	[710, 717]	3830	[963, 3690]
468	[824, 825]	1589	[2287, 2288]	2710	[3111, 1458]	3831	[4050, 4051]
469	[826, 827]	1590	[2289, 2290]	2711	[3250, 668]	3832	[4052, 4053]
470	[828, 829]	1591	[2291, 2292]	2712	[1897, 725]	3833	[351, 2805]
471	[830, 831]	1592	[2272, 2293]	2713	[1475, 2002]	3834	[4054, 2803]
472	[832, 833]	1593	[2294, 2295]	2714	[3116, 3251]	3835	[2367, 3327]
473	[834, 835]	1594	[2296, 2297]	2715	[3252, 2899]	3836	[4055, 4056]
474	[836, 837]	1595	[2298, 915]	2716	[2001, 1476]	3837	[4057, 4058]
475	[838, 839]	1596	[2299, 2300]	2717	[1882, 3240]	3838	[3534, 3517]
476	[840, 841]	1597	[2301, 2302]	2718	[2970, 1813]	3839	[4059, 4060]
477	[842, 843]	1598	[2303, 1040]	2719	[3047, 1568]	3840	[4061, 3523]
478	[844, 845]	1599	[2304, 2305]	2720	[3253, 3254]	3841	[4062, 3695]
479	[846, 847]	1600	[2306, 2307]	2721	[2968, 1459]	3842	[4063, 2421]
480	[848, 849]	1601	[2308, 2309]	2722	[2983, 1885]	3843	[4064, 4065]
481	[850, 851]	1602	[2310, 69]	2723	[2897, 2899]	3844	[4066, 4067]
482	[852, 315]	1603	[2311, 434]	2724	[1492, 475]	3845	[4068, 2360]
483	[853, 854]	1604	[2312, 2313]	2725	[1615, 3255]	3846	[4069, 4070]
484	[855, 287]	1605	[2314, 2315]	2726	[1923, 636]	3847	[4071, 2579]
485	[856, 857]	1606	[2316, 1039]	2727	[3256, 197]	3848	[4072, 1103]
486	[858, 859]	1607	[2317, 2318]	2728	[2919, 2986]	3849	[4073, 2853]
487	[860, 407]	1608	[2319, 2320]	2729	[3161, 1508]	3850	[4074, 4075]
488	[861, 862]	1609	[2208, 2312]	2730	[3257, 545]	3851	[4076, 1049]
489	[863, 864]	1610	[2321, 2322]	2731	[1609, 1603]	3852	[4077, 1094]
490	[865, 866]	1611	[2128, 119]	2732	[3140, 1708]	3853	[4078, 2841]
491	[867, 868]	1612	[2221, 2323]	2733	[3258, 2018]	3854	[4079, 896]
492	[869, 870]	1613	[2324, 2325]	2734	[3259, 1739]	3855	[3449, 3364]
493	[871, 872]	1614	[2326, 2327]	2735	[582, 1958]	3856	[4080, 4081]
494	[873, 874]	1615	[2328, 1178]	2736	[3136, 3260]	3857	[4082, 390]
495	[875, 876]	1616	[2329, 344]	2737	[3261, 816]	3858	[909, 117]
496	[364, 877]	1617	[2330, 2331]	2738	[1732, 1942]	3859	[4083, 313]
497	[366, 878]	1618	[1043, 2319]	2739	[3248, 1735]	3860	[4084, 2223]
498	[879, 880]	1619	[2332, 2333]	2740	[2979, 1905]	3861	[3498, 4045]
499	[881, 882]	1620	[2334, 2335]	2741	[1562, 1767]	3862	[4085, 4086]
500	[883, 884]	1621	[2336, 2337]	2742	[584, 2963]	3863	[4087, 4088]
501	[882, 363]	1622	[2338, 2237]	2743	[1879, 241]	3864	[4089, 1232]
502	[885, 886]	1623	[2339, 1385]	2744	[2907, 486]	3865	[2420, 2308]
503	[887, 888]	1624	[4, 1387]	2745	[3262, 34]	3866	[4090, 3607]
504	[889, 890]	1625	[2340, 2341]	2746	[3263, 677]	3867	[1135, 2117]
505	[891, 892]	1626	[2342, 2343]	2747	[3264, 1902]	3868	[4091, 1379]
506	[893, 894]	1627	[2344, 2345]	2748	[3265, 2920]	3869	[3489, 21]
507	[895, 319]	1628	[2346, 2347]	2749	[1502, 3266]	3870	[4092, 4093]
508	[896, 897]	1629	[2348, 2165]	2750	[37, 3006]	3871	[4094, 4033]

509	[898, 899]	1630	[2349, 2350]	2751	[1730, 166]	3872	[1292, 2751]
510	[900, 901]	1631	[2351, 2352]	2752	[1934, 233]	3873	[4095, 2750]
511	[394, 902]	1632	[2353, 2354]	2753	[3085, 2957]	3874	[4096, 4097]
512	[903, 904]	1633	[953, 2355]	2754	[1696, 3222]	3875	[4098, 4099]
513	[905, 879]	1634	[2356, 2357]	2755	[1901, 676]	3876	[2507, 3401]
514	[906, 907]	1635	[64, 1320]	2756	[3246, 3267]	3877	[4100, 4101]
515	[908, 909]	1636	[372, 259]	2757	[1853, 1991]	3878	[4102, 4103]
516	[910, 911]	1637	[1637, 1637]	2758	[3268, 3269]	3879	[339, 80]
517	[912, 913]	1638	[2325, 2358]	2759	[608, 182]	3880	[4104, 2418]
518	[914, 887]	1639	[2359, 993]	2760	[1513, 209]	3881	[4105, 3637]
519	[915, 916]	1640	[2360, 2106]	2761	[472, 2910]	3882	[4106, 3674]
520	[917, 918]	1641	[2361, 2362]	2762	[1709, 53]	3883	[4107, 2648]
521	[919, 271]	1642	[2261, 1117]	2763	[1780, 144]	3884	[4108, 1133]
522	[920, 921]	1643	[2363, 1328]	2764	[1577, 1719]	3885	[4109, 317]
523	[922, 923]	1644	[1347, 960]	2765	[779, 1707]	3886	[4110, 4111]
524	[924, 925]	1645	[2267, 2364]	2766	[3242, 3066]	3887	[2763, 2721]
525	[926, 927]	1646	[1112, 2365]	2767	[751, 3080]	3888	[4112, 4113]
526	[928, 929]	1647	[2366, 2367]	2768	[3244, 2010]	3889	[4114, 4115]
527	[286, 930]	1648	[2368, 361]	2769	[3270, 1790]	3890	[4116, 1356]
528	[931, 932]	1649	[1400, 2369]	2770	[1955, 3271]	3891	[4117, 4118]
529	[933, 934]	1650	[2370, 2371]	2771	[797, 3014]	3892	[352, 1402]
530	[935, 936]	1651	[2372, 1365]	2772	[799, 1888]	3893	[4119, 4120]
531	[244, 937]	1652	[2373, 2374]	2773	[674, 13]	3894	[4121, 3465]
532	[938, 21]	1653	[2375, 1316]	2774	[3272, 698]	3895	[4122, 2621]
533	[939, 940]	1654	[2376, 2377]	2775	[3273, 3274]	3896	[4123, 2081]
534	[941, 942]	1655	[2378, 101]	2776	[1599, 3109]	3897	[3580, 117]
535	[943, 944]	1656	[2379, 2380]	2777	[1797, 1921]	3898	[3472, 2441]
536	[945, 946]	1657	[2381, 1184]	2778	[3275, 1573]	3899	[2219, 2731]
537	[947, 948]	1658	[2382, 2383]	2779	[3165, 3143]	3900	[4124, 4125]
538	[949, 950]	1659	[1314, 2384]	2780	[3268, 3276]	3901	[2419, 2213]
539	[907, 945]	1660	[2305, 2385]	2781	[1630, 2936]	3902	[2789, 4126]
540	[122, 951]	1661	[2386, 2387]	2782	[528, 1908]	3903	[2491, 2150]
541	[952, 953]	1662	[90, 1371]	2783	[3277, 218]	3904	[4127, 2825]
542	[954, 955]	1663	[2388, 2389]	2784	[543, 2003]	3905	[4128, 4129]
543	[956, 957]	1664	[1176, 1380]	2785	[3120, 146]	3906	[2245, 2656]
544	[958, 959]	1665	[2390, 17]	2786	[3278, 2033]	3907	[4130, 3780]
545	[960, 961]	1666	[2098, 2391]	2787	[1863, 3086]	3908	[1383, 1138]
546	[962, 963]	1667	[456, 1265]	2788	[3036, 1479]	3909	[4131, 453]
547	[897, 903]	1668	[2392, 1046]	2789	[510, 1871]	3910	[3495, 1095]
548	[899, 964]	1669	[2393, 1156]	2790	[2026, 159]	3911	[3761, 1341]
549	[965, 966]	1670	[2394, 448]	2791	[1444, 3266]	3912	[4132, 1228]
550	[967, 968]	1671	[972, 450]	2792	[3279, 496]	3913	[4133, 898]
551	[969, 970]	1672	[2395, 2396]	2793	[3030, 3251]	3914	[4134, 1408]
552	[971, 972]	1673	[2076, 2311]	2794	[3280, 1788]	3915	[4135, 4136]

553	[973, 974]	1674	[2274, 2397]	2795	[1750, 230]	3916	[4137, 4138]
554	[950, 975]	1675	[2398, 2399]	2796	[3059, 3012]	3917	[4139, 373]
555	[976, 977]	1676	[2400, 2401]	2797	[1948, 509]	3918	[2619, 4140]
556	[978, 979]	1677	[2402, 2403]	2798	[1612, 793]	3919	[4141, 462]
557	[980, 981]	1678	[2404, 2405]	2799	[3281, 1441]	3920	[4142, 2316]
558	[982, 983]	1679	[2406, 852]	2800	[729, 594]	3921	[4143, 4144]
559	[984, 985]	1680	[2407, 2408]	2801	[2968, 1486]	3922	[4145, 2861]
560	[986, 987]	1681	[2409, 403]	2802	[1798, 599]	3923	[4146, 4147]
561	[988, 103]	1682	[2410, 2411]	2803	[3282, 3283]	3924	[4148, 4149]
562	[110, 989]	1683	[2412, 2413]	2804	[3284, 2973]	3925	[2499, 2809]
563	[990, 991]	1684	[2414, 2415]	2805	[1917, 129]	3926	[4150, 2190]
564	[992, 986]	1685	[2416, 2108]	2806	[3138, 1889]	3927	[4151, 4152]
565	[993, 994]	1686	[2417, 121]	2807	[3285, 586]	3928	[4153, 4154]
566	[995, 996]	1687	[2418, 2419]	2808	[3257, 2891]	3929	[4155, 4156]
567	[997, 998]	1688	[916, 2420]	2809	[1472, 479]	3930	[4157, 4158]
568	[999, 107]	1689	[2421, 2218]	2810	[763, 1546]	3931	[4159, 1136]
569	[1000, 415]	1690	[2422, 2423]	2811	[1768, 1502]	3932	[4160, 2780]
570	[1001, 1002]	1691	[2424, 2425]	2812	[1631, 3286]	3933	[4161, 4162]
571	[1003, 1004]	1692	[2426, 2427]	2813	[34, 1916]	3934	[2297, 2447]
572	[1005, 1006]	1693	[2428, 832]	2814	[3287, 1650]	3935	[4125, 2474]
573	[955, 1007]	1694	[2429, 2430]	2815	[3038, 229]	3936	[4163, 4164]
574	[1008, 1009]	1695	[2431, 1382]	2816	[1991, 3003]	3937	[4165, 354]
575	[1010, 1011]	1696	[2432, 2433]	2817	[1488, 3112]	3938	[1032, 428]
576	[1012, 1013]	1697	[2434, 1226]	2818	[520, 2923]	3939	[4166, 4167]
577	[825, 303]	1698	[925, 2435]	2819	[1639, 546]	3940	[4168, 2054]
578	[1014, 1015]	1699	[2436, 1321]	2820	[145, 3121]	3941	[4169, 2632]
579	[1016, 1008]	1700	[2437, 2438]	2821	[3288, 1794]	3942	[4170, 1369]
580	[1017, 1018]	1701	[839, 2439]	2822	[3289, 3290]	3943	[4171, 2477]
581	[936, 1019]	1702	[2440, 2441]	2823	[1591, 1961]	3944	[4172, 380]
582	[1020, 1021]	1703	[2442, 2289]	2824	[3291, 765]	3945	[4173, 4174]
583	[1022, 1023]	1704	[2443, 2444]	2825	[167, 3292]	3946	[2813, 2583]
584	[1024, 1025]	1705	[2445, 2446]	2826	[3293, 817]	3947	[4175, 99]
585	[1026, 1027]	1706	[2447, 2448]	2827	[1697, 616]	3948	[892, 2497]
586	[1028, 1029]	1707	[1411, 2449]	2828	[1664, 498]	3949	[4176, 355]
587	[272, 1030]	1708	[2450, 2183]	2829	[3294, 1582]	3950	[4177, 4178]
588	[1031, 1032]	1709	[2451, 2452]	2830	[1692, 3295]	3951	[3363, 3681]
589	[1033, 1034]	1710	[2453, 1375]	2831	[1966, 40]	3952	[4179, 4180]
590	[1035, 1036]	1711	[2454, 2052]	2832	[1853, 1523]	3953	[4181, 1155]
591	[1037, 1038]	1712	[2455, 2456]	2833	[1499, 772]	3954	[4182, 4183]
592	[1039, 331]	1713	[1262, 824]	2834	[638, 753]	3955	[4184, 436]
593	[1040, 1041]	1714	[2331, 1005]	2835	[1661, 1865]	3956	[4185, 2230]
594	[1042, 1043]	1715	[2457, 2458]	2836	[1511, 568]	3957	[1327, 1392]
595	[1044, 1045]	1716	[2459, 2460]	2837	[3296, 1571]	3958	[4186, 3593]
596	[1046, 1045]	1717	[2461, 2462]	2838	[3185, 685]	3959	[2627, 2144]

