Accenture

Question 1

Write a function CheckPassword(str) which will accept the string as an argument or parameter and validates the password. It will return 1 if the conditions are satisfied else it'll return 0?

The password is valid if it satisfies the below conditions:

It should contain at least 4 characters.

At least 1 numeric digit should be present.

1 Capital letter should be there.

Password should not contain space or slash.

The starting character should not be a number.

Question 1

Input:
bB1_89
Output:
1

Input:
Abc/@89
Output:
0

Input:
aA_1
Output:
1
Input:
Abc @89
Output:
0

Question 2

Write a function CalculateBinaryOperations(str) that accepts the string as an argument or parameter. The string should contains the binary numbers with their operators OR, AND, and XOR?

- **A** Means the AND Operation.
- **B** Means the OR Operation.
- **C** Means the XOR Operation.

By scanning the given string from left to right you've to calculate the string and by taking one operator at a time then return the desired output.

Question 2

Conditions:

- The priority of the operator is not required.
- The length of the string is always Odd.
- If the length of the string is null then return -1.

Sample Test Case:

Input:

1C0C1C1A0B1

Output:

1

Question 2

Explanation:
The entered input string is 1 XOR 0 XOR 1 XOR 1 AND 0 OR 1.
Now calculate the string without an operator priority and scan the string characters from left to right. Now calculate the result and return the desired output.
Note: This will convert the char into the num (char – ‘0’) in the c++ language

Question 3

Write a function differenceofSum(n,m) which will take two integers as an argument. You've to obtain the total of all the integers ranging from 1 to m (both inclusive) that are not divisible by n. You should also return the distinction between the sum of the integers which are not divisible by n with the sum of the integers divisible by n?

Consider: n and m are greater than 0. i.e n>0 and m>0. And their sum should lies between the integral range.

Question 3

Sample Test Case 1:

Input:

n = 4 and m = 20

Output:

90

Explanation:

Sum of numbers divisible by 4 are 4 + 8 + 12 + 16 + 20 = 60

Sum of numbers not divisible by 4 are 1 +2 + 3 + 5 + 6 + 7 + 9 + 10 + 11 + 13 + 14 + 15 + 17 + 18 + 19 = 150

Difference 150 – 60 = 90

Question 4

Execute this function: function LargeSmallSum(arr,n)

The function accepts an integers arr of size ’length’ as its arguments you are required to return the sum of second largest element from the even positions and second smallest from the odd position of given ‘arr’

Assumption:

All array elements are unique

Treat the 0th position as even

NOTE

Return 0 if array is empty

Return 0, if array length is 3 or less than 3

Question 4

Example

Input

n: 6

arr:3 2 1 7 5 4

Output

7

Explanation

Second largest among even position elements(1 3 5) is 3

Second smallest among odd position element is 4

Thus output is 3+4 = 7

Sample Input

n: 7

arr:1 8 0 2 3 5 6

Sample Output

8

Rat Count House

Problem Description :

The function accepts two positive integers ‘r’ and ‘unit’ and a positive integer array ‘arr’ of size ‘n’ as its argument ‘r’ represents the number of rats present in an area, ‘unit’ is the amount of food each rat consumes and each ith element of array ‘arr’ represents the amount of food present in ‘i+1’ house number, where 0 <= i

Note:

Return -1 if the array is null

Return 0 if the total amount of food from all houses is not sufficient for all the rats.

Computed values lie within the integer range.

Question 5

Example:

Input:

r: 7

unit: 2

n: 8

arr: 2 8 3 5 7 4 1 2

Output:

4

Explanation:

Total amount of food required for all rats = r * unit

= 7 * 2 = 14.

The amount of food in 1st houses = 2+8+3+5 = 18. Since, amount of food in 1st 4 houses is sufficient for all the rats. Thus, output is 4.

Question 6

You are required to implement the following function.

Int OperationChoices(int c, int a , int b)

The function accepts 3 positive integers ‘a’ , ‘b’ and ‘c ‘ as its arguments.

Implement the function to return.

(a+ b) , if c=1

(a – b) , if c=2

(a * b) , if c=3

(a / b) , if c =4

Assumption : All operations will result in integer output.

Question 6

Example:

Input

c :1

a:12

b:16

Output:

Since ‘c’=1 , (12+16) is performed which is equal to 28 , hence 28 is returned.

Sample Input

c : 2

a : 16

b : 20

Sample Output

-4

Question 7

Execute this function: Void *ReplaceCharacter(Char str[], int n, char ch1, char ch2);

The function accepts a string ‘ str’ of length n and two characters ‘ch1’ and ‘ch2’ as its arguments . Implement the function to modify and return the string ‘ str’ in such a way that all occurrences of ‘ch1’ in original string are replaced by ‘ch2’ and all occurrences of ‘ch2’ in original string are replaced by ‘ch1’.

