Substrings

You are given a string S which consists of 250000 lowercase latin letters at most. We define F(x) as the maximal number of times that some string with length x appears in S. For example for string 'ababa' F(3) will be 2 because there is a string 'aba' that occurs twice. Your task is to output F(i) for every i so that 1<=i<=|S|.

Input

String S consists of at most 250000 lowercase latin letters.

Output

Output |S| lines. On the i-th line output F(i).

Example

Input:
ababa

Output:
3
2
2
1
1