Problem E
Hexadecimal Statistic

Given a sequence of positive integers in hexadecimal representation, for example, $S = [\texttt{9af47c0b}, \texttt{2545557}, \texttt{ff6447979}]$, we define $\texttt{sum}(S)$ as the sum of all elements in S. Now, consider a certain permutation of the 16 hexadecimal digits, for example, $p = [\texttt{4}, \texttt{9}, \texttt{5}, \texttt{a}, \texttt{0}, \texttt{c}, \texttt{f}, \texttt{3}, \texttt{d}, \texttt{7}, \texttt{8}, \texttt{b}, \texttt{1}, \texttt{2}, \texttt{6}, \texttt{e}]$. Beginning with the base sequence S, we can define a transformed sequence $S^{[4]}$, obtained with the removal of all occurences of the hexadecimal digit 4 from all integers in S, $S^{[4]} = [\texttt{9af7c0b}, \texttt{255557}, \texttt{ff67979}]$. Next, we can remove the digit 9 and obtain $S^{[4,9]} = [\texttt{af7c0b}, \texttt{255557}, \texttt{ff677}]$. Following the digit order in the permutation p, we can define in this way, 16 sequences: $S^{[4]}, S^{[4,9]}, S^{[4,9,5]}, \ldots, S^{[4,9,5,a,0,c,f,3,d,7,8,b,1,2,6,e]}$. We are interested in the sum of all elements from these 16 sequences:

$$\texttt{total}(S, p) = \texttt{sum}(S^{[4]}) + \texttt{sum}(S^{[4,9]}) + \texttt{sum}(S^{[4,9,5]}) + \cdots + \texttt{sum}(S^{[4,9,5,a,0,c,f,3,d,7,8,b,1,2,6,e]})$$

Clearly, this total depends on the permutation p used in the sucessive removal. Given a sequence of N positive integers in hexadecimal, you have to compute, considering all possible permutations of the 16 hexadecimal digits: the minimum total, the maximum total and the sum of all totals from all permutations. For the sum of all totals, print the result modulo 3b9aca07 ($10^9 + 7$ on base 10).

Input

The first line of the input contains an integer N, $\texttt{1} \leq N \leq \texttt{3f}$, representing the size of the sequence. The next N lines contain, each one, a positive integer P, $\texttt{0} \leq P \leq \texttt{ffffffff}$, defining the initial sequence S of integers. All numbers in the input are in hexadecimal, with lowercase letters.

Output

Output one line containing three positive integers, in hexadecimal with lowercase letters, representing the minimum total, the maximum total and the sum of all totals considering all possible permutations of the 16 hexadecimal digits.

Examples

Examples

<table>
<tr><th>Input</th><th>Output</th></tr>
<tr><td><pre>3
9af47c0b
2545557
ff6447979
1
ffffffff</pre></td><td><pre>1312c99c b4e87e9387 5bb5fc
0 efffffff1 15dac189</pre></td></tr>
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