

Bracket Sequence

Correct Bracket Sequence (CBS) is a sequence that can be obtained through following rules:

- 1) An empty string is the CBS.
- 2) If A is a CBS, then B = (A) is also a CBS.
- 3) If A is a CBS, then B = [A] is also a CBS.
- 4) If A and B are CBS, then C = AB is also a CBS.

Length of the CBS is the number of brackets in it, and this number is always even.

Assume that '(' < ')' < '[' < ']'.

CBS $a_1a_2 \dots a_n$ is lexicographically smaller than the CBS $b_1b_2 \dots b_n$ if and only if there exists an integer i , $i \leq n$, so that $a_j = b_j$, for each j , $1 \leq j < i$ and $a_i < b_i$.

Illustration

Enumerate all CBS length 4 in lexicographical order: $()()$, $()[]$, $(())$, $([])$, $[][]$, $[][()]$, $[][]$.

Task

Your task is to find k-th CBS with length n in lexicographical order

Input

Contains 2 integers n (2..250) and k ($1..10^{120}$)

Output

Print the k-th CBS with length n in lexicographical order

Example

Input:

4

3

Output:

$()[]$