भारतीय सूचना प्रौद्योगिकी संस्थान गुवाहाटी

Indian Institute of Information Technology Guwahati

COMPUTER PROGRAMMING LAB (CS110)

ASSIGNMENTS–06

[Note: Do not use the `scanf()` function.]

1. Write a function in C to compute the area of a circle. You must pass the circle's diameter as a parameter to the function. Write the main function and call it from the main function. You need to define the function before the main function.

2. Write a function in C to check whether a number is prime or not. If it is a prime number, the function should return 1. Otherwise, it should return 0. Write the main function and call the function from the main function. You need to define the function after the main function and declare the function inside the main function.

3. Write a function in C to check whether a number is Armstrong or not. If it is an Armstrong number, the function should return 1. Otherwise, it should return 0. Write the main function and call the function from the main function. You need to define the function after the main function and declare the function outside (before) the main function.

4. Write a function in C to print all prime numbers inside a given range $[a, b]$. You need to pass a and b as parameters to the function.

5. Write a function in C to print all Strong numbers inside a given range $[a, b]$. You need to pass a and b as parameters to the function.

6. Write a function in C to print all Armstrong numbers inside a given range $[a, b]$. You need to pass a and b as parameters to the function.

7. Write a function in C to print all Perfect numbers inside a given range $[a, b]$. You need to pass a and b as parameters to the function.

8. Write a function in C to find the minimum of two numbers.

9. Write a function in C that takes three integers as arguments and returns the largest one's value.

10. Write a function in C that takes a real number as an argument and returns that number's absolute value.

11. Write a function in C that takes a positive integer n as an argument and returns the smallest power of two that is greater than or equal to n.

12. Write a function in C that takes a positive integer as input and returns the leading digit in its decimal representation. For example, the leading digit of 234567 is 2.

13. Write a recursive function in C to find the factorial of a positive integer.

14. Write a recursive function in C to find the summation of the first n natural numbers.

15. Write a recursive function in C to find the ith number in the Fibonacci sequence.

16. Write a recursive function in C to find x^n, where x is a real value, and n is a positive integer.

17. Write a recursive function in C to find the sum of all even numbers in a given range.

18. Write a recursive function in C to find the sum of all odd numbers in a given range.

19. Write a recursive function in C to find the number of digits in a positive integer.

20. Write a recursive function in C to find the sum of digits in a positive integer.

21. Write a recursive function in C to reverse a positive integer.

22. Write a recursive function in C to find the greatest common divisor (GCD) of two numbers.

23. Write a tail-recursive function in C to find the factorial of a positive integer.

24. Write a tail-recursive function in C to find the summation of the first n natural numbers.