597	[1047, 1048]	1718	[2463, 2464]	2839	[3209, 3093]	3960	[4187, 2252]
598	[1049, 1050]	1719	[2300, 2465]	2840	[3105, 3001]	3961	[4188, 4104]
599	[1051, 1052]	1720	[2466, 2467]	2841	[3297, 3274]	3962	[877, 270]
600	[1053, 940]	1721	[2337, 2414]	2842	[1687, 1694]	3963	[4189, 4190]
601	[1054, 1055]	1722	[2468, 1017]	2843	[40, 1525]	3964	[4191, 4192]
602	[1056, 1057]	1723	[1396, 2382]	2844	[3134, 2043]	3965	[396, 1235]
603	[1058, 1059]	1724	[2469, 2470]	2845	[3298, 1614]	3966	[4193, 1249]
604	[1060, 1061]	1725	[1219, 102]	2846	[3299, 1931]	3967	[1256, 3761]
605	[1062, 1063]	1726	[256, 2471]	2847	[1847, 566]	3968	[264, 4194]
606	[1064, 1065]	1727	[2472, 2056]	2848	[3300, 233]	3969	[4195, 2404]
607	[1066, 1067]	1728	[2473, 2474]	2849	[3301, 51]	3970	[4196, 900]
608	[1068, 1069]	1729	[2475, 2476]	2850	[3262, 208]	3971	[4138, 1347]
609	[1070, 1071]	1730	[2477, 2478]	2851	[3302, 3303]	3972	[4197, 1003]
610	[1072, 1073]	1731	[2479, 2480]	2852	[130, 3304]	3973	[2698, 4198]
611	[1074, 298]	1732	[76, 1102]	2853	[3207, 1451]	3974	[1173, 2325]
612	[1075, 369]	1733	[2481, 1416]	2854	[565, 3017]	3975	[3778, 2075]
613	[1076, 1077]	1734	[843, 997]	2855	[3305, 1545]	3976	[1055, 841]
614	[1078, 1079]	1735	[1366, 1345]	2856	[3306, 8]	3977	[4199, 3564]
615	[1080, 1081]	1736	[2482, 830]	2857	[3307, 1807]	3978	[4200, 2326]
616	[1082, 1083]	1737	[2483, 2484]	2858	[3308, 1766]	3979	[4201, 2820]
617	[1084, 1044]	1738	[2485, 2486]	2859	[1977, 737]	3980	[4202, 4035]
618	[1085, 1086]	1739	[2487, 1072]	2860	[3243, 599]	3981	[4203, 4204]
619	[1087, 1088]	1740	[2488, 2489]	2861	[1663, 3006]	3982	[4205, 2417]
620	[1089, 938]	1741	[2490, 2491]	2862	[1743, 795]	3983	[4060, 3344]
621	[1090, 65]	1742	[2492, 993]	2863	[217, 2034]	3984	[4206, 2301]
622	[1091, 969]	1743	[876, 2493]	2864	[3309, 3310]	3985	[4207, 4208]
623	[1092, 1093]	1744	[2494, 2495]	2865	[1505, 3311]	3986	[4209, 3694]
624	[1094, 1095]	1745	[2496, 2497]	2866	[491, 3132]	3987	[4210, 346]
625	[1096, 1097]	1746	[2498, 2499]	2867	[3312, 1624]	3988	[4211, 4212]
626	[1098, 1099]	1747	[2500, 2501]	2868	[612, 1728]	3989	[4213, 4214]
627	[1100, 1101]	1748	[2502, 2503]	2869	[1451, 3255]	3990	[4215, 4216]
628	[1102, 1103]	1749	[2504, 1179]	2870	[1633, 3172]	3991	[929, 3367]
629	[1104, 113]	1750	[301, 2505]	2871	[1561, 152]	3992	[4217, 4218]
630	[1105, 1106]	1751	[2506, 2507]	2872	[3179, 1989]	3993	[2782, 2875]
631	[1107, 1108]	1752	[2508, 2432]	2873	[3096, 3147]	3994	[4219, 2112]
632	[1109, 1110]	1753	[2509, 2278]	2874	[1741, 3313]	3995	[4220, 4221]
633	[1111, 1112]	1754	[2510, 1395]	2875	[1662, 784]	3996	[4222, 1319]
634	[1113, 1114]	1755	[2511, 2512]	2876	[3314, 197]	3997	[4223, 2616]
635	[1115, 1116]	1756	[2513, 2222]	2877	[1682, 2975]	3998	[4224, 999]
636	[1117, 1118]	1757	[2514, 2298]	2878	[3239, 2982]	3999	[4225, 1268]
637	[1119, 1120]	1758	[2515, 257]	2879	[1758, 726]	4000	[4226, 307]
638	[1121, 1122]	1759	[2516, 1170]	2880	[2921, 542]	4001	[4227, 4228]
639	[1123, 1124]	1760	[2517, 2518]	2881	[1643, 3190]	4002	[884, 1195]
640	[1125, 1126]	1761	[2519, 2520]	2882	[3315, 1263]	4003	[4229, 4230]

641	[1127, 1128]	1762	[2292, 889]	2883	[3316, 3317]	4004	[3455, 3517]
642	[441, 1129]	1763	[2427, 2521]	2884	[3318, 2830]	4005	[3598, 1209]
643	[1130, 353]	1764	[2522, 2523]	2885	[2707, 3319]	4006	[1215, 2861]
644	[1131, 1132]	1765	[2524, 2525]	2886	[3320, 3321]	4007	[4231, 964]
645	[1133, 329]	1766	[847, 2526]	2887	[1149, 1271]	4008	[4232, 1157]
646	[1134, 1135]	1767	[292, 2527]	2888	[3322, 3323]	4009	[4233, 4234]
647	[1136, 1137]	1768	[295, 2071]	2889	[3324, 3325]	4010	[868, 3603]
648	[96, 1138]	1769	[2528, 2529]	2890	[1114, 2440]	4011	[4235, 2398]
649	[402, 1139]	1770	[2530, 2531]	2891	[2285, 906]	4012	[4236, 920]
650	[1140, 1141]	1771	[2532, 2533]	2892	[3326, 2638]	4013	[4237, 4238]
651	[1142, 1143]	1772	[2534, 2535]	2893	[3327, 3328]	4014	[2425, 2302]
652	[1144, 1145]	1773	[2536, 2537]	2894	[114, 2551]	4015	[4239, 4240]
653	[1146, 1147]	1774	[2538, 2539]	2895	[3329, 3330]	4016	[4241, 2179]
654	[1148, 1149]	1775	[2123, 1373]	2896	[3331, 3332]	4017	[4242, 4243]
655	[1150, 842]	1776	[2540, 2541]	2897	[3333, 3334]	4018	[4244, 2654]
656	[1151, 1152]	1777	[2542, 2373]	2898	[3335, 3336]	4019	[4245, 825]
657	[1153, 1154]	1778	[86, 2543]	2899	[3337, 64]	4020	[3431, 1383]
658	[1155, 1156]	1779	[2544, 438]	2900	[3338, 2730]	4021	[4246, 2545]
659	[1157, 1158]	1780	[2545, 2546]	2901	[3339, 3340]	4022	[4247, 2110]
660	[1159, 838]	1781	[116, 2547]	2902	[2055, 3341]	4023	[4248, 1554]
661	[1160, 1161]	1782	[362, 2548]	2903	[3342, 3343]	4024	[4249, 194]
662	[1162, 1163]	1783	[1390, 2549]	2904	[2523, 990]	4025	[3811, 482]
663	[1164, 1066]	1784	[6, 2550]	2905	[118, 3344]	4026	[4250, 1731]
664	[1165, 863]	1785	[2551, 97]	2906	[3345, 958]	4027	[4251, 3154]
665	[1166, 1167]	1786	[2552, 1360]	2907	[3346, 2400]	4028	[4252, 3005]
666	[1168, 1169]	1787	[2467, 2553]	2908	[3347, 3348]	4029	[4253, 1519]
667	[1170, 1171]	1788	[2554, 1410]	2909	[3349, 2121]	4030	[1665, 2013]
668	[1172, 1173]	1789	[2555, 2556]	2910	[3350, 3351]	4031	[4254, 187]
669	[1174, 1175]	1790	[2541, 1068]	2911	[3352, 3353]	4032	[4255, 613]
670	[888, 1176]	1791	[2557, 2131]	2912	[3354, 3355]	4033	[1957, 1667]
671	[1177, 1172]	1792	[2558, 2559]	2913	[3356, 3357]	4034	[3130, 1490]
672	[1178, 1179]	1793	[2560, 2561]	2914	[3358, 2348]	4035	[4256, 618]
673	[1180, 1181]	1794	[1002, 1384]	2915	[3359, 2461]	4036	[4257, 1841]
674	[1182, 1183]	1795	[2562, 2563]	2916	[3360, 3361]	4037	[4258, 3283]
675	[1184, 1185]	1796	[2564, 2565]	2917	[3362, 3363]	4038	[3985, 695]
676	[1186, 1187]	1797	[2566, 1125]	2918	[2347, 3364]	4039	[4259, 776]
677	[1188, 1189]	1798	[2350, 1053]	2919	[2655, 2854]	4040	[3952, 1512]
678	[1190, 1191]	1799	[449, 2567]	2920	[3365, 2359]	4041	[3930, 3026]
679	[1192, 1193]	1800	[2568, 1014]	2921	[1342, 3366]	4042	[4260, 3156]
680	[1194, 444]	1801	[1063, 1361]	2922	[2139, 3356]	4043	[4261, 1940]
681	[1195, 1196]	1802	[2569, 2570]	2923	[2773, 3367]	4044	[1967, 3092]
682	[1197, 1198]	1803	[2571, 2572]	2924	[3368, 2554]	4045	[3145, 1552]
683	[1199, 1200]	1804	[2573, 2574]	2925	[3369, 3370]	4046	[4262, 1469]
684	[1050, 1201]	1805	[1270, 2575]	2926	[2777, 3371]	4047	[1739, 811]

685	[1202, 1203]	1806	[2576, 2577]	2927	[2164, 2099]	4048	[1911, 1743]
686	[1204, 1205]	1807	[1239, 895]	2928	[2770, 3372]	4049	[3145, 651]
687	[1206, 1207]	1808	[2439, 2075]	2929	[1126, 2641]	4050	[3871, 174]
688	[1208, 1209]	1809	[1013, 941]	2930	[3373, 3374]	4051	[1925, 809]
689	[1210, 1211]	1810	[1052, 2578]	2931	[3375, 3376]	4052	[3272, 468]
690	[1212, 464]	1811	[2579, 2580]	2932	[1061, 2356]	4053	[3990, 1693]
691	[1057, 1213]	1812	[2581, 2582]	2933	[3377, 2174]	4054	[4263, 1519]
692	[1214, 1215]	1813	[2130, 2583]	2934	[3378, 3379]	4055	[3962, 1517]
693	[1216, 1217]	1814	[2584, 2585]	2935	[2649, 3380]	4056	[3189, 1644]
694	[1218, 1219]	1815	[2586, 976]	2936	[3381, 1051]	4057	[4264, 1920]
695	[1220, 1221]	1816	[2587, 2498]	2937	[3382, 3383]	4058	[4265, 187]
696	[1222, 1223]	1817	[1303, 2588]	2938	[3384, 3385]	4059	[4266, 746]
697	[1224, 1225]	1818	[2589, 81]	2939	[2840, 867]	4060	[4267, 3131]
698	[1226, 1227]	1819	[2227, 2590]	2940	[3386, 3387]	4061	[3158, 1552]
699	[1228, 1229]	1820	[1352, 2591]	2941	[3388, 3389]	4062	[3065, 3902]
700	[1230, 1231]	1821	[2592, 2434]	2942	[3390, 2370]	4063	[1572, 1855]
701	[1232, 1233]	1822	[2593, 2594]	2943	[3391, 2216]	4064	[2937, 132]
702	[1234, 1235]	1823	[2595, 844]	2944	[3392, 933]	4065	[2900, 3938]
703	[1236, 1237]	1824	[266, 2596]	2945	[968, 2571]	4066	[3164, 3131]
704	[1238, 1239]	1825	[2597, 2598]	2946	[3393, 3394]	4067	[3889, 3827]
705	[1240, 1241]	1826	[2599, 2600]	2947	[3395, 3396]	4068	[3931, 778]
706	[1242, 1243]	1827	[2601, 2602]	2948	[3397, 3398]	4069	[4268, 3093]
707	[1244, 300]	1828	[2603, 2447]	2949	[3399, 1022]	4070	[3978, 2890]
708	[1245, 1246]	1829	[2604, 2605]	2950	[3400, 2760]	4071	[3126, 502]
709	[821, 1247]	1830	[1331, 2606]	2951	[389, 3401]	4072	[3874, 3092]
710	[1248, 324]	1831	[1156, 2607]	2952	[3402, 3403]	4073	[4269, 1856]
711	[1249, 1250]	1832	[2608, 2609]	2953	[454, 2218]	4074	[3855, 1962]
712	[1251, 1252]	1833	[400, 1089]	2954	[3404, 3405]	4075	[3000, 3106]
713	[1253, 1254]	1834	[2387, 1194]	2955	[3406, 3407]	4076	[4270, 1910]
714	[1255, 1256]	1835	[2561, 1199]	2956	[2613, 2725]	4077	[3943, 507]
715	[1257, 29]	1836	[2610, 105]	2957	[3408, 3409]	4078	[4271, 776]
716	[1258, 1259]	1837	[2611, 455]	2958	[1088, 2767]	4079	[4272, 134]
717	[1260, 1261]	1838	[2612, 2613]	2959	[3410, 101]	4080	[4273, 1632]
718	[1237, 1262]	1839	[2614, 2615]	2960	[3411, 1140]	4081	[4274, 1706]
719	[1263, 1264]	1840	[2616, 2617]	2961	[3412, 27]	4082	[466, 708]
720	[1265, 1257]	1841	[2184, 2186]	2962	[3413, 285]	4083	[3859, 586]
721	[1266, 1267]	1842	[2570, 25]	2963	[1059, 3414]	4084	[4275, 192]
722	[349, 91]	1843	[2618, 2619]	2964	[3415, 3416]	4085	[4276, 815]
723	[1268, 93]	1844	[2147, 73]	2965	[3417, 3418]	4086	[3821, 178]
724	[1269, 1270]	1845	[337, 2620]	2966	[3419, 3420]	4087	[3948, 1469]
725	[1271, 1272]	1846	[2621, 2274]	2967	[3421, 3422]	4088	[4277, 3076]
726	[1273, 1274]	1847	[1407, 2622]	2968	[937, 3423]	4089	[4262, 1916]
727	[1275, 1276]	1848	[2623, 919]	2969	[3424, 3425]	4090	[3997, 725]
728	[1277, 1278]	1849	[2624, 1266]	2970	[3426, 3427]	4091	[4278, 1841]

