C Programming Lab
(Common to all branches)

Course Code: KG21CS107 **B. Tech I Year I Semester**

List of Programs

1. Write a simple program that prints the results of all the operators available in C (including pre / post increment, bitwise and/or/not, etc.). Read required operand values from standard input.

2. Write a simple program that converts one given data type to another using auto conversion and casting. Take the values form standard input.

3. Write a program for find the max and min from the three numbers.

4. Write the program for the simple, compound interest.

5. Write program that declares Class awarded for a given percentage of marks, where mark <40%= Failed, 40% to <60% = Second class, 60% to <70%=First class, >= 70% = Distinction. Read percentage from standard input.

6. Write a C program to find the roots of a Quadratic equation.

7. Write a C program, which takes two integer operands and one operator from the user, performs the operation and then prints the result. (Consider the operators +, -, *, /, % and use Switch Statement)

8. Write a program that prints a multiplication table for a given number and the number of rows in the table. For example, for a number 5 and rows = 3, the output should be:
   5 x 1 = 5
   5 x 2 = 10
   5 x 3 = 15

9. Write a program that shows the binary equivalent of a given positive number between 0 and 255.

10. Write a C program to construct a pyramid of numbers as follows:

11. A building has 10 floors with a floor height of 3 meters each. A ball is dropped from the top of the building. Find the time taken by the ball to reach each floor. (Use the formula s = ut+(1/2) at^2 where u and a are the initial velocity in m/sec (= 0) and acceleration in m/sec^2 (= 9.8 m/s^2)).

12. Write a program that finds if a given number is a prime number
13. Write a C program to find the sum of individual digits of a positive integer and test given number is palindrome.

14. Write a C program to generate the first n terms of the sequence.

15. Write a C program to generate all the prime numbers between 1 and n, where n is a value supplied by the user.

16. Write a C program to calculate the following, where x is a fractional value. 1-x/2 +x^2/4-x^3/6
17. Write a C program to read in two numbers, x and n, and then compute the sum of this geometric progression: 1+x+x^2+x^3+……. +x^n. For example: if n is 3 and x is 5, then the program computes 1+5+25+125.

18. Write a C program to convert a Roman numeral ranging from I to L to its decimal equivalent.

19. Write a C program that converts a number ranging from 1 to 50 to Roman equivalent

20. Write a C program to find the minimum, maximum and average in an array of integers.

21. Write a C program to determine if the given string is a palindrome or not (Spelled same in both directions with or without a meaning like madam, civic, noon, abcba, etc.)

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1          *          1          1          *
1 2        * *        2 3        2 2        * *
1 2 3      * * *      4 5 6      3 3 3      * * *
                                 4 4 4 4    * *
                                            *
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22. Write a C program that displays the position of a character ch in the string S or – 1 if S doesn’t ‘t contains ch.

23. Write a C program to count the lines, words and characters in a given text.

24. Write a program through pointer variable to sum of n elements from array.

25. Write a program for reading elements using pointer into array and display the values using array.

26. Write a program for display values reverse order from array using pointer.

27. Write a C program to display the contents of a file to standard output device.

28. Write a C program which copies one file to another, replacing all lowercase characters with their uppercase equivalents.

29. Write a C program to count the number of times a character occurs in a text file. The file name and the character are supplied as command line arguments.

30. Write a C program that does the following: It should first create a binary file and store 10 integers, where the file name and 10 values are given in the command line. (hint: convert the strings using atoi function) Now the program asks for an index and a value from the user and the value at that index should be changed to the new value in the file. (hint: use fseek function) The program should then read all 10 values and print them back.

31. Write a C program to merge two files into a third file (i.e., the contents of the first file followed by those of the second are put in the third file).

32. Write a C program that uses functions to perform addition of two matrices.

33. Write a C program that uses functions to perform multiplication of two matrices.

34. Transpose of a matrix with memory dynamically allocated for the new matrix as row and column counts may not be same.

35. Write a function to compute mean, variance, Standard Deviation, sorting of n elements in single dimension array.

36. Write C programs that use both recursive and non-recursive functions to find the factorial of a given integer.

37. Write C programs that use both recursive and non-recursive functions to find the GCD (greatest common divisor) of two given integers.

38. Write C programs that use both recursive and non-recursive functions to find x^n

39. Write a C program that uses function to insert a sub-string in to a given main string from a given position

40. Write a C program that uses function to delete n Characters from a given position in a given string.

41. Write a C program that uses functions to perform the following operations:
    i. Reading a complex number
    ii. Writing a complex number
    iii. Addition of two complex numbers
    iv. Multiplication of two complex numbers
    (Note: represent complex number using a structure.)

42. Write a menu driven C program that allows a user to enter n numbers and then choose between finding the smallest, largest, sum, or average. The menu and all the choices are to be functions. Use a switch statement to determine what action to take. Display an error message if an invalid choice is entered.