1. UG 2—C Programming Language—Homework

1) Write a program to input a 4 digit number and then print it in the pattern provided:

   1 2 3 4
   1 2 3
   1 2
   1

2. Read a 4 digit number and print the sum of the digits.
3. Read two integer values a and b, decide whether a is a multiple of b?
4. Write a program to determine whether a given number is even or odd?
5. Find the area of a) an equilateral triangle whose sides are mentioned,
6. Isosceles triangle whose sides are mentioned.
7. Find the area and perimeter of a rectangle.
8. Write a program to determine whether a number is even or odd? Use a) if statement without else statements, b) if-else statement c) conditional operator.
9. Write a program to find the number of integers between 100 and 200 that are divisible by 5. Do not use any loop environment.
10. Write a program to solve a system of simultaneous linear equations in two variables x and y. That is a11x+a12y=b1; a21x+a22y=b2. First ensure that the determinant of the coefficient matrix is non singular. (aij, bi, (i=1,2, j=1,2) are to be provided as inputs/read through the keyboard into the program).
11. Write a program to compute the real roots of a quadratic equation $ax^2 + bx + c = 0$.
12. Write a program that finds the correct value of y depending upon the value of x entered. Given that $y = \begin{cases} 1, & x > 0 \\ 0, & x = 0 \\ -1, & x < 0 \end{cases}$

    Using a) nested if statement b) else-if statement c) conditional operator.
13. Write a program to find all the integers that are divisible by 6 but not by 4 and lie in between 0 and 100. Count the number of such integers present? Find the sum of all such integers.
14. Read a positive integer in between 100 - 200 from the user and decide whether it is prime?
15. Using a) while b) do-while c) for statement reverse the digits of a number.
16. Using a) while b) do-while c) for statement find the factorial of a number.
17. Use a) while b) do-while c) for statement to determine the sum of the digits of a number.
18. Using a) while b) do-while c) for statements generate the Fibonacci series 1, 1, 2, 3, 5, 8, ... between 1 to 100.

19. Write a program to read the age of 'n' persons and count the number of persons in the age groups 1-10 and 70-80. Use a) for b) do-while. (There would be two separate counts).
20. Use a) while and b) for statements to evaluate the series for y=exp(-x) for positive values of x between 0.0 to 2.0 in steps of 0.1
21. Write a program to evaluate e=1+1/1!+2/2!+3/3!+4/4!+.....Accuracy should be of the order 10E-5. Use a) do-while b) for.
22. Write a program to print the integers between 1 and 100 that are not divisible by 2 or 3. Use a) do-while b) for.
23. Write a program to find the largest and smallest number from a set of 10 integers.
24. Write a program to find the square and cube of all integers between 1 to n. Use a) while b) do-while c) for loop environments. Further find the inverse of the cubes and squares of the number using all three loop environments.
25. Write a program to check whether a number is a Fibonacci number or not? (A number n is Fibonacci provided $5n^2 \pm 4$ is a perfect square.)
26. Write a program to find the GCD and LCM of two numbers. Use a) for b) while environments.
27. Use for loop environment to determine all the prime numbers in between 100-200.
28. Find the sum of the series a) 1+11+111+1111+..... b) 9+99+999+9999+..... Use a) for and b) while loop.
29. Convert a Binary number to the Decimal number using a) for loop and b) do-while loop.
30. Convert a Decimal number to Binary number using a) while loop and b) for loop.
31. Use for loop to print the pattern

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32. Write a program to find the sum of all the a) even numbers b) odd numbers between 1-100 using for loop environment.
33. Write a program to determine whether a number is strong? (Strong numbers are those numbers whose sum of the factorials of their digits is same as the number itself.)
34. Check whether a number is a palindrome number. Use a) for b) while loop.
35. Find LCM of a number using the GCD.
36. Find all the strong numbers between 50 – 200. Find their sum and determine whether that number is a strong number? (Strong number: The number is same as the sum of the factorial of its digits.)