729	[1279, 1280]	1850	[2606, 1167]	2971	[3428, 1220]	4092	[4279, 2894]
730	[1281, 1282]	1851	[2625, 2524]	2972	[426, 3429]	4093	[3309, 1775]
731	[1283, 289]	1852	[2626, 2627]	2973	[3430, 3431]	4094	[4280, 133]
732	[1284, 1026]	1853	[124, 2628]	2974	[3432, 2560]	4095	[3936, 649]
733	[1285, 1286]	1854	[2629, 2113]	2975	[2559, 956]	4096	[3991, 1487]
734	[1287, 1288]	1855	[2630, 2631]	2976	[3433, 1423]	4097	[4251, 4010]
735	[1289, 1290]	1856	[2178, 2246]	2977	[374, 3434]	4098	[1702, 1785]
736	[1291, 1292]	1857	[2632, 1015]	2978	[3435, 446]	4099	[4281, 1551]
737	[1034, 1293]	1858	[2633, 2271]	2979	[3436, 2086]	4100	[3993, 612]
738	[1030, 1294]	1859	[2634, 2635]	2980	[1152, 3437]	4101	[4282, 1966]
739	[1295, 1296]	1860	[2464, 914]	2981	[3438, 3439]	4102	[755, 1635]
740	[1297, 1298]	1861	[2636, 283]	2982	[2729, 3440]	4103	[4283, 1507]
741	[1299, 1300]	1862	[2637, 2135]	2983	[3441, 2281]	4104	[3881, 4284]
742	[290, 1301]	1863	[2638, 2639]	2984	[3442, 85]	4105	[3045, 62]
743	[1302, 1303]	1864	[2640, 2225]	2985	[3443, 2633]	4106	[4285, 1710]
744	[343, 1304]	1865	[2641, 2642]	2986	[3444, 3445]	4107	[4286, 1855]
745	[1305, 1306]	1866	[2643, 1111]	2987	[3446, 3447]	4108	[1867, 610]
746	[1307, 1308]	1867	[2644, 1074]	2988	[2313, 1062]	4109	[3241, 1552]
747	[1181, 5]	1868	[2645, 2646]	2989	[3448, 3449]	4110	[4287, 3109]
748	[1309, 1310]	1869	[2647, 25]	2990	[3450, 1037]	4111	[4288, 1679]
749	[1311, 1312]	1870	[2648, 2649]	2991	[3451, 910]	4112	[4289, 593]
750	[1313, 1314]	1871	[2650, 2651]	2992	[74, 3452]	4113	[4290, 192]
751	[1315, 423]	1872	[2652, 2653]	2993	[3453, 3454]	4114	[3939, 2927]
752	[1316, 1317]	1873	[2385, 318]	2994	[2154, 3455]	4115	[4291, 2887]
753	[1120, 1318]	1874	[2654, 2655]	2995	[260, 883]	4116	[4292, 1513]
754	[284, 980]	1875	[1198, 2656]	2996	[3456, 275]	4117	[4020, 1638]
755	[1319, 1320]	1876	[2657, 2658]	2997	[3457, 2468]	4118	[4293, 3276]
756	[1321, 1322]	1877	[2659, 2660]	2998	[2438, 3458]	4119	[2896, 179]
757	[1323, 1113]	1878	[2661, 2662]	2999	[3459, 3460]	4120	[2984, 814]
758	[1324, 1325]	1879	[2663, 2664]	3000	[3461, 3462]	4121	[4294, 1655]
759	[1326, 1327]	1880	[2665, 1349]	3001	[2345, 2398]	4122	[4278, 1674]
760	[1328, 1329]	1881	[2666, 2667]	3002	[433, 2188]	4123	[3869, 1540]
761	[1330, 1331]	1882	[902, 2668]	3003	[2628, 3362]	4124	[3873, 508]
762	[1332, 1333]	1883	[1374, 418]	3004	[3463, 3464]	4125	[4267, 3005]
763	[1334, 1335]	1884	[966, 2669]	3005	[3465, 3466]	4126	[2006, 1545]
764	[1336, 1337]	1885	[2670, 2671]	3006	[2653, 1100]	4127	[4295, 1980]
765	[1338, 1339]	1886	[2672, 2673]	3007	[3467, 3468]	4128	[1903, 642]
766	[1340, 1134]	1887	[2674, 2675]	3008	[3469, 3470]	4129	[3849, 3249]
767	[1341, 1342]	1888	[2676, 890]	3009	[3471, 3472]	4130	[4252, 3131]
768	[1343, 1344]	1889	[2677, 2678]	3010	[2639, 3408]	4131	[3296, 801]
769	[1345, 1346]	1890	[2679, 2680]	3011	[3473, 2425]	4132	[3955, 1885]
770	[1038, 1347]	1891	[2681, 2682]	3012	[3474, 2650]	4133	[3926, 1536]
771	[1348, 871]	1892	[2683, 2684]	3013	[996, 3475]	4134	[4286, 1471]
772	[1349, 1350]	1893	[2685, 954]	3014	[2822, 3327]	4135	[3876, 1579]

773	[1351, 1352]	1894	[2686, 281]	3015	[3476, 3477]	4136	[4296, 810]
774	[1353, 931]	1895	[2687, 2688]	3016	[3478, 3479]	4137	[4297, 1670]
775	[1354, 881]	1896	[2689, 2690]	3017	[3480, 3350]	4138	[1530, 2005]
776	[1355, 1356]	1897	[2691, 2692]	3018	[3481, 3482]	4139	[3291, 684]
777	[1357, 1358]	1898	[2693, 2683]	3019	[435, 1105]	4140	[1824, 1501]
778	[918, 1359]	1899	[2694, 2695]	3020	[3483, 3484]	4141	[3157, 815]
779	[1360, 1168]	1900	[2696, 2697]	3021	[358, 3485]	4142	[4298, 1697]
780	[1361, 1362]	1901	[2383, 2698]	3022	[3486, 3487]	4143	[4014, 683]
781	[1363, 1364]	1902	[2150, 2094]	3023	[3488, 3489]	4144	[4299, 760]
782	[1365, 1366]	1903	[72, 2699]	3024	[3490, 2366]	4145	[1623, 1743]
783	[1367, 1368]	1904	[2700, 2701]	3025	[3491, 3492]	4146	[2946, 56]
784	[1369, 1370]	1905	[250, 972]	3026	[3493, 2153]	4147	[3907, 3064]
785	[1371, 1372]	1906	[2702, 2703]	3027	[3475, 3494]	4148	[3166, 792]
786	[1373, 1374]	1907	[2704, 2132]	3028	[2815, 3495]	4149	[4300, 3199]
787	[1375, 399]	1908	[2705, 2469]	3029	[3496, 2881]	4150	[569, 2985]
788	[1376, 273]	1909	[2706, 2707]	3030	[3497, 3498]	4151	[2954, 3066]
789	[1377, 1378]	1910	[870, 2708]	3031	[2333, 2379]	4152	[3813, 603]
790	[1379, 1380]	1911	[2709, 1291]	3032	[2391, 3377]	4153	[3979, 507]
791	[862, 1182]	1912	[2710, 1197]	3033	[3499, 3500]	4154	[4301, 3884]
792	[1071, 1381]	1913	[2711, 2233]	3034	[324, 970]	4155	[3929, 1924]
793	[1382, 1383]	1914	[447, 2534]	3035	[3501, 3443]	4156	[3953, 3303]
794	[1384, 419]	1915	[2712, 2713]	3036	[3502, 2284]	4157	[3844, 3867]
795	[1385, 1386]	1916	[2714, 1195]	3037	[2594, 3503]	4158	[4302, 1824]
796	[1387, 1388]	1917	[1167, 249]	3038	[3504, 3505]	4159	[4002, 503]
797	[1389, 1390]	1918	[2715, 2716]	3039	[3506, 2511]	4160	[4303, 500]
798	[1391, 1392]	1919	[2585, 2717]	3040	[3507, 3508]	4161	[2925, 608]
799	[1393, 1394]	1920	[2718, 2719]	3041	[299, 3509]	4162	[3243, 612]
800	[1395, 1188]	1921	[2720, 2721]	3042	[3510, 3511]	4163	[1529, 57]
801	[1041, 1396]	1922	[2722, 2723]	3043	[3512, 3513]	4164	[4304, 2015]
802	[1397, 1398]	1923	[2724, 1253]	3044	[3514, 1115]	4165	[3212, 1793]
803	[1399, 1400]	1924	[2725, 2726]	3045	[1282, 2206]	4166	[4007, 14]
804	[1401, 1402]	1925	[2727, 973]	3046	[3515, 3516]	4167	[3878, 4284]
805	[1403, 1404]	1926	[2728, 836]	3047	[2446, 2859]	4168	[4305, 56]
806	[1405, 1277]	1927	[2423, 2729]	3048	[3517, 3518]	4169	[4303, 1517]
807	[1406, 1407]	1928	[2730, 2731]	3049	[3519, 860]	4170	[4306, 558]
808	[1408, 1409]	1929	[2732, 2733]	3050	[2365, 3520]	4171	[4307, 529]
809	[1410, 1411]	1930	[2734, 2735]	3051	[3521, 364]	4172	[3285, 544]
810	[1412, 1413]	1931	[2736, 1096]	3052	[3522, 2241]	4173	[4257, 1674]
811	[1414, 1415]	1932	[2737, 2738]	3053	[3523, 2623]	4174	[4308, 2935]
812	[1416, 1417]	1933	[2739, 2740]	3054	[3524, 383]	4175	[3054, 198]
813	[1418, 1419]	1934	[2476, 2741]	3055	[3525, 2796]	4176	[4309, 1541]
814	[1233, 1420]	1935	[2742, 2743]	3056	[3526, 2578]	4177	[4289, 729]
815	[1421, 1422]	1936	[2526, 2744]	3057	[3527, 2353]	4178	[4310, 1612]
816	[1423, 1424]	1937	[2745, 2746]	3058	[3528, 1078]	4179	[1473, 814]

