Maximum Subarray

Problem Statement

Given an integer array `nums`, find the subarray with the largest sum, and return its sum.

Example

Example 1:

- Input: nums = [-2,1,-3,4,-1,2,1,-5,4]
- Output: 6
- Explanation: The subarray [4,-1,2,1] has the largest sum 6.

Example 2:

- Input: nums = [1]
- Output: 1
- Explanation: The subarray [1] has the largest sum 1.

Example 3:

- Input: nums = [5,4,-1,7,8]
- Output: 23
- Explanation: The subarray [5,4,-1,7,8] has the largest sum 23.

Constraints

- 1 <= nums.length <= 105
- -104 <= nums[i] <= 104

Approach Explanation

- Initialize two variables `max_sum` and `current_sum` with the first element of the array.
- Iterate through the array starting from the second element.
- At each step, update `current_sum` to be the maximum of the current element and the sum of the current element and the previous `current_sum`.
- Update `max_sum` to be the maximum of the current `max_sum` and the updated `current_sum`.
- Return the `max_sum`.