Coding challenges

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Exercise 0.1 *Build function which takes an array of integers and a number and returns all the pairs in the array whose sum is the number. For instance if $L = [1, 2, 4, 3, 0, 5]$ and the number is 5 the function returns $[[2, 3], [1, 4], [0, 5]]$. If sum = 10, the function returns $[[5, 5]]$.*

Solution : The solution is simple, we set an empty list and we traverse the array we check if sum - array[i] is in the array. If so we add the couple [array[i],sum-array[i]] the desired list. To ovoid repetition, we check first that [sum-array[i],array[i]] is not already in our list.

The time complexity is $O(N^2)$: for each iteration in the for loop, we traverse the array once more the check if sum - array[i] is in the array.

```swift
func pairsSum(array: [Int],sum: Int )-> [[Int]] {
    var pairs = [[Int]]()


    for i in 0..<array.count {
        if pairs.contains([sum - array[i],array[i]]) {
            continue
        }

        if array.contains(sum - array[i])  {
            pairs += [[array[i],sum - array[i]]]
        }
    }
    return pairs

}

let L = [1, 2, 4, 3, 0, 5]

print(pairsSum(array: L, sum: 5))

print(pairsSum(array: L, sum: 10))
```

```
[[1, 4], [2, 3], [0, 5]]
[[5, 5]]
```