817	[1425, 1302]	1938	[2747, 2748]	3059	[3529, 3530]	4180	[1898, 1953]
818	[1426, 1427]	1939	[2749, 2750]	3060	[3531, 3532]	4181	[3824, 1833]
819	[1428, 910]	1940	[2751, 2752]	3061	[3533, 3534]	4182	[3965, 1463]
820	[1429, 1430]	1941	[2753, 2603]	3062	[3535, 3536]	4183	[4311, 1489]
821	[1431, 809]	1942	[2754, 2755]	3063	[3537, 2694]	4184	[3912, 705]
822	[1432, 640]	1943	[2756, 2757]	3064	[1381, 460]	4185	[3922, 3006]
823	[1433, 1434]	1944	[2758, 365]	3065	[3538, 2381]	4186	[4312, 1846]
824	[1435, 1436]	1945	[1097, 2759]	3066	[3539, 3540]	4187	[4269, 50]
825	[542, 572]	1946	[2760, 2761]	3067	[3541, 3542]	4188	[3971, 642]
826	[1437, 489]	1947	[2762, 2763]	3068	[3543, 2742]	4189	[3839, 205]
827	[1438, 725]	1948	[2764, 2765]	3069	[3544, 2213]	4190	[2969, 1763]
828	[469, 570]	1949	[2766, 2072]	3070	[3545, 3546]	4191	[4313, 1809]
829	[487, 1439]	1950	[2767, 846]	3071	[3547, 3548]	4192	[4314, 3933]
830	[1440, 1441]	1951	[2768, 2769]	3072	[2695, 2350]	4193	[3903, 1633]
831	[687, 733]	1952	[92, 2199]	3073	[3549, 2436]	4194	[1489, 11]
832	[1442, 1443]	1953	[2352, 2344]	3074	[2824, 3446]	4195	[3206, 564]
833	[1444, 1445]	1954	[1317, 2770]	3075	[3550, 2276]	4196	[3069, 1538]
834	[1446, 1447]	1955	[2771, 2409]	3076	[3551, 3552]	4197	[3987, 128]
835	[1448, 807]	1956	[2772, 2773]	3077	[3553, 2235]	4198	[1762, 1436]
836	[1449, 1450]	1957	[2774, 2775]	3078	[975, 3348]	4199	[4004, 818]
837	[1451, 1452]	1958	[2776, 2777]	3079	[3554, 3555]	4200	[4315, 744]
838	[1453, 1454]	1959	[1067, 362]	3080	[1301, 3556]	4201	[2908, 783]
839	[598, 1455]	1960	[2778, 2779]	3081	[3557, 2375]	4202	[4316, 3108]
840	[1456, 1457]	1961	[2520, 2661]	3082	[3558, 3559]	4203	[4253, 1636]
841	[1458, 1459]	1962	[2265, 2754]	3083	[2396, 1336]	4204	[3294, 3211]
842	[1460, 1461]	1963	[2671, 2760]	3084	[3560, 3561]	4205	[3909, 235]
843	[1462, 1463]	1964	[2780, 885]	3085	[3562, 3563]	4206	[3840, 1946]
844	[1464, 1465]	1965	[2781, 2317]	3086	[3564, 3565]	4207	[3820, 570]
845	[1466, 564]	1966	[1193, 2782]	3087	[3566, 2772]	4208	[4317, 1884]
846	[1467, 1468]	1967	[2783, 2342]	3088	[3567, 2092]	4209	[3039, 2015]
847	[208, 1469]	1968	[823, 2784]	3089	[3568, 3569]	4210	[2962, 638]
848	[1470, 510]	1969	[2785, 2786]	3090	[368, 1373]	4211	[4287, 701]
849	[1471, 1472]	1970	[2525, 2787]	3091	[3570, 3571]	4212	[4318, 237]
850	[1473, 1474]	1971	[2788, 2789]	3092	[2529, 3459]	4213	[3989, 585]
851	[1475, 1476]	1972	[2790, 2791]	3093	[412, 3572]	4214	[3273, 3918]
852	[1435, 1477]	1973	[2792, 2793]	3094	[3573, 335]	4215	[4260, 2893]
853	[1478, 1479]	1974	[2794, 1190]	3095	[3574, 3357]	4216	[4319, 1784]
854	[1480, 1481]	1975	[2247, 1075]	3096	[3575, 924]	4217	[1585, 1468]
855	[1482, 1483]	1976	[946, 2795]	3097	[3576, 1332]	4218	[4320, 1931]
856	[1484, 1485]	1977	[2796, 2797]	3098	[3577, 3578]	4219	[3110, 203]
857	[1486, 1487]	1978	[1036, 2798]	3099	[3579, 3580]	4220	[3830, 1857]
858	[1488, 1489]	1979	[2799, 1123]	3100	[3581, 350]	4221	[3159, 3067]
859	[1490, 1491]	1980	[2095, 2800]	3101	[3582, 3583]	4222	[4009, 638]
860	[1492, 734]	1981	[2444, 2801]	3102	[3584, 457]	4223	[3866, 1681]

861	[1493, 695]	1982	[2802, 387]	3103	[3585, 3586]	4224	[3947, 211]
862	[1494, 1495]	1983	[1101, 2542]	3104	[3587, 3568]	4225	[3280, 185]
863	[1496, 133]	1984	[1246, 2338]	3105	[3588, 2496]	4226	[4019, 576]
864	[812, 1497]	1985	[2803, 912]	3106	[3589, 276]	4227	[4264, 1797]
865	[1498, 615]	1986	[2804, 2718]	3107	[3590, 2473]	4228	[4321, 1697]
866	[1499, 1500]	1987	[2646, 2805]	3108	[3591, 3592]	4229	[3180, 1662]
867	[477, 1501]	1988	[2806, 2807]	3109	[3593, 3594]	4230	[4322, 3841]
868	[1502, 1445]	1989	[2808, 2809]	3110	[3595, 1126]	4231	[4304, 2927]
869	[1503, 1504]	1990	[2810, 2811]	3111	[3596, 2137]	4232	[4323, 711]
870	[1505, 1506]	1991	[2812, 265]	3112	[3597, 3598]	4233	[3228, 43]
871	[1507, 656]	1992	[2171, 373]	3113	[3599, 3339]	4234	[619, 197]
872	[1508, 1509]	1993	[2746, 2813]	3114	[3600, 2170]	4235	[3956, 1946]
873	[1510, 1511]	1994	[2814, 2815]	3115	[3516, 2647]	4236	[3868, 1560]
874	[1508, 751]	1995	[1386, 2816]	3116	[3601, 2762]	4237	[4324, 1613]
875	[177, 1512]	1996	[2817, 2818]	3117	[3602, 3603]	4238	[4325, 3934]
876	[1513, 227]	1997	[2819, 305]	3118	[3604, 3499]	4239	[4016, 753]
877	[668, 1514]	1998	[2820, 2384]	3119	[894, 2571]	4240	[4326, 1560]
878	[498, 1515]	1999	[2821, 2822]	3120	[3605, 3606]	4241	[4256, 705]
879	[1516, 1516]	2000	[1006, 415]	3121	[3607, 3608]	4242	[4327, 503]
880	[671, 497]	2001	[2823, 2824]	3122	[3609, 3610]	4243	[4328, 1995]
881	[671, 517]	2002	[2825, 2826]	3123	[1161, 3611]	4244	[4275, 718]
882	[681, 670]	2003	[2827, 2827]	3124	[3612, 3613]	4245	[3972, 570]
883	[1515, 500]	2004	[2828, 2829]	3125	[458, 3614]	4246	[4329, 3155]
884	[499, 1517]	2005	[2830, 2522]	3126	[1380, 2188]	4247	[4263, 1636]
885	[500, 1518]	2006	[2831, 2832]	3127	[3344, 3615]	4248	[4330, 4331]
886	[190, 671]	2007	[2553, 2833]	3128	[3616, 2874]	4249	[4332, 375]
887	[1519, 1520]	2008	[345, 2834]	3129	[2149, 3617]	4250	[4333, 849]
888	[1521, 1522]	2009	[2835, 1313]	3130	[932, 2143]	4251	[4334, 2846]
889	[1523, 1524]	2010	[1027, 2836]	3131	[2716, 2192]	4252	[4335, 2428]
890	[1525, 1526]	2011	[2837, 926]	3132	[3618, 2429]	4253	[2580, 2362]
891	[644, 582]	2012	[2838, 2263]	3133	[3619, 1285]	4254	[4336, 4337]
892	[1527, 1528]	2013	[2474, 348]	3134	[3343, 2253]	4255	[4338, 4339]
893	[1529, 207]	2014	[2839, 2840]	3135	[3620, 2873]	4256	[4340, 4341]
894	[1530, 1531]	2015	[2841, 2842]	3136	[3621, 3365]	4257	[2189, 3445]
895	[1532, 593]	2016	[20, 2843]	3137	[3622, 3623]	4258	[4342, 4145]
896	[1533, 512]	2017	[2844, 2845]	3138	[3624, 3625]	4259	[4343, 1033]
897	[134, 1534]	2018	[2846, 2847]	3139	[3626, 1279]	4260	[4344, 4345]
898	[1535, 711]	2019	[2848, 2849]	3140	[2371, 3627]	4261	[4346, 1236]
899	[1536, 1523]	2020	[2850, 2624]	3141	[3628, 3629]	4262	[2470, 2135]
900	[1537, 1531]	2021	[2851, 2852]	3142	[3630, 3631]	4263	[878, 986]
901	[1538, 1539]	2022	[2101, 2678]	3143	[2327, 1244]	4264	[4347, 4348]
902	[699, 1540]	2023	[2853, 2854]	3144	[3632, 2229]	4265	[4349, 4350]
903	[512, 1541]	2024	[2855, 2856]	3145	[3633, 3634]	4266	[4351, 3455]
904	[1542, 635]	2025	[1201, 1216]	3146	[3635, 3636]	4267	[4352, 3784]

905	[679, 1543]	2026	[2857, 2858]	3147	[3637, 3627]	4268	[4164, 2591]
906	[1544, 1545]	2027	[2859, 2860]	3148	[3638, 3639]	4269	[2315, 303]
907	[1546, 1547]	2028	[2861, 2862]	3149	[3640, 2802]	4270	[4353, 949]
908	[1548, 478]	2029	[2863, 2864]	3150	[3641, 3642]	4271	[4354, 2601]
909	[1549, 229]	2030	[2865, 2866]	3151	[3643, 3644]	4272	[4355, 2166]
910	[160, 1544]	2031	[2867, 2868]	3152	[3645, 2328]	4273	[4356, 4357]
911	[54, 1550]	2032	[1189, 2424]	3153	[3646, 3647]	4274	[4358, 4359]
912	[1519, 560]	2033	[2854, 2869]	3154	[1415, 2831]	4275	[4360, 3444]
913	[518, 1514]	2034	[2575, 2870]	3155	[3648, 3649]	4276	[4361, 3715]
914	[1514, 1521]	2035	[1209, 2699]	3156	[1267, 253]	4277	[4362, 4363]
915	[1551, 1552]	2036	[2871, 2872]	3157	[3650, 875]	4278	[1138, 372]
916	[36, 1553]	2037	[2873, 1355]	3158	[3651, 915]	4279	[3505, 3518]
917	[1467, 164]	2038	[2874, 2875]	3159	[3652, 3653]	4280	[4364, 3400]
918	[1554, 1555]	2039	[2876, 2877]	3160	[408, 3654]	4281	[4365, 4366]
919	[1556, 1557]	2040	[2878, 2330]	3161	[3655, 3656]	4282	[4367, 4368]
920	[1558, 1559]	2041	[2879, 401]	3162	[3657, 2851]	4283	[4369, 4370]
921	[1560, 790]	2042	[2161, 2880]	3163	[410, 3658]	4284	[859, 4194]
922	[1561, 1562]	2043	[2881, 883]	3164	[3659, 3660]	4285	[4371, 3803]
923	[1563, 1564]	2044	[2882, 1668]	3165	[3661, 2082]	4286	[4372, 1294]
924	[1565, 1566]	2045	[635, 223]	3166	[3662, 3663]	4287	[4373, 4374]
925	[1567, 1568]	2046	[2039, 1652]	3167	[3664, 3665]	4288	[4375, 2756]
926	[1569, 1570]	2047	[2883, 538]	3168	[3666, 3667]	4289	[4376, 3414]
927	[1571, 802]	2048	[2884, 178]	3169	[3668, 1109]	4290	[4377, 371]
928	[1572, 1471]	2049	[537, 2885]	3170	[2678, 3669]	4291	[4378, 4379]
929	[748, 1573]	2050	[2886, 2887]	3171	[3670, 3671]	4292	[4380, 4381]
930	[697, 1574]	2051	[2888, 765]	3172	[1422, 3672]	4293	[4382, 2349]
931	[714, 674]	2052	[2889, 2890]	3173	[326, 2104]	4294	[4383, 1311]
932	[1575, 1576]	2053	[2891, 546]	3174	[3673, 115]	4295	[2673, 2420]
933	[1577, 1578]	2054	[2892, 2893]	3175	[3674, 2313]	4296	[4384, 1414]
934	[709, 1579]	2055	[1553, 2894]	3176	[3586, 2062]	4297	[3707, 3437]
935	[1580, 1518]	2056	[2895, 1535]	3177	[3372, 3675]	4298	[4385, 1208]
936	[1581, 1582]	2057	[1603, 1491]	3178	[3676, 3451]	4299	[4386, 1307]
937	[43, 709]	2058	[2896, 128]	3179	[3677, 1273]	4300	[4387, 336]
938	[723, 45]	2059	[2897, 493]	3180	[3678, 939]	4301	[4388, 1245]
939	[712, 1583]	2060	[2898, 2899]	3181	[3679, 1421]	4302	[4389, 4390]
940	[57, 1584]	2061	[2900, 2901]	3182	[3680, 3681]	4303	[1015, 1019]
941	[1439, 212]	2062	[2902, 2903]	3183	[2380, 3682]	4304	[4391, 4392]
942	[719, 596]	2063	[2904, 2905]	3184	[2656, 3683]	4305	[4393, 1212]
943	[1585, 164]	2064	[1886, 1618]	3185	[3684, 3429]	4306	[3559, 2831]
944	[1586, 1587]	2065	[2906, 1932]	3186	[2697, 3485]	4307	[4394, 946]
945	[1545, 1588]	2066	[2017, 1822]	3187	[3685, 3686]	4308	[4395, 4048]
946	[1589, 1590]	2067	[2907, 1890]	3188	[431, 3618]	4309	[1344, 2327]
947	[1591, 1592]	2068	[1607, 1962]	3189	[3687, 3688]	4310	[4396, 4397]
948	[1593, 231]	2069	[1472, 1463]	3190	[1128, 3689]	4311	[4398, 4399]

