

E. Excitation of Atoms

time limit per test: 2 seconds
 memory limit per test: 256 megabytes
 input: standard input
 output: standard output

Mr. Chanek is currently participating in a science fair that is popular in town. He finds an exciting puzzle in the fair and wants to solve it.

There are N atoms numbered from 1 to N . These atoms are especially quirky. Initially, each atom is in normal state. Each atom can be in an excited. Exciting atom i requires D_i energy. When atom i is excited, it will give A_i energy. You can excite any number of atoms (including zero).

These atoms also form a peculiar one-way bond. For each i , ($1 \leq i < N$), if atom i is excited, atom E_i will also be excited at no cost. Initially, $E_i = i + 1$. Note that atom N cannot form a bond to any atom.

Mr. Chanek must change **exactly** K bonds. Exactly K times, Mr. Chanek chooses an atom i , ($1 \leq i < N$) and changes E_i to a different value other than i and the current E_i . Note that an atom's bond can remain unchanged or changed more than once. Help Mr. Chanek determine the maximum energy that he can achieve!

note: You must first change **exactly** K bonds before you can start exciting atoms.

Input

The first line contains two integers N K ($4 \leq N \leq 10^5$, $0 \leq K < N$), the number of atoms, and the number of bonds that must be changed.

The second line contains N integers A_i ($1 \leq A_i \leq 10^6$), which denotes the energy given by atom i when on excited state.

The third line contains N integers D_i ($1 \leq D_i \leq 10^6$), which denotes the energy needed to excite atom i .

Output

A line with an integer that denotes the maximum number of energy that Mr. Chanek can get.

Example

input	Copy
6 1 5 6 7 8 10 2 3 5 6 7 1 10	
output	Copy
35	

Note

An optimal solution to change E_5 to 1 and then excite atom 5 with energy 1. It will cause atoms 1, 2, 3, 4, 5 be excited. The total energy gained by Mr. Chanek is $(5 + 6 + 7 + 8 + 10) - 1 = 35$.

Another possible way is to change E_3 to 1 and then exciting atom 3 (which will excite atom 1, 2, 3) and exciting atom 4 (which will excite atom 4, 5, 6). The total energy gained by Mr. Chanek is $(5 + 6 + 7 + 8 + 10 + 2) - (6 + 7) = 25$ which is not optimal.

2020 ICPC, COMPFEST 12, Indonesia Multi-Provincial Contest (Unrated, Online Mirror, ICPC Rules, Teams Preferred)

Finished

Practice



→ Virtual participation

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Clone Contest

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Language: GNU G++17 9.2.0 (64 bit, r) ▼

Choose file: Choose File No file chosen

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- Statements #1 (id) ✕
- Statements #2 (en) ✕

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