204. Count Primes

Difficulty: Medium

Problem Description

Given an integer `n`, return the number of prime numbers that are strictly less than `n`.

Examples

Example 1:

```
Input: n = 10
Output: 4
Explanation: There are 4 prime numbers less than 10, they are 2, 3, 5, 7.
```

Example 2:

```
Input: n = 0
Output: 0
```

Example 3:

```
Input: n = 1
Output: 0
```

Constraints

- `0 <= n <= 5 * 10^6`

Topics

- Math
- Array
- Number Theory

Hints

Consider using the Sieve of Eratosthenes algorithm for an efficient solution.

```
class Solution {
    public int countPrimes(int n) {
        if (n < 2)
            return 0;
        boolean[] arr = new boolean[n];

        Arrays.fill(arr, true);
        arr[0] = false;
        arr[1] = false;

        for (int i = 2; i * i <= n; i++) {
            if (arr[i]) {
                for (int j = i * i; j < n; j += i) {
                    arr[j] = false;
                }
            }
        }
        int count = 0;
        for (int i = 2; i < arr.length; i++) {
            if (arr[i])
                count++;
        }
        return count;
    }
}
```