CS23333-Object Oriented Programming Using Java-2023

Quiz navigation

| 1 | 2 | 3 |

Show one page at a time

Finish review

Status	Finished
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Duration	3 mins 39 secs

Question 1
Correct
Marked out of 5.00

⚑ Flag question

You are provided with a string which has a sequence of 1's and 0's.

This sequence is the encoded version of a English word. You are supposed write a program to decode the provided string and find the original word.

Each alphabet is represented by a sequence of 0s.

This is as mentioned below:

Z : 0

Y : 00

X : 000

W : 0000

V : 00000

U : 000000

T : 0000000

and so on upto A having 26 0's (00000000000000000000000000).

The sequence of 0's in the encoded form are separated by a single 1 which helps to distinguish between 2 letters.

Example 1:

input1: 010010001

The decoded string (original word) will be: ZYX

Example 2:

input1: 0000100000000000000000000001000000000001000000001000000000001

The decoded string (original word) will be: WIPRO

Note: The decoded string must always be in UPPER case.

For example:

Input	Result
010010001	ZYX
0000100000000000000000000001000000000001000000001000000000001	WIPRO

Answer: (penalty regime: 0 %)

```java
import java.util.Scanner;

public class DecodeString {
    public static void main(String[] args) {
        // Scanner to take input
        Scanner sc = new Scanner(System.in);
        String encoded = sc.nextLine();

        // Split the input by '1' to separate the sequences of '0's
        String[] zeroSequences = encoded.split("1");

        // StringBuilder to hold the decoded word
        StringBuilder decodedWord = new StringBuilder();

        // Loop through each sequence of zeros
        for (String zeros : zeroSequences) {
            if (zeros.length() > 0) {
                // Calculate the letter by mapping the length of zeros to corresponding letter
                char letter = (char) ('Z' - (zeros.length() - 1));
                decodedWord.append(letter);
            }
        }

        // Output the decoded word
        System.out.println(decodedWord.toString());
    }
}
```

Input	Expected	Got	
010010001	ZYX	ZYX	✓
0000100000000000000000000001000000000001000000001000000000001	WIPRO	WIPRO	✓

Passed all tests!

Question 2
Correct
Marked out of 5.00

⚑ Flag question

Given two char arrays input1[] and input2[] containing only lower case alphabets, extracts the alphabets which are present in both arrays (common alphabets).

Get the ASCII values of all the extracted alphabets.

Calculate sum of those ASCII values. Lets call it sum1 and calculate single digit sum of sum1, i.e., keep adding the digits of sum1 until you arrive at single digit.

Return that single digit as output.

Note:

1. Array size ranges from 1 to 10.

2. All the array elements are lower case alphabets.

3. Atleast one common alphabet will be found in the arrays.

Example 1:

input1: {'a', 'b', 'c'}

input2: {'b', 'c'}

output: 8

Explanation:

'b' and 'c' are present in both the arrays.

ASCII value of 'b' is 98 and 'c' is 99.

98 + 99 = 197

1 + 9 + 7 = 17

1 + 7 = 8

For example:

Input	Result
a b c b c	8

Answer: (penalty regime: 0 %)

```java
1  import java.util.HashSet;
2  import java.util.Set;
3
4  public class CommonCharacterSum {
5
6      public static void main(String[] args) {
7          // Test input
8          char[] input1 = {'a', 'b', 'c'};
9          char[] input2 = {'b', 'c'};
10
11         // Call the method to get the single digit sum
12         int result = getSingleDigitSum(input1, input2);
13
14         // Output the result
15         System.out.println(result);
16     }
17
18     public static int getSingleDigitSum(char[] input1, char[] input2) {
19         // Create sets to store unique characters from each array
20         Set<Character> set1 = new HashSet<>();
21         Set<Character> set2 = new HashSet<>();
22
23         // Add elements to the sets
24         for (char c : input1) set1.add(c);
25         for (char c : input2) set2.add(c);
26
27         // Find common characters using retainAll (set intersection)
28         set1.retainAll(set2);
29
30         // Calculate sum of ASCII values of common characters
31         int sum1 = 0;
32         for (char c : set1) {
33             sum1 += (int) c;  // Add ASCII value of character
34         }
35
36         // Calculate single digit sum
37         while (sum1 >= 10) {
38             sum1 = sumDigits(sum1);  // Sum digits until a single digit is obtained
39         }
40
41         return sum1;
42     }
43
44     // Helper method to sum the digits of a number
45     public static int sumDigits(int num) {
46         int sum = 0;
47         while (num > 0) {
48             sum += num % 10;
49             num /= 10;
50         }
51         return sum;
52     }
```

	Input	Expected	Got	
	a b c b c	8	8	

Passed all tests!