949	[1594, 1595]	2070	[1736, 514]	3191	[3614, 3684]	4312	[2668, 2613]
950	[521, 1596]	2071	[557, 1460]	3192	[2547, 2520]	4313	[4400, 4165]
951	[185, 1597]	2072	[558, 1544]	3193	[3686, 3690]	4314	[4401, 4245]
952	[1598, 728]	2073	[2908, 11]	3194	[3437, 3691]	4315	[4051, 1043]
953	[1431, 630]	2074	[2909, 2030]	3195	[3692, 327]	4316	[4402, 4403]
954	[1599, 701]	2075	[179, 531]	3196	[3693, 315]	4317	[4404, 2264]
955	[1600, 525]	2076	[539, 2910]	3197	[3649, 2729]	4318	[4405, 4406]
956	[1601, 1602]	2077	[2911, 798]	3198	[3694, 3640]	4319	[4407, 4408]
957	[1603, 1604]	2078	[2912, 494]	3199	[3695, 3696]	4320	[4409, 2530]
958	[1605, 43]	2079	[2913, 775]	3200	[3697, 992]	4321	[4410, 1082]
959	[1606, 242]	2080	[2914, 2023]	3201	[393, 2548]	4322	[4411, 4376]
960	[1607, 1608]	2081	[2915, 1716]	3202	[3698, 1148]	4323	[3688, 2597]
961	[1609, 1490]	2082	[1816, 2887]	3203	[2740, 1299]	4324	[1427, 3592]
962	[1610, 1611]	2083	[2916, 1912]	3204	[424, 458]	4325	[4412, 1348]
963	[1612, 1613]	2084	[2917, 2918]	3205	[3699, 403]	4326	[4413, 1354]
964	[711, 1609]	2085	[2919, 193]	3206	[1200, 2594]	4327	[1187, 984]
965	[803, 1614]	2086	[2024, 2920]	3207	[3700, 3701]	4328	[4414, 4095]
966	[1615, 1452]	2087	[2921, 1715]	3208	[3468, 1224]	4329	[1213, 2241]
967	[1616, 1617]	2088	[2895, 716]	3209	[2074, 451]	4330	[3908, 681]
968	[1618, 1619]	2089	[2922, 2923]	3210	[3702, 3703]	4331	[1997, 3191]
969	[1620, 1621]	2090	[2924, 1745]	3211	[451, 3391]	4332	[4298, 615]
970	[1622, 667]	2091	[1510, 211]	3212	[3704, 3705]	4333	[3905, 3286]
971	[1623, 794]	2092	[2925, 181]	3213	[3706, 3707]	4334	[4315, 754]
972	[1624, 508]	2093	[591, 769]	3214	[2097, 2224]	4335	[3935, 1461]
973	[1625, 1626]	2094	[1532, 729]	3215	[3708, 3709]	4336	[3916, 1946]
974	[1627, 172]	2095	[171, 2926]	3216	[3710, 2157]	4337	[1448, 1864]
975	[1490, 1604]	2096	[2014, 2927]	3217	[3711, 1412]	4338	[4415, 1571]
976	[613, 1628]	2097	[160, 2006]	3218	[3542, 2378]	4339	[4416, 1990]
977	[1629, 614]	2098	[746, 1798]	3219	[3712, 3713]	4340	[3831, 1699]
978	[1630, 746]	2099	[176, 2928]	3220	[3714, 1297]	4341	[4259, 707]
979	[1631, 1632]	2100	[203, 2929]	3221	[3715, 980]	4342	[4417, 1547]
980	[494, 1633]	2101	[1983, 581]	3222	[2045, 3716]	4343	[4271, 707]
981	[543, 573]	2102	[2930, 613]	3223	[1095, 1292]	4344	[3812, 1531]
982	[225, 1634]	2103	[2931, 1441]	3224	[3371, 3717]	4345	[2955, 3973]
983	[199, 1635]	2104	[796, 759]	3225	[2335, 2118]	4346	[3847, 743]
984	[1636, 560]	2105	[605, 2932]	3226	[3718, 2450]	4347	[3178, 1750]
985	[499, 500]	2106	[778, 647]	3227	[3719, 3720]	4348	[1563, 658]
986	[1637, 1638]	2107	[2933, 1653]	3228	[3721, 3722]	4349	[4313, 557]
987	[1515, 1517]	2108	[492, 2899]	3229	[3723, 3724]	4350	[4418, 1749]
988	[1639, 1640]	2109	[544, 1467]	3230	[3725, 2640]	4351	[3842, 557]
989	[659, 534]	2110	[2934, 2935]	3231	[1211, 1377]	4352	[1689, 1835]
990	[563, 1641]	2111	[1627, 2926]	3232	[3379, 2440]	4353	[3967, 1557]
991	[1642, 635]	2112	[530, 1983]	3233	[3726, 3727]	4354	[2974, 1495]
992	[1643, 1644]	2113	[745, 2936]	3234	[3728, 89]	4355	[3857, 695]

993	[1645, 1526]	2114	[1571, 1722]	3235	[3729, 123]	4356	[4279, 2992]
994	[1646, 1647]	2115	[2937, 640]	3236	[3730, 3731]	4357	[219, 1595]
995	[1648, 1649]	2116	[2938, 2939]	3237	[2582, 3732]	4358	[4273, 3286]
996	[771, 1500]	2117	[1790, 2940]	3238	[3733, 3734]	4359	[4419, 1485]
997	[1442, 1650]	2118	[639, 780]	3239	[3735, 2788]	4360	[3974, 1638]
998	[1463, 480]	2119	[2941, 1777]	3240	[3691, 3535]	4361	[1751, 211]
999	[1651, 1652]	2120	[2942, 2943]	3241	[3736, 424]	4362	[4420, 1641]
1000	[673, 715]	2121	[1482, 536]	3242	[3737, 3738]	4363	[4421, 654]
1001	[637, 147]	2122	[2944, 2009]	3243	[1329, 3739]	4364	[4280, 726]
1002	[1653, 751]	2123	[1658, 2945]	3244	[827, 316]	4365	[4422, 199]
1003	[1654, 1655]	2124	[2946, 553]	3245	[3740, 3741]	4366	[4423, 563]
1004	[128, 180]	2125	[2947, 1777]	3246	[3742, 3743]	4367	[4422, 32]
1005	[1656, 1657]	2126	[2948, 721]	3247	[1296, 3377]	4368	[4424, 1983]
1006	[1658, 1659]	2127	[2949, 645]	3248	[3671, 3614]	4369	[3034, 1724]
1007	[701, 1660]	2128	[1671, 233]	3249	[429, 898]	4370	[4425, 1780]
1008	[1661, 1662]	2129	[2950, 2951]	3250	[2362, 885]	4371	[3900, 1865]
1009	[1663, 38]	2130	[2952, 485]	3251	[2286, 3744]	4372	[3970, 1470]
1010	[1664, 669]	2131	[183, 2953]	3252	[3745, 3474]	4373	[3882, 1853]
1011	[1665, 1666]	2132	[206, 57]	3253	[3746, 3747]	4374	[1887, 800]
1012	[1651, 1667]	2133	[2954, 214]	3254	[948, 3748]	4375	[4426, 1853]
1013	[1668, 719]	2134	[2955, 2956]	3255	[3701, 2749]	4376	[4292, 1885]
1014	[136, 1516]	2135	[2957, 1700]	3256	[3749, 2865]	4377	[4427, 681]
1015	[1517, 1518]	2136	[655, 1919]	3257	[3750, 3751]	4378	[4428, 1793]
1016	[1669, 611]	2137	[2029, 2958]	3258	[3752, 1080]	4379	[4429, 2893]
1017	[1670, 1671]	2138	[1590, 786]	3259	[3753, 3754]	4380	[4276, 494]
1018	[1672, 1673]	2139	[203, 2951]	3260	[2805, 3337]	4381	[4317, 1655]
1019	[1518, 1674]	2140	[2959, 49]	3261	[3755, 3756]	4382	[4430, 768]
1020	[1675, 1444]	2141	[2960, 649]	3262	[3757, 2714]	4383	[3252, 493]
1021	[1676, 522]	2142	[1914, 1555]	3263	[3758, 3759]	4384	[4005, 769]
1022	[1677, 1678]	2143	[649, 1672]	3264	[3639, 2449]	4385	[3942, 1865]
1023	[1679, 624]	2144	[1576, 1645]	3265	[3760, 2514]	4386	[4272, 1935]
1024	[1680, 1681]	2145	[2961, 715]	3266	[841, 3761]	4387	[3852, 474]
1025	[1682, 740]	2146	[2962, 147]	3267	[3762, 3763]	4388	[4431, 1738]
1026	[1587, 1683]	2147	[724, 1701]	3268	[3764, 2207]	4389	[2948, 48]
1027	[490, 1684]	2148	[1918, 2963]	3269	[318, 1338]	4390	[4432, 2933]
1028	[1685, 544]	2149	[2964, 690]	3270	[3765, 3386]	4391	[1949, 1557]
1029	[1686, 1687]	2150	[1958, 171]	3271	[3376, 3691]	4392	[3960, 2994]
1030	[520, 1688]	2151	[617, 705]	3272	[3766, 3767]	4393	[4295, 1487]
1031	[1689, 785]	2152	[2965, 1495]	3273	[3768, 2260]	4394	[1549, 1750]
1032	[1690, 1691]	2153	[1546, 2966]	3274	[3769, 2689]	4395	[4433, 2932]
1033	[1692, 1693]	2154	[1781, 2905]	3275	[3770, 3771]	4396	[4434, 502]
1034	[59, 1694]	2155	[2967, 2968]	3276	[2843, 3772]	4397	[4435, 680]
1035	[1695, 1612]	2156	[2969, 665]	3277	[2452, 3535]	4398	[4436, 571]
1036	[1696, 577]	2157	[2970, 1838]	3278	[3773, 1324]	4399	[4437, 1901]

1037	[1535, 717]	2158	[2920, 2031]	3279	[2182, 1137]	4400	[3232, 1538]
1038	[1618, 1607]	2159	[2971, 2972]	3280	[3774, 357]	4401	[4438, 804]
1039	[1697, 688]	2160	[1893, 2921]	3281	[3775, 2555]	4402	[3946, 676]
1040	[1494, 1698]	2161	[1634, 2973]	3282	[3776, 2228]	4403	[2914, 1738]
1041	[1699, 199]	2162	[34, 1469]	3283	[2236, 2393]	4404	[4294, 1884]
1042	[1700, 741]	2163	[2974, 1698]	3284	[2590, 1161]	4405	[4415, 801]
1043	[1699, 32]	2164	[739, 2975]	3285	[3777, 3778]	4406	[4439, 3267]
1044	[1438, 1701]	2165	[2976, 1747]	3286	[2049, 2479]	4407	[4248, 1914]
1045	[815, 1633]	2166	[1700, 2977]	3287	[911, 2261]	4408	[4440, 1714]
1046	[142, 149]	2167	[2886, 1817]	3288	[3642, 2338]	4409	[1959, 2904]
1047	[1702, 183]	2168	[2978, 231]	3289	[3779, 2790]	4410	[4441, 1750]
1048	[1703, 1704]	2169	[2979, 2980]	3290	[3780, 3781]	4411	[4438, 1614]
1049	[1705, 1706]	2170	[2981, 2982]	3291	[3782, 1202]	4412	[4309, 513]
1050	[1459, 1487]	2171	[2016, 1731]	3292	[2818, 2597]	4413	[4442, 671]
1051	[571, 1707]	2172	[686, 732]	3293	[2816, 3655]	4414	[4417, 2966]
1052	[1527, 1708]	2173	[1629, 1628]	3294	[3783, 3651]	4415	[4443, 4333]
1053	[666, 1556]	2174	[1601, 1993]	3295	[3784, 3785]	4416	[4444, 3410]
1054	[1709, 158]	2175	[2922, 1688]	3296	[3786, 1397]	4417	[3689, 3748]
1055	[1704, 1710]	2176	[2983, 1513]	3297	[3787, 3788]	4418	[4445, 828]
1056	[1711, 1632]	2177	[2984, 1474]	3298	[3789, 3790]	4419	[4446, 856]
1057	[1712, 1713]	2178	[566, 1497]	3299	[3791, 3792]	4420	[921, 2847]
1058	[1714, 1715]	2179	[195, 2977]	3300	[2288, 1286]	4421	[4447, 2771]
1059	[1716, 1717]	2180	[1815, 554]	3301	[3793, 3794]	4422	[4448, 872]
1060	[1718, 1719]	2181	[560, 669]	3302	[3795, 3796]	4423	[4449, 2361]
1061	[1720, 1721]	2182	[1638, 1637]	3303	[2201, 3797]	4424	[4450, 4451]
1062	[1722, 1723]	2183	[518, 502]	3304	[951, 3798]	4425	[4452, 4453]
1063	[750, 1724]	2184	[1516, 136]	3305	[276, 1079]	4426	[4454, 2812]
1064	[1725, 1726]	2185	[1518, 1841]	3306	[3799, 1035]	4427	[2358, 365]
1065	[1727, 1435]	2186	[497, 668]	3307	[2259, 1272]	4428	[4455, 4456]
1066	[599, 1728]	2187	[136, 136]	3308	[3800, 3801]	4429	[4457, 4458]
1067	[1729, 52]	2188	[670, 496]	3309	[3802, 3551]	4430	[1413, 2811]
1068	[1730, 1731]	2189	[1636, 1520]	3310	[3434, 3803]	4431	[4459, 1076]
1069	[1732, 627]	2190	[1826, 589]	3311	[3571, 3804]	4432	[4460, 4461]
1070	[1733, 1734]	2191	[2985, 216]	3312	[3805, 3806]	4433	[3744, 3446]
1071	[792, 1613]	2192	[780, 1954]	3313	[3492, 3807]	4434	[2187, 3431]
1072	[13, 1735]	2193	[709, 1984]	3314	[3808, 3809]	4435	[4462, 2704]
1073	[1525, 818]	2194	[1719, 1857]	3315	[2882, 489]	4436	[2807, 1106]
1074	[1736, 565]	2195	[192, 2986]	3316	[2941, 3170]	4437	[4463, 1186]
1075	[791, 596]	2196	[2987, 639]	3317	[3810, 1656]	4438	[4464, 4465]
1076	[1737, 1738]	2197	[2934, 2988]	3318	[3811, 240]	4439	[4466, 1240]
1077	[1739, 1740]	2198	[2989, 1458]	3319	[1481, 1941]	4440	[4467, 4468]
1078	[1741, 1742]	2199	[2990, 590]	3320	[3812, 2005]	4441	[4469, 1127]
1079	[1743, 808]	2200	[2991, 2992]	3321	[3813, 3041]	4442	[270, 912]
1080	[1744, 1745]	2201	[2993, 2994]	3322	[3814, 1765]	4443	[3011, 3006]

