

Find Three Largest Numbers

Input: array = [41, 1, 17, -7, -17, -27, 18, 541, 8, 7, 7]

Output: [18, 141, 541]

Input: An array of at least three integers

Output: a sorted array of the three largest integers

Cannot sort the input array

Return duplicate integers if necessary ([10, 10, 12] for input array [10, 5, 9, 10, 12])

```
// O(n) time | O(1) space
function findThreeLargestNumbers(array) {
  let largestThree = [null, null, null];
  for (let i = 0; i < array.length; i++) {
    let curr = array[i];
    if (curr > largestThree[2] || largestThree[2] === null) {
      largestThree[0] = largestThree[1];
      largestThree[1] = largestThree[2];
      largestThree[2] = curr;
    } else if (curr > largestThree[1] || largestThree[1] === null) {
      largestThree[0] = largestThree[1];
      largestThree[1] = curr;
    } else if (curr > largestThree[0] || largestThree[0] === null) {
      largestThree[0] = curr;
    }
  }
  return largestThree;
}
```

Note: Use **null** instead of **0** as we could get negative numbers in our array

Time: $O(n)$ (where n is the size of the input array) because we are iterating over the entire length of the array

Space: $O(1)$ since we do not use extra space as the size of the input grows