

LAB ASSIGNMENT FOR PROBLEM SOLVING AND PROGRAMMING IN C.

VARIABLES, OPERATORS AND INPUT/OUTPUT FUNCTIONS. (LAST DATE: 16-08-2018)


- 1) Write a program that reads in two integers and determines and prints the first is multiple of second (Note: Use only operators and functions).
- 2) Write a program that enters three different integers from the keyboard, and then prints the sum, the average, the product, the smallest and the largest of these numbers.
- 3) Write a program that reads in radius of a circle and prints circle's diameter, circumference and area.
- 4) Write a program that accepts a character and prints its decimal, octal and hexadecimal equivalent.
- 5) A company pays its salesman on a commission basis. The salesperson receives RS 1000/= per week plus a (% of their gross sales for that week. Write a program that will input each salesperson's gross sales for last week and will calculate and display the salesperson's earning.

CONTROL STRUCTURE: (LAST DATE: 30-08-2018)

- 6) Write a program that determines the GrossPay for each of the several employees. The company pays "straight time" for the first 40 hours worked by each employee and pays "time-and-half" for all hours worked in excess of 40 hours. You are given a list of the employees of the company, number of hours each employee worked last week and the hourly rate of all employees. Your program should input the information for each employee and display the employee's gross salary.
- 7) A program that determines the winner of sales contest would input the number of units sold by each salesperson. The salesperson who sells the most units wins the contest. Write a program that inputs employee number and sales unit of 10 employees and determines the winner.
- 8) Write a program to print table of numbers from 1 to 10 in the following format:

1	2	3
2	4	6
3	6	9.
- 9) A palindrome is a number or text phrase that reads the same backwards and forwards.
Write a program that reads an integer and determines whether or not it is a palindrome.
- 10) Write a program to accept a binary number and convert it into its decimal, octal and hexadecimal equivalent.
- 11) Write a program that reads an integer m and a single digit say n and determines how many digits in integer m are n(s).
- 12) Write a program that reads three non-zero integers and determines and prints if they could represent the sides of a triangle.
- 13) A Company wants to transmit data over telephone but they are concerned that their phone may be tapped. All of their data is transmitted as four digit integers. They have asked you to write a program that will encrypt their data so that it may be transmitted more securely. Your program should read a four digits integer and encrypt it as follows
◆ Replace each digit by (the sum of that digit and 7) modulus 10.
◆ Then swap the first digit with third, and second with the fourth. Write a program for it.
◆ Then print the encrypted integer. Write a separate program that inputs an encrypted four-digit integer, and decrypt it to form the original number.
- 14