[CS 11 25.1] Lab 3c – Subarray Min

Cheatsheet is available here: https://oj.dcs.upd.edu.ph/cs11cheatsheet/

Submit solution [CS 11 25.1] Lab Exercise 3

Points: 75 (partial)
Time limit: 10.0s
Memory limit: 1G

Problem type

Allowed languages
py3

Problem Statement

Given an array of integers, find the sum of the smallest values of all nonempty subarrays.

Note that an array of n integers has $n(n+1)/2$ nonempty subarrays.

Task Details

Implement a function called `sum_mins`:

```
def sum_mins(seq):
```

- `seq` — `tuple` of n `int`s

Return an `int`.

Restrictions

For this problem:

- Loops and lists are allowed.
- Up to 6 function definitions are allowed.
- Recursion is **disallowed**. (The recursion limit has been greatly reduced.)
- Comprehensions are **disallowed**.
- The following names are now allowed: `range`, `list`, `print`, `append`, `pop`, `extend`, `remove`, `sort`, `insert`, `clear`, `reverse`.
- The source code limit is 4000.

Example Calls

Example 1 Function Call

```
sum_mins((3, 1, 4))
```

Example 1 Return Value

```
11
```

Explanation

There are 6 nonempty subarrays:

- $(3,)$, whose smallest value is 3;
- $(3, 1)$, whose smallest value is 1;
- $(3, 1, 4)$, whose smallest value is 1;
- $(1,)$, whose smallest value is 1;
- $(1, 4)$, whose smallest value is 1;
- $(4,)$, whose smallest value is 4.

Therefore, the answer is $3 + 1 + 1 + 1 + 1 + 4 = 11$.

Example 2 Function Call

```
sum_mins((3, 1, 4, 1, 5))
```

Example 2 Return Value

```
24
```

Constraints

- The function `sum_mins` will be called at most $50{,}000$ times.
- $0 \le n \le 200{,}000$
- The sum of all n is $\le 200{,}000$.
- Each element of `seq` will have an absolute value of at most 10^{10}.

Scoring

Note: New tests may be added and all submissions may be rejudged at a later time. (All future tests will satisfy the constraints.)

- You get 45 ❤️ points if you solve all test cases where:
  - $n < 50$
  - the sum of all n is ≤ 500.
- You get 15 💔 points if you solve all test cases where:
  - $n \le 6{,}000$
  - the sum of all n is $\le 6{,}000$.
- You get 15 💔 points if you solve all test cases.

Clarifications

Report an issue

No clarifications have been made at this time.