

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** $10^9 + 7$.

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:

$1 \leq \text{arr.length} \leq 3 * 10^4$ $1 \leq \text{arr}[i] \leq 3 * 10^4$

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:
```