

2979. Most Expensive Item That Can Not Be Bought

Premium

Medium

Topics

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Hint

You are given two **distinct prime** numbers `primeOne` and `primeTwo`.

Alice and Bob are visiting a market. The market has an **infinite** number of items, for **any** positive integer `x` there exists an item whose price is `x`. Alice wants to buy some items from the market to gift to Bob. She has an **infinite** number of coins in the denomination `primeOne` and `primeTwo`. She wants to know the **most expensive** item she can **not** buy to gift to Bob.

Return *the price of the **most expensive** item which Alice can not gift to Bob.*

Example 1:

Input:

primeOne = 2, primeTwo = 5

Output:

3

Explanation:

The prices of items which cannot be bought are [1,3]. It can be shown that all items with a price greater than 3 can be bought using a combination of coins of denominations 2 and 5.

Example 2:

Input:

primeOne = 5, primeTwo = 7

Output:

23

Explanation:

The prices of items which cannot be bought are [1,2,3,4,6,8,9,11,13,16,18,23]. It can be shown that all items with a price greater than 23 can be bought.

Constraints:

- `1 < primeOne, primeTwo < 104`
- `primeOne`, `primeTwo` are prime numbers.
- `primeOne * primeTwo < 105`

Seen this question in a real interview before? 1/5

Yes

No

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Amazon10

Hint 1

Write out a few cases. It can be seen that all items greater than `primeOne * primeTwo` can always be bought.

Hint 2

If we can buy items with cost `i`, we can also buy items with price `i + primeOne` and `i + primeTwo`.

Hint 3

Use dynamic programming.

Hint 4

There is an O(1) solution: Use the Chicken McNugget Theorem.

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