Assumption: String Contains only lower-case alphabetical letters.

Note:

Return null if string is null.

If both characters are not present in string or both of them are same , then return the string unchanged.

Question 7

Example:

Input:

Str: apples

ch1:a

ch2:p

Output:

paales

Question 8

Write a program to create an array and sort the elements in it using Insertion sort.

Sample Input:

```
6
1 2 3 4 3 3
```

Sample Output:

```
1 2 3 3 3 4
```

Question 9

Write a program to create an array and insert an element in it, in the specified position.

Sample Input:

```
5
1 2 3 4 5
2 10
```

Sample Output:

```
1 10 2 3 4 5
```

Question 10

Write a program to create an array and delete an element from an array from the specified position.

Sample Input:

```
5
10 12 36 42 58
2
```

Sample Output:

```
10 36 42 58
```

Question 11

Given an array which may contain duplicates, print all elements and their frequencies.

Sample Input:

```
arr[] = {10, 20, 20, 10,
10, 20, 5, 20}
```

Sample Output:

```
10 3
20 4
5  1
```

Question 12

Given a sorted array arr[] of size N, the task is to remove the duplicate elements from the array.

Sample Input:

```
arr[] = {1, 2, 2, 3, 4,
4, 4, 5, 5}
```

Sample Output:

```
arr[] = {1, 2, 3, 4, 5}
```

Question 13

Given an array such that all its terms is either 0 or 1.You need to tell the number represented by a subarray a[l..r] is odd or even

Explanation: number represented by arr[l...r] is 101 which 5 in decimal form which is
odd

Sample Input:

```
arr = {1, 1, 0, 1}
        l = 1, r = 3
```

Sample Output:

Odd

Question 14

Given an array of integers arr[] of size N and an integer d, the task is to rotate the array elements to the left by d positions.

Sample Input:

```
d = 2 ,arr[] = {1, 2, 3, 4, 5, 6, 7}
```

Sample Output:

```
3 4 5 6 7 1 2
```

Question 15

Given a sorted array of n distinct integers where each integer is in the range from 0 to m-1 and m > n. Find the smallest number that is missing from the array.

Sample Input:

```
{0, 1, 2, 6, 9}, n = 5, m = 10
```

Sample Output:

```
3
```

Question 16

Jack has an array A of length N. He wants to label whether the number in the array is even or odd. Your task is to help him find and return a string with labels even or odd in sequence according to which the numbers appear in the array.

Input 1:

6

[1, 2, 3, 4, 5, 6]

Output 1 :

OddEvenOddEvenOddEven

Question 17

You are given a string S and your task is to find and return the count of permutation formed by fixing the positions of the vowels present in the string.

Input 1:

ABC

Output 1 :

2

Question 17

Input 2:
CDF

Output2:
6

Question 18

Ian has been given an Array A of length N and he wants to find the sum of even positions after reversing the array. Your task is to help him find and return an integer value representing sum of the array elements present at the even index of the reversed array.

Input 1:
10, 20, 30, 40, 50, 60
6

Output 1:
120

Question 18

Input 2:
21, 24, 67, 13, 24,27.
6

Output 2:
64

Question 19

Alice has collection of songs represented as a string S where each character
represents a song. A playlist is the substring of the given string with exactly k number of songs. She wants to create a playlist that contains maximum number of her favourite song which is ‘a’. Your task is to find and return an integer value representing the maximum number of favorite songs that she can get in a single playlist.

Input:
Abcaca
3
Output :
2

abc , bca , cac and aca

Question 20

The function accepts an integer array ‘arr’ of size ‘n’ as its argument. The function needs to return the index of an equilibrium point in the array, where the sum of elements on the left of the index is equal to the sum of elements on the right of the index. If no equilibrium point exists return -1.

Input 1 :

7

-7 1 5 2 -4 3 0

Output 1:

3

The left sum at index 3 is -7 + 1 + 5 = -1, and the right sum after index 3 is -4 + 3 + 0 = -1.

Question 20

Input :

3

0, 2, -2, 0

Output:

0

At index 0, the sum on the left (which is empty) is 0, and the sum on the right is 0.

Question 21

Write a program to eliminate the common elements in the given 2 arrays and print only the non repeating elements and the total.

Sample Input:

```
5 4
1 2 8 6 5
2 6 8 10
```

Sample Output:

```
1 5 10
3
```

Question 22

Write a program to search an element in an array and print its index value. If the element if not present, then print -1.

Sample Input:

```
5
4 6 7 2 8
2
```

Sample Output:

```
3
```

Question 23

Given an array arr and two integer value n and m as input, take the first element and find the difference between the first element and the integer value n. if the difference is less than m then increment a value. Do this for all the element in an array and print the final result as output.

