

## Question 1

Correct

Marked out of 5.00

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 a 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 %)

```

1 import java.util.HashSet;
2 import java.util.Scanner;
3
4 public class CommonCharacterASCII {
5
6     public static void main(String[] args) {
7         Scanner scanner = new Scanner(System.in);
8
9
10        String input1 = scanner.nextLine();
11        char[] charArray1 = input1.replace(" ", "").toCharArray(); // Convert to char array
12
13        // Prompt the user for the second input
14
15        String input2 = scanner.nextLine();
16        char[] charArray2 = input2.replace(" ", "").toCharArray(); // Convert to char array
17
18        // Calculate the result
19        int result = calculateSingleDigitSum(charArray1, charArray2);
20        System.out.println( result); // Display the result
21
22    }
23 }
```

```
22 scanner.close();
23 }
24
25 public static int calculateSingleDigitSum(char[] input1, char[] input2) {
26     // Step 1: Find common characters
27     HashSet<Character> commonChars = new HashSet<>();
28     for (char c1 : input1) {
29         for (char c2 : input2) {
30             if (c1 == c2) {
31                 commonChars.add(c1);
32             }
33         }
34     }
35
36     // Step 2: Calculate the sum of ASCII values of common characters
37     int sum1 = 0;
38     for (char c : commonChars) {
39         sum1 += (int) c; // Get ASCII value
40     }
41
42     // Step 3: Calculate single digit sum
43     return getSingleDigit(sum1);
44 }
45
46 private static int getSingleDigit(int sum) {
47     while (sum >= 10) {
48         int tempSum = 0;
49         while (sum > 0) {
50             tempSum += sum % 10; // Add last digit
51             sum /= 10; // Remove last digit
52         }
53     }
54 }
```

	Input	Expected	Got	
✓	a b c b c	8	8	✓

Passed all tests! ✓



## Question 2

Correct

Marked out of 5.00

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 (000000000000000000000000000000).

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: 000010000000000000000000100000000000100000000010000000000001

The decoded string (original word) will be: WIPRO

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

#### For example:

Input	Result
010010001	ZYX
000010000000000000000000100000000000100000000010000000000001	WIPRO

**Answer:** (penalty regime: 0 %)

```

1 import java.util.Scanner;
2
3 public class Decoder {
4     public static void main(String[] args) {
5         Scanner sc = new Scanner(System.in);
6         String input = sc.nextLine(); // Read the input string of 1's and 0's
7         sc.close();
8
9         // Decode the string
10        String decodedWord = decode(input);
11        System.out.println(decodedWord);
12    }
13
14    private static String decode(String input) {
15        String[] segments = input.split("1"); // Split by '1'
16        StringBuilder decoded = new StringBuilder();
17
18        for (String segment : segments) {
19            int length = segment.length();

```

```

20     if (length > 0 && length <= 26) { // Ensure the length is valid
21         // Calculate the corresponding character
22         char letter = (char) ('Z' - (length - 1));
23         decoded.append(letter);
24     }
25 }
26
27 return decoded.toString();
28 }
29 }
30

```

[illegible]

Passed all tests! ✓

## Question 3

Correct

Marked out of 5.00

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 SeigOlonehceT 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:

- 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.
- 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".
- 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 %)

```

1 import java.util.Scanner;
2 import java.util.Arrays;
3
4 public class ReverseWords {
5     public static String reverseWords(String sentence, int caseOption) {
6         String[] words = sentence.split("\\s+"); // Split by whitespace, including commas
7         StringBuilder reversedSentence = new StringBuilder();
8
9         for (String word : words) {

```

```

10     char[] chars = word.toCharArray();
11     char[] a=word.toCharArray();
12     int start = 0, end = chars.length - 1;
13
14     // Reverse word characters
15     while (start < end) {
16         char temp = chars[start];
17         chars[start] = chars[end];
18         chars[end] = temp;
19         start++;
20         end--;
21     }
22     int index=chars.length;
23     if (caseOption == 1) {
24         for (int i = 0; i < chars.length; i++) {
25             if (Character.isLetter(chars[i])&&i!=index) {
26                 chars[i] = Character.isUpperCase(a[i]) ? Character.toUpperCase(chars
27             }
28             else if(!Character.isLetter(chars[i])&&!Character.isWhitespace(chars[i]
29                 char c=a[i];
30                 String d=String.valueOf(chars);
31                 index=d.indexOf(c);
32                 if(index!=-1)
33                     chars[index]=a[i];
34             }
35         }
36     }
37
38     }
39 }
40
41     reversedSentence.append(String.valueOf(chars)).append(" ");
42 }
43     return reversedSentence.toString().trim();
44 }
45
46 public static void main(String[] args) {
47     Scanner scanner = new Scanner(System.in);
48     String sentence = scanner.nextLine();
49     int caseOption = scanner.nextInt();
50     String reversedSentence = reverseWords(sentence, caseOption);
51     System.out.println(reversedSentence);
52 }

```

	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! ✓

◀ Lab-12-MCQ

Jump to...

Identify possible words ▶