भारतीय सूचना प्रौद्योगिकी संस्थान गुवाहाटी
Indian Institute of Information Technology Guwahati
COMPUTER PROGRAMMING LAB (CS110)
ASSIGNMENTS–04

Practice problems

1. Write a c program to print all prime numbers between a and b, where a and b are positive integer and $a < b$.

2. Write a C program to print all 3 digit Armstrong numbers. Armstrong number is a number that is equal to the sum of cubes of its digits. For example 153 and 407 are the Armstrong numbers.

3. Write a program in C to find the greatest common divisor (GCD) of two positive integers.

4. Write a program in C to find x^n for a given positive real value x and a positive integer n.

5. Write a programs in C to compute the sum of the first n terms of the following series:
$$S_{e^x} = 1 + x + \frac{x^2}{2!} + \frac{x^3}{3!} + \cdots$$

6. Write separate programs in C to print the following patterns. Each of them is associated with a control variable n. The examples are associated with n = 4. A printf should print only 1 character.

   i.
```
   %
  %%
 %%%
%%%%
```

   ii.
```
****
 *  *
 *  *
****
```

   iii. For this one, you need to print 2*n-1 rows

```
1
010
10101
0101010
10101
010
1
```

iv.
```
      *
     ***
    *****
   *******
```

v.
```
      *
     * *
    * * *
   * * * *
```

7. Write a C program to find the number of days in a month using switch when month (in number) is input.

8. Write a C program to create menu driven calculator that performs basic arithmetic operations (add, subtract, multiply and divide) using switch case and functions. The calculator should input two numbers and an operator from user. It should perform operation according to the operator entered and must take input in given format.

    $< number1 >< operator >< number2 >$

9. Write a c program to display the outputs of bit-wise operators on unsigned integers. Check outputs on negative integers also.