A Coin Problem

Time limit: 1.0s **Memory limit:** 32M
PyPy 2: 128M
PyPy 3: 128M

Angie is going shopping!

She has N different types of coins in her pocket, with the i^{th} type of coin being worth d_i dollars, and she's going to V stores. From the j^{th} store, she wants to buy c_j dollars worth of stuff from store j, but store j only accepts the first l_j types of coins in her pocket!

Can you help her figure out the minimum number of coins to pay for each transaction in exact change?

Note that for the purpose of this problem, Angie has an infinite number of each type of coin.

Constraints

$1 \leq l_j \leq N \leq 2 \times 10^3$

$1 \leq V \leq 10^5$

$1 \leq d_i, c_j \leq 10^4$

Input Specification

The first line of input consists of N and V, separated by a space.

The next line contains N space separated integers containing the values d_i ($d_1, d_2, \ldots, d_N$).

The next V lines of input each contain the space separated integers c_j and l_j.

Output Specification

There are V lines of output, with each line containing the minimum amount of coins needed to satisfy the payment in the j^{th} transaction.

If the j^{th} transaction cannot be satisfied however, print `-1`.

Note for Python users: To pass this question using Python you must select the PyPy interpreter instead of the normal one.

Sample Input 1

```
6 3
7 10 15 2 3 24
107 3
12 4
24 2
```

Sample Output 1

```
8
2
3
```

Explanation for Sample Output 1

Transaction 1: 6 coins with $\$15$, 1 coin with $\$10$, and 1 coin worth $\$7$.

Transaction 2: 1 coin worth $\$10$, and 1 coin worth $\$2$.

Transaction 3: 1 coin worth $\$10$, and 2 coins worth $\$7$.

All that needs to be noted here is that for the third transaction, even though she has a coin worth $\$24$ the third store won't accept it.

Sample Input 2

```
4 3
11 15 3 1
6 2
15 1
7 4
```

Sample Output 2

```
-1
-1
3
```

Explanation for Sample Output 2

Transactions 1 and 2: Not possible.

Transaction 3: 2 coins worth $\$3$, and 1 coin worth $\$1$.

Note that the first transaction cannot be completed without the third type of coin and the second one cannot be completed without the second type of coin.