Day 04-1470, 1672, 1431, 2367, 2057.

20. Problem: 2057. Smallest Index with equal value

Given a **0-indexed** integer array `nums`, return *the **smallest** index* `i` *of* `nums` *such that* `i mod 10 == nums[i]`, *or* `-1` *if such index does not exist.*
`x mod y` denotes the **remainder** when `x` is divided by `y`.

Example 1:
```
Input: nums = [0,1,2]
Output: 0
Explanation:
i=0: 0 mod 10 = 0 == nums[0].
i=1: 1 mod 10 = 1 == nums[1].
i=2: 2 mod 10 = 2 == nums[2].
All indices have i mod 10 == nums[i], so we return the smallest index 0.
```
Example 2:
```
Input: nums = [4,3,2,1]
Output: 2
Explanation:
i=0: 0 mod 10 = 0 != nums[0].
i=1: 1 mod 10 = 1 != nums[1].
i=2: 2 mod 10 = 2 == nums[2].
i=3: 3 mod 10 = 3 != nums[3].
2 is the only index which has i mod 10 == nums[i].
```
Example 3:
```
Input: nums = [1,2,3,4,5,6,7,8,9,0]
Output: -1
Explanation: No index satisfies i mod 10 == nums[i].
```

Constraints:
```
1 <= nums.length <= 100
0 <= nums[i] <= 9
```

Solution:

My Solution:

```java
package O1_easy.day_04;

public class O20_SmallestIndexWithEqualValue_2057 {
    public static void main(String[] args) {
        Solution_2057 solution_2057 = new Solution_2057();
        int[] arr = {0, 1, 2};
        int[] arr2 = {4, 3, 2, 1};
        int[] arr3 = {1, 2, 3, 4, 5, 6, 7, 8, 9, 0};
        System.out.println(solution_2057.smallestEqual(arr));
        System.out.println(solution_2057.smallestEqual(arr2));
```

```
        System.out.println(solution_2057.smallestEqual(arr3));
    }
}

class Solution_2057 {
    public int smallestEqual(int[] nums) {
        for (int i = 0; i < nums.length; i++) {
            if (i % 10 == nums[i]) {
                return i;
            }
        }
        return -1;
    }
}

// https://leetcode.com/problems/smallest-index-with-equal-value/
```

Another Solution: 01

```
class Solution {
    public int smallestEqual(int[] a) {
        for (int d1 = 0; d1 <= 9; d1++)
            for (int d2 = 0; d2 <= 9 && 10 * d1 + d2 < a.length; d2++)
                if (d2 == a[d1 * 10 + d2]) return d1 * 10 + d2;
        return -1;
    }
}
```

Another Solution: 02

```
class Solution {
    public int smallestEqual(int[] n) {
        int k = n.length;
        for (int i = 0; i < k; i++) {
            if (i % 10 == n[i]) return i;
        }
        return -1;
    }
}
```

Another Solution: 03

```
class Solution {
    public int smallestEqual(int[] nums) {
        for (int i = 0; i < nums.length; i++) {
            if (i % 10 == nums[i]) {
                return i;
            }
        }
        return -1;
```

```
    }
}
```

19. Problem: 2367. Number of Arithmetic Triplets

You are given a **0-indexed**, **strictly increasing** integer array `nums` and a positive integer `diff`. A triplet `(i, j, k)` is an **arithmetic triplet** if the following conditions are met:

`i < j < k`,
`nums[j] - nums[i] == diff`, and
`nums[k] - nums[j] == diff`.
Return *the number of unique **arithmetic triplets***.

Example 1:

```
Input: nums = [0,1,4,6,7,10], diff = 3
Output: 2
Explanation:
(1, 2, 4) is an arithmetic triplet because both 7 - 4 == 3 and 4 - 1 == 3.
(2, 4, 5) is an arithmetic triplet because both 10 - 7 == 3 and 7 - 4 == 3.
```

Example 2:

```
Input: nums = [4,5,6,7,8,9], diff = 2
Output: 2
Explanation:
(0, 2, 4) is an arithmetic triplet because both 8 - 6 == 2 and 6 - 4 == 2.
(1, 3, 5) is an arithmetic triplet because both 9 - 7 == 2 and 7 - 5 == 2.
```

Constraints:

`3 <= nums.length <= 200`
`0 <= nums[i] <= 200`
`1 <= diff <= 50`
`nums` is **strictly** increasing.

Solution:

My Solution:

```
import java.util.HashSet;
import java.util.Set;
import java.util.stream.IntStream;

public class O19_NumberOfArithmeticTriplets_2367 {
    public static void main(String[] args) {
        Solution_2367 solution_2367 = new Solution_2367();
        int[] num = {0, 1, 4, 6, 7, 10};
        int[] num2 = {4, 5, 6, 7, 8, 9};
        System.out.println(solution_2367.arithmeticTriplets(num, 3));
        System.out.println(solution_2367.arithmeticTriplets(num2, 2));
    }
}

class Solution_2367 {
    public int arithmeticTriplets(int[] nums, int diff) {
        int t = 0;
```

```
        for (int i = 0; i < nums.length; i++) {
            for (int j = 0; j < nums.length; j++) {
                for (int k = 0; k < nums.length; k++) {
                    if (i != j && j != k && i < j && j < k && nums[j] - nums[i] == diff && nums[k] - nums[j] == diff)
{
                        t += 1;
                    }
                }
            }
        }
        return t;
    }
}

// https://leetcode.com/problems/number-of-arithmetic-triplets/
```

Another Solution: 01

```
class Solution {
    public int arithmeticTriplets(int[] nums, int diff) {
        int cnt = 0;
        Set<Integer> seen = new HashSet<>();
        for (int num : nums) {
            if (seen.contains(num - diff) && seen.contains(num - diff * 2)) {
                ++cnt;
            }
            seen.add(num);
        }
        return cnt;
    }
}
```

Another Solution: 02

```
class Solution {
    public int arithmeticTriplets(int[] nums, int diff) {
        int count = 0;
        for (int i = 0; i < nums.length - 2; i++) {
            for (int j = i + 1; j < nums.length - 1; j++) {
                for (int k = j + 1; k < nums.length; k++) {
                    if (nums[j] - nums[i] == diff && nums[k] - nums[j] == diff) count++;
                }
            }
        }
        return count;
    }
}
```

Another Solution: 03

```java
class Solution {
    public int arithmeticTriplets(int[] nums, int diff) {
        Set<Integer> set = new HashSet<>();
        for (int num : nums) {
            set.add(num);
        }
        int ans = 0;
        for (int num : nums) {
            if ((set.contains(num + diff) && set.contains(num + 2 * diff))) {
                ans++;
            }
        }
        return ans;
    }
}
```

18. Problem: 1431. Kids with Greatest Number Of Candies

There are `n` kids with candies. You are given an integer array `candies`, where each `candies[i]` represents the number of candies the `i`th kid has, and an integer `extraCandies`, denoting the number of extra candies that you have.
Return *a boolean array* `result` *of length* `n`*, where* `result[i]` *is* `true` *if, after giving the* `i`th *kid all the* `extraCandies`*, they will have the* ***greatest*** *number of candies among all the kids, or* `false` *otherwise.*
Note that **multiple** kids can have the **greatest** number of candies.

