Programming Fundamentals LAB – BSDSF21

(Both Morning and Afternoon)

Lab 09 – 24-03-2022

YOU may USE Command Prompt to interpret and execute all the PYTHON programs. Use of any IDE, except ***Mu Editor*** is not allowed for this LAB, despite you are expert. Unless and until you convinced me in personal capacity.

1. Using the concepts of ASCII codes you learned in class session, write suitable functions and and the main logic to print the pattern as describes in following example. **printTriange('k', 's')**

```
k
kl
klm
klmn
klmno
klmnop
klmnopq
klmnopqr
klmnopqrs
```

2. Using the concepts of ASCII codes you learned in class session, write suitable functions and and the main logic to print the pattern as describes in following example. **printPyramid('m', 'u')**

```
    m
   mno
  mnopq
 mnopqrs
mnopqrstu
```

3. Write an exhaustive search based function to return the LCM (Least common multiple) of two integers passed as its parameters. LCM of a and b can be maximum a*b. Also, write its main logic.

4. In main function create an array on integers of size above 12 and populate the array with values in random way (not in any specific order). Invoke a function to print array values on one line. Then invoke a function **bubble(a, n)** that start processing array from its end towards its beginning, and in each iteration compare two adjacent values, if the value at bigger index is smaller than value at its lower adjacent index, it interchange the two values, otherwise do nothing in this iteration. Again, invoke a function to print array values on one line.

5. Copy the code you made in above task and this time invoke the bubble function **n** times, using a loop. Before and after the loop you have to call print array function.

6. The ASCII values of 0 is 48, 1 is 49, 2 is 50, …, 9 is 57. Write code to print the sum of all digits in a string named D of size N. As an example, please note that in given string below, there are two digits in it and sum of their ASCII's of "1" and "4" is 49+52, but you have to compute it as 1+4.
   D = "C1k*h=>jTag 4.@s.....c"

7. Write code to assign two suitable integer values to variables SX and SY, then create X an array of size SX and populate it with unique integers (all different values), and another array Y of size SY and populate it with integers which may repeat any number of times in it. Later, print those value in X along with its count in array Y, whose count is less than 3. A value in X which is absent in Y means its count is ZERO (0). You must have to populate suitable data and may need to create several functions.

8. Consider data arrays to stores only positive numbers. A programmer has written several functions to manipulate such data arrays by placing data values at contiguous indices from 0 onwards and place an end of data marker after them. Rest of allocated space in array is garbage and never considered as data. He has taken that end of data marker as -1 a negative value which never be appeared as data. As, a lot of work is remaining, and deadline is approaching, and fortunately you are hired to code some functions to manipulate such data. Here you have to provide code to join (append) data in array named **nd** to array named **ad**, assuming data array have necessary and sufficient space. You also have to write its suitable main logic to demonstrate the working of the function.

Thanks, for your **patience**