CSE115L – Programming Language I Lab
Lab-07
Simple Loop

Example 01: Write a C program that computes the sum of the series: 3+7+11+…+n, where n is a user input

```
//Program using while loop:
#include<stdio.h>
void main()
{
    int n, i=3, sum=0;
    printf("Enter the value of n:");
    scanf("%d",&n);

    while(i<=n){
        sum+=i;
        i+=4;
    }
    printf("sum=%d", sum);
}
```

```
//Program using for loop:
#include<stdio.h>

void main()
{
    int n, i, sum = 0;
    printf("Enter the value of n:");
    scanf("%d",&n);

    for(i=3;i<=n; i+=4){
        sum+=i;
    }
    printf("sum=%d", sum);
}
```

Example 02: Write a C program to read an integer from user and count the total number of digits in it.

```
#include <stdio.h>

void main()
{
    lint num, count = 0;

    printf("Enter any integer: ");
    scanf("%d", &num);

    while(num != 0)
    {
        count++;
        num /= 10;
    }

    printf("Total digits:
%d",count);
}
```

Example 03: Write a C program to read an integer from user and count the total number of <u>nonzero</u> digits in it.

```
#include <stdio.h>

void main()
{
    lint num, count = 0;

    printf("Enter any integer: ");
    scanf("%d", &num);

    while(num != 0)
    {
        //current digit is num%10
        if(num%10 != 0)
           count++;
        num /= 10;
    }

    printf("Total nonzero digits: %d",
count);
}
```

Example 04: Write a C program that reads an integer and then computes & prints the factorial of that integer

```
#include<stdio.h>

void main()
{
     int n, i, fact = 1;
     printf("Enter the value of n:");
     scanf("%d",&n);

      for(i=1;i<=n; i++){
```

```
            fact*=i;
        }

        printf("n!=%d", fact);
}
```

Example 05: Write a C program that can be used to find whether a number is a prime number or not.

```
#include <stdio.h>

void main()
{
    int i, n, isPrime = 1;

    printf("Enter any number to check if it is prime: ");
    scanf("%d", &n);

    for(i=2; i<=n/2; i++)
    {
        if(n%i==0)
        {
            isPrime = 0;
            break;
        }
    }

    if(isPrime == 0)
    {
        printf("\n%d is not a prime number", n);
    }
    else
    {
        printf("\n%d is a prime number", n);
    }

}
```

Example 06: Write a C program to find Least Common Multiple (LCM) of two given numbers.

```
#include <stdio.h>

void main()
{
  int i, n1, n2, max, lcm=1;

  printf("Enter any two numbers to find LCM: ");
  scanf("%d %d", &n1, &n2);

  i = max = (n1>n2) ? n1 : n2;  //compute the max of n1 and n2;  this is the lowest possible value of LCM
  while(1)  //while condition is always true (1)
  {
    if(i%n1==0 && i%n2==0)       // If i is a multiple of both n1 and n2 then i is the LCM of n1 and n2
    {
      lcm = i;
      break;  //break out of the loop since LCM has been found
    }
```

```
    //we come to the next line if current value of i is not the LCM
     i += max;   //values of i are: max, 2*max, 3*max, …, all of which are possible values of LCM
  }

  printf("\nLCM of %d and %d = %d\n", n1, n2, lcm);
```

Perform the following tasks.

Task 1: Write a program to print all even numbers between m and n (m, n are user inputs) in reverse order.

Sample input/output (bold ones are inputs):
Enter m: **9**
Enter n: **21**
All even numbers between 9 and 20 in reverse order: 20, 18, 16, 14, 12, 10

Task 2: Write a C program to display a given number in words starting from its leftmost digit.
Hint: Compute the reverse of the given number and then use a while loop like practice 3 to print the digits. E.g., if input number is 1234 your program should print "One Two Three Four".

Task 3: Write a C program to check whether an input number is a perfect number or not. A perfect number is a positive integer which is equal to the sum of its proper positive factors. For e.g. 6 is a perfect number; because proper factors of 6 are 1, 2, 3 and 1+2+3 = 6. Also, 28 is a perfect number since sum of its factors = 1+2+4+7+14 = 28.