Example 1:
```
Input: candies = [2,3,5,1,3], extraCandies = 3
Output: [true,true,true,false,true]
Explanation: If you give all extraCandies to:
- Kid 1, they will have 2 + 3 = 5 candies, which is the greatest among the kids.
- Kid 2, they will have 3 + 3 = 6 candies, which is the greatest among the kids.
- Kid 3, they will have 5 + 3 = 8 candies, which is the greatest among the kids.
- Kid 4, they will have 1 + 3 = 4 candies, which is not the greatest among the kids.
- Kid 5, they will have 3 + 3 = 6 candies, which is the greatest among the kids.
```
Example 2:
```
Input: candies = [4,2,1,1,2], extraCandies = 1
Output: [true,false,false,false,false]
Explanation: There is only 1 extra candy.
Kid 1 will always have the greatest number of candies, even if a different kid is given the extra candy.
```
Example 3:
```
Input: candies = [12,1,12], extraCandies = 10
Output: [true,false,true]
```

Constraints:
```
n == candies.length
2 <= n <= 100
1 <= candies[i] <= 100
1 <= extraCandies <= 50
```

Solution:

My Solution:

```java
import java.util.ArrayList;
import java.util.Arrays;
import java.util.List;
import java.util.stream.Collectors;

public class O18_KidsWithGreatestNumberOfCandies_1431 {
    public static void main(String[] args) {
        Solution_1431 solution_1431 = new Solution_1431();
        int[] arr = {2, 3, 5, 1, 3};
        int[] arr2 = {4, 2, 1, 1, 2};
        int[] arr3 = {12, 1, 12};
        System.out.println(solution_1431.kidsWithCandies(arr, 3));
        System.out.println(solution_1431.kidsWithCandies(arr2, 1));
        System.out.println(solution_1431.kidsWithCandies(arr3, 10));
    }
}

class Solution_1431 {
    public List<Boolean> kidsWithCandies(int[] candies, int extraCandies) {
        List<Boolean> result = new ArrayList<>();
        for (int i = 0; i < candies.length; i++) {
            boolean b = false;
            for (int j = 0; j < candies.length; j++) {
                if (i != j && candies[i] + extraCandies < candies[j]) {
                    b = false;
                    break;
                } else {
                    b = true;
                }
            }
            result.add(b);
        }
        return result;
    }
}

// https://leetcode.com/problems/kids-with-the-greatest-number-of-candies/
```

Another Solution: 01

```java
class Solution {
    public List<Boolean> kidsWithCandies(int[] candies, int extraCandies) {
        int max = Arrays.stream(candies).max().getAsInt();
        return Arrays.stream(candies).mapToObj(candy -> candy + extraCandies >=
max).collect(Collectors.toList());
    }
}
```

Another Solution: 02

```
class Solution {
    public List<Boolean> kidsWithCandies(int[] cs, int e) {
        int max = 0;
        List<Boolean> res = new ArrayList<>();
        for (int n : cs) max = Math.max(n, max);
        for (int n : cs) res.add(n + e >= max);
        return res;
    }
}
```

Another Solution: 03

```
class Solution {
    public List<Boolean> kidsWithCandies(int[] candies, int extraCandies) {
        List<Boolean> ans = new ArrayList<>(candies.length);
        int max = 0;
        for (int candy : candies) {
            max = Math.max(candy, max);
        }
        for (int candy : candies) {
            ans.add(candy + extraCandies >= max);
        }
        return ans;
    }
}
```

17. Problem: 1672. Richest Customer Wealth

You are given an `m x n` integer grid `accounts` where `accounts[i][j]` is the amount of money the `i`th customer has in the `j`th bank. Return *the **wealth** that the richest customer has.*
A customer's **wealth** is the amount of money they have in all their bank accounts. The richest customer is the customer that has the maximum **wealth**.

Example 1:
```
Input: accounts = [[1,2,3],[3,2,1]]
Output: 6
Explanation:
1st customer has wealth = 1 + 2 + 3 = 6
2nd customer has wealth = 3 + 2 + 1 = 6
Both customers are considered the richest with a wealth of 6 each, so return 6.
```
Example 2:
```
Input: accounts = [[1,5],[7,3],[3,5]]
Output: 10
Explanation:
1st customer has wealth = 6
2nd customer has wealth = 10
3rd customer has wealth = 8
The 2nd customer is the richest with a wealth of 10.
```
Example 3:
```
Input: accounts = [[2,8,7],[7,1,3],[1,9,5]]
Output: 17
```

Constraints:

```
m == accounts.length
n == accounts[i].length
1 <= m, n <= 50
1 <= accounts[i][j] <= 100
```

Solution:

My Solution:

```java
import java.util.Arrays;

public class O17_RichestCustomerWealth_1672 {
    public static void main(String[] args) {
        Solution_1672 solution_1672 = new Solution_1672();
        int[][] arr = {{1, 2, 3}, {3, 2, 1}};
        int[][] arr2 = {{1, 5}, {7, 3}, {3, 5}};
        int[][] arr3 = {{2, 8, 7}, {7, 1, 3}, {1, 9, 5}};
        System.out.println(solution_1672.maximumWealth(arr));
        System.out.println(solution_1672.maximumWealth(arr2));
        System.out.println(solution_1672.maximumWealth(arr3));
    }
}

class Solution_1672 {
    public int maximumWealth(int[][] accounts) {
        int max = 0;
        for (int i = 0; i < accounts.length; i++) {
            int a = wealth(accounts[i]);
            if (a > max) {
                max = a;
            }
        }
        return max;
    }

    public int wealth(int[] a) {
        int sum = 0;
        for (int i = 0; i < a.length; i++) {
            sum += a[i];
        }
        return sum;
    }
}

// https://leetcode.com/problems/richest-customer-wealth/submissions/
```

Another Solution: 01

```java
class Solution {
    public int maximumWealth(int[][] accounts) {
        int temp = 0;
```

```
        for (int i = 0; i < accounts.length; i++) {
            int sum = 0;
            for (int j = 0; j < accounts[i].length; j++) {
                sum = sum + accounts[i][j];
            }
            if (sum > temp) {
                temp = sum;
            }
        }
        return temp;
    }
}
```

Another Solution: 02

```
class Solution {
    public int maximumWealth(int[][] accounts) {
        return Arrays.stream(accounts)
                .mapToInt(i -> Arrays.stream(i).sum())
                .max()
                .getAsInt();
    }
}
```

Another Solution: 03

```
class Solution {
    public int maximumWealth(int[][] accounts) {
        var maxWealth = 0;
        for (var customer : accounts) {
            maxWealth = Math.max(maxWealth, Arrays.stream(customer).sum());
        }
        return maxWealth;
    }
}
```

16. Problem: 1470. Shuffle the array

Given the array `nums` consisting of `2n` elements in the form $[x_1, x_2, \ldots, x_n, y_1, y_2, \ldots, y_n]$.
Return the array in the form $[x_1, y_1, x_2, y_2, \ldots, x_n, y_n]$.

Example 1:
Input: nums = [2,5,1,3,4,7], n = 3
Output: [2,3,5,4,1,7]
Explanation: Since $x_1=2$, $x_2=5$, $x_3=1$, $y_1=3$, $y_2=4$, $y_3=7$ then the answer is [2,3,5,4,1,7].
Example 2:
Input: nums = [1,2,3,4,4,3,2,1], n = 4
Output: [1,4,2,3,3,2,4,1]
Example 3:
Input: nums = [1,1,2,2], n = 2
Output: [1,2,1,2]

Constraints:

```
1 <= n <= 500
nums.length == 2n
1 <= nums[i] <= 10^3
```

Solution:

My Solution:

```java
import java.util.Arrays;
import java.util.stream.IntStream;

public class O16_ShuffleTheString_1470 {
    public static void main(String[] args) {
        Solution_1470 solution_1470 = new Solution_1470();
        int[] arr = {2, 5, 1, 3, 4, 7};
        int[] arr2 = {1, 2, 3, 4, 4, 3, 2, 1};
        int[] arr3 = {1, 1, 2, 2};
        System.out.println(Arrays.toString(solution_1470.shuffle(arr, 3)));
        System.out.println(Arrays.toString(solution_1470.shuffle(arr2, 4)));
        System.out.println(Arrays.toString(solution_1470.shuffle(arr3, 2)));
    }
}

class Solution_1470 {
    public int[] shuffle(int[] nums, int n) {
        int[] arrR = new int[nums.length];
        int t = 0;
        for (int k = 0; k < nums.length; k += 2) {
            arrR[k] = nums[t];
            t++;
        }
        int t2 = n;
        for (int l = 1; l < nums.length; l += 2) {
            arrR[l] = nums[t2];
            t2++;
        }
        return arrR;
    }
}

// https://leetcode.com/problems/shuffle-the-array/submissions/
```

