

Fewest Coins Needed to Make Change

Filename: mincoins

The Problem

Given a set of coin denominations, determine the fewest number of coins necessary to make change for a given number of cents. Assume you can use as many of one particular denomination as necessary. For example, if the set of coin denominations was {1, 5, 10, 25} one would need 3 coins to make change for 40 cents: 25, 10 and 5. You will also need to detect cases where it's impossible to make change for the given amount.

The Input

The first line of the input file will contain a single positive integer, n ($n < 100$), representing the number of input cases. The following n lines contain information for one input case each. The first number on each of these lines is a positive integer, x ($x < 1000000$), representing the number of cents for which to make change. The second number on each of these lines will be a positive integer, d ($d < 10$), representing the number of different coin denominations for the input case. This is followed by d distinct positive integers less than 10000, sorted in ascending order, representing the different coin denominations for the input set.

The Output

For each input case, output a single integer on a line by itself representing the fewest number of coins necessary to make change for the given number of cents. If no such way exists, output -1.

Sample Input

```
3
11 4 1 5 10 25
3 9 1 2 3 4 5 6 7 8 9
5 3 2 4 6
```

Sample Output

```
2
1
-1
```