DAY- 02

Tata Consultancy Services Digital Capability Assessment Coding Questions

TCS Digital Capability

Assessment

20th March 2021 (Slot 3)

Coding Question 1

Coding Question

Given a string, the task is to convert each letter to ASCII and take the XOR encryption of all the resulting numbers.

Hint :

There are two numbers a=3 and b=4; the binary representation of 3 is 011 and of 4 is 100, so the XOR of the same bits is 0, and for the opposite bits, it is 1. In the given example, 3A4, where "A" is a XOR symbol, will give us 111, whose decimal value will be 7.

Examples :

Assume that the input word is 'Qwert’.

ASCII value of 'Q' is 81.

ASCII value of 'w' is 119.

ASCII value of 'e' is 101.

ASCII value of 'r' is 114.ASCII value of 't' is 116.

XOR of ASCII values = 81 ^ 119 ^ 101 ^ 114 ^ 116 = 69

Example :

Input : Qwert

Output : 69

Example :

Input : abc

Output : 96

Explanation :

In Example 2, the input word is “abc". ASCII value of 'a' is 97, 'b' is 98 and 'C is 99, so XOR of ASCII values = 97 ^98 ^ 99 = 96.

Instructions:
The system does not allow any kind of hard coded input value/values.
The written program code by the candidate will be verified against the inputs that are supplied from the system.
For more clarification, please read the following points carefully till the end.

Constraints:
The input word must have letters only.
The input word cannot contain space or any special character.

Input Format:
The candidate has to write the code to accept a single string value for str without any additional message.

Output Format :
The written program should generate the output as a single integer value.
Additional messages in the output will result in the failure of test cases.

TCS Digital Capability

Assessment

20th March 2021 (Slot 2)

Coding Question 2

Coding Question

In house, there is a ladder that has 11 steps. Every step is assigned with a number from 1 to 10.

The user has to start from the lowest step. From each step, the user can hop a maximum number of steps at a time according to the given number on that step.

The task is to find out the minimum number of hops user can take to reach the end of the ladder.

For example:

If steps are assigned with the following numbers: {1,3,5, 3, 8, 2, 6, 7, 6, 8, 9), then the user will hop from the 1st step to the 2nd step because he/she is permitted to hop only 1 step. From the 2nd step, the user has the chance to hop maximum of 3 steps directly. So, the user has the option to choose the step with numbers or 3 or 8. If number 8 is chosen, then the end stair 9 can be reached So, the order is 1–3-8-9. Hence, a minimum of 3 hops are required to reach the end of the ladder.

Example 1 :
Input :
1 //Value of A[0]
3 //Value of A[1]
5 //Value of A[2]
3 //Value of A[3]
8 //Value of A[4]
2 //Value of A[5]
6 //Value of A[6]
7 //Value of A[7]
6 //Value of A[8]
8 //Value of A[9]
9 //Value of A[10]

Output :3

Instructions:
The system does not allow any kind of hard coded input value/values.
The written program code by the candidate will be verified against the inputs that are supplied from the system.
For more clarification, please read the following points carefully till the end.

Constraints:
1 <=A[i] <= 10
Size of Array A=11

TCS Digital Capability

Assessment

20th March 2021 (Slot 2)

Coding Question 1

Coding Question

Write a program to find the sum of all characters and all possible contiguous character combinations from the given String Consider the string S1="321" .

All characters and combinations of contiguous characters from the above string are: 3,2,1,32,21,321 . Adding all the numbers (3+2+1+32+21+321), we get 380 as the result.

Example 1 :

Input :
321

Output :
380

Example 2 :

Input :
12

Output :
15

Explanation :
In Example 1 it possible combinations are 3,2,1,32,21,321 so sum = 380
In Example 2 it possible combinations are 1,2,12. so sum=1+2+12=15

Instructions:
The system does not allow any kind of hard coded input value/values.
The written program code by the candidate will be verified against the inputs that are supplied from the system.
For more clarification, please read the following points carefully till the end.

Constraints :
The input string contains only integer numbers without any space.
The length of input string is less than 5.

