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 whithout 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 $\langle c_1, c_2, \ldots, c_{2n} \rangle$. Mahsa can perform these two shuffles as many times as she wants:

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

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

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 ($1 \leqslant n \leqslant 10^5$ and $1 \leqslant i, j \leqslant 2n$).

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