

Problem L

Palindromic Parentheses

Construct a parentheses sequence consisting of N characters such that it is **balanced** and the length of its **longest palindromic subsequence (LPS)** is exactly K . Determine whether such a construction is possible. If there are several possible sequences, construct any of them.

A parentheses sequence consists of only character `(` and `)`. A parentheses sequence is **balanced** if each character `(` has a corresponding character `)` and the pairs of parentheses are properly nested. For example, `()`, `(())`, `(())()`, and `((())()` are balanced. However, `)()`, `((()`, and `()()` are not balanced.

A sequence is **palindromic** if it reads the same backwards as forwards. For example, `((,)`, `(())()`, and `((((` are palindromic. However, `()`, `)()`, and `(((` are not palindromic.

A **subsequence** can be derived from another sequence by removing zero or more characters without changing the order of the remaining characters. For example, `(,))()`, `(())()`, and `((())()` are subsequence of `((())()`. However, `)()` and `((())()` are not subsequence of `((())()`.

The **longest palindromic subsequence (LPS)** of a sequence is a subsequence with the maximum number of characters, derived from that sequence and it is palindromic. For example, the LPS of sequence `((())()` is `((((`, which can be obtained by removing the second and sixth characters. Therefore, the length of the LPS of `((())()` is 4.

Input

Input consists of two integers N K ($2 \leq N \leq 2000$; $1 \leq K \leq N$). N is an even number.

Output

If there is no such parentheses sequence such that it is balanced and the length of its LPS is exactly K , then output `-1`.

Otherwise, output a string of N characters, representing the parentheses sequence. If there are several possible answers, output any of them.

Sample Input #1

```
6 4
```

Sample Output #1

```
(( ))()
```

Sample Input #2

```
6 3
```

Sample Output #2

```
((())
```

Explanation for the sample input/output #2

The LPS of $((())$ is either $(($ (by removing all $)$ characters, or $)$) by removing all $($ characters.

The output $((())$ also satisfies the requirements.

Sample Input #3

```
4 1
```

Sample Output #3

```
-1
```

Explanation for the sample input/output #3

The only possible balanced parentheses sequences are $(())$ and $()()$. The length of the LPS of $(())$ and $()()$ are 2 and 3, respectively.

Sample Input #4

```
14 11
```

Sample Output #4

```
()((())(())()
```

Explanation for the sample input/output #4

The LPS of $()((())(())()$ is $)())(())()$, which can be obtained by removing the first, fourth, and fifth characters.