EXPERIMENT-5:

Working with Loops/Iterations

Objective: To understand the concepts of Looping with Iterations; applying while, do-while and for constructs.

List of Lab Activities:

Write algorithm and C program, compile, execute and test the code using Linux C compiler with suitable test cases.

1. Given positive number 'n', generate all the Armstrong numbers between 1 and n.[Hint: A 3-digit number (Ex. 153) is an Armstrong number if the sum of cube of each digit ($1^3+5^3+3^3$) is equal to 153]
2. Multiple two given numbers without using the arithmetic binary multiplication operator using for loop.
3. Find the sum of digits of a number using while loop.
4. Given value of 'n', find the sum of the series 1+ 1/2 + 1/3 + 1/4 + 1/5 + …+ 1/n.
5. Print the given pattern using nested for loop.

```
11111
22222
33333
44444
55555
```

List of Practice Activities:

Write algorithm and C program, compile, execute and test the code using Linux C compiler with suitable test cases.

1. Generate the first 'n' terms of a Fibonacci sequence. [Hint: The first and second terms of a Fibonacci sequence are 0 and 1. Subsequent terms are found by adding the preceding two terms in the sequence.]
2. Print numbers which are divisible by 3 and 5 from the first 'n' natural numbers.
3. Generate all the prime numbers between 1 and n, where n is a value supplied by the user.
4. Reverse the digits of a given number and check if given number is a Palindrome or not using do-while.
5. Using a menu driven control, print the given patterns as per user choice.

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

```
1
22
333
4444
55555
```