

Problem 3023: Find Pattern in Infinite Stream I

Problem Information

Difficulty: Medium

Acceptance Rate: 56.74%

Paid Only: Yes

Tags: Array, Sliding Window, Rolling Hash, String Matching, Hash Function

Problem Description

You are given a binary array `pattern` and an object `stream` of class `InfiniteStream` representing a **0-indexed** infinite stream of bits.

The class `InfiniteStream` contains the following function:

`* int next()`: Reads a **single** bit (which is either `0` or `1`) from the stream and returns it.

Return **the first starting** index where the pattern matches the bits read from the stream. For example, if the pattern is `[1, 0]`, the first match is the highlighted part in the stream `[0, 1, 0, 1, ...]`.

Example 1:

Input: `stream = [1,1,1,0,1,1,1,...]`, `pattern = [0,1]` **Output:** `3` **Explanation:** The first occurrence of the pattern `[0,1]` is highlighted in the stream `[1,1,1,0,1,...]`, which starts at index 3.

Example 2:

Input: `stream = [0,0,0,0,...]`, `pattern = [0]` **Output:** `0` **Explanation:** The first occurrence of the pattern `[0]` is highlighted in the stream `[0,...]`, which starts at index 0.

Example 3:

Input: `stream = [1,0,1,1,0,1,1,0,1,...]`, `pattern = [1,1,0,1]` **Output:** `2` **Explanation:** The first occurrence of the pattern `[1,1,0,1]` is highlighted in the stream `[1,0,1,1,0,1,...]`,

which starts at index 2.

****Constraints:****

* `1` <= pattern.length <= 100 * `pattern` consists only of `0` and `1`. * `stream` consists only of `0` and `1`. * The input is generated such that the pattern's start index exists in the first `105` bits of the stream.

Code Snippets

C++:

```
/**
 * Definition for an infinite stream.
 * class InfiniteStream {
 * public:
 *   InfiniteStream(vector<int> bits);
 *   int next();
 * };
 */
class Solution {
public:
    int findPattern(InfiniteStream* stream, vector<int>& pattern) {

    }
};
```

Java:

```
/**
 * Definition for an infinite stream.
 * class InfiniteStream {
 * public InfiniteStream(int[] bits);
 * public int next();
 * }
 */
class Solution {
    public int findPattern(InfiniteStream infiniteStream, int[] pattern) {

    }
}
```

Python3:

```
# Definition for an infinite stream.
# class InfiniteStream:
# def next(self) -> int:
# pass
class Solution:
def findPattern(self, stream: Optional['InfiniteStream'], pattern: List[int])
-> int:
```