**Best time to buy and sell stock:**

Given:

We have an array of items. Each of the items indicates the price of a stock on a given day.

Goal/Objective:

We need to calculate the possible maximum profit when we choose a day to buy the stock and sell on a different day in the future

Solution:

To implement this, here is the logic. Compare the items in an array and find what day we should buy and sell the stock in the future to get maximum profit.

Assumptions:

* We have to buy first and sell later.
* This process should be done only once.
* Since we are talking about the prices of a stock, the values are not negative

**Contains duplicate:**

Given:

I have an array of items that consists of all types of numbers and integers can be repeated or may not be repeated.

Goal/Objective:

I need to find out whether the integers were repeated or not. If repeated then the output should be true or else it should be false.

Solution:

To implement this problem,

* We are using 4 ways

1. Brute force method:

* We first check the length of the array
* Next, in the for loop, we assign the range of the variable “I” as the length of the array -1
* Next, we assign the next “for” loop and assign the range of another variable “j” as i+1 till the length of the array
* I compare the value using the if condition if the integers are the same it returns as true or else it returns as false and it will be exited from the loops.

*undergoes multiple loops checks every item in an array and displays the output.*

1. Sorting:  
     *the item checks the other items in an order without having multiple loops.*

* This process will happen with only one for-loop where we are assigning the range of I as 1 to the length of the array

1. Hash Set:  
   *the item checks the other items in the stack and defines the duplicate.*
2. Hash Map:  
   *the array is arranged in a stack and the stack is any duplicates in that. If there is any duplicate it shows as true or else false.*

Assumptions:

* If it finds a match the loop should be returned
* The output should be true or false not in the 0’s and 1’s

**Product of Array Except self:**

Given:

I was given an array of items which consist of integers

Goal/Objective:

Need to find out the product of the elements in the array every time we point the item and the product should be in such a way that it should not consider the pointing item.

Solution:

I wrote two methods:

Brute Force:

* First, I assigned a variable to the length of the array and opened a new array to store the answer we calculated.
* I assigned the range of the for loop to the length of the array and assigned a variable “product” as 1 which we used to update the product of the array of the particular item
* Following, I wrote another for loop with range as the length of the array where we check the position of the item in the array. If the position doesn’t match the n the value is multiplied and added to the variable “product” and the process goes to the end of the array.
* At the end, by using the append function we push the values to the empty array named “answer” and return it after the loop completes if not if the loop goes till the end of the length of the array

Assumptions:

* The value of every single item should be the product of the other items in the array.
* The product of any prefix or suffix of an array should be guaranteed to fit in a 32-bit integer.
* The time complicity should be O(n)
* Without using a division operator