**PLT Programs - Level 3**

**For loops, recursion, break and continue**

1. Write the programs to generate the following outputs. accept N from the user

a.

11111

22222

33333

44444

 :

 N rows

b.

\*\*\*\*\*

\*\*\*\*\*

\*\*\*\*\*

\*\*\*\*\*

:

 N rows

 2. Write the programs to generate the following outputs. accept N from the user

a.

12345

12345

12345

12345

:

N rows

b.

\*

\* \*

\* \* \*

\* \* \* \*

:

N rows

3. Write a program to display the below pattern. accept N from the user

a.

              \*

            \*\*

          \*\*\*

        \*\*\*\*

:

N rows

b.

         \*

      \* \* \*

   \* \* \* \* \*

\* \* \* \* \* \* \*

..

N

4.  Write a program to display the below output. accept N from the user

a.

1

22

333

4444

:

N  rows

b.

1

12

123

1234

:

 N  rows

5.  Write a program to display the below output. accept N from the user

a.

1

2 3

4 5 6

7 8 9 10

:

N  rows

b.

1

1 2

3 5 8

:

N rows

6. Write a program with "Recursion" to find the factorial of a given number. 0! is always 1. The factorial of a negative number is not possible.   (Note: Use Recursion)

7. Write a program to generate the following series. In all the following cases, accept N:

a. 1, 2, 6, 15, 31, 56 … N

b. 1, 1, 2, 3, 5, 8, 13, … N

8. Write a program to generate the following series. In all the following cases, accept N:

1. c. 1, 2, 4, 6, 7,10, 10,14… N
2. d. 1, 5, 8, 14, 27, 49, … N

9. Write a program to find whether a given number is a Fibonacci number or not.

10.Write the programs to generate the following outputs. In all the following cases, accept N:

a.

  1

 ‐4    9

‐16  25  ‐36

  :   :

  N rows

b.

1

1  2

6 24  120

 :   :

 N rows

11. Write a program that takes amount and displays them in words

a. Input: 1234

b. Output: One thousand two hundred and thirty four only

12. Accept the item code, description, qty, and price of an item. Compute the total for the item.

1. Accept the user’s choice. If the choice is ‘y’ then accept the next set of inputs for a new item and compute the total. In this manner, compute the grand total for all the items purchased by the customer.
2. If the grand total is more than Rs. 10,000/‐ then, the customer is allowed a discount of 10%.
3. If the grand total is less than Rs. 1,000/‐ and the customer chooses to pay by card, then a surcharge of 2.5% is levied on the grand total.
4. Display the grand total for the customer in number form and in words.

**Algorithms and data Structures**

1. Write a program to store N elements in an array of integers. Display the elements. Accept a number to be searched. Display whether the number is found or not in the array (LINEAR SEARCH).

2. Write a program to store N elements in an array of integers. Display the elements. Sort the elements. Accept a number to be searched. Display whether the number is found or not in the array using BINARY SEARCH.