TCS Digital Capability

Assessment

20 March 2021 (Slot 1)

Coding Question 2

Coding Question

Write a program to check if, for a given number N, its power of 4 ends with the number itself or not.

Hint:
Power of 4 for number 5=3125 so end digit of 3125 is 5.

Example 1 :

Input :
5

Output:
TRUE

Example 2 :

Input:
7

Output:
FALSE //Power of 4 for number 7 is 2401

Example 3 :

Input :
-8

Output:
Wrong Input

Instructions:
1. The system does not allow any kind of hard coded input value / values.
2. The written program code by the candidate will be verified against the inputs that are supplied from the system.
3. For more clarification, please read the following points carefully till the end.

Constraints:
1 <= N <= 10^8

Input Format:
Input contains an integer "N" denoting the Number

Output Format:
If the input number whose power of 4 ends with the number itself, then print "True" otherwise print "False"
If the user enter a negative integer then the result should display "Wrong Input".

TCS Digital Capability

Assessment

20 March 2021 (Slot 1)

Coding Question 1

Coding Question

Write a program to find Nth Largest element from an array of Numbers.

Example 1 :

Input :

Output:

5 //Size of Array

30

10 //1st element of Array

20 //2nd element of Array

40 //3rd element of Array

30 //4th element of Array

60 //5th element of Array

3 //value of N to find the Nth largest element

Explanation:

In above example the first input is 5 is the size of array. 10,20,40,30,60 are the elements of A[i]. The last input, i.e 3. is pointing to the 3rd greatest element in the given array. Hence, the 3rd greatest element is 30.

Instructions:
1. The system does not allow any kind of hard coded input value / values.
2. The written program code by the candidate will be verified against the inputs that are supplied from the system.
3. For more clarification, please read the following points carefully till the end.

Constraints:
1<= X <= 10
1 <= A[i] <= 1000
1 <= N <= X

Input Format:
The first input contains integer value X, used for defining the size of array.
The second input contains X unsorted distinct integer numbers separated by new line, i.e. A[i].
The third input contains the value of N, to find the Nth largest element from the array.

Output Format:
The output should be an integer value, the Nth largest element in the array.
Additional message in the output will result in the failure of test cases.
There must be an error message as "INVALID INPUT" if the same integer is input more than once.

TCS Digital Capability

Assessment

19 March 2021 (Slot 1)

Coding Question 2

Coding Question

Write a program to find the number of ways in which we can transform a wrong word to a correct word by removing zero or more characters from the wrong word. Given: strings, i.e. S1 (for wrong word) and S2 (for correct word).

Example 1 :

Input :
Indiiian - String S1, i.e. wrong word
Indian - String S2, i.e. correct word

Output:
3

Example 2 :

Input:
ggoog - String S1, i.e. wrong word
go - String S2, i.e. correct word

Output:
4

Explanation:
In the 1st example The three ways will be "ind..ian", "indi.an" and "ind.i.an" is where a character is removed.

TCS Digital Capability

Assessment

19 March 2021 (Slot 1)

Coding Question 1

Coding Question

Consider one string as input. You have to check whether the strings obtained from the input string with single backward and single forward shift are the same or not. If both are the same then print one(1) otherwise print 0(zero).

Hint :
Backward Shift - A single circular rotation of the string in which the first character becomes the last character and all the other characters are shifted one index to the left. For example 'manasa' becomes "anasam" after one backward shift.

Forward Shift - A single circular rotation of the string in which the last character becomes the first character and all the other characters are shifted to the right. For example 'manasa' becomes 'amanas' after one forward shift.

Example 1 :

Input :
sfdlmnop

Output:
0

Example 2 :

Input:
mama

Output:
1

Explanation:
In the 1st example, the string is “sfdlmnop".
Forward Shift: fdlmnops
Backward Shift: psfdlmnop
Both the strings are not equal, so the output is 0.

In the 2nd example, the string is "mama"
Forward Shift: amam
Backward Shift: amam
Both the strings are equal, so the output is 1.

Instructions:
1. The system does not allow any kind of hard coded input value / values.
2. The written program code by the candidate will be verified against the inputs that are supplied from the system.
3. For more clarification, please read the following points carefully till the end.

THANK YOU

Question and Doubt

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