Practice: set
2 second, 32 MB

You are given a list of N integers: X_1, X_2, ..., X_N. You are also give a list of M queries: Y_1, Y_2,...,Y_M. For each query Y_j, you want to find the integer X_i that minimizes $|X_i - Y_j|$. If there are more than 1 solutions, answer the smaller values.

Since this is a practice for using STL's `set` data structure, you should implement your solution with `set`.

Hint: You may want to look at `upper_bound` and `lower_bound` funtions. Also, you can move the iterator returned by these functions (by incrementing it or decrementing it).

Input

The first line contain two integers N and M. (1 <= N <= 100,000; 1 <= M <= 100,000)
        The next N lines contains the list of integers X_1, X_2, ..., X_N. More specifically, line 1 + i contains X_i, for 1<=i<=N. Each integer is between 0 and 1,000,000,000.
        Finally, the last M lines contains the list of integers Y_1, Y_2, ..., Y_M. More specifically, line 1 $N + j$ contains Y_j, for 1<=j<=M. Each integer is between 0 and 1,000,000,000.

Output

Your program should output M integers, the answers for all queries.

Example

Input	Output
5 4 10 20 35 12 25 100 11 17 25	35 10 20 25