Coin Change

Time limit: 1 sec

Baht currency is denominated into 1000, 500, 100, 50, 20 bank notes and into 10, 5, 2, 1 coins. In this denomination, we can easily represent any amount of money by trying to use the largest denomination first and then proceed to the smaller one. This approach always results in minimal number of notes and coins. However, if the currency is denominated differently, this approach might not yield the minimal number of notes and coins.

For example, if we have 5, 4, 1 baht coins and wish to represent the value of 8. The largest first approach would yield one of 5 baht coin and 3 of 1 baht coin. However, the optimal representation would be two of 4 coins. In this problem, denominations are given and we wish to compute the representation of money that uses the smallest number of notes and coins.

Input

- The first line contains two integers, the number of denomination **N**, and the value of money to be represented **M** (1 <= **N** <= 20 and 1 <= **M** <= 10,000).
- The second line contains **N** integers that describe the denominations in decreasing order. It is also guaranteed that the last denomination is always 1. Each denomination is not exceed 1,000.

Output

The output contains a single integer representing the smallest number of denominations that can represent the value **M.**

Example

Input	Output
4 28 10 5 2 1	5
3 13 5 4 1	3