Another Solution: 01

```java
class Solution {
    public int[] shuffle(int[] nums, int n) {
        int len = nums.length;
        for (int i = n; i < len; i++) {
            nums[i] = (nums[i] << 10) | nums[i - n];
        }
        int index = 0;
```

```
        for (int i = n; i < len; i++, index += 2) {
            nums[index] = nums[i] & 1023;
            nums[index + 1] = nums[i] >>> 10;
        }
        return nums;
    }
}
```

Another Solution: 02

```
class Solution {
    public int[] shuffle(int[] nums, int n) {
        return IntStream.range(0, 2 * n).map(i -> nums[i / 2 + i % 2 * n]).toArray();
    }
}
```

Another Solution: 03

```
class Solution {
    public int[] shuffle(int[] nums, int n) {
        int[] res = new int[2 * n];
        for (int i = 0, j = n, idx = 0; idx < res.length; i++, j++) {
            res[idx++] = nums[i];
            res[idx++] = nums[j];
        }
        return res;
    }
}
```

Day 03 -2114, 1, 24, 415, 709.

15. Problem: 709. To Lower Case

Given a string `s`, return the string after replacing every uppercase letter with the same lowercase letter.

Example 1:
```
Input: s = "Hello"
Output: "hello"
```
Example 2:
```
Input: s = "here"
Output: "here"
```
Example 3:
```
Input: s = "LOVELY"
Output: "lovely"
```

Constraints:
`1 <= s.length <= 100`
`s` consists of printable ASCII characters.

Solution:

My Solution:

```
public class O15_ToLowerCase_709 {
    public static void main(String[] args) {
        Solution_709 solution_709 = new Solution_709();
        String s = "Hello";
        System.out.println(solution_709.interpret(s));
    }
}

class Solution_709 {
    public String interpret(String command) {
        return command.toLowerCase();
    }
}

// https://leetcode.com/problems/to-lower-case/
```

Another Solution: 01

```
class Solution_709 {
    public String toLowerCase(String str) {
        char[] a = str.toCharArray();
        for (int i = 0; i < a.length; i++)
            if ('A' <= a[i] && a[i] <= 'Z')
                a[i] = (char) (a[i] - 'A' + 'a');
        return new String(a);
    }
}
```

Another Solution: 02

```
class Solution_709 {
    public String toLowerCase(String s) {
        char[] a = s.toCharArray();
 IntStream.range(0, a.length).filter(i -> 'A' <= a[i] && a[i] <= 'Z').forEach(i -> a[i] = (char) (a[i] - 'A' + 'a'));
        return new String(a);
    }
}
```

Another Solution: 03

```
class Solution {
    public String toLowerCase(String s) {
        StringBuilder str = new StringBuilder();
        for (int i = 0; i < s.length(); i++) {
            if (s.charAt(i) >= 65 && s.charAt(i) <= 90) {
                str.append((char) (s.charAt(i) + 32));
```

```
        } else {
            str.append(s.charAt(i));
        }
    }
    return str.toString();
  }
}
```

14. Problem: 415. Add String

Given two non-negative integers, `num1` and `num2` represented as string, return *the sum of* `num1` *and* `num2` *as a string*.
You must solve the problem without using any built-in library for handling large integers (such as `BigInteger`). You must also not convert the inputs to integers directly.

Example 1:
```
Input: num1 = "11", num2 = "123"
Output: "134"
```
Example 2:
```
Input: num1 = "456", num2 = "77"
Output: "533"
```
Example 3:
```
Input: num1 = "0", num2 = "0"
Output: "0"
```

Constraints:
`1 <= num1.length, num2.length <= 10^4`
`num1` and `num2` consist of only digits.
`num1` and `num2` don't have any leading zeros except for the zero itself.

Solution:

My Solution:

```
import java.math.BigInteger;

public class O14_AddString_415 {
    public static void main(String[] args) {
        Solution_415 solution_415 = new Solution_415();
        String s = "654615";
        String s2 = "654615";
        System.out.println(solution_415.addStrings(s, s2));
    }
}

class Solution_415 {
    public String addStrings(String num1, String num2) {
        BigInteger bigInteger = new BigInteger(num1);
        BigInteger bigInteger2 = new BigInteger(num2);
        return String.valueOf(bigInteger2.add(bigInteger));
```

```
    }
}

// https://leetcode.com/problems/add-strings/submissions/
```

Another Solution: 01

```
class Solution {
    public String addStrings(String num1, String num2) {
        int i = num1.length() - 1, j = num2.length() - 1, carry = 0;
        StringBuilder sb = new StringBuilder();

        while (i >= 0 || j >= 0 || carry != 0) {
            if (i >= 0) carry += num1.charAt(i--) - '0';
            if (j >= 0) carry += num2.charAt(j--) - '0';
            sb.append(carry % 10);
            carry /= 10;
        }
        return sb.reverse().toString();
    }
}
```

Another Solution: 02

```
class Solution {
    public String addStrings(String num1, String num2) {
        int carry = 0;
        int i = num1.length() - 1, j = num2.length() - 1;
        StringBuilder sb = new StringBuilder();
        while (i >= 0 || j >= 0) {
            int n1 = 0, n2 = 0;
            if (i >= 0) {
                n1 = num1.charAt(i) - '0';
            }
            if (j >= 0) {
                n2 = num2.charAt(j) - '0';
            }
            int sum = n1 + n2 + carry;
            carry = sum / 10;
            sb.append(sum % 10);
            i--;
            j--;
        }
        if (carry != 0) {
            sb.append(carry);
        }
        return sb.reverse().toString();
    }
}
```

Another Solution: 03

```java
public class Solution {
    public String addStrings(String num1, String num2) {
        int i = num1.length() - 1;
        int j = num2.length() - 1;
        int carry = 0;
        char[] num1Array = num1.toCharArray();
        char[] num2Array = num2.toCharArray();
        StringBuilder sb = new StringBuilder();
        while (i >= 0 || j >= 0 || carry == 1) {
            int a = i >= 0 ? (num1Array[i--] - '0') : 0;
            int b = j >= 0 ? (num2Array[j--] - '0') : 0;
            int sum = a + b + carry;
            sb.insert(0, sum % 10);
            carry = sum / 10;
        }
        return sb.toString();
    }
}

/**
 * Complexity Analysis
 * Time Complexity: `O(m + n)` (Average Case) and `O(m + n)` (Worst Case) where `m` and `n` are the total number of characters
 * in the first and second input respectively. The algorithm evaluate each character for potential carry.
 *
 * Auxiliary Space: `O(m + n)` space is used where `m` and `n` are the total number of characters in the first and second input respectively.
 * Converting both input to character array required extra space.
 *
 * Algorithm
 * Approach: Iterative
 *  * The while loop will run as long as there are characters left in one of the strings or when there is a carry in remaining.
 *  Starting from right to left, each character is converted to integer by the mean of offsetting its ASCII value.
 *  If the shorter string is exhausted first, the value will be forced to `0` as default from there onwards.
 *  Sum for that particular position is conveniently calculated and a modulus of `10` will extract the digit portion in case the sum is bigger than 10.
 *  Carry in is extracted by flooring the number after division by `10`. StringBuilder is used due to its efficiently in inserting character to
 *  existing StringBuilder object. If normal String is used then each insertion by + operation will have to copy over the immutable String object which is highly inefficient
```

13. Problem: 26. Remove Duplicates From sorted array

Given an integer array `nums` sorted in **non-decreasing order**, remove the duplicates **in-place** such that each unique element appears only **once**. The **relative order** of the elements should be kept the **same**.
Since it is impossible to change the length of the array in some languages, you must instead have the result be placed in the **first part** of the array `nums`. More formally, if there are `k` elements after removing the duplicates, then the first `k` elements of `nums` should hold the final result. It does not matter what you leave beyond the first `k` elements.
Return `k` *after placing the final result in the first* `k` *slots of* `nums`.

