

Закрепление массивов, Java-Basic

1. Consider the leftmost and rightmost appearances of some value in an array. We'll say that the "span" is the number of elements between the two inclusive. A single value has a span of 1. Returns the largest span found in the given array. (Efficiency is not a priority.)

```
maxSpan([1, 2, 1, 1, 3]) → 4  
maxSpan([1, 4, 2, 1, 4, 1, 4]) → 6  
maxSpan([1, 4, 2, 1, 4, 4, 4]) → 6
```

2. Given a non-empty array, return true if there is a place to split the array so that the sum of the numbers on one side is equal to the sum of the numbers on the other side.

```
canBalance([1, 1, 1, 2, 1]) → true  
canBalance([2, 1, 1, 2, 1]) → false  
canBalance([10, 10]) → true
```

3. Given $n \geq 0$, create an array with the pattern {1, 1, 2, 1, 2, 3, ... 1, 2, 3 .. n} (spaces added to show the grouping). Note that the length of the array will be $1 + 2 + 3 \dots + n$, which is known to sum to exactly $n*(n + 1)/2$.

```
seriesUp(3) → [1, 1, 2, 1, 2, 3]  
seriesUp(4) → [1, 1, 2, 1, 2, 3, 1, 2, 3, 4]  
seriesUp(2) → [1, 1, 2]
```

4. Return an array that contains exactly the same numbers as the given array, but rearranged so that every 3 is immediately followed by a 4. Do not move the 3's, but every other number may move. The array contains the same number of 3's and 4's, every 3 has a number after it that is not a 3, and a 3 appears in the array before any 4.

```
fix34([1, 3, 1, 4]) → [1, 3, 4, 1]  
fix34([1, 3, 1, 4, 4, 3, 1]) → [1, 3, 4, 1, 1, 3, 4]  
fix34([3, 2, 2, 4]) → [3, 4, 2, 2]
```

5. Given two arrays of ints sorted in increasing order, outer and inner, return true if all of the numbers in inner appear in outer. The best solution makes only a single "linear" pass of both arrays, taking advantage of the fact that both arrays are already in sorted order.

```
linearIn([1, 2, 4, 6], [2, 4]) → true  
linearIn([1, 2, 4, 6], [2, 3, 4]) → false  
linearIn([1, 2, 4, 4, 6], [2, 4]) → true
```

6. We'll say that a "mirror" section in an array is a group of contiguous elements such that somewhere in the array, the same group appears in reverse order. For example, the largest mirror section in {1, 2, 3, 8, 9, 3, 2, 1} is length 3 (the {1, 2, 3} part). Return the size of the largest mirror section found in the given array.

```
maxMirror([1, 2, 3, 8, 9, 3, 2, 1]) → 3  
maxMirror([1, 2, 1, 4]) → 3  
maxMirror([7, 1, 2, 9, 7, 2, 1]) → 2
```

7. (This is a slightly harder version of the fix34 problem.) Return an array that contains exactly the same numbers as the given array, but rearranged so that every 4 is immediately followed by a 5. Do not move the 4's, but every other number may move. The array contains the same number of 4's and 5's, and every 4 has a number after it that is not a 4. In this version, 5's may appear anywhere in the original array.

```
fix45([5, 4, 9, 4, 9, 5]) → [9, 4, 5, 4, 5, 9]
fix45([1, 4, 1, 5]) → [1, 4, 5, 1]
fix45([1, 4, 1, 5, 5, 4, 1]) → [1, 4, 5, 1, 1, 4, 5]
```

8. Given $n \geq 0$, create an array length $n \times n$ with the following pattern, shown here for $n=3$: {0, 0, 1, 0, 2, 1, 3, 2, 1} (spaces added to show the 3 groups).

```
squareUp(3) → [0, 0, 1, 0, 2, 1, 3, 2, 1]
squareUp(2) → [0, 1, 2, 1]
squareUp(4) → [0, 0, 0, 1, 0, 0, 2, 1, 0, 3, 2, 1, 4, 3, 2, 1]
```

9. Say that a "clump" in an array is a series of 2 or more adjacent elements of the same value. Return the number of clumps in the given array.

```
countClumps([1, 2, 2, 3, 4, 4]) → 2
countClumps([1, 1, 2, 1, 1]) → 2
countClumps([1, 1, 1, 1, 1]) → 1
```

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Перевод 01

Условие задачи - ищем самый большой диапазон для любого элемента из массива, а не только для первого или последнего элементов.

Массив может быть гораздо длиннее и большее расстояние может находиться и в середине массива. Мы ищем большее расстояние между одинаковыми элементами на любых позициях.

1. Consider the **leftmost** and **rightmost appearances of some value** in an array. **Перевод:** "Сравните самое левое и самое правое появление какого-либо значения в массиве. "
2. We'll say that the "span" is the number of elements between the two inclusive. **Перевод:** "Назовём "интервалом" (span) количество элементов между двумя одинаковыми элементами, включая эти элементы."
3. A single value has a span of 1. Returns the largest span found in the given array. **Перевод:** "У единичного значения интервал 1. Верните больший интервал в заданном массиве." (Efficiency is not a priority.)