Just sort





Once upon a time, there was an increasing integer sequence A_0 , A_1 , A_2 , ... A_{n-1} . One day, an evil ghost came and made a new sequence B^r_0 ... B^r_{n-1} , where $B^r_i = A_i - (A_i \mod 3) * (A_i \mod 5)$. Your task is to sort in increasing order the sequence B^r .

As to not slow down your solution with input and output, we will:

• Give you N, A₀ и g seed. This procedure is used to generate the rest of A:

```
int g_seed; // from input

unsigned int fastrand() {
    g_seed = 214013*g_seed + 2531011;
    return (g_seed>>16) & 0x7FFF;
}

int next(int prev) {
    return 1 + prev + (fastrand() & 0b111);
}
```

Препишете внимателно константите във функциите fastrand и next.

Generate
$$A_i = next(A_{i-1}), i \neq 0$$

- We'll call B the sorted in increasing order Br
- Print the result of the following equation. Notice it refers to the sorted sequence B.

$$\left(\sum_{i=0}^{N-1} 139^i B_i\right) \bmod 2^{64}$$

Input

From the only line of the input file justsort.in the integers N, A_0 u g_seed are entered, separated with spaces.

Output

On the only line of the output file justsort.out print the answer.

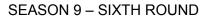
Constraints

$$1 \le N \le 2*10^7$$

$$10 \le A_i \le 10^9$$

$$0 \le g_seed \le 10^9$$







Time limit: 2 seconds Memory limit: 32 MB

Examples

<pre>Input (justsort.in)</pre>	Output (justsort.out)	Notes
8 17 1213	42397401520864154	a={17 25 26 33 38 41 42
		43}
		b={13 25 24 33 32 39 42
		40}
5000 40 8765	606307377094608339	