Do **not** allocate extra space for another array. You must do this by **modifying the input array in-place** with O(1) extra memory.

Custom Judge:

The judge will test your solution with the following code:

```
int[] nums = [...]; // Input array
int[] expectedNums = [...]; // The expected answer with correct length

int k = removeDuplicates(nums); // Calls your implementation

assert k == expectedNums.length;
for (int i = 0; i < k; i++) {
    assert nums[i] == expectedNums[i];
}
```

If all assertions pass, then your solution will be **accepted**.

Example 1:

```
Input: nums = [1,1,2]
Output: 2, nums = [1,2,_]
Explanation: Your function should return k = 2, with the first two elements of
nums being 1 and 2 respectively.
It does not matter what you leave beyond the returned k (hence they are
underscores).
```

Example 2:

```
Input: nums = [0,0,1,1,1,2,2,3,3,4]
Output: 5, nums = [0,1,2,3,4,_,_,_,_,_]
Explanation: Your function should return k = 5, with the first five elements of
nums being 0, 1, 2, 3, and 4 respectively.
It does not matter what you leave beyond the returned k (hence they are
underscores).
```

Constraints:

`1 <= nums.length <= 3 * 10⁴`
`-100 <= nums[i] <= 100`
`nums` is sorted in **non-decreasing** order.

Solution:

My Solution:

```
import java.util.*;

public class O13_RemoveDuplicateFromsortedArray_26 {
   public static void main(String[] args) {
      Solution solution = new Solution();
      int[] arr = {1, 1, 2};
      int[] arr2 = {0, 0, 1, 1, 1, 2, 2, 3, 3, 4};
      System.out.println(solution.removeDuplicates(arr));
      System.out.println(solution.removeDuplicates(arr2));
   }
}
```

```java
class Solution {
    public int removeDuplicates(int[] nums) {
        int[] temp = new int[nums.length];
        int j = 0;
        for (int i = 0; i < nums.length - 1; i++) {
            if (nums[i] != nums[i + 1]) {
                temp[j++] = nums[i];
            }
        }

        temp[j++] = nums[nums.length - 1];

        // Changing original array
        for (int i = 0; i < j; i++) {
            nums[i] = temp[i];
        }
        return j;
    }
}

// https://leetcode.com/problems/remove-duplicates-from-sorted-array/
```

Another Solution: 01

```java
class Solution {
    public int removeDuplicates(int[] nums) {
        int i = 0;
        for (int n : nums)
            if (i == 0 || n > nums[i - 1])
                nums[i++] = n;
        return i;
    }
}

// And to  not need the i ==0check in the loop:

class Solution {
    public int removeDuplicates(int[] nums) {
        int i = nums.length > 0 ? 1 : 0;
        for (int n : nums)
            if (n > nums[i - 1])
                nums[i++] = n;
        return i;
    }
}
```

Another Solution: 02

```java
class Solution {
    public int removeDuplicates(int[] nums) {
        int pos = 0;
```

```
        for (int num : nums) {
            if (nums[pos] != num) {
                nums[++pos] = num;
            }
        }
        return pos + 1;
    }
}
```

Another Solution: 03

```
class Solution {
    public int removeDuplicates(int[] A) {
        if (A.length == 0) return 0;
        int j = 0;
        for (int i = 0; i < A.length; i++)
            if (A[i] != A[j]) A[++j] = A[i];
        return ++j;
    }
}
```

12. Problem: 01. Two Sum

Given an array of integers `nums` and an integer `target`, return *indices of the two numbers such that they add up to* `target`.
You may assume that each input would have ***exactly* one solution**, and you may not use the *same* element twice.
You can return the answer in any order.

Example 1:
```
Input: nums = [2,7,11,15], target = 9
Output: [0,1]
Explanation: Because nums[0] + nums[1] == 9, we return [0, 1].
```
Example 2:
```
Input: nums = [3,2,4], target = 6
Output: [1,2]
```
Example 3:
```
Input: nums = [3,3], target = 6
Output: [0,1]
```

Constraints:
- $2 \le nums.length \le 10^4$
- $-10^9 \le nums[i] \le 10^9$
- $-10^9 \le target \le 10^9$
- **Only one valid answer exists.**

Follow-up: Can you come up with an algorithm that is less than O(n2) time complexity?

Solution:

My Solution:

```java
import java.util.Arrays;
import java.util.HashMap;
import java.util.Map;

public class O12_TwoSum_1 {
    public static void main(String[] args) {
        Solution_1 solution_1 = new Solution_1();
        int[] arr = {2, 7, 11, 15};
        int[] arr2 = {3, 2, 4};
        System.out.println(Arrays.toString(solution_1.twoSum(arr, 9)));
        System.out.println(Arrays.toString(solution_1.twoSum(arr2, 6)));
    }
}

class Solution_1 {
    public int[] twoSum(int[] nums, int target) {
        int[] result = new int[2];
        for (int i = 0; i < nums.length; i++) {
            for (int j = 0; j < nums.length; j++) {
                if (i != j && nums[i] + nums[j] == target) {
                    result[0] = i;
                    result[1] = j;
                    break;
                }
            }
        }
        return result;
    }
}

// https://leetcode.com/problems/two-sum/submissions/
```

Another Solution: 01

```java
class Solution {
    public int[] twoSum(int[] numbers, int target) {
        int[] result = new int[2];
        Map<Integer, Integer> map = new HashMap<Integer, Integer>();
        for (int i = 0; i < numbers.length; i++) {
            if (map.containsKey(target - numbers[i])) {
                result[1] = i;
                result[0] = map.get(target - numbers[i]);
                return result;
            }
            map.put(numbers[i], i);
        }
        return result;
    }
}
```

Another Solution: 02

```
class Solution {
    public int[] twoSum(int[] nums, int target) {
        HashMap<Integer, Integer> seen = new HashMap<>();
        for (int i = 0; i < nums.length; ++i) {
            int b = nums[i], a = target - b;
            if (seen.containsKey(a)) return new int[]{seen.get(a), i}; // Found pair of (a, b), so that a + b = target
            seen.put(b, i);
        }
        return new int[]{};
    }
}
```

Another Solution: 03

```
class Solution {
    //O(nlogn)
    public int[] twoSum_n2(int[] nums, int target) {
        if (nums == null) return null;
        int[] nums2 = Arrays.copyOf(nums, nums.length);
        Arrays.sort(nums2);
        int a = 0, b = 0;
        int start = 0, end = nums2.length - 1;
        //find two nums
        while (start < end) {
            int sum = nums2[start] + nums2[end];
            if (sum < target) start++;
            else if (sum > target) end--;
            else {
                a = nums2[start];
                b = nums2[end];
                break;
            }
        }
        //find the index of two numbers
        int[] res = new int[2];
        for (int i = 0; i < nums.length; i++) {
            if (nums[i] == a) {
                res[0] = i;
                break;
            }
        }
        if (a != b) {
            for (int i = 0; i < nums.length; i++) {
                if (nums[i] == b) {
                    res[1] = i;
                    break;
                }
            }
        } else {
            for (int i = 0; i < nums.length; i++) {
                if (nums[i] == b && i != res[0]) {
                    res[1] = i;
```

```
                break;
            }
        }
    }
    return res;
  }
}
```

11. Problem: 2114. Maximum Number of Words found in Sentence

A sentence is a list of words that are separated by a single space with no leading or trailing spaces.
You are given an array of strings `sentences`, where each `sentences[i]` represents a single sentence.
Return *the maximum number of words that appear in a single sentence*.

