\[
\begin{align*}
    x_1 &= x_{2n-1} + x_{2n+1} + x_{3n} = 0 \pmod{2n} \\
    -x_1 + x_3 + x_{2n+1} + x_{2n+2} &= 0 \pmod{2n} \\
    \vdots \\
    -x_{2i-1} + x_{2i+1} + x_{2n-i} + x_{2n+i+1} &= 0 \pmod{2n} \\
    -x_{2n-5} + x_{2n-3} + x_{3n-2} + x_{3n-1} &= 0 \pmod{2n} \\
    -x_{2n-3} + x_{2n-1} + x_{3n-1} + x_{3n} &= 0 \pmod{2n}
\end{align*}
\]

We can rewrite these equations in another form

\[
\begin{align*}
    x_1 - x_{2n-1} + x_{2n+1} + x_{3n} &= k_1 \cdot 2n \\
    -x_1 + x_3 + x_{2n+1} + x_{2n+2} &= k_2 \cdot 2n \\
    \vdots \\
    -x_{2i-1} + x_{2i+1} + x_{2n+i} + x_{2n+i+1} &= k_i \cdot 2n \\
    \vdots \\
    -x_{2n-5} + x_{2n-3} + x_{3n-2} + x_{3n-1} &= k_{n-1} \cdot 2n \\
    -x_{2n-3} + x_{2n-1} + x_{3n-1} + x_{3n} &= k_n \cdot 2n
\end{align*}
\]

For each \( k_i (1 \leq i \leq n) \), it satisfies

\[-(2n+1)+1+2n+1+2n+2 \leq k_i \cdot 2n \leq -1+2n-1+3n-1+3n\]

That is

\[2n+5 \leq k_i \cdot 2n \leq 8n-3\]

Since \( k_i \) is an integer, we conclude \( k_i = 2 \) or \( k_i = 3 \).

On the other hand, from the above equations, we sum both side

\[2 \sum_{i=1}^{2n} x_{2n+1} = 2n \cdot \sum_{i=1}^{n} k_i \]

But \( x_{2n+1} \in \{2n+1, 3n\} \),

\[2 \sum_{i=1}^{n} x_{2n+1} = 2 \sum_{i=1}^{n} 2n + i = 2 \sum_{i=1}^{n} (2n+1+3n)n = 2n \cdot \frac{(5n+1)2}{2} = 2n \cdot (2 + 2 + \cdots + 2 + 3 + 3 + \cdots + 3)\]

That is

\[\sum_{i=1}^{n} k_i = (2 + 2 + \cdots + 2 + 3 + 3 + \cdots + 3)\]

Hence, we can select \((k_1, k_2, \ldots, k_{n+1}, k_n) = (2, 3, 2, 3, \ldots, 3, 3)\).

Next, we need to construct the order of \((2n+1, 2n+2, \ldots, 3n)\) in \((x_{2n+1}, x_{2n+2}, \ldots, x_{3n})\). The method of construction is as follows: