

Observation-4

1. def count_elements(arr):

 element_set = set(arr)

 count = 0

 for num in arr:

 if num + 1 in element_set:

 count += 1

 return count

print(count_elements([1, 2, 3]))

2. def string_shifts(s, shift):

 total_shift = 0

 for direction, amount in shift:

 if direction == 0:

 total_shift -= amount

 else:

 total_shift += amount

 n = len(s)

 total_shift %= n

 return s[-total_shift:] + s[:-total_shift]

print(string_shifts("abc", [[0, 1], [1, 2]]))

3. def leftmost_column_with_one(binaryMatrix):

 rows, cols = binaryMatrix.dimensions()

 current_row, current_col = 0, cols - 1

 leftmost = -1

 while current_row < rows and current_col >= 0:

 if binaryMatrix.get(current_row, current_col) == 1:

 leftmost = current_col

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        current_col -= 1
    else:
        current_row += 1

    return leftmost

class BinaryMatrix:
    def __init__(self, mat):
        self.mat = mat

    def get(self, row, col):
        return self.mat[row][col]

    def dimensions(self):
        return [len(self.mat), len(self.mat[0])]

binaryMatrix = BinaryMatrix([[0, 0], [1, 1]])
print(leftmost_column_with_one(binaryMatrix))

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4. from collections import deque

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class FirstUnique:

    def __init__(self, nums):
        self.queue = deque()
        self.counts = {}

        for num in nums:
            self.add(num)

    def showFirstUnique(self):
        while self.queue and self.counts[self.queue[0]] > 1:

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        self.queue.popleft()
    return self.queue[0] if self.queue else -1

def add(self, value):
    if value in self.counts:
        self.counts[value] += 1
    else:
        self.counts[value] = 1
        self.queue.append(value)
firstUnique = FirstUnique([2, 3, 5])
print(firstUnique.showFirstUnique())
firstUnique.add(5)

5.class TreeNode:
    def __init__(self, val=0, left=None, right=None):
        self.val = val
        self.left = left
        self.right = right

def isValidSequence(root, arr):
    def dfs(node, arr, index):
        if not node or index == len(arr) or node.val != arr[index]:
            return False
        if index == len(arr) - 1:
            return not node.left and not node.right
        return dfs(node.left, arr, index + 1) or dfs(node.right, arr, index + 1)

    return dfs(root, arr, 0)

root = TreeNode(0, TreeNode(1, TreeNode(0, None, TreeNode(1)), TreeNode(1, TreeNode(0),
TreeNode(0))), TreeNode(0, TreeNode(0)))
arr = [0, 1, 0, 1]

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print(isValidSequence(root, arr))
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6.def kidsWithCandies(candies, extraCandies):
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    max_candies = max(candies)
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    return [(candy + extraCandies) >= max_candies for candy in candies]
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print(kidsWithCandies([2, 3, 5, 1, 3], 3))
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7.def maxDifference(num):
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    str_num = str(num)
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    max_num = min_num = num
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    for d in str_num:
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        if d != '9':
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            max_num = int(str_num.replace(d, '9'))
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            break
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    for d in str_num:
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        if d != '1' and d != '0':
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            min_num = int(str_num.replace(d, '1'))
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            break
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    return max_num - min_num
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print(maxDifference(9))
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8.def checkIfCanBreak(s1, s2):
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    s1, s2 = sorted(s1), sorted(s2)
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    return all(x >= y for x, y in zip(s1, s2)) or all(x <= y for x, y in zip(s1, s2))
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print(checkIfCanBreak("abc", "xya"))
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9.def number_ways_to_wear_hats(hats):
    MOD = 10**9 + 7
    n = len(hats)

    hat_to_person = {}
    for person, hats_list in enumerate(hats):
        for hat in hats_list:
            if hat not in hat_to_person:
                hat_to_person[hat] = []
            hat_to_person[hat].append(person)
    dp = [0] * (1 << n)
    dp[0] = 1
    for hat in range(1, 41):
        if hat in hat_to_person:
            for mask in range((1 << n) - 1, -1, -1):
                for person in hat_to_person[hat]:
                    if mask & (1 << person) == 0:
                        dp[mask | (1 << person)] = (dp[mask | (1 << person)] + dp[mask]) % MOD
    return dp[(1 << n) - 1]

hats = [[3,4],[4,5],[5]]
print(number_ways_to_wear_hats(hats))

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10.def destination_city(paths):
    starting_cities = set()
    for start, end in paths:
        starting_cities.add(start)

    for start, end in paths:
        if end not in starting_cities:
            return end

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paths = [{"London", "New York"}, {"New York", "Lima"}, {"Lima", "Sao Paulo"}]
print(destination_city(paths))
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