Problem 3610: Minimum Number of Primes to Sum to Target

Problem Information

Difficulty: Medium
Acceptance Rate: 59.40%
Paid Only: Yes
Tags: Array, Math, Dynamic Programming, Number Theory

Problem Description

You are given two integers `n` and `m`.

You have to select a multiset of **prime numbers** from the **first** `m` prime numbers such that the sum of the selected primes is **exactly** `n`. You may use each prime number **multiple** times.

Return the **minimum** number of prime numbers needed to sum up to `n`, or -1 if it is not possible.

Example 1:

Input: n = 10, m = 2

Output: 4

Explanation:

The first 2 primes are [2, 3]. The sum 10 can be formed as 2 + 2 + 3 + 3, requiring 4 primes.

Example 2:

Input: n = 15, m = 5

Output: 3

Explanation:

The first 5 primes are [2, 3, 5, 7, 11]. The sum 15 can be formed as 5 + 5 + 5, requiring 3 primes.

Example 3:

Input: n = 7, m = 6

Output: 1

Explanation:

The first 6 primes are [2, 3, 5, 7, 11, 13]. The sum 7 can be formed directly by prime 7, requiring only 1 prime.

Constraints:

* `1 <= n <= 1000` * `1 <= m <= 1000`

Code Snippets

C++:

```
class Solution {
public:
int minNumberOfPrimes(int n, int m) {

}
};
```

Java:

```
class Solution {
public int minNumberOfPrimes(int n, int m) {

}
}
```

Python3:

```
class Solution:
def minNumberOfPrimes(self, n: int, m: int) -> int:
```