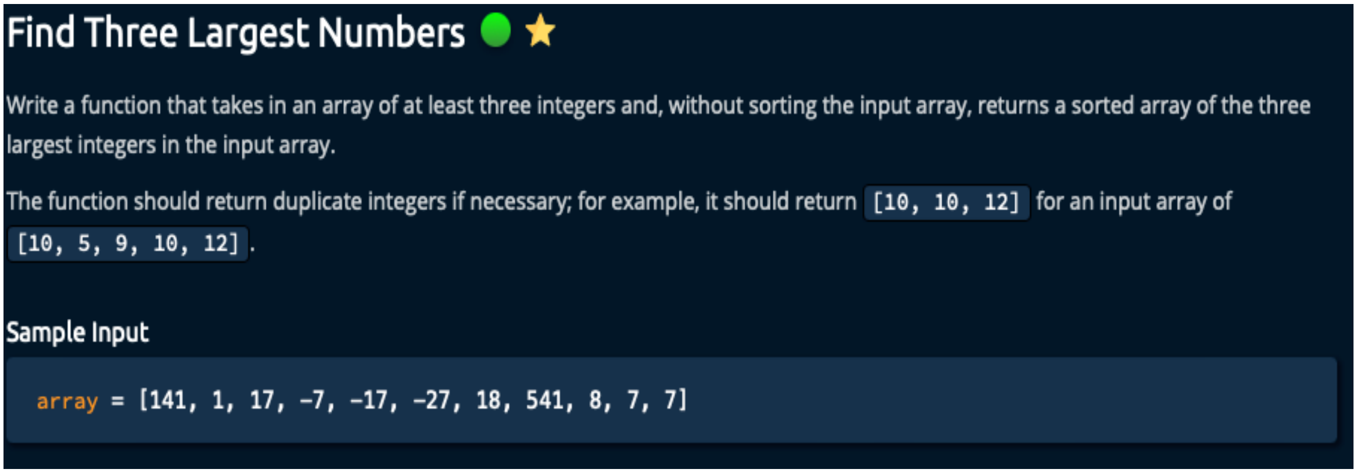
Code Challenge #16 Find Three Largest Numbers (Easy)



Find Three Largest Numbers

Write a function that takes in an array of at least three integers and, without sorting the input array, returns a sorted array of the three largest integers in the input array.

The function should return duplicate integers if necessary; for example, it should return `[10, 10, 12]` for an input array of `[10, 5, 9, 10, 12]`.

Sample Input

```
array = [141, 1, 17, -7, -17, -27, 18, 541, 8, 7, 7]
```

```
function findThreeLargestNumbers(array) {
 const threeLargest = [null, null, null];
 for (const num of array) {
      updateLargest(threeLargest, num)
 }
 return threeLargest;
}

function updateLargest(threeLargest, num) {
      if (threeLargest[2] === null || num > threeLargest[2]) {
           shiftAndUpdate(threeLargest, num, 2);
      } else if (threeLargest[1] === null || num > threeLargest[1]) {
           shiftAndUpdate(threeLargest, num, 1);
      } else if (threeLargest[0] === null || num > threeLargest[0]) {
           shiftAndUpdate(threeLargest, num, 0);
      }
 }

 function shiftAndUpdate(array, num, idx) {
      for (let i = 0; i <= idx; i++) {
           if (i === idx) {
                array[i] = num;
           } else {
                array[i] = array[i + 1];
           }
```

```
        }
}

```

Explanation

This problem can be broken down into three different parts using helper methods to abstract (hide the logic) in helper methods. The input array is a list of different numbers in an array. We are required to output a different array which lists the largest three numbers including duplicate values. The solution uses three helper methods to find the three largest numbers. The first method is the main method which is called **findThreeLargestNumbers.** Inside the method is a const variable called threeLargest which contains an array with three null values. We then use a for loop to iterate through the numbers in the array using a syntactic sugar for loop. Within the for loop we use a helper method called updateLargest which takes in two arguments (threeLargest, num). The final part of the main function returns the array threeLargest.

The second method called **updatelargest** takes in two arguments called threeLargest and num. It checks the value of each index of the array threeLargest to see if it is null or if the num is greater than the value at that current index. If it is we pass the arguments of threeLargest, num and the current index we are checking to a third method called shiftAndUpdate. The **shiftAndUpdate** method takes in three arguments which are the array, num and idx and runs a for loop starting with i = 0 up until the idx. If the value at i matches the idx we store the num value at the index of i else, we shift the values of array[i] to the values in front of it [i + 1].

Example of shifting

[5,10, 11] ➔ [10, 11, null]