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Soal Minggu Ke - 4 (17 Maret 2024)

Soal Essay

1. Buatlah sebuah program menggabungkan 2 array yang diberikan, dan jangan sampai terdapat nama yang sama di data yang sudah tergabung tadi.

### **Sample Test Cases**

Input: ['kazuya', 'jin', 'lee'], ['kazuya', 'feng']

Output: ['kazuya', 'jin', 'lee', 'feng']

Input: ['lee', 'jin'], ['kazuya', 'panda']

Output: ['lee', 'jin', 'kazuya', 'panda']

2. Buat program sesuai dengan deskripsi di bawah. Input merupakan variable string berisi kumpulan angka. Output merupakan list / array berisi angka yang hanya muncul 1 kali pada input.

### **Sample Test Case**

Input: "76523752"

Output: [6, 3]

Input: "1122"

Output: []

3. Given an array of sorted numbers and a target sum, find a pair in the array whose sum is equal to the given target. Write a function to return the indices of the two numbers (i.e. the pair) such that they add up to the given target.

### **Challenges:**

Solve with linear complexity  $O(n)$ , **not**  $O(n^2)$  if you can!

### **Sample Test Cases**

Input: [1, 2, 3, 4, 6], target=6

Output: [1, 3]

Explanation: The numbers at index 1 and 3 add up to 6:  $2+4=6$

Input: [2, 5, 9, 11], target=11

Output: [0, 2]

Explanation: The numbers at index 0 and 2 add up to 11:  $2+9=11$

4. Buatlah sebuah program **ArrayUnique** yang menerima 2 parameter berupa array angka. Output adalah program adalah satu array berupa kumpulan angka di array pertama tetapi tidak memiliki duplikasi di di array kedua.

#### **Sample Test Case**

input: [1, 2, 3, 4] dan [1, 3, 5, 10, 16]

Output: [2, 4]

input: [3, 8] dan [2, 8]

Output: [3]

5. Given an array of sorted numbers, remove all duplicates from it. You should not use any extra space; after removing the duplicates in-place return the length of the subarray that has no duplicate in it.

#### **Sample Test Case**

Input: [2, 3, 3, 3, 6, 9, 9]

Output: 4

Explanation: The first four elements after removing the duplicates will be [2, 3, 6, 9].

#### **Sample Test Case**

Input: [2, 2, 2, 11]

Output: 2

Explanation: The first two elements after removing the duplicates will be [2, 11].

6. [Opsional / Nilai Tambah] Given an array of positive numbers and a positive number 'k', find the maximum sum of any contiguous subarray of size 'k'.

### Sample Test Case

Input: [2, 1, 5, 1, 3, 2], k=3

Output: 9

Explanation: Subarray with maximum sum is [5, 1, 3].

### Sample Test Case

Input: [2, 3, 4, 1, 5], k=2

Output: 7

Explanation: Subarray with maximum sum is [3, 4].

2, 1, 5, 1, 3, 2

Jawab

```
1  package tugas;
2
3  import java.util.ArrayList;
4  import java.util.HashSet;
5  import java.util.List;
6  import java.util.Set;
7
8  public class SoalEssaySatuSebelas {
9      @
10     public static List<String> mergeUnique(String[] arr1, String[] arr2) {
11         Set<String> mergedSet = new HashSet<>();
12         List<String> mergedList = new ArrayList<>();
13
14         // Tambahkan elemen dari arr1 ke dalam hasil gabungan dan set
15         for (String name : arr1) {
16             if (!mergedSet.contains(name)) {
17                 mergedSet.add(name);
18                 mergedList.add(name);
19             }
20
21         // Tambahkan elemen dari arr2 ke dalam hasil gabungan dan set
22         for (String name : arr2) {
23             if (!mergedSet.contains(name)) {
24                 mergedSet.add(name);
25                 mergedList.add(name);
26             }
27         }
28     }
}
```

```
17         mergedList.add(name);
18     }
19 }
20
21 // Tambahkan elemen dari arr2 ke dalam hasil gabungan dan set
22 for (String name : arr2) {
23     if (!mergedSet.contains(name)) {
24         mergedSet.add(name);
25         mergedList.add(name);
26     }
27 }
28
29 return mergedList;
30}
31
32 D public static void main(String[] args) {
33     String[] arr1 = {"kazuya", "jin", "lee"};
34     String[] arr2 = {"kazuya", "feng"};
35     List<String> merged = mergeUnique(arr1, arr2);
36     System.out.println(merged); // Output: [kazuya, jin, lee, feng]
37
38     String[] arr3 = {"lee", "jin"};
39     String[] arr4 = {"kazuya", "panda"};
40     List<String> merged2 = mergeUnique(arr3, arr4);
41     System.out.println(merged2); // Output: [lee, jin, kazuya, panda]
42 }
43
44
45 }
```

