

Problem 907: Sum of Subarray Minimums

Problem Information

Difficulty: Medium

Acceptance Rate: 38.06%

Paid Only: No

Tags: Array, Dynamic Programming, Stack, Monotonic Stack

Problem Description

Given an array of integers `arr`, find the sum of `min(b)`, where `b` ranges over every (contiguous) subarray of `arr`. Since the answer may be large, return the answer **modulo** `109 + 7`.

Example 1.

Input: `arr = [3,1,2,4]` **Output:** 17 **Explanation:** Subarrays are `[3]`, `[1]`, `[2]`, `[4]`, `[3,1]`, `[1,2]`, `[2,4]`, `[3,1,2]`, `[1,2,4]`, `[3,1,2,4]`. Minimums are 3, 1, 2, 4, 1, 1, 2, 1, 1, 1. Sum is 17.

Example 2.

Input: `arr = [11,81,94,43,3]` **Output:** 444

Constraints:

`1 <= arr.length <= 3 * 104` `1 <= arr[i] <= 3 * 104`

Code Snippets

C++:

```
class Solution {
public:
    int sumSubarrayMins(vector<int>& arr) {
```

```
}  
};
```

Java:

```
class Solution {  
    public int sumSubarrayMins(int[] arr) {  
  
    }  
}
```

Python3:

```
class Solution:  
    def sumSubarrayMins(self, arr: List[int]) -> int:
```