Example 1:
```
Input: sentences = ["alice and bob love leetcode", "i think so too", "this is great thanks very much"]
Output: 6
Explanation:
- The first sentence, "alice and bob love leetcode", has 5 words in total.
- The second sentence, "i think so too", has 4 words in total.
- The third sentence, "this is great thanks very much", has 6 words in total.
Thus, the maximum number of words in a single sentence comes from the third sentence, which has 6 words.
```
Example 2:
```
Input: sentences = ["please wait", "continue to fight", "continue to win"]
Output: 3
Explanation: It is possible that multiple sentences contain the same number of words.
In this example, the second and third sentences (underlined) have the same number of words.
```

Constraints:
`1 <= sentences.length <= 100`
`1 <= sentences[i].length <= 100`
`sentences[i]` consists only of lowercase English letters and `' '` only.
`sentences[i]` does not have leading or trailing spaces.
All the words in `sentences[i]` are separated by a single space.

Solution:

My Solution:

```
import java.util.Arrays;
import java.util.stream.Stream;

public class O11_MaxNumberOfWordInSentence_2114 {
    public static void main(String[] args) {
        Solution_2114 solution_2114 = new Solution_2114();
        String[] arr = {"alice and bob love leetcode", "i think so too", "this is great thanks very much"};
        String[] arr2 = {"please wait", "continue to fight", "continue to win"};
        System.out.println((solution_2114.mostWordsFound(arr)));
        System.out.println((solution_2114.mostWordsFound(arr2)));
```

```
    }
}

class Solution_2114 {
    public int mostWordsFound(String[] sentences) {
        int max = 0;
        for (int i = 0; i < sentences.length; i++) {
            int c = most(sentences[i]);
            if (c > max) {
                max = c;
            }
        }
        return max;
    }

    public int most(String s) {
        int m = 0;
        String[] strings = s.split(" ");
        m = strings.length;
        return m;
    }
}

// https://leetcode.com/problems/maximum-number-of-words-found-in-sentences/
```

Another Solution: 01

```
class Solution {
    public int mostWordsFound(String[] sentences) {
        return Stream.of(sentences).mapToInt(s -> s.split(" ").length).max().getAsInt();
    }
}
```

Another Solution: 02

```
class Solution {
    public int mostWordsFound(String[] sentences) {
        int max = 0;
        for (String s : sentences) {
            max = Math.max(max, s.split(" ").length);
        }
        return max;
    }
}
```

Another Solution: 03

```
class Solution {
    public int mostWordsFound(String[] sentences) {
        int max = 0;
        for (String s : sentences) {
```

```
            int x = s.indexOf(" "), count = 1;
            while (x != -1) {
                count++;
                x = s.indexOf(" ", x + 1);
            }
            max = Math.max(count, max);
        }
        return max;
    }
}
```

Day 02-1929, 1920, 1512, 1365, 1816.

10. Problem: 1816. Truncate Sentence

A **sentence** is a list of words that are separated by a single space with no leading or trailing spaces. Each of the words consists of **only** uppercase and lowercase English letters (no punctuation).
For example, `"Hello World"`, `"HELLO"`, and `"hello world hello world"` are all sentences.
You are given a sentence `s` and an integer `k`. You want to **truncate** `s` such that it contains only the **first** `k` words. Return `s` *after* ***truncating*** *it.*

Example 1:
```
Input: s = "Hello how are you Contestant", k = 4
Output: "Hello how are you"
Explanation:
The words in s are ["Hello", "how" "are", "you", "Contestant"].
The first 4 words are ["Hello", "how", "are", "you"].
Hence, you should return "Hello how are you".
```
Example 2:
```
Input: s = "What is the solution to this problem", k = 4
Output: "What is the solution"
Explanation:
The words in s are ["What", "is" "the", "solution", "to", "this", "problem"].
The first 4 words are ["What", "is", "the", "solution"].
Hence, you should return "What is the solution".
```
Example 3:
```
Input: s = "chopper is not a tanuki", k = 5
Output: "chopper is not a tanuki"
```

Constraints:
`1 <= s.length <= 500`
`k` is in the range `[1, the number of words in s]`.
`s` consist of only lowercase and uppercase English letters and spaces.
The words in `s` are separated by a single space.
There are no leading or trailing spaces.

Solution:

My Solution:

```
public class O10_TruncateSentence_1816 {
    public static void main(String[] args) {
        Solution_1816 solution_1816 = new Solution_1816();
        System.out.println(solution_11816.truncateSentence("Hello how are you Contestant", 4));
    }
}
class Solution_1816 {
    public String truncateSentence(String s, int k) {
        String[] na = s.split(" ");
        String newString = "";
        for (int i = 0; i < k; i++) {
            if (i != k - 1) {
                newString += na[i] + " ";
            } else {
                newString += na[i];
            }
        }
        return newString;
    }
}

// https://leetcode.com/problems/truncate-sentence/
```

Another Solution: 01

```
//Approch 1:[using split]
class Solution {
    public String truncateSentence(String s, int k) {
        String[] str = s.split(" ");
        StringBuilder truncatedSentence = new StringBuilder();
        for (int i = 0; i < k - 1; i++) {
            truncatedSentence.append(str[i] + " ");
        }
        truncatedSentence.append(str[k - 1]); //because we don't want  space for last word
        return truncatedSentence.toString();
    }
}
//Complexity:
//Time:O(n) and Space:O(n)
//Note: Split function will iterate over the string to split on the basis of "". thats why time is O(n) not O(k)


//Approch 2:[without split]
class Solution {
    public String truncateSentence(String s, int k) {
        int idx = 0;
        int spaceCount = 0;

        while (idx < s.length() && spaceCount < k) {
```

```
            if (s.charAt(idx) == ' ') spaceCount++;
            idx++;
        }
        // if(spaceCount<k) means we have to include whole string
        return spaceCount == k ? s.substring(0, idx - 1) : s;
    }
}
//Complexity:
//Time:O(n) and O(1) [Big O notation average time complexity is better than approch 1]
```

Another Solution: 02

```
class Solution {
    public String truncateSentence(String s, int k) {
        String[] words = s.split(" ");
        StringBuilder sb = new StringBuilder(words[0]);
        for (int i = 1; i < k; ++i) {
            sb.append(" " + words[i]);
        }
        return sb.toString();
    }
}
```

Another Solution: 03

```
class Solution {
    public String truncateSentence(String s, int k) {
        int n = s.length();
        int count = 0;
        int i = 0;
        while (i < n) {
            if (s.charAt(i) == ' ') {
                count++;
                if (count == k)
                    return s.substring(0, i);
            }
            i++;
        }
        return s;
    }
}
```

09. Problem: 1365. How many numbers are smaller than the current number

Given the array `nums`, for each `nums[i]` find out how many numbers in the array are smaller than it. That is, for each `nums[i]` you have to count the number of valid `j's` such that `j != i` and `nums[j] < nums[i]`.
Return the answer in an array.

Example 1:
`Input: nums = [8,1,2,2,3]`

```
Output: [4,0,1,1,3]
Explanation:
For nums[0]=8 there exist four smaller numbers than it (1, 2, 2 and 3).
For nums[1]=1 does not exist any smaller number than it.
For nums[2]=2 there exist one smaller number than it (1).
For nums[3]=2 there exist one smaller number than it (1).
For nums[4]=3 there exist three smaller numbers than it (1, 2 and 2).
```
Example 2:
```
Input: nums = [6,5,4,8]
Output: [2,1,0,3]
```
Example 3:
```
Input: nums = [7,7,7,7]
Output: [0,0,0,0]
```

Constraints:
```
2 <= nums.length <= 500
0 <= nums[i] <= 100
```

Solution:

