

Problem J : Magic with Cards

Mahsa has been practicing shuffling cards for a few months now. Tonight, she finally decided to invite her friends over and show off her new skills. So she picks up a deck with $2n$ cards, shows her friends the face of the cards without changing the deck order and asks someone to pick two positions i and j in the deck. Then, she tells everyone that she is going to move the card in the i -th position to the j -th position by applying only two types of shuffles.

Assume the cards in the deck are $\langle c_1, c_2, \dots, c_{2n} \rangle$. Mahsa can perform these two shuffles as many times as she wants:

Riffle: Divide the cards into two parts $\langle c_1, \dots, c_n \rangle$ and $\langle c_{n+1}, \dots, c_{2n} \rangle$ and produce $\langle c_1, c_{n+1}, c_2, c_{n+2}, \dots, c_n, c_{2n} \rangle$.

Scuffle: From $\langle c_1, c_2, \dots, c_{2n} \rangle$, produce $\langle c_2, c_1, c_4, c_3, \dots, c_{2n}, c_{2n-1} \rangle$.

Help Mahsa find out the minimum number of shuffles she needs, and she'll figure out the rest.

Input

The input consists of a single line containing three space-separated integers n , i and j ($1 \leq n \leq 10^5$ and $1 \leq i, j \leq 2n$).

Output

Print a single integer, the minimum number of shuffles required to bring the i -th card to j -th position. If it is not possible to do so, print -1 instead.

Example

Standard Input	Standard Output
4 3 8	3
Standard Input	Standard Output
5 4 1	5
Standard Input	Standard Output
1 1 1	0