Problem M. String Problem

Input file:	`standard input`
Output file:	`standard output`
Time limit:	2 seconds
Memory limit:	512 megabytes

JB hates solving string problems. Therefore, when his friend Potato gives him a string problem to solve, he immediately gives it to you and continues playing Genshin Impact, the greatest game in the world.

You are given a string and then for each nonempty prefix, you need to find the largest substring in lexicographical order and point out the leftmost occurrence of the largest substring.

Input

The only line contains a string S ($1 \le |S| \le 10^6$), which consists of lowercase Latin letters, `a` to `z`.

Output

Output $|S|$ lines, the i-th of which contains two integers l_i and r_i, indicating the leftmost occurrence of the largest substring in the prefix of length i.

Examples

standard input	standard output
potato	1 1 1 2 3 3 3 4 3 5 5 6
pbpbppb	1 1 1 2 1 3 1 4 1 5 5 6 5 7