(codingan no 1)

```
/Library/Java/JavaVirtualMachines/jdk-17.jdk/Contents/Home/bin/java -javaagent:/Applications/IntelliJ IDEA CE.app/Contents/lib/idea_rt.jar=49797:/Applications/IntelliJ IDEA CE.app/Contents/lib/idea_rt.jar
[kazuya, jin, lee, feng]
[lee, jin, kazuya, panda]

Process finished with exit code 0
```

(output codingan no 1)

```
1 package tugas;
2
3 import java.util.ArrayList;
4 import java.util.HashMap;
5 import java.util.List;
6 import java.util.Map;
7
8 public class SoalEssayDuaSembelas {
9     @
10    public static List<Integer> findUniqueNumbers(String input) {
11        Map<Character, Integer> frequencyMap = new HashMap<>();
12        List<Integer> uniqueNumbers = new ArrayList<>();
13
14        // Hitung frekuensi setiap angka dalam input
15        for (char digit : input.toCharArray()) {
16            frequencyMap.put(digit, frequencyMap.getOrDefault(digit, 0) + 1);
17        }
18
19        // Tambahkan angka-angka yang hanya muncul sekali ke dalam list output
20        for (Map.Entry<Character, Integer> entry : frequencyMap.entrySet()) {
21            if (entry.getValue() == 1) {
22                uniqueNumbers.add(Character.getNumericValue(entry.getKey()));
23            }
24        }
25
26        return uniqueNumbers;
27    }
28
29    public static void main(String[] args) {
30        String input1 = "76523752";
31        System.out.println(findUniqueNumbers(input1)); // Output: [6, 3]
32
33        String input2 = "1122";
34        System.out.println(findUniqueNumbers(input2)); // Output: []
35    }
}
```

2.

(codingan no 2 )

```
/Library/Java/JavaVirtualMachines/jdk-17.jdk/Contents/Home/bin/java -javaagent:/Applications/IntelliJ IDEA CE.app/Contents/lib/idea_rt.jar=50355:/Applications/IntelliJ IDEA CE.app/Contents/lib/idea_rt.jar
[3, 6]
[]

Process finished with exit code 0
```

(Output Codingan no 2)

```

1 package tugas;
2
3 import java.util.Arrays;
4
5 public class SoalEssayTigaSebelas {
6     @
7     public static int[] findPair(int[] nums, int target) {
8         int left = 0;
9         int right = nums.length - 1;
10
11        while (left < right) {
12            int sum = nums[left] + nums[right];
13            if (sum == target) {
14                return new int[]{left, right};
15            } else if (sum < target) {
16                left++;
17            } else {
18                right--;
19            }
20        }
21        // jika tidak ada pasangan yang ditemukan
22        return new int[]{-1, -1};
23    }
24
25    public static void main(String[] args) {
26        int[] nums1 = {1, 2, 3, 4, 6};
27        int target1 = 6;
28        System.out.println(Arrays.toString(findPair(nums1, target1))); // Output: [1, 3]
29
30        int[] nums2 = {2, 5, 9, 11};
31        int target2 = 11;
32        System.out.println(Arrays.toString(findPair(nums2, target2))); // Output: [0, 2]
33    }

```

3.

