

6280. Closest Prime Numbers in Range

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Given two positive integers `left` and `right`, find the two integers `num1` and `num2` such that:

- `left <= num1 < num2 <= right`.
- `num1` and `num2` are both **prime** numbers.
- `num2 - num1` is the **minimum** amongst all other pairs satisfying the above conditions.

Return the positive integer array `ans = [num1, num2]`. If there are multiple pairs satisfying these conditions, return the one with the minimum `num1` value or `[-1, -1]` if such numbers do not exist.

A number greater than 1 is called **prime** if it is only divisible by 1 and itself.

User Accepted: 0

User Tried: 0

Total Accepted: 0

Total Submissions: 0

Difficulty: Medium

Example 1:

Input: `left = 10, right = 19`
Output: `[11,13]`
Explanation: The prime numbers between 10 and 19 are 11, 13, 17, and 19. The closest gap between any pair is 2, which can be achieved by `[11,13]` or `[17,19]`. Since 11 is smaller than 17, we return the first pair.

Example 2:

Input: `left = 4, right = 6`
Output: `[-1,-1]`
Explanation: There exists only one prime number in the given range, so the conditions cannot be satisfied.

Constraints:

- `1 <= left <= right <= 106`

JavaScript

📄

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⚙️


```
1 const closestPrimes = (l, r) => {
2   let a = sieveEratosthenes(r), idx = 0, res = [-1, -1], dis = Number.MAX_SAFE_INTEGER;
3   a = [...a].sort((x, y) => x - y);
4   for (let i = 0; i < a.length; i++) {
5     if (a[i] >= l) {
6       idx = i;
7       break;
8     }
9   }
10  a = a.slice(idx);
11  for (let i = 1; i < a.length; i++) {
12    if (a[i] - a[i - 1] < dis) {
13      dis = a[i] - a[i - 1];
14      res = [a[i - 1], a[i]];
15    }
16  }
17  return res;
18 };
19
20 const sieveEratosthenes = (n) => {
21   let prime = Array(n + 1).fill(true);
22   for (let p = 2; p * p <= n; p++) {
23     if (prime[p] == true) {
24       for (let i = p * p; i <= n; i += p) prime[i] = false;
25     }
26   }
27   let res = new Set();
28   for (let p = 2; p <= n; p++) {
29     if (prime[p]) res.add(p);
30   }
31 }
```

```
31     return res;
32 };
```

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