My Solution:

```java
import java.util.Arrays;
import java.util.HashMap;
import java.util.Map;

public class O9_Test {
    public static void main(String[] args) {
        Solution_1365 solution_1365 = new Solution_1365();
        int[] arr = {8, 1, 2, 2, 3};
        int[] arr2 = {6, 5, 4, 8};
        int[] arr3 = {7, 7, 7, 7};
        System.out.println((Arrays.toString(solution_1365.smallerNumbersThanCurrent(arr))));
        System.out.println((Arrays.toString(solution_1365.smallerNumbersThanCurrent(arr2))));
        System.out.println((Arrays.toString(solution_1365.smallerNumbersThanCurrent(arr3))));
    }
}

class Solution_1365 {
    public int[] smallerNumbersThanCurrent(int[] nums) {
        int[] result = new int[nums.length];
        int count = 0;
        for (int i = 0; i < nums.length; i++) {
            for (int j = 0; j < nums.length; j++) {
                if (nums[i] > nums[j]) {
                    count++;
                }
            }
            result[i] = count;
            count = 0;
        }
        return result;
    }
```

```
}

// https://leetcode.com/problems/how-many-numbers-are-smaller-than-the-current-number/submissions/

/**
 * Both i and j loop start from 0.
 * so that every element is compare to every element.
 */
```

Another Solution: 01

```
class Solution {
    public int[] smallerNumbersThanCurrent(int[] nums) {
        int[] answer = new int[nums.length];
        int count;
        for (int i = 0; i < nums.length; i++) {
            count = 0;
            for (int j = 0; j < nums.length; j++) {
                if (i != j && nums[j] < nums[i])
                    count++;
            }
            answer[i] = count;
        }
        return answer;
    }
}
```

Another Solution: 02

```
class Solution {
    public int[] smallerNumbersThanCurrent(int[] nums) {
        int[] buck = new int[101];
        for (int i = 0; i < nums.length; i++) {
            buck[nums[i]] += 1;
        }
        for (int j = 1; j <= 100; j++) {
            buck[j] += buck[j - 1];
        }
        for (int k = 0; k < nums.length; k++) {
            int pos = nums[k];
            nums[k] = pos == 0 ? 0 : buck[pos - 1];
        }
        return nums;
    }
}
```

Another Solution: 03

```
class Solution {
    public int[] smallerNumbersThanCurrent(int[] nums) {
        Map<Integer, Integer> map = new HashMap<>();
        int[] copy = nums.clone();
```

```
        Arrays.sort(copy);
        for (int i = 0; i < nums.length; i++) {
            map.putIfAbsent(copy[i], i);
        }
        for (int i = 0; i < nums.length; i++) {
            copy[i] = map.get(nums[i]);
        }
        return copy;
    }
}
```

08. Problem: 1512. Number of Good Pairs

Given an array of integers `nums`, return *the number of* ***good pairs***.
A pair `(i, j)` is called *good* if `nums[i] == nums[j]` and `i < j`.

Example 1:
```
Input: nums = [1,2,3,1,1,3]
Output: 4
Explanation: There are 4 good pairs (0,3), (0,4), (3,4), (2,5) 0-indexed.
```
Example 2:
```
Input: nums = [1,1,1,1]
Output: 6
Explanation: Each pair in the array are good.
```
Example 3:
```
Input: nums = [1,2,3]
Output: 0
```

Constraints:
```
1 <= nums.length <= 100
1 <= nums[i] <= 100
```
Accepted
362,718
Submissions
411,274

Solution:

My Solution:

```
package O1_easy.day_02;

import java.util.Arrays;
import java.util.HashMap;

public class O8_NumberOfGoodPairs_1512 {
    public static void main(String[] args) {
        Solution_1470 solution_1470 = new Solution_1470();
        int[] arr = {1, 2, 3, 1, 1, 3};
        int[] arr2 = {1, 1, 1, 1};
        int[] arr3 = {1, 2, 3};
```

```
        System.out.println((solution_1470.numIdenticalPairs(arr)));
        System.out.println((solution_1470.numIdenticalPairs(arr2)));
        System.out.println((solution_1470.numIdenticalPairs(arr3)));
    }
}

class Solution_1470 {
    public int numIdenticalPairs(int[] nums) {
        int count = 0;
        for (int i = 0; i < nums.length; i++) {
            for (int j = 1; j < nums.length; j++) {
                if (nums[i] == nums[j] && i < j) {
                    count++;
                }
            }
        }
        return count;
    }
}

// https://leetcode.com/problems/number-of-good-pairs/
```

Another Solution: 01

```
class Solution1 {
    public int numIdenticalPairs1(int[] A) {
        int res = 0, count[] = new int[101];
        for (int a : A) {
            res += count[a]++;
        }
        return res;
    }
}
```

Another Solution: 02

```
class Solution2 {
    public int numIdenticalPairs2(int[] guestList) {
        HashMap<Integer, Integer> hm = new HashMap<>();
        int ans = 0;
        for (int friend : guestList) {
            int friendCount = hm.getOrDefault(friend, 0);
            ans += friendCount;
            hm.put(friend, friendCount + 1);
        }
        return ans;
    }
}
```

Another Solution: 03

```java
class Solution3 {
    public int numIdenticalPairs3(int[] nums) {
        int ans = 0;
        int[] count = new int[101];
        for (int n : nums)
            count[n]++;
        for (int n : count)
            ans += (n * (n - 1)) / 2;
        return ans;
    }
}
```

07. Problem: 2011. Final value of variable after performing operation

There is a programming language with only **four** operations and **one** variable `X`:
`++X` and `X++` **increments** the value of the variable `X` by `1`.
`--X` and `X--` **decrements** the value of the variable `X` by `1`.
Initially, the value of `X` is `0`.
Given an array of strings `operations` containing a list of operations, return *the **final** value of* `X` *after performing all the operations.*

Example 1:

```
Input: operations = ["--X","X++","X++"]
Output: 1
Explanation: The operations are performed as follows:
Initially, X = 0.
--X: X is decremented by 1, X =  0 - 1 = -1.
X++: X is incremented by 1, X = -1 + 1 =  0.
X++: X is incremented by 1, X =  0 + 1 =  1.
```

Example 2:

```
Input: operations = ["++X","++X","X++"]
Output: 3
Explanation: The operations are performed as follows:
Initially, X = 0.
++X: X is incremented by 1, X = 0 + 1 = 1.
++X: X is incremented by 1, X = 1 + 1 = 2.
X++: X is incremented by 1, X = 2 + 1 = 3.
```

Example 3:

```
Input: operations = ["X++","++X","--X","X--"]
Output: 0
Explanation: The operations are performed as follows:
Initially, X = 0.
X++: X is incremented by 1, X = 0 + 1 = 1.
++X: X is incremented by 1, X = 1 + 1 = 2.
--X: X is decremented by 1, X = 2 - 1 = 1.
X--: X is decremented by 1, X = 1 - 1 = 0.
```

Constraints:

`1 <= operations.length <= 100`
`operations[i]` will be either `"++X"`, `"X++"`, `"--X"`, or `"X--"`.

Solution:

My Solution:

```
import java.util.Arrays;

public class O7_Test {
    public static void main(String[] args) {
        Solution_2011 solution_2011 = new Solution_2011();
        String[] arr = {"--X", "X++", "X++"};
        String[] arr2 = {"X++", "++X", "--X", "X--"};
        String[] arr3 = {"++X", "++X", "X++"};
        System.out.println(solution_2011.finalValueAfterOperations(arr));
        System.out.println(solution_2011.finalValueAfterOperations(arr2));
        System.out.println(solution_2011.finalValueAfterOperations(arr3));

    }
}

class Solution_2011 {
    public int finalValueAfterOperations(String[] operations) {

        int result = 0;
        for (int i = 0; i < operations.length; i++) {
            if (operations[i].equals("++X")) {
                result = 1 + result;
            } else if (operations[i].equals("--X")) {
                result = result - 1;
            } else if (operations[i].equals("X++")) {
                result = result + 1;
            } else if (operations[i].equals("X--")) {
                result = result - 1;
            }
        }
        return result;
    }
}

// https://leetcode.com/problems/build-array-from-permutation/
```

Another Solution: 01

```
class Solution1 {
    public int finalValueAfterOperations1(String[] operations) {
        int val = 0;
        for (int i = 0; i < operations.length; i++) {
            if (operations[i].charAt(1) == '+') val++;
            else val--;
        }
        return val;
```

```
    }
}
```

Another Solution: 02

```
class Solution2 {
    public int finalValueAfterOperations2(String[] operations) {
        int res = 0;
        for (String operation : operations) {
            res += operation.charAt(1) == '+' ? 1 : -1;
        }
        return res;
    }
}
```

Another Solution: 03

```
    public static int finalValueAfterOperations3(String[] operations) {
        return Arrays.stream(operations, 0, operations.length)
                .mapToInt(operation -> operation.charAt(1) == '+' ? 1 : -1)
                .sum();
    }
```

06. Problem: 1929. Concatenation of Array

Given an integer array `nums` of length `n`, you want to create an array `ans` of length `2n` where `ans[i] == nums[i]` and `ans[i + n] == nums[i]` for `0 <= i < n` (**0-indexed**).
Specifically, `ans` is the **concatenation** of two `nums` arrays.
Return *the array* `ans`.