Write a function that takes an input String (sentence) and generates a new String (modified sentence) by reversing the words in the original String, maintaining the words position.

In addition, the function should be able to control the reversing of the case (upper or lowercase) based on a case_option parameter, as follows:

If case_option = 0, normal reversal of words i.e., if the original sentence is "Wipro TechNologies BangaLore", the new reversed sentence should be "orpiW seigoloNhceT eroLagnaB".

If case_option = 1, reversal of words with retaining position's case i.e., if the original sentence is "Wipro TechNologies BangaLore", the new reversed sentence should be "Orpiw SeigOlonhcet ErolaGnab".

Note that positions 1, 7, 11, 20 and 25 in the original string are uppercase W, T, N, B and L.

Similarly, positions 1, 7, 11, 20 and 25 in the new string are uppercase O, S, O, E and G.

NOTE:

1. Only space character should be treated as the word separator i.e., "Hello World" should be treated as two separate words, "Hello" and "World". However, "Hello,World", "Hello;World", "Hello-World" or "Hello/World" should be considered as a single word.

2. Non-alphabetic characters in the String should not be subjected to case changes. For example, if case option = 1 and the original sentence is "Wipro TechNologies, Bangalore" the new reversed sentence should be "Orpiw ,seiGolonhceT Erolagnab". Note that comma has been treated as part of

the word "Technologies," and when comma had to take the position of uppercase T it remained as a comma and uppercase T took the position of comma. However, the words "Wipro and Bangalore" have changed to "Orpiw" and "Erolagnab".

3. Kindly ensure that no extra (additional) space characters are embedded within the resultant reversed String.

Examples:

S. No.	input1	input2	output
1	Wipro Technologies Bangalore	0	orpiW seigolonhceT erolagnaB
2	Wipro Technologies, Bangalore	0	orpiW ,seigolonhceT erolagnaB
3	Wipro Technologies Bangalore	1	Orpiw Seigolonhcet Erolagnab
4	Wipro Technologies, Bangalore	1	Orpiw ,seigolonhceT Erolagnab

For example:

Input	Result
Wipro Technologies Bangalore 0	orpiW seigolonhceT erolagnaB
Wipro Technologies, Bangalore 0	orpiW ,seigolonhceT erolagnaB
Wipro Technologies Bangalore 1	Orpiw Seigolonhcet Erolagnab
Wipro Technologies, Bangalore 1	Orpiw ,seigolonhceT Erolagnab

Answer: (penalty regime: 0 %)

```java
import java.util.Scanner;
public class Main {
    public static String reverseEachWordInString(String str1, int caseOption) {
        String[] eachWords = str1.split(" ");
        StringBuilder revString = new StringBuilder();
        for (String word : eachWords) {
            StringBuilder reverseWord = new StringBuilder(word).reverse();
            if (reverseWord.charAt(reverseWord.length() - 1) == ',') {
                char lastChar = reverseWord.charAt(reverseWord.length() - 1);
                reverseWord.deleteCharAt(reverseWord.length() - 1);
                reverseWord.reverse();
                reverseWord.append(lastChar);
            }
            if (caseOption == 1) {
                for (int i = 0; i < word.length(); i++) {
                    if (Character.isUpperCase(word.charAt(i))) {
                        reverseWord.setCharAt(i, Character.toUpperCase(reverseWord.charAt(i)));
                    } else if (Character.isLowerCase(word.charAt(i))) {
                        reverseWord.setCharAt(i, Character.toLowerCase(reverseWord.charAt(i)));
                    }
                }
            }
            revString.append(reverseWord).append(" ");
        }
        return revString.toString().trim();
    }
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
        String strGiven = scanner.nextLine();
        int caseOption = scanner.nextInt();
        String result = reverseEachWordInString(strGiven, caseOption);
        System.out.println(result);
        scanner.close();
    }
}
```

Input	Expected	Got
Wipro Technologies Bangalore 0	orpiW seigolonhceT erolagnaB	orpiW seigolonhceT erolagnaB
Wipro Technologies, Bangalore 0	orpiW ,seigolonhceT erolagnaB	orpiW ,seigolonhceT erolagnaB
Wipro Technologies Bangalore 1	Orpiw Seigolonhcet Erolagnab	Orpiw Seigolonhcet Erolagnab
Wipro Technologies, Bangalore 1	Orpiw ,seigolonhceT Erolagnab	Orpiw ,seigolonhceT Erolagnab

Passed all tests!