Sample Input:

```
5
2 1 4 5 7
3 2
```

Sample Output:

```
3 2 5 5 7
```

Question 24

Write a program to convert decimal number to binary equivalent number.

Sample Input:
10

Sample Output:
1010

Question 25

Write a program to convert a binary number to an equivalent decimal value.

Sample Input:

1000

Sample Output:

8

Question 26

Write a program to print the second greatest element in the given array.

Sample Input:

5

12 5 7 3 90

Sample Output:

12

Question 27

Write a program to segregate all the 0’s in left side and 1’s in right side in the same array with O(n) complexity.

Sample Input:

5
0 1 0 1 0

Sample Output:

0 0 0 1 1

Question 28

Write a program to find the most occurring character in the string.

Sample Input:

Happy coding

Sample Output:

p

Question 29

Write a program in C such that it takes a lower limit and upper limit as inputs and print all the intermediate palindrome numbers.

Sample Input:

10, 80

Sample Output:

11 , 22 , 33 , 44 , 55 , 66 , 77.

Question 30

Write a program to create an array and print the first half sorted array in ascending order and second half in descending order.

Sample Input:

```
5
1 2 3 4 5
```

Sample Output:

```
1 2 5 4 3
```

Question 31

You are given a function,

int findCount(int arr[], int length, int num, int diff);

The function accepts an integer array ‘arr’, its length and two integer variables ‘num’ and ‘diff’.

Implement this function to find and return the number of elements of ‘arr’ having an absolute difference of less than or equal to ‘diff’ with ‘num’.

Note: In case there is no element in ‘arr’ whose absolute difference with ‘num’ is less than or equal to ‘diff’, return -1.

Sample Input:

```
6
12 3 14 56 77 13
num:13
diff:2
```

Sample Output:

```
3
```

Question 32

N-base notation is a system for writing numbers that uses only n different symbols, This symbols are the first n symbols from the given notation list(Including the symbol for o) Decimal to n base notation are (0:0, 1:1, 2:2, 3:3, 4:4, 5:5, 6:6, 7:7, 8:8, 9:9, 10:A,11:B and so on upto 35:Z)

Implement the following function

Char* DectoNBase(int n, int num):

The function accept positive integer n and num Implement the function to calculate the n-base equivalent of num and return the same as a string

Steps:

1. Divide the decimal number by n,Treat the division as the integer division
2. Write the the remainder (in n-base notation)
3. Divide the quotient again by n, Treat the division as integer division
4. Repeat step 2 and 3 until the quotient is 0
5. The n-base value is the sequence of the remainders from last to first

Question 32

Assumption:
1 < n < = 36

Sample Input:
n: 12
num: 718

Explanation

num	Divisor	quotient	remainder
718	12	59	10(A)
59	12	4	11(B)
4	12	0	4(4)

Sample Output:
4BA

Sample Input:
n: 21
num: 5678

Sample Output:
CI8

Question 33

A carry is a digit that is transferred to left if sum of digits exceeds 9 while adding two numbers from right-to-left one digit at a time

You are required to implement the following function.

Int NumberOfCarries(int num1 , int num2);

The functions accepts two numbers ‘num1’ and ‘num2’ as its arguments. You are required to calculate and return the total number of carries generated while adding digits of two numbers ‘num1’ and ‘ num2’.

Assumption: num1, num2>=0

Question 33

Sample Input:

num1: 451
num2: 349

Sample Output:

2

Explanation

Adding ‘num 1’ and ‘num 2’ right-to-left results in 2 carries since (1+9) is 10. 1 is carried and (5+4=1) is 10, again 1 is carried. Hence 2 is returned.

Sample Input:

num1: 23
num2: 563

Sample Output:

0

Question 34

You are required to input the size of the matrix then the elements of matrix, then you have to divide the main matrix in two sub matrices (even and odd) in such a way that element at 0 index will be considered as even and element at 1st index will be considered as odd and so on. then you have sort the even and odd matrices in ascending order then print the sum of second largest number from both the matrices

Example

enter the size of array : 5
enter element at 0 index : 3
enter element at 1 index : 4
enter element at 2 index : 1
enter element at 3 index : 7
enter element at 4 index : 9
Sorted even array : 1 3 9
Sorted odd array : 4 7
7

Question 35

You are given a function: def MinimumUnfairness(arr, k): The function accepts an integer array 'arr' of length n' and an integer k. If (x1, x2, x3,...xk) are k numbers randomly selected from the array 'arr', the Unfairness is defined as max(x1, x2,..., xk) - min(xl, x2, ..., xk), where max denotes the largest integer among the k elements, and min denotes the smallest integer among the k elements. Select k integers from the array 'arr' such that its unfairness is minimized and return minimized unfairness value.

Sample Input:

```
7
10 100 300 200 1000 20 30
3
```

Sample Output:

```
20
```

Question 36

Given two positive numbers **N** and **M**, the task is to count the number of digits that are present in both **N** and **M**.

Sample Input:

N = 748294
M = 34298156

Sample Output:

4

Explanation:

The digits that are present in both the numbers are {4, 8, 2, 9}. Therefore, the required count is 4.

Question 37

Given a positive integer N, count all possible distinct binary strings of length N such that there are no consecutive 1’s.

Sample Input:

```
N = 2
```

Sample Output:

```
3
```

Explanation:

The 3 strings are 00, 01, 10

Question 38

An Autobiographical Number is a number N such that the first digit of N represents the count of how many zeroes are there in N, the second digit represents the count of how many ones are there in N and so on.

You are given a function, def FindAutoCount(n):

The function accepts string “n” which is a number and checks whether the number is an autobiographical number or not. If it is, an integer is returned, i.e. the count of distinct numbers in ‘n’. If not, it returns 0.

Assumption:

The input string will not be longer than 10 characters.
Input string will consist of numeric characters.
Note:

If string is None return 0.

Question 38

Sample Input:

```
N = 1210
```

Sample Output:

```
3
```

Explanation:

0th position in the input contains the number of 0 present in input, i.e. 1, in 1st position the count of number of 1s in input i.e. 2, in 2nd position the count of 2s in input i.e. 1, and in 3rd position the count of 3s i.e. 0, so the number is an autobiographical number.
Now unique numbers in the input are 0, 1, 2, so the count of unique numbers is 3. So 3 is returned.

Question 39

Write a Function that finds the max occurring Character in a given String

Input Format:
Input consists of a String.
OUTPUT FORMAT:
Returns the character which occurs for the maximum number of times in the input string.
If multiple character occurs with the same highest frequency then return”0”.
SAMPLE INPUT 1:
abcdd
SAMPLE OUTPUT 1:
d
SAMPLE INPUT 2:
aabcdd
SAMPLE OUTPUT 1:
0

Question 40

Given an integer array find the maximum sum contiguous sub array. If the array contains all negative numbers, then the maximum sub array contains only the negative numbers with the least value.

Input Format:

Input1: N, the number of elements in array.

Input2: Array of numbers between -1000 <= input2[i] <= 1000

OUTPUT FORMAT:

Returns the maximum sum of contiguous elements.

SAMPLE INPUT 1:

3

3 -1 2

SAMPLE OUTPUT 1:

4

Question 41

Write a Function to push all the zeros that are present to the end of the array. The respective order of other elements should remain the same.

SAMPLE INPUT 1:

5 0 7 6

4

SAMPLE OUTPUT 1:

5 7 6 0

Question 42

There is a tournament in town. The rule of the game is such that the player with the highest number of goals wins. Three players compete at a time. The committee needs a program to determine the winner based on the highest number of goals scored. Write a program and help the committee to declare the winner with highest number of goals.

SAMPLE INPUT 1:

15 20 22

SAMPLE OUTPUT 1:

The largest number is: 22

Question 43

You have been given an array containing N distinct integers taken from the range 1 to N+1. This means there is one integer missing from the range. Your task is to write a program to find and return missing integer

SAMPLE INPUT 1:

7

1 2 4 6 3 7 8

SAMPLE OUTPUT 1:

5

Question 44

You are on a hiking trail represented by an array A of length N, where the trail initially ascends and then descends forming a single peak. Your task is to find and return an integer value representing the elevation of the summit.

SAMPLE INPUT 1:

1 2 3 4 3 2 1

7

SAMPLE OUTPUT 1:

4

Question 45

You are given a function:
Int MaxExponents (int a , int b);
You have to find and return the number between ‘a’ and ‘b’ (range inclusive on both ends) which has the maximum exponent of 2.
The algorithm to find the number with maximum exponent of 2 between the given range is
Loop between ‘a’ and ‘b’. Let the looping variable be ‘i’.
Find the exponent (power) of 2 for each ‘i’ and store the number with maximum exponent of 2 so far in a variable , let say ‘max’. Set ‘max’ to ‘i’ only if ‘i’ has more exponent of 2 than ‘max’.
Return ‘max’.
Assumption: a < b
Note: If two or more numbers in the range have the same exponents of 2 , return the small

Question 45

SAMPLE INPUT 1:

7

12

SAMPLE OUTPUT 1:

8

Explanation:

Exponents of 2 in:

7-0

8-3

9-0

10-1

11-0

12-2

Hence the maximum exponent if two is of 8.

THANK YOU