1081	[1746, 1747]	2202	[2977, 742]	3323	[3815, 789]	4444	[4316, 1927]
1082	[1748, 1749]	2203	[621, 1699]	3324	[3816, 2008]	4445	[3969, 3095]
1083	[1750, 641]	2204	[2995, 499]	3325	[3817, 485]	4446	[4270, 3012]
1084	[1751, 1511]	2205	[2996, 562]	3326	[3195, 2021]	4447	[4312, 676]
1085	[1752, 1430]	2206	[695, 203]	3327	[789, 731]	4448	[3023, 489]
1086	[727, 176]	2207	[2997, 801]	3328	[3290, 1972]	4449	[4427, 1522]
1087	[1753, 814]	2208	[2009, 1908]	3329	[3818, 719]	4450	[4434, 1514]
1088	[1754, 1755]	2209	[2977, 2998]	3330	[3819, 48]	4451	[4470, 3083]
1089	[1756, 1757]	2210	[1998, 2999]	3331	[3820, 470]	4452	[4436, 779]
1090	[1758, 133]	2211	[3000, 3001]	3332	[3821, 1512]	4453	[4471, 1799]
1091	[1759, 1622]	2212	[32, 1635]	3333	[3229, 1495]	4454	[3913, 508]
1092	[1760, 1761]	2213	[8, 590]	3334	[3822, 170]	4455	[3937, 1835]
1093	[1762, 1477]	2214	[1622, 1556]	3335	[3098, 707]	4456	[3915, 1869]
1094	[664, 1763]	2215	[1430, 1696]	3336	[689, 3033]	4457	[4428, 3129]
1095	[507, 1730]	2216	[796, 547]	3337	[598, 3823]	4458	[4472, 3123]
1096	[641, 1764]	2217	[764, 1547]	3338	[3824, 1485]	4459	[3197, 793]
1097	[1645, 818]	2218	[38, 1732]	3339	[3210, 3825]	4460	[3963, 237]
1098	[1464, 722]	2219	[802, 1723]	3340	[2943, 1443]	4461	[4473, 1678]
1099	[1765, 513]	2220	[507, 2016]	3341	[1768, 1444]	4462	[4430, 1849]
1100	[44, 1579]	2221	[1634, 3002]	3342	[3227, 2025]	4463	[4442, 496]
1101	[1766, 1708]	2222	[1556, 1950]	3343	[2042, 1800]	4464	[3892, 513]
1102	[152, 1767]	2223	[1979, 2987]	3344	[228, 1768]	4465	[3135, 3095]
1103	[144, 1768]	2224	[1523, 3003]	3345	[3826, 3056]	4466	[4431, 2023]
1104	[1769, 698]	2225	[12, 1785]	3346	[3217, 3827]	4467	[4254, 1649]
1105	[691, 1770]	2226	[1842, 783]	3347	[506, 10]	4468	[4474, 687]
1106	[583, 171]	2227	[571, 1794]	3348	[3828, 1471]	4469	[3858, 207]
1107	[1771, 1772]	2228	[556, 1809]	3349	[3829, 1608]	4470	[4475, 2443]
1108	[1773, 1601]	2229	[1913, 1554]	3350	[734, 476]	4471	[4476, 4477]
1109	[1774, 1775]	2230	[3004, 3005]	3351	[3237, 238]	4472	[4478, 2459]
1110	[1676, 1596]	2231	[3006, 2028]	3352	[3830, 1860]	4473	[4479, 3590]
1111	[1776, 1777]	2232	[1465, 723]	3353	[1812, 1838]	4474	[4480, 1351]
1112	[1672, 1778]	2233	[1802, 580]	3354	[3831, 198]	4475	[4329, 232]
1113	[1779, 1780]	2234	[668, 502]	3355	[3832, 468]	4476	[4327, 1521]
1114	[1781, 1782]	2235	[3007, 1968]	3356	[1560, 775]	4477	[4481, 1848]
1115	[473, 1679]	2236	[38, 2028]	3357	[677, 696]	4478	[4305, 553]
1116	[1783, 236]	2237	[1896, 46]	3358	[3833, 1555]	4479	[4441, 229]
1117	[1784, 1647]	2238	[1807, 1540]	3359	[3204, 547]	4480	[4426, 1536]
1118	[1785, 184]	2239	[3008, 771]	3360	[3818, 791]	4481	[4482, 2141]
1119	[1786, 470]	2240	[3009, 235]	3361	[3834, 778]	4482	[4433, 2903]
1120	[813, 1474]	2241	[1675, 1502]	3362	[241, 62]		

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	748	0	1496	1	2244	1	2992	0	3740	1

1	0	749	0	1497	1	2245	1	2993	0	3741	0
2	0	750	0	1498	1	2246	0	2994	0	3742	0
3	0	751	1	1499	0	2247	1	2995	0	3743	1
4	0	752	1	1500	1	2248	0	2996	0	3744	1
5	0	753	0	1501	0	2249	1	2997	0	3745	1
6	0	754	0	1502	0	2250	1	2998	0	3746	0
7	0	755	0	1503	1	2251	1	2999	0	3747	0
8	1	756	0	1504	1	2252	1	3000	0	3748	0
9	0	757	0	1505	0	2253	0	3001	1	3749	1
10	1	758	0	1506	1	2254	0	3002	1	3750	1
11	0	759	0	1507	0	2255	0	3003	1	3751	0
12	1	760	0	1508	1	2256	1	3004	0	3752	1
13	0	761	1	1509	0	2257	1	3005	0	3753	1
14	0	762	0	1510	1	2258	0	3006	0	3754	0
15	0	763	1	1511	0	2259	1	3007	1	3755	1
16	1	764	0	1512	0	2260	0	3008	1	3756	1
17	1	765	0	1513	1	2261	0	3009	0	3757	0
18	0	766	0	1514	0	2262	1	3010	1	3758	1
19	0	767	1	1515	1	2263	1	3011	1	3759	1
20	1	768	1	1516	0	2264	1	3012	1	3760	0
21	1	769	1	1517	0	2265	1	3013	1	3761	0
22	1	770	0	1518	0	2266	0	3014	0	3762	1
23	0	771	1	1519	0	2267	1	3015	1	3763	0
24	0	772	0	1520	1	2268	0	3016	1	3764	1
25	1	773	1	1521	1	2269	1	3017	0	3765	0
26	1	774	1	1522	0	2270	0	3018	0	3766	0
27	0	775	1	1523	0	2271	1	3019	0	3767	1
28	0	776	0	1524	0	2272	1	3020	1	3768	1
29	0	777	1	1525	0	2273	0	3021	1	3769	1
30	1	778	0	1526	1	2274	1	3022	0	3770	0
31	0	779	1	1527	0	2275	1	3023	1	3771	1
32	0	780	0	1528	0	2276	1	3024	0	3772	0
33	1	781	0	1529	1	2277	1	3025	1	3773	1
34	0	782	1	1530	1	2278	0	3026	1	3774	0
35	1	783	1	1531	0	2279	0	3027	0	3775	0
36	0	784	0	1532	0	2280	0	3028	1	3776	1
37	0	785	0	1533	0	2281	0	3029	0	3777	1
38	1	786	0	1534	0	2282	1	3030	0	3778	1
39	0	787	1	1535	0	2283	0	3031	0	3779	0
40	1	788	0	1536	1	2284	1	3032	1	3780	0
41	1	789	1	1537	0	2285	1	3033	0	3781	0
42	1	790	0	1538	1	2286	1	3034	1	3782	0
43	1	791	1	1539	1	2287	1	3035	0	3783	0
44	1	792	1	1540	1	2288	1	3036	1	3784	0

45	1	793	0	1541	0	2289	1	3037	1	3785	0
46	0	794	0	1542	1	2290	1	3038	1	3786	0
47	0	795	1	1543	1	2291	1	3039	1	3787	0
48	0	796	1	1544	0	2292	0	3040	0	3788	0
49	0	797	1	1545	1	2293	0	3041	1	3789	0
50	1	798	1	1546	1	2294	1	3042	0	3790	0
51	1	799	1	1547	0	2295	0	3043	1	3791	1
52	1	800	0	1548	0	2296	1	3044	0	3792	1
53	1	801	0	1549	0	2297	0	3045	1	3793	1
54	1	802	0	1550	1	2298	1	3046	0	3794	1
55	0	803	1	1551	0	2299	0	3047	1	3795	0
56	1	804	1	1552	0	2300	0	3048	1	3796	0
57	0	805	1	1553	0	2301	0	3049	0	3797	1
58	0	806	1	1554	0	2302	1	3050	1	3798	0
59	0	807	0	1555	0	2303	0	3051	1	3799	0
60	1	808	0	1556	1	2304	0	3052	0	3800	1
61	1	809	1	1557	0	2305	1	3053	1	3801	1
62	1	810	0	1558	1	2306	0	3054	0	3802	1
63	0	811	0	1559	1	2307	0	3055	0	3803	0
64	1	812	1	1560	0	2308	0	3056	1	3804	1
65	0	813	0	1561	1	2309	1	3057	1	3805	1
66	0	814	0	1562	0	2310	0	3058	0	3806	0
67	1	815	0	1563	0	2311	1	3059	0	3807	1
68	0	816	0	1564	1	2312	0	3060	1	3808	0
69	0	817	0	1565	1	2313	0	3061	0	3809	0
70	0	818	0	1566	1	2314	1	3062	1	3810	1
71	1	819	0	1567	0	2315	1	3063	0	3811	1
72	0	820	0	1568	1	2316	0	3064	0	3812	0
73	0	821	0	1569	0	2317	0	3065	0	3813	1
74	0	822	1	1570	0	2318	0	3066	0	3814	1
75	0	823	0	1571	1	2319	0	3067	0	3815	1
76	0	824	1	1572	1	2320	0	3068	0	3816	0
77	1	825	0	1573	1	2321	1	3069	0	3817	0
78	1	826	1	1574	1	2322	0	3070	0	3818	1
79	0	827	0	1575	0	2323	0	3071	1	3819	1
80	0	828	1	1576	0	2324	1	3072	1	3820	1
81	1	829	0	1577	1	2325	1	3073	1	3821	0
82	0	830	1	1578	1	2326	0	3074	0	3822	0
83	1	831	0	1579	1	2327	0	3075	1	3823	0
84	0	832	0	1580	0	2328	0	3076	1	3824	1
85	1	833	1	1581	1	2329	1	3077	0	3825	0
86	0	834	1	1582	1	2330	0	3078	0	3826	1
87	1	835	0	1583	0	2331	0	3079	0	3827	1
88	0	836	0	1584	1	2332	1	3080	0	3828	1

