Problem 1. «PIN code»

A PIN code $P = \overline{p_1 p_2 \ldots}$ is an arbitrary number consisting of a few pairwise different digits in ascending order ($p_1 < p_2 < \ldots$). Bob got his personal PIN code in the bank, but he decided that the code is not secure enough and changed it in the following way:

1. Bob multiplied his PIN code P by 999 and obtained the number $A = \overline{a_1 a_2 \ldots}$;

2. Then he found the sum of all digits of A: $a_1 + a_2 + \ldots = S = \overline{s_1 s_2 \ldots}$;

3. Finally, he took all digits (starting from 0) that are smaller than s_1, sorted them in ascending order and inserted between digits s_1 and s_2 in the number S. Resulting number P' is Bob's new PIN code. For example, if S was 345, then, after such insertion we obtain $P' = 301245$.

Find the new code P'!