(codingan no 3)

```

/Library/Java/JavaVirtualMachines/jdk-17.jdk/Contents/Home/bin/java -javaagent:/Applications/IntelliJ IDEA CE.app/Contents/lib/idea_rt.jar=50353:/Applications/IntelliJ IDEA CE.app/Contents/lib/idea_rt.jar
[1, 3]
[0, 2]

Process finished with exit code 0

```

(Output codingan no 3)

```

1 package tugas;
2
3 > import ...
4
5 public class SoalEssayEmpatSebelas {
6     @
7     public static List<Integer> findUnique(int[] arr1, int[] arr2) {
8         Set<Integer> set = new HashSet<>();
9         List<Integer> result = new ArrayList<>();
10
11        // Tambahkan semua angka dari arr2 ke dalam HashSet
12        for (int num : arr2) {
13            set.add(num);
14        }
15
16        // Tambahkan angka-angka dari arr1 ke dalam hasil jika tidak ada dalam HashSet
17        for (int num : arr1) {
18            if (!set.contains(num)) {
19                result.add(num);
20            }
21        }
22
23    }
24
25    return result;
26}
27
28    public static void main(String[] args) {
29        int[] arr1 = {1, 2, 3, 4};
30        int[] arr2 = {1, 3, 5, 10, 16};
31        System.out.println(findUnique(arr1, arr2)); // Output: [2, 4]
32
33        int[] arr3 = {3, 8};
34        int[] arr4 = {2, 8};
35        System.out.println(findUnique(arr3, arr4)); // Output: [3]
36    }

```

4.

(codingan no 4)

```
/Library/Java/JavaVirtualMachines/jdk-17.jdk/Contents/Home/bin/java -javaagent:/Applications/IntelliJ IDEA CE.app/Contents/lib/idea_rt.jar=50349:/Applications/IntelliJ IDEA CE.app/Contents/lib/idea_rt.jar
[2, 4]
[3]

Process finished with exit code 0
```

(Output codingan no 4)

```
1 package tugas;
2
3 public class SoalEssayLimaSebelas {
4     @
5         public static int removeDuplicates(int[] nums) {
6             if (nums.length == 0) {
7                 return 0;
8             }
9
10            int writeIndex = 1; // Indeks untuk menulis elemen tanpa duplikat
11            for (int i = 1; i < nums.length; i++) {
12                if (nums[i] != nums[writeIndex - 1]) {
13                    nums[writeIndex] = nums[i];
14                    writeIndex++;
15                }
16            }
17
18            return writeIndex; // Panjang subarray tanpa duplikat
19        }
20
21        public static void main(String[] args) {
22            int[] nums1 = {2, 3, 3, 3, 6, 9, 9};
23            System.out.println(removeDuplicates(nums1)); // Output: 4
24
25            int[] nums2 = {2, 2, 2, 11};
26            System.out.println(removeDuplicates(nums2)); // Output: 2
27        }
28    }
```

5.

(codingan no 5)

(output codingan no 5)

```
1 package tugas;
2
3 ▶ public class SoalEssayEnamSebelas {
4     2 usages
5     public static int findMaxSubarraySum(int[] arr, int k) {
6         int maxSum = 0;
7         int windowSum = 0;
8
9         // Hitung jumlah awal dari jendela pertama
10        for (int i = 0; i < k; i++) {
11            windowSum += arr[i];
12        }
13
14        maxSum = windowSum;
15
16        // Geser jendela
17        for (int i = k; i < arr.length; i++) {
18            // Tambahkan elemen baru ke jumlah jendela
19            windowSum += arr[i] - arr[i - k];
20            // Update nilai maksimum jika perlu
21            maxSum = Math.max(maxSum, windowSum);
22        }
23
24    }
25
26 }
```

6.

```
25
26 ▶     public static void main(String[] args) {
27         int[] arr1 = {2, 1, 5, 1, 3, 2};
28         int k1 = 3;
29         System.out.println(findMaxSubarraySum(arr1, k1)); // Output: 9
30
31         int[] arr2 = {2, 3, 4, 1, 5};
32         int k2 = 2;
33         System.out.println(findMaxSubarraySum(arr2, k2)); // Output: 7
34     }
35
36 }
```

(codingan no 6)

```
/Library/Java/JavaVirtualMachines/jdk-17.jdk/Contents/Home/bin/java -javaagent:/Applications/IntelliJ IDEA CE.app/Contents/lib/idea_rt.jar=503331:/Applications/IntelliJ IDEA CE.app/Contents/bin
9
7

Process finished with exit code 0
```

(output codingan no 6)