89	1	837	1	1585	0	2333	0	3081	0	3829	1
90	0	838	1	1586	1	2334	0	3082	0	3830	0
91	1	839	1	1587	1	2335	0	3083	0	3831	1
92	0	840	1	1588	0	2336	0	3084	0	3832	0
93	0	841	0	1589	1	2337	0	3085	1	3833	1
94	1	842	1	1590	1	2338	0	3086	1	3834	0
95	0	843	0	1591	1	2339	0	3087	0	3835	1
96	0	844	1	1592	1	2340	0	3088	1	3836	1
97	0	845	0	1593	1	2341	1	3089	1	3837	1
98	0	846	1	1594	1	2342	0	3090	0	3838	1
99	0	847	1	1595	1	2343	0	3091	1	3839	1
100	1	848	1	1596	0	2344	1	3092	1	3840	0
101	1	849	0	1597	0	2345	1	3093	0	3841	0
102	0	850	0	1598	0	2346	1	3094	1	3842	1
103	1	851	0	1599	0	2347	1	3095	1	3843	0
104	1	852	1	1600	0	2348	1	3096	1	3844	0
105	1	853	0	1601	0	2349	0	3097	0	3845	0
106	1	854	1	1602	0	2350	0	3098	0	3846	0
107	1	855	1	1603	1	2351	1	3099	0	3847	0
108	1	856	0	1604	0	2352	1	3100	0	3848	0
109	1	857	0	1605	1	2353	0	3101	1	3849	1
110	1	858	0	1606	0	2354	0	3102	0	3850	0
111	0	859	0	1607	0	2355	1	3103	1	3851	1
112	0	860	0	1608	0	2356	0	3104	0	3852	0
113	1	861	0	1609	0	2357	0	3105	1	3853	1
114	1	862	1	1610	1	2358	0	3106	0	3854	0
115	0	863	1	1611	0	2359	1	3107	1	3855	0
116	0	864	1	1612	0	2360	0	3108	1	3856	0
117	0	865	1	1613	1	2361	0	3109	0	3857	0
118	0	866	0	1614	0	2362	0	3110	0	3858	0
119	0	867	1	1615	0	2363	1	3111	0	3859	0
120	1	868	0	1616	1	2364	0	3112	1	3860	0
121	1	869	1	1617	0	2365	1	3113	1	3861	1
122	1	870	0	1618	0	2366	1	3114	1	3862	1
123	1	871	0	1619	1	2367	1	3115	0	3863	0
124	0	872	1	1620	0	2368	0	3116	1	3864	1
125	1	873	1	1621	0	2369	0	3117	1	3865	0
126	1	874	1	1622	0	2370	1	3118	1	3866	1
127	0	875	1	1623	0	2371	0	3119	1	3867	0
128	1	876	1	1624	0	2372	1	3120	0	3868	0
129	1	877	1	1625	0	2373	0	3121	0	3869	1
130	1	878	0	1626	0	2374	0	3122	0	3870	0
131	0	879	0	1627	1	2375	0	3123	1	3871	1
132	0	880	0	1628	1	2376	0	3124	1	3872	0

133	0	881	0	1629	1	2377	1	3125	0	3873	1
134	1	882	1	1630	0	2378	1	3126	0	3874	0
135	1	883	1	1631	1	2379	1	3127	1	3875	1
136	1	884	0	1632	0	2380	1	3128	0	3876	0
137	0	885	1	1633	0	2381	0	3129	0	3877	1
138	0	886	0	1634	0	2382	1	3130	0	3878	0
139	0	887	0	1635	1	2383	1	3131	1	3879	1
140	0	888	1	1636	1	2384	1	3132	1	3880	1
141	0	889	0	1637	0	2385	0	3133	0	3881	1
142	1	890	0	1638	1	2386	0	3134	0	3882	1
143	1	891	1	1639	1	2387	1	3135	1	3883	0
144	0	892	0	1640	0	2388	1	3136	1	3884	0
145	0	893	1	1641	0	2389	0	3137	1	3885	1
146	1	894	1	1642	0	2390	1	3138	0	3886	1
147	0	895	0	1643	1	2391	1	3139	0	3887	1
148	1	896	0	1644	0	2392	0	3140	0	3888	1
149	0	897	1	1645	1	2393	1	3141	0	3889	0
150	1	898	0	1646	1	2394	0	3142	1	3890	1
151	0	899	1	1647	1	2395	1	3143	0	3891	1
152	1	900	0	1648	0	2396	0	3144	0	3892	0
153	0	901	1	1649	0	2397	1	3145	1	3893	1
154	1	902	0	1650	1	2398	1	3146	0	3894	1
155	1	903	0	1651	1	2399	1	3147	1	3895	0
156	0	904	1	1652	0	2400	0	3148	1	3896	1
157	0	905	1	1653	0	2401	0	3149	1	3897	1
158	0	906	0	1654	0	2402	1	3150	1	3898	0
159	0	907	1	1655	1	2403	1	3151	0	3899	0
160	1	908	0	1656	1	2404	0	3152	1	3900	1
161	1	909	0	1657	0	2405	0	3153	0	3901	1
162	0	910	1	1658	1	2406	1	3154	1	3902	0
163	0	911	1	1659	1	2407	0	3155	1	3903	0
164	1	912	0	1660	1	2408	0	3156	0	3904	1
165	1	913	0	1661	0	2409	1	3157	0	3905	0
166	1	914	0	1662	0	2410	0	3158	0	3906	1
167	0	915	0	1663	1	2411	0	3159	0	3907	1
168	0	916	0	1664	1	2412	1	3160	0	3908	1
169	1	917	1	1665	1	2413	1	3161	1	3909	0
170	0	918	0	1666	1	2414	0	3162	1	3910	0
171	0	919	1	1667	1	2415	0	3163	0	3911	0
172	0	920	1	1668	0	2416	0	3164	0	3912	0
173	1	921	0	1669	1	2417	0	3165	1	3913	0
174	0	922	1	1670	0	2418	1	3166	1	3914	0
175	0	923	0	1671	0	2419	1	3167	1	3915	0
176	1	924	1	1672	1	2420	0	3168	1	3916	1

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178	1	926	0	1674	1	2422	1	3170	1	3918	0
179	0	927	1	1675	1	2423	0	3171	1	3919	0
180	0	928	1	1676	0	2424	0	3172	1	3920	0
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182	1	930	0	1678	0	2426	1	3174	0	3922	0
183	0	931	1	1679	1	2427	1	3175	1	3923	0
184	1	932	0	1680	0	2428	1	3176	1	3924	1
185	0	933	1	1681	1	2429	0	3177	0	3925	0
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187	1	935	0	1683	1	2431	0	3179	1	3927	0
188	1	936	1	1684	0	2432	0	3180	1	3928	1
189	0	937	1	1685	0	2433	0	3181	1	3929	0
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191	0	939	0	1687	1	2435	0	3183	1	3931	0
192	0	940	0	1688	0	2436	0	3184	1	3932	0
193	1	941	0	1689	1	2437	0	3185	0	3933	1
194	0	942	0	1690	1	2438	0	3186	0	3934	0
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196	0	944	1	1692	1	2440	1	3188	1	3936	1
197	0	945	1	1693	1	2441	0	3189	0	3937	0
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199	1	947	1	1695	0	2443	0	3191	1	3939	0
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201	1	949	1	1697	1	2445	1	3193	1	3941	0
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205	0	953	0	1701	1	2449	0	3197	1	3945	1
206	1	954	0	1702	1	2450	1	3198	1	3946	0
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210	1	958	1	1706	1	2454	1	3202	1	3950	1
211	1	959	0	1707	1	2455	0	3203	1	3951	0
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214	1	962	1	1710	0	2458	0	3206	1	3954	1
215	1	963	0	1711	1	2459	0	3207	0	3955	0
216	1	964	1	1712	0	2460	1	3208	1	3956	0
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219	0	967	1	1715	1	2463	0	3211	0	3959	0
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221	1	969	0	1717	1	2465	1	3213	0	3961	1
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223	1	971	0	1719	0	2467	0	3215	1	3963	1
224	1	972	0	1720	0	2468	1	3216	1	3964	1
225	0	973	0	1721	0	2469	0	3217	1	3965	1
226	1	974	1	1722	1	2470	1	3218	0	3966	0
227	0	975	0	1723	1	2471	1	3219	1	3967	1
228	1	976	0	1724	0	2472	0	3220	1	3968	1
229	0	977	1	1725	0	2473	0	3221	1	3969	1
230	0	978	0	1726	1	2474	0	3222	1	3970	0
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232	0	980	1	1728	0	2476	1	3224	0	3972	0
233	1	981	0	1729	0	2477	0	3225	0	3973	1
234	0	982	0	1730	0	2478	1	3226	0	3974	0
235	1	983	1	1731	0	2479	0	3227	1	3975	1
236	1	984	1	1732	0	2480	1	3228	1	3976	0
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239	1	987	1	1735	1	2483	0	3231	0	3979	1
240	0	988	1	1736	0	2484	1	3232	1	3980	0
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246	1	994	1	1742	0	2490	0	3238	0	3986	1
247	1	995	0	1743	1	2491	0	3239	1	3987	0
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257	1	1005	1	1753	1	2501	0	3249	1	3997	1
258	1	1006	1	1754	1	2502	0	3250	0	3998	0
259	1	1007	1	1755	0	2503	1	3251	1	3999	0
260	0	1008	0	1756	1	2504	1	3252	1	4000	0
261	1	1009	1	1757	0	2505	0	3253	0	4001	1
262	1	1010	1	1758	0	2506	1	3254	1	4002	0
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264	1	1012	1	1760	0	2508	0	3256	1	4004	0

265	0	1013	0	1761	0	2509	1	3257	1	4005	0
266	0	1014	1	1762	0	2510	1	3258	1	4006	1
267	0	1015	0	1763	1	2511	0	3259	1	4007	0
268	0	1016	1	1764	1	2512	1	3260	0	4008	0
269	0	1017	0	1765	1	2513	1	3261	1	4009	1
270	0	1018	1	1766	1	2514	0	3262	0	4010	0
271	0	1019	0	1767	0	2515	0	3263	1	4011	0
272	1	1020	1	1768	0	2516	0	3264	0	4012	0
273	1	1021	0	1769	1	2517	0	3265	0	4013	0
274	1	1022	1	1770	1	2518	0	3266	0	4014	1
275	1	1023	1	1771	0	2519	0	3267	1	4015	1
276	1	1024	0	1772	1	2520	0	3268	1	4016	1
277	0	1025	0	1773	1	2521	0	3269	0	4017	1
278	1	1026	1	1774	0	2522	1	3270	0	4018	0
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284	0	1032	1	1780	1	2528	1	3276	1	4024	0
285	1	1033	1	1781	0	2529	1	3277	1	4025	1
286	1	1034	0	1782	1	2530	1	3278	1	4026	0
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315	1	1063	0	1811	0	2559	1	3307	1	4055	1
316	1	1064	0	1812	1	2560	1	3308	1	4056	0
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324	1	1072	0	1820	1	2568	0	3316	0	4064	0
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331	0	1079	1	1827	0	2575	0	3323	1	4071	0
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334	1	1082	0	1830	0	2578	0	3326	1	4074	0
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355	0	1103	0	1851	0	2599	0	3347	1	4095	1
356	1	1104	1	1852	1	2600	1	3348	1	4096	0
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362	1	1110	0	1858	1	2606	1	3354	1	4102	0
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366	1	1114	0	1862	0	2610	0	3358	1	4106	1
367	0	1115	1	1863	1	2611	1	3359	0	4107	0
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370	0	1118	1	1866	1	2614	1	3362	0	4110	1
371	1	1119	0	1867	0	2615	1	3363	0	4111	0
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373	0	1121	1	1869	1	2617	0	3365	0	4113	0
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375	1	1123	1	1871	0	2619	0	3367	0	4115	0
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377	0	1125	1	1873	0	2621	1	3369	1	4117	1
378	1	1126	0	1874	1	2622	0	3370	1	4118	0
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380	0	1128	1	1876	1	2624	0	3372	0	4120	1
381	1	1129	1	1877	0	2625	0	3373	1	4121	1
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388	0	1136	0	1884	0	2632	0	3380	1	4128	0
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390	0	1138	0	1886	1	2634	1	3382	0	4130	1
391	0	1139	1	1887	0	2635	1	3383	1	4131	0
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394	1	1142	1	1890	1	2638	1	3386	1	4134	0
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397	1	1145	0	1893	0	2641	1	3389	0	4137	1
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413	1	1161	1	1909	1	2657	1	3405	1	4153	1
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415	1	1163	1	1911	1	2659	0	3407	0	4155	0
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417	0	1165	1	1913	0	2661	0	3409	1	4157	0
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419	1	1167	0	1915	0	2663	1	3411	0	4159	0
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421	0	1169	0	1917	0	2665	0	3413	0	4161	1
422	0	1170	0	1918	1	2666	0	3414	1	4162	1
423	0	1171	1	1919	1	2667	0	3415	0	4163	1
424	0	1172	1	1920	0	2668	1	3416	0	4164	0
425	1	1173	0	1921	0	2669	1	3417	0	4165	0
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427	0	1175	0	1923	0	2671	0	3419	1	4167	0
428	1	1176	1	1924	0	2672	1	3420	0	4168	1
429	1	1177	0	1925	1	2673	1	3421	1	4169	0
430	1	1178	0	1926	1	2674	0	3422	1	4170	0
431	1	1179	1	1927	0	2675	0	3423	0	4171	0
432	0	1180	0	1928	1	2676	1	3424	0	4172	1
433	1	1181	1	1929	0	2677	0	3425	1	4173	1
434	1	1182	1	1930	1	2678	1	3426	0	4174	1
435	0	1183	0	1931	1	2679	1	3427	0	4175	0
436	0	1184	0	1932	1	2680	0	3428	1	4176	1
437	1	1185	1	1933	1	2681	0	3429	1	4177	1
438	1	1186	0	1934	1	2682	0	3430	0	4178	1
439	1	1187	1	1935	0	2683	1	3431	1	4179	0
440	0	1188	0	1936	1	2684	1	3432	1	4180	1

