

# Alphabetti

September 2022  
C++ — 2 SEC — 512 MB

After tidying her room, Tina has found another box full of wooden blocks. This time, the blocks are each inscribed with a letter of the alphabet.

Tina loves palindromes (her surname is Anit after all), so she always arranges her blocks so they read the same forwards and backwards.

Tina considers all of the possible palindromes that she can make with a selection of her blocks. She wants to know what the  $i$ th palindrome is in lexicographic order.

**INPUT** You will be given 2 integers,  $n$  and  $i$ , followed by a string of  $n$  uppercase letters. Tina wishes to know the  $i$ th palindrome - in lexicographic order - that can be made from a selection of the  $n$  blocks. You will always be given a valid input.

$$1 \leq n \leq 35$$
$$1 \leq i < 2^{64}$$

**OUTPUT** Output a string, the  $i$ th palindrome - in lexicographic order - that can be made from a selection of the  $n$  blocks.

**SAMPLE** For example, suppose Tina has the blocks AAABBC. She can make the following palindromes, given in lexicographic order: A AA AAA ABA ABABA ABBA ABCBA ACA B BAB BAAB BAAAB BACAB BB BCB C.

## INPUT

6 7  
CAABAB

10 50  
CDEFABFBDE

20 64660  
AAAAABBBBBCCCCDDEEE

## OUTPUT

ABCBA

BFDADFB

EAE