Example 1:

```
Input: nums = [1,2,1]
Output: [1,2,1,1,2,1]
Explanation: The array ans is formed as follows:
- ans = [nums[0],nums[1],nums[2],nums[0],nums[1],nums[2]]
- ans = [1,2,1,1,2,1]
```

Example 2:

```
Input: nums = [1,3,2,1]
Output: [1,3,2,1,1,3,2,1]
Explanation: The array ans is formed as follows:
- ans = [nums[0],nums[1],nums[2],nums[3],nums[0],nums[1],nums[2],nums[3]]
- ans = [1,3,2,1,1,3,2,1]
```

Constraints:

```
n == nums.length
1 <= n <= 1000
1 <= nums[i] <= 1000
```

Solution:

My Solution:

```java
public class O6_ConcatenationOfArray_1929 {
    public static void main(String[] args) {
        Solution_1929 solution_1929 = new Solution_1929();
        int[] arr = {1, 3, 2, 1};
        System.out.println(Arrays.toString(solution_1929.getConcatenation(arr)));
    }
}
class Solution_1929 {
    public int[] getConcatenation(int[] nums) {
        int[] newAnswer = new int[nums.length * 2];
        int givenArrayLength = nums.length;
        for (int i = 0; i < nums.length; i++) {
            newAnswer[i] = nums[i];
            newAnswer[i + givenArrayLength] = nums[i];
        }
        return newAnswer;
    }
}

// https://leetcode.com/problems/concatenation-of-array/

/**
 * (int i = 0; i < nums.length; i++) --> must be i<nums.length or i<=nums.length-1
 */
```

Another Solution: 01

```java
public int[] getConcatenation(int[] nums) {
    int[] result = new int[nums.length * 2];
    for (int i = 0; i < nums.length; i++)
        result[i + nums.length] = result[i] = nums[i];
    return result;
}
```

Another Solution: 02

```java
public int[] getConcatenation(int[] nums) {
    int[] ans = new int[nums.length * 2];
    for (int i = 0; i < nums.length; i++) {
        ans[i] = nums[i];
        ans[nums.length + i] = nums[i];
    }
    return ans;
}
```

Day 01 - 9, 1480, 1108, 1662, 2235.

5. Problem: 1108. Defanging an IP Address

Given a valid (IPv4) IP `address`, return a defanged version of that IP address.
A *defanged IP address* replaces every period `"."` with `"[.]"`.

Example 1:
Input: `address = "1.1.1.1"`
Output: `"1[.]1[.]1[.]1"`
Example 2:
Input: `address = "255.100.50.0"`
Output: `"255[.]100[.]50[.]0"`

Constraints:
The given `address` is a valid IPv4 address.

Solution:

My Solution:

```
public class O5_DefiningIpAddress_1108 {
    public static void main(String[] args) {
        Solution_1108 solution_1108 = new Solution_1108();
        System.out.println(solution_1108.defangIPaddr("1.1.1.1"));
    }
}

class Solution_1108 {
    public String defangIPaddr(String address) {
        return address.replace(".", "[.]");
    }
}
```

Another Solution: 01

```
// Another solution:
class Solution {
    public String defangIPaddr(String address) {
        StringBuilder str = new StringBuilder();
        for (int i = 0; i < address.length(); i++) {
            if (address.charAt(i) == '.') {
                str.append("[.]");
            } else {
                str.append(address.charAt(i));
            }
        }
        return str.toString();
    }
}
```

Another Solution: 02

```
//Another Solution:
class Solution {
    public String defangIPaddr(String address) {
        return address.replaceAll("\\.", "[.]");
    }
}
```

Another Solution: 03

04. Problem: 1662. Check If Two String array are Equivalent

Given two string arrays `word1` and `word2`, return `true` if the two arrays **represent** the same string, and `false` otherwise.
A string is **represented** by an array if the array elements concatenated **in order** forms the string.

Example 1:
```
Input: word1 = ["ab", "c"], word2 = ["a", "bc"]
Output: true
Explanation:
word1 represents string "ab" + "c" -> "abc"
word2 represents string "a" + "bc" -> "abc"
The strings are the same, so return true.
```
Example 2:
```
Input: word1 = ["a", "cb"], word2 = ["ab", "c"]
Output: false
```
Example 3:
```
Input: word1  = ["abc", "d", "defg"], word2 = ["abcddefg"]
Output: true
```

Constraints:
`1 <= word1.length, word2.length <= 10^3`
`1 <= word1[i].length, word2[i].length <= 10^3`
`1 <= sum(word1[i].length), sum(word2[i].length) <= 10^3`
`word1[i]` and `word2[i]` consist of lowercase letters.

Solution:

My Solution:

```
public class O4_StringEquivalent_1662 {
    public static void main(String[] args) {
        Solution_1662 solution_1662 = new Solution_1662();
        String[] word1 = {"a", "cb"};
        String[] word2 = {"ab", "c"};
        System.out.println(solution_1662.arrayStringsAreEqual(word1, word2));
    }
```

```
}

class Solution_1662 {
    public boolean arrayStringsAreEqual(String[] word1, String[] word2) {
        String r1 = "";
        for (int i = 0; i < word1.length; i++) {
            r1 += word1[i];
        }
        System.out.println(r1);
        String r2 = "";
        for (int i = 0; i < word2.length; i++) {
            r2 += word2[i];
        }
        System.out.println(r2);

        if (r1.equals(r2)) {
            return true;
        } else {
            return false;
        }
    }
}

// https://leetcode.com/problems/check-if-two-string-arrays-are-equivalent/
```

Another Solution: 01

```
class Solution {
    public boolean arrayStringsAreEqual(String[] word1, String[] word2) {
        return String.join("", word1).equals(String.join("", word2));
    }
}
```

Another Solution: 02

```
class Solution {
    public boolean arrayStringsAreEqual(String[] word1, String[] word2) {
        StringBuilder sb1 = new StringBuilder(), sb2 = new StringBuilder();
        for (String word : word1)
            sb1.append(word);

        for (String word : word2)
            sb2.append(word);

        return sb1.toString().equals(sb2.toString());
    }
}
```

Another Solution: 03

```
class Solution {
    public boolean arrayStringsAreEqual(String[] word1, String[] word2) {
```

```
        int idx1 = 0, idx2 = 0, arrIdx1 = 0, arrIdx2 = 0;
        while (arrIdx1 < word1.length && arrIdx2 < word2.length) {
            if (word1[arrIdx1].charAt(idx1) != word2[arrIdx2].charAt(idx2)) return false;
            if (idx1 == word1[arrIdx1].length() - 1) {
                idx1 = 0;
                arrIdx1++;
            } else idx1++;
            if (idx2 == word2[arrIdx2].length() - 1) {
                idx2 = 0;
                arrIdx2++;
            } else idx2++;
        }
        return arrIdx1 == word1.length && arrIdx2 == word2.length;
    }
}
```

Another Solution: 04

```
class Solution {
    public boolean arrayStringsAreEqual(String[] word1, String[] word2) {
        int idx1 = 0, idx2 = 0, arrIdx1 = 0, arrIdx2 = 0;
        while (arrIdx1 < word1.length && arrIdx2 < word2.length) {
            if (word1[arrIdx1].charAt(idx1) != word2[arrIdx2].charAt(idx2)) return false;
            idx1 = (++idx1) % word1[arrIdx1].length();
            idx2 = (++idx2) % word2[arrIdx2].length();
            if (idx1 == 0) arrIdx1++;
            if (idx2 == 0) arrIdx2++;
        }
        return arrIdx1 == word1.length && arrIdx2 == word2.length;
    }
}
```

03. Problem: 1480. Running Sum of 1d array

Given an array `nums`. We define a running sum of an array as `runningSum[i] = sum(nums[0]…nums[i])`. Return the running sum of `nums`.

