Second Largest

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Platform	GeeksForGeeks
difficulty	Easy
tags	Logic
language	C++
solved on	@15/11/2024
link	https://www.geeksforgeeks.org/problems/second-largest3735/1
Completion	☑

Intuition

The goal is to find the second largest element in the array without sorting it. By iterating through the array, we can keep track of the largest and second-largest elements in a single pass. This ensures an optimal and efficient solution.

Approach

1. Initialize two variables, `largest` to the first element of the array and `sLarge` (second largest) to -1 (or any value indicating not found yet).
2. Iterate through the array:
   - If the current element is greater than `largest`, update `sLarge` to `largest` and then update `largest` to the current element.
   - If the current element is not equal to `largest` but greater than `sLarge`, update `sLarge`.
3. At the end of the loop, `sLarge` will hold the second largest element or remain -1 if no such element exists.
4. Return `sLarge`.

Complexity

Time Complexity:

- **O(n):** We traverse the array once, where `n` is the size of the array.

Space Complexity:

- **O(1):** We use a constant amount of extra space.

Code

```
class Solution {
  public:
    // Function returns the second largest element
    int getSecondLargest(vector<int> &arr) {
        int largest = arr[0];
        int sLarge = -1;

        for(int i = 1; i < arr.size(); i++){
```

```
            if(arr[i] > largest){
                sLarge = largest;
                largest = arr[i];
            }
            else if(arr[i] > sLarge && largest != arr[i])
                sLarge = arr[i];
        }
        return sLarge;
    }
};
```