441	0	1189	1	1937	0	2685	0	3433	1	4181	1
442	0	1190	1	1938	0	2686	1	3434	0	4182	1
443	1	1191	1	1939	0	2687	1	3435	0	4183	1
444	0	1192	1	1940	0	2688	0	3436	1	4184	0
445	0	1193	1	1941	1	2689	0	3437	0	4185	0
446	0	1194	0	1942	0	2690	0	3438	0	4186	1
447	1	1195	1	1943	0	2691	0	3439	0	4187	1
448	1	1196	0	1944	1	2692	0	3440	0	4188	1
449	1	1197	0	1945	1	2693	1	3441	1	4189	1
450	0	1198	0	1946	1	2694	0	3442	1	4190	0
451	0	1199	0	1947	1	2695	1	3443	0	4191	1
452	1	1200	1	1948	1	2696	1	3444	0	4192	0
453	1	1201	0	1949	0	2697	0	3445	1	4193	0
454	0	1202	1	1950	1	2698	1	3446	1	4194	0
455	1	1203	1	1951	0	2699	0	3447	0	4195	1
456	1	1204	1	1952	0	2700	0	3448	1	4196	0
457	1	1205	1	1953	1	2701	1	3449	0	4197	0
458	0	1206	0	1954	1	2702	0	3450	0	4198	0
459	1	1207	1	1955	1	2703	1	3451	1	4199	0
460	0	1208	1	1956	1	2704	1	3452	1	4200	1
461	1	1209	1	1957	0	2705	0	3453	0	4201	1
462	0	1210	1	1958	0	2706	1	3454	1	4202	0
463	0	1211	0	1959	0	2707	0	3455	0	4203	1
464	0	1212	1	1960	0	2708	0	3456	0	4204	0
465	0	1213	1	1961	0	2709	1	3457	0	4205	0
466	0	1214	0	1962	1	2710	0	3458	0	4206	0
467	1	1215	1	1963	0	2711	0	3459	0	4207	1
468	1	1216	0	1964	1	2712	0	3460	1	4208	1
469	1	1217	1	1965	0	2713	0	3461	0	4209	1
470	1	1218	1	1966	1	2714	1	3462	1	4210	0
471	1	1219	0	1967	1	2715	1	3463	0	4211	1
472	0	1220	1	1968	0	2716	1	3464	0	4212	1
473	1	1221	1	1969	0	2717	0	3465	0	4213	0
474	0	1222	0	1970	1	2718	0	3466	0	4214	1
475	1	1223	1	1971	1	2719	1	3467	1	4215	0
476	1	1224	0	1972	1	2720	0	3468	1	4216	1
477	1	1225	0	1973	1	2721	1	3469	1	4217	0
478	1	1226	0	1974	0	2722	1	3470	1	4218	0
479	1	1227	0	1975	1	2723	0	3471	0	4219	0
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483	0	1231	0	1979	0	2727	1	3475	0	4223	1
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485	0	1233	0	1981	1	2729	1	3477	1	4225	0
486	0	1234	0	1982	0	2730	1	3478	1	4226	0
487	0	1235	0	1983	1	2731	0	3479	1	4227	1
488	0	1236	0	1984	0	2732	0	3480	0	4228	0
489	1	1237	1	1985	1	2733	1	3481	0	4229	1
490	1	1238	0	1986	1	2734	1	3482	0	4230	0
491	1	1239	1	1987	0	2735	1	3483	1	4231	0
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493	0	1241	1	1989	1	2737	1	3485	1	4233	1
494	1	1242	0	1990	1	2738	0	3486	0	4234	1
495	1	1243	1	1991	1	2739	1	3487	0	4235	0
496	1	1244	1	1992	1	2740	1	3488	1	4236	0
497	1	1245	0	1993	1	2741	0	3489	1	4237	0
498	0	1246	0	1994	1	2742	0	3490	0	4238	1
499	0	1247	0	1995	0	2743	1	3491	1	4239	1
500	1	1248	1	1996	0	2744	1	3492	1	4240	0
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502	1	1250	0	1998	0	2746	1	3494	0	4242	1
503	0	1251	0	1999	1	2747	0	3495	0	4243	0
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506	1	1254	1	2002	0	2750	0	3498	1	4246	1
507	0	1255	1	2003	1	2751	0	3499	0	4247	0
508	0	1256	1	2004	1	2752	1	3500	0	4248	1
509	0	1257	0	2005	1	2753	1	3501	0	4249	0
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511	1	1259	0	2007	0	2755	1	3503	1	4251	1
512	0	1260	0	2008	1	2756	0	3504	1	4252	1
513	1	1261	0	2009	0	2757	0	3505	0	4253	1
514	0	1262	0	2010	1	2758	1	3506	1	4254	1
515	0	1263	0	2011	0	2759	0	3507	0	4255	1
516	1	1264	1	2012	0	2760	1	3508	1	4256	1
517	0	1265	0	2013	0	2761	0	3509	0	4257	1
518	0	1266	1	2014	1	2762	1	3510	0	4258	0
519	0	1267	0	2015	0	2763	1	3511	0	4259	1
520	1	1268	0	2016	1	2764	1	3512	1	4260	0
521	1	1269	1	2017	0	2765	1	3513	0	4261	0
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523	1	1271	0	2019	1	2767	1	3515	0	4263	0
524	1	1272	0	2020	0	2768	0	3516	0	4264	1
525	0	1273	1	2021	0	2769	0	3517	1	4265	1
526	1	1274	1	2022	1	2770	1	3518	1	4266	1
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529	1	1277	1	2025	0	2773	1	3521	1	4269	1
530	0	1278	0	2026	1	2774	0	3522	0	4270	1
531	1	1279	0	2027	0	2775	1	3523	1	4271	1
532	0	1280	0	2028	1	2776	0	3524	0	4272	0
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534	0	1282	1	2030	0	2778	0	3526	1	4274	0
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536	1	1284	1	2032	1	2780	1	3528	0	4276	1
537	1	1285	0	2033	1	2781	0	3529	0	4277	0
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540	1	1288	1	2036	1	2784	0	3532	1	4280	1
541	0	1289	0	2037	1	2785	0	3533	0	4281	1
542	0	1290	0	2038	0	2786	1	3534	1	4282	1
543	0	1291	1	2039	0	2787	1	3535	1	4283	1
544	1	1292	0	2040	1	2788	1	3536	1	4284	0
545	0	1293	0	2041	0	2789	0	3537	0	4285	1
546	1	1294	0	2042	0	2790	1	3538	0	4286	0
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548	1	1296	0	2044	0	2792	1	3540	0	4288	0
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550	1	1298	0	2046	0	2794	0	3542	0	4290	0
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552	0	1300	0	2048	1	2796	0	3544	0	4292	1
553	0	1301	0	2049	1	2797	1	3545	0	4293	0
554	1	1302	1	2050	0	2798	0	3546	1	4294	1
555	0	1303	1	2051	1	2799	0	3547	1	4295	1
556	0	1304	1	2052	0	2800	0	3548	0	4296	0
557	1	1305	1	2053	1	2801	1	3549	1	4297	1
558	0	1306	1	2054	1	2802	0	3550	1	4298	0
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562	1	1310	0	2058	1	2806	0	3554	0	4302	1
563	1	1311	0	2059	0	2807	1	3555	1	4303	0
564	1	1312	1	2060	0	2808	1	3556	1	4304	0
565	1	1313	0	2061	1	2809	1	3557	0	4305	1
566	0	1314	1	2062	0	2810	1	3558	0	4306	0
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569	0	1317	1	2065	1	2813	0	3561	1	4309	1
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571	0	1319	0	2067	1	2815	1	3563	1	4311	1
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576	1	1324	0	2072	0	2820	0	3568	1	4316	0
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579	1	1327	0	2075	0	2823	1	3571	0	4319	1
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585	1	1333	1	2081	0	2829	0	3577	0	4325	1
586	0	1334	1	2082	1	2830	1	3578	0	4326	0
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595	0	1343	1	2091	1	2839	1	3587	0	4335	1
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597	1	1345	1	2093	0	2841	0	3589	0	4337	0
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601	1	1349	0	2097	1	2845	0	3593	0	4341	1
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604	0	1352	1	2100	0	2848	1	3596	0	4344	0
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615	0	1363	0	2111	1	2859	0	3607	0	4355	0
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619	1	1367	1	2115	0	2863	0	3611	0	4359	1
620	1	1368	0	2116	0	2864	1	3612	1	4360	0
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622	0	1370	0	2118	1	2866	1	3614	1	4362	0
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624	1	1372	0	2120	0	2868	1	3616	0	4364	1
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626	1	1374	1	2122	0	2870	0	3618	1	4366	0
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628	1	1376	0	2124	0	2872	1	3620	1	4368	1
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634	0	1382	0	2130	1	2878	1	3626	0	4374	0
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637	0	1385	1	2133	0	2881	1	3629	1	4377	0
638	1	1386	0	2134	0	2882	0	3630	1	4378	0
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641	1	1389	1	2137	0	2885	0	3633	1	4381	1
642	0	1390	0	2138	1	2886	0	3634	1	4382	0
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644	1	1392	1	2140	0	2888	1	3636	0	4384	0
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669	1	1417	1	2165	1	2913	0	3661	1	4409	0
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683	0	1431	0	2179	1	2927	1	3675	0	4423	0
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685	1	1433	0	2181	0	2929	0	3677	1	4425	1
686	1	1434	0	2182	1	2930	1	3678	1	4426	0
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689	1	1437	1	2185	0	2933	0	3681	0	4429	0
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691	0	1439	0	2187	1	2935	1	3683	0	4431	1
692	0	1440	1	2188	1	2936	0	3684	0	4432	1
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694	1	1442	0	2190	0	2938	0	3686	1	4434	1
695	1	1443	0	2191	0	2939	1	3687	0	4435	0
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697	0	1445	1	2193	0	2941	0	3689	0	4437	0
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700	1	1448	0	2196	1	2944	0	3692	1	4440	1
701	1	1449	0	2197	0	2945	0	3693	0	4441	0
702	0	1450	0	2198	1	2946	0	3694	1	4442	0
703	0	1451	1	2199	0	2947	0	3695	1	4443	1
704	0	1452	1	2200	1	2948	1	3696	0	4444	0

705	1	1453	1	2201	0	2949	0	3697	0	4445	1
706	0	1454	1	2202	1	2950	1	3698	1	4446	1
707	1	1455	1	2203	0	2951	1	3699	0	4447	1
708	0	1456	1	2204	0	2952	1	3700	0	4448	1
709	0	1457	1	2205	0	2953	0	3701	0	4449	0
710	1	1458	0	2206	1	2954	0	3702	0	4450	1
711	1	1459	1	2207	0	2955	0	3703	0	4451	1
712	0	1460	1	2208	0	2956	0	3704	0	4452	1
713	0	1461	1	2209	1	2957	1	3705	1	4453	1
714	1	1462	0	2210	0	2958	1	3706	0	4454	0
715	0	1463	0	2211	0	2959	0	3707	1	4455	0
716	1	1464	1	2212	0	2960	0	3708	1	4456	0
717	0	1465	1	2213	1	2961	0	3709	0	4457	0
718	1	1466	0	2214	0	2962	0	3710	1	4458	1
719	0	1467	1	2215	0	2963	0	3711	1	4459	1
720	0	1468	0	2216	1	2964	0	3712	1	4460	1
721	1	1469	0	2217	0	2965	0	3713	0	4461	0
722	0	1470	1	2218	1	2966	1	3714	1	4462	0
723	0	1471	0	2219	0	2967	1	3715	1	4463	0
724	1	1472	1	2220	0	2968	1	3716	0	4464	0
725	0	1473	0	2221	0	2969	0	3717	1	4465	1
726	1	1474	1	2222	1	2970	0	3718	0	4466	1
727	1	1475	0	2223	0	2971	1	3719	1	4467	1
728	1	1476	1	2224	0	2972	1	3720	0	4468	0
729	0	1477	0	2225	1	2973	0	3721	1	4469	0
730	1	1478	0	2226	0	2974	1	3722	0	4470	1
731	0	1479	0	2227	0	2975	1	3723	0	4471	1
732	1	1480	1	2228	0	2976	1	3724	1	4472	1
733	0	1481	1	2229	0	2977	1	3725	1	4473	0
734	0	1482	1	2230	0	2978	0	3726	0	4474	0
735	0	1483	0	2231	0	2979	1	3727	1	4475	1
736	1	1484	0	2232	1	2980	0	3728	0	4476	1
737	0	1485	1	2233	0	2981	0	3729	0	4477	1
738	1	1486	0	2234	1	2982	1	3730	1	4478	1
739	1	1487	1	2235	1	2983	1	3731	1	4479	0
740	0	1488	0	2236	1	2984	1	3732	1	4480	0
741	0	1489	0	2237	0	2985	0	3733	0	4481	1
742	1	1490	0	2238	1	2986	0	3734	0	4482	1
743	1	1491	1	2239	1	2987	1	3735	1		
744	1	1492	0	2240	0	2988	0	3736	1		
745	1	1493	0	2241	1	2989	1	3737	0		
746	1	1494	1	2242	1	2990	0	3738	0		
747	1	1495	1	2243	1	2991	1	3739	1		

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