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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]))

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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]]))

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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
            current_col -= 1
        else:

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current_row += 1
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return leftmost
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class BinaryMatrix:
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    def __init__(self, mat):
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        self.mat = mat
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    def get(self, row, col):
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        return self.mat[row][col]
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    def dimensions(self):
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        return [len(self.mat), len(self.mat[0])]
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binaryMatrix = BinaryMatrix([[0, 0], [1, 1]])
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print(leftmost_column_with_one(binaryMatrix))
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4.from collections import deque
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class FirstUnique:
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    def __init__(self, nums):
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        self.queue = deque()
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        self.counts = {}
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        for num in nums:
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            self.add(num)
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    def showFirstUnique(self):
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        while self.queue and self.counts[self.queue[0]] > 1:
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            self.queue.popleft()
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        return self.queue[0] if self.queue else -1
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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:

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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]
print(isValidSequence(root, arr))

```

```
6.def kidsWithCandies(candies, extraCandies):  
    max_candies = max(candies)  
    return [(candy + extraCandies) >= max_candies for candy in candies]  
print(kidsWithCandies([2, 3, 5, 1, 3], 3))
```

```
7.def maxDifference(num):  
    str_num = str(num)  
    max_num = min_num = num  
  
    for d in str_num:  
        if d != '9':  
            max_num = int(str_num.replace(d, '9'))  
            break  
  
    for d in str_num:  
        if d != '1' and d != '0':  
            min_num = int(str_num.replace(d, '1'))  
            break  
  
    return max_num - min_num  
  
print(maxDifference(9))
```

```
8.def checkIfCanBreak(s1, s2):  
    s1, s2 = sorted(s1), sorted(s2)  
    return all(x >= y for x, y in zip(s1, s2)) or all(x <= y for x, y in zip(s1, s2))  
print(checkIfCanBreak("abc", "xya"))
```

```
9.def number_ways_to_wear_hats(hats):  
    MOD = 10**9 + 7
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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]

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

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10. def destination_city(paths):

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

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    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"]]

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```
print(destination_city(paths))
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