Let $b_0,b_{m-1} \ldots b_{b_1}$ be the binary representation of $n$. That is $n = (b_0,b_{m-1} \ldots b_{b_1})_2$. Since $n$ is an odd number, $b_m = 1$ and $b_1 = 1$. We proceed the following algorithm recursively:

Step 1: Let $\text{ptr}=1, X = (1)$
Step 2: Expand $X = (y_1, y_2, y_3, \ldots, y_n)$ to $T = \text{Double size of } X$ such that $T = (y_1, 2y_2, y_3, 2y_4, \ldots, y_n, 2y_{n+1})$.
Step 3: If $b_{\text{ptr}} = 1$, then $T = (y_1, 2y_2, y_3, 2y_4, \ldots, y_n, 2y_{n+1})$.
If $b_{\text{ptr}} = 0$, then $T$ no change.
Step 4: Let $X = T$;
Step 5: If $\text{ptr} = n$, then each element in $X$ add $2n$, return $X$;
Step 6: $\text{ptr} = \text{ptr} + 1$, goto Step 2;

The order that we want is in the order of elements in $X$.
Here, it is better we illustrate some examples.

**Example 1.** $n=3, (k_1, k_2, k_3) = (2,3,3)$. Since the binary representation of 3 is $(b_2b_1)_2 = (11)_2$.
We have $m=2$, $X=(1)$ and $T=(1,2)$. Since $b_1=1$ we expand $T$ to $T=(1,2,3)$. Let $X=(1,2,3)$. Now ptr change to 2. We see that $b_2=1$ by step 5 each element in $X$ is increase by $2n=2\times3=6$. Thus $X=(7,8,9)$
Hence we have the following labeling (Figure 7)

![Figure 7](image)

**Example 2.** $n=5, (k_1, k_2, k_3, k_4, k_5) = (2,3,2,3,3)$. The binary representation of 5 $(b_2b_1)_2 = (101)_2$.
Hence $m=3$. Initially, we have $X=(1)$. The ptr point to 1, Expand X to $T=(1,2)$. Now $X=(1,2)$. Then ptr $=2$, $T$ is expand to $(1,2,3)$. Since $b_2=1$, we have $T=(1,4,2,3,5)$. Now ptr $=3$, we have $X=(1,4,2,3,5)$
Each term add $2n=2\times5=10$. Thus we obtain $X=(11,14,12,13,15)$.

![Figure 8](image)

Hence $(x_{10}, x_{11}, x_{12}, x_{13}, x_{14}, x_{15}) = (11,14,12,13,15)$.(Figure 8)