Example 1:

```
Input: nums = [1,2,3,4]
Output: [1,3,6,10]
Explanation: Running sum is obtained as follows: [1, 1+2, 1+2+3, 1+2+3+4].
```

Example 2:

```
Input: nums = [1,1,1,1,1]
Output: [1,2,3,4,5]
Explanation: Running sum is obtained as follows: [1, 1+1, 1+1+1, 1+1+1+1, 1+1+1+1+1].
```

Example 3:

```
Input: nums = [3,1,2,10,1]
Output: [3,4,6,16,17]
```

Constraints:

```
1 <= nums.length <= 1000
-10^6 <= nums[i] <= 10^6
```

Solution:

My Solution:

```java
import java.util.Arrays;

public class O3_RunningSum1dArray_1480 {
    public static void main(String[] args) {
        Solution_1480 solution_1480 = new Solution_1480();
        int[] nums = {1, 1, 1, 1, 1};
        System.out.println(Arrays.toString(solution_1480.runningSum(nums)));
        int[] nums2 = {1, 2, 3, 4};
        System.out.println(Arrays.toString(solution_1480.runningSum(nums2)));
    }
}

class Solution_1480 {
    public int[] runningSum(int[] nums) {
        int[] result = new int[nums.length];
        int sum = 0;
        for (int i = 0; i < nums.length; i++) {
            sum = sum + nums[i];
            result[i] = sum;
        }
        return result;
    }
}

    /**
     * {1, 2, 3, 4}
     * <p>
     * Iteration: 1
     * sum = sum + num[i]  | sum = 0 + 1 = 1
     * result[i] = sum     | result[0] = 1
     * <p>
     * Iteration: 2
     * sum = 1 + 2 = 3 , result[1] = 3
     * <p>
     * Iteration: 3
     * sum = 3 + 3 = 6  , result[2] = 6
     * <p>
     * Iteration: 4
     * sum = 3 + 6 = 10 , result[3] = 10
     */

// https://leetcode.com/problems/running-sum-of-1d-array/
```

Another Solution: 01

```java
public int[] runningSum(int[] nums) {
        // modify the input array, adding n[i] with n[i-1]
        for (int i = 1; i < nums.length; i++) {
            nums[i] += nums[i - 1];
        }

        // return the modified array
        return nums;
    }
```

Another Solution: 02

```java
class Solution {
    public int[] runningSum(int[] nums) {
        return IntStream.range(0, nums.length).map(i -> i == 0 ? nums[i] : (nums[i] += nums[i - 1])).toArray();
    }
}
```

Another Solution: 03

02. Problem: 9. Palindrome or not

Given an integer `x`, return `true` if `x` is palindrome integer.
An integer is a **palindrome** when it reads the same backward as forward.
For example, `121` is a palindrome while `123` is not.

Example 1:
```
Input: x = 121
Output: true
Explanation: 121 reads as 121 from left to right and from right to left.
```
Example 2:
```
Input: x = -121
Output: false
Explanation: From left to right, it reads -121. From right to left, it becomes 121-. Therefore it
is not a palindrome.
```
Example 3:
```
Input: x = 10
Output: false
Explanation: Reads 01 from right to left. Therefore it is not a palindrome.
```

Constraints:
$-2^{31} <= x <= 2^{31} - 1$

Follow up: Could you solve it without converting the integer to a string?

Solution:

My Solution:

```
package O1_easy;

public class O2_Palindrome_9 {
    public static void main(String args[]) {
        Solution_9 solution = new Solution_9();
        System.out.println(solution.isPalindrome(121));
        System.out.println(solution.isPalindrome(123));
    }
}

class Solution_9 {
    public boolean isPalindrome(int x) {
        String s = String.valueOf(x);
        StringBuffer sb = new StringBuffer(s);
        String s1 = String.valueOf(sb.reverse());

        if (s.equals(s1)) {
            return true;
        } else {
            return false;
        }
    }
}

// https://leetcode.com/problems/palindrome-number/
```

Another Solution: 01

```
public class Solution {
    public boolean isPalindrome(int x) {
        if (x < 0) return false;
        int y = x;
        int res = 0;
        while (y != 0) {
            res = res * 10 + y % 10;
            y /= 10;
        }
        return x == res;
    }
}
```

Another Solution: 02

```
public boolean isPalindrome(int x){
        int p=x,q=0;
        while(p>=1){
        q*=10;
        q+=p%10;
```

```
        p/=10;
        }
        return q==x;
        }
```

Another Solution: 03

01. Problem: 2235. Add Two Integers

Given two integers num1 and num2, return the sum of the two integers.

Example 1:
```
Input: num1 = 12, num2 = 5
Output: 17
Explanation: num1 is 12, num2 is 5, and their sum is 12 + 5 = 17, so 17 is returned.
```
Example 2:
```
Input: num1 = -10, num2 = 4
Output: -6
Explanation: num1 + num2 = -6, so -6 is returned.
```

Constraints:
```
-100 <= num1, num2 <= 100
```

Solution:

My Solution:

```
public class O1_AddTwoIntegers_2235 {
    public static void main(String[] args) {
        Solution s = new Solution();
        System.out.println(s.sum(5, 8));
    }
}

class Solution {
    public int sum(int num1, int num2) {
        return num1 + num2;
    }
}

// https://leetcode.com/problems/add-two-integers/
```

Another Solution: 01

```
class Solution {
    public int sum(int num1, int num2) {
        if (num2 == 0) return num1;
        int temp = (num1 & num2) << 1;
```

```
        return sum(num1 ^ num2, temp);
    }
}
```

Another Solution: 02

Another Solution: 03

Day 00-1929, , , , , .

5. Problem:

Solution:

My Solution:

Another Solution: 01

Another Solution: 02

Another Solution: 03

04. Problem:

Solution:

My Solution:

Another Solution: 01

Another Solution: 02

Another Solution: 03

03. Problem:

Solution:

My Solution:

Another Solution: 01

Another Solution: 02

Another Solution: 03

02. Problem:

Solution:

My Solution:

Another Solution: 01

Another Solution: 02

Another Solution: 03

01. Problem:

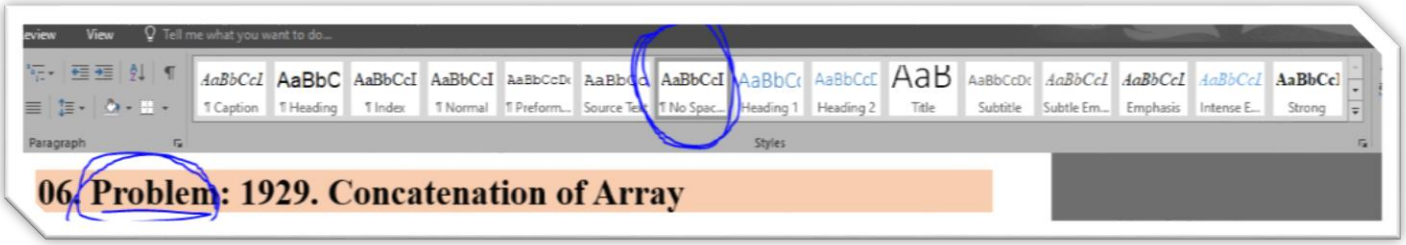
Solution:

My Solution:

Another Solution: 01

Another Solution: 02

Another Solution: 03

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Intense E...
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Styles
Solution: