B. Tech.(CSE) Semester-I
BTPS102-18: Programming for Problem Solving
Lab Assignment-I

Note: Last Date of Evaluation of Assignment is **3rd April, 2023.**

1. Write a program to compute area and perimeter of rectangle, triangle, square, and circle.
2. Write a program to swap two numbers
    a. Using third variable
    b. Without using third variable
3. Write a program to determine whether a number is positive, negative, or zero.
4. Write a program to determine whether a given number is odd or even.
5. Write a program to compute roots of a quadratic equation.
6. Write a program to find the number of and sum of all integers greater than 500 and less than 1000 that are divisible by 6.
7. Write a program that takes two integer operands and one operator(+, -, /, %, *) from the user, perform the requested operation and output the results.
8. Given three numbers, write a program to determine whether they can form sides of an isosceles triangle.
9. Given three points A(x1, y1), B(x2, y2), and C(x3, y3), write a program to determine whether they are collinear i.e., lie on the same line or not.
10. Write a program to determine whether a number is palindrome or not.
11. Write a program to determine whether a year is prime or not?
12. Write a program to enter a number and calculate the sum of its digits.
13. Write a program to find the sum of first n positive integer numbers.
14. Write a program to print Fibonacci series, i.e., 0 1 1 2 3 5 8 13……
15. Write a program to compute factorial of number.
16. Write a program to determine whether is number is Armstrong?
17. Write a program to compute HCF of a given numbers.
18. Write a program to read the age of 100 persons and count the number of persons in the age group of 50 to 60.
19. Write a program that will read a positive integer and determine and print its binary equivalent.
20. Write a program to calculate pow(x,n), i.e., to calculate x^n.
21. Write a program to calculate sum of following series
    a. $1+\frac{1}{2}+\frac{1}{3}+\cdots\frac{1}{n}$
    b. $\frac{1}{1!}+\frac{1}{2!}+\frac{1}{3!}+\cdots\frac{1}{n!}$
    c. $\frac{1}{1^2}+\frac{1}{2^2}+\frac{1}{3^2}+\cdots+\frac{1}{n^2}$
22. Write a program to print the following patterns:

1	1	*	*	1
12	22	**	***	121
123	333	***	*****	12321
1234	4444	****	*******	1234321
12345	55555	*****	*********	123454321

23. Write a program to find the largest element in a list.
24. Write a program to find the smallest element in a list.
25. Write a program to reverse the order of elements of an array.
26. Write a program to implement linear search using array.
27. Write a program to insert and delete elements from an array.
28. Write a program to sort the list of numbers.
29. Write a program to compute addition and product of two matrices. (Also check the feasibility of the product.)
30. Write a program to compute transpose of a matrix.
31. Write a program to find the largest element of an m by n matrix.
32. Write a program to compute sum of diagonal elements of matrix.
33. Write a program to illustrate the use of all string library functions (strlen, strrev, strcat, strcmp, etc.)
34. Write programs to implement string library functions
    a. strlen
    b. strrev
    c. strcat
    d. strcmp
    e. strcpy
35. Write a program that will scan a character string passed as an argument and convert all lowercase characters into their upper case equivalents.

Subject Teacher
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