Zoho School for Graduate Studies

1) Write a program to print a letters from the user input character to 'Z' without using strings.

Example 1:   input : X
              Output : XYZ

Example 2:   Input : M
              Output : MNOPQRSTUWXYZ

2) Write a program to define the functionality of a Bitwise operators.

3) Write a program for the following. Let consider 20 students in a class with the roll no 101-120. We are going to split them into four groups. Based on their roll number we are going to split them with the following logics.

Example 1:

              Input : Total Number of students : 20
              Output:
                     Group 1:
                     101
                     105
                     109
                     113
                     117

                     Group 2:
                     102
                     106
                     110
                     114
                     118

                     Group 3:

103
107
111
115
119

Group 4:
104
108
112
116
120

4) Write a program to print the number **7.50** without using String(print **7.50** not 7.5).

5) Write a program to evaluate the polynomial equation

$$ax^2 + bx + c = 0$$

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

6) Evaluate the following expression on paper and on program and understand the difference
i)++a-b−   ii)a%b++   iii)a*=b+5   iv)x=69>>>2

7) Evaluate the following expression on paper and on program and understand the difference
a+=a++ + ++a + −a + a−; when a=28

8) Program to Find ASCII Value of a Character

9) Write a program to display the number in reverse order without use of String functions.

       Eg 1: Input: 12345

             Output :The number in reverse order is : 54321

10) Using Recursion, reverse the string such as

       Eg 1: Input: one two three

             Output: three two one

       Eg 2: Input: I love india

             Output: india love I

11) Write a program to give the following output for the given input:

       Eg 1: Input: a1b10

             Output: abbbbbbbbbb

       Eg: 2: Input: b3c6d15

             Output: bbbcccccdddddddddddddddd

             The number varies from 1 to 99.

12) Program to Check Whether a Character is an Alphabet or not

13) Java Program to print the smallest element in an array

14) Java Program to copy all elements of one array into another array

15) Java Program to print the duplicate elements of an array

16) Given two sorted arrays, merge them such that the elements are not repeated

Example 1:

      Input: Array 1: 2,4,5,6,7,9,10,13

             Array 2: 2,3,4,5,6,7,8,9,11,15

      Output: Merged array: 2,3,4,5,6,7,8,9,10,11,13,15

17) Alternate sorting: Given an array of integers, rearrange the array in such a way that the first element is first maximum and second element is first minimum.

 Example: Input : {1, 2, 3, 4, 5, 6, 7}
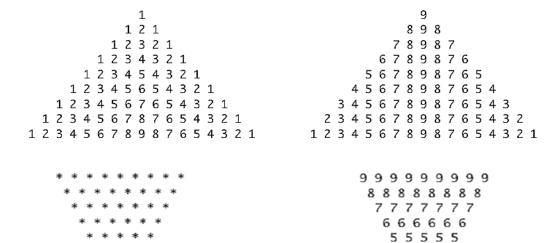
                Output: {7, 1, 6, 2, 5, 3, 4}

18) Write a program to sort the elements in odd positions in descending order and elements in ascending order.

       Eg 1: Input: 13,2 4,15,12,10,5

Output: 13,2,12,10,5,15,4

Eg 2:   Input: 1,2,3,4,5,6,7,8,9

Output: 9,2,7,4,5,6,3,8,1

19) Java Program to left rotate the elements of a multidimensional array.

20, 21, 22, 23) Write a programs to print following patterns

```
                1                                              9
              1 2 1                                          8 9 8
            1 2 3 2 1                                      7 8 9 8 7
          1 2 3 4 3 2 1                                  6 7 8 9 8 7 6
        1 2 3 4 5 4 3 2 1                              5 6 7 8 9 8 7 6 5
      1 2 3 4 5 6 5 4 3 2 1                          4 5 6 7 8 9 8 7 6 5 4
    1 2 3 4 5 6 7 6 5 4 3 2 1                      3 4 5 6 7 8 9 8 7 6 5 4 3
  1 2 3 4 5 6 7 8 7 6 5 4 3 2 1                  2 3 4 5 6 7 8 9 8 7 6 5 4 3 2
1 2 3 4 5 6 7 8 9 8 7 6 5 4 3 2 1            1 2 3 4 5 6 7 8 9 8 7 6 5 4 3 2 1
```

```
      * * * * * * * * *                          9 9 9 9 9 9 9 9 9
        * * * * * * * *                            8 8 8 8 8 8 8 8
          * * * * * * *                              7 7 7 7 7 7 7
            * * * * * *                                6 6 6 6 6 6
              * * * * *                                  5 5 5 5 5
                * * * *                                    4 4 4 4
                  * * *                                      3 3 3
                    * *                                        2 2
                      *                                          1
```

24) Write a program to make such a pattern like a pyramid with numbers increased by 1.

Eg: Input : 10

Output:

1

2 3

4 5 6

7 8 9 10

25) Write a program to print the following output for the given input. You can assume the string is of odd length

Eg 1:   Input: 12345

Output:

1   5

2   4

3

```
        2   4
     1       5
```

26) Write a program to print the following pattern for the given input number.

      Eg 1: Input: 4

           Output:

```
*******
***__***
**____**
*_____*
**____**
***__***
*******
```

27) Find if a String2 is substring of String1. If it is, return the index of the first occurrence. else return -1.

      Eg 1: Input: String 1: test123string

                 String 2: 123

           Output: 4

      Eg 2: Input: String 1: testing12

                 String 2: 1234

           Output: -1

28) Write a program to find the sum of the series. The series will be like 1 +11 + 111 + 1111 +.. n terms.

      Eg 1: Input: Input the number of terms : 5

           Output :

                 1 + 11 + 111 + 1111 + 11111

                 The Sum is : 12345

      Eg 2: Input: Input the number of terms : 3

           Output :

                 1 + 11 + 111

                 The Sum is : 123

29) Write a program to print the alphabet 'C' with the stars based on the given numbers

      Eg 1: Input: 4

           Output:

```
****
*
*
****
```

30) Given a N*N square matrix, return an array of its anti-diagonals. Look at the example for more details.

Example
 Input:
1 2 3
4 5 6
7 8 9

Output : [
[1],

[2, 4],
[3, 5, 7],
[6, 8],
[9]
]

Input :
1 2
3 4

Output :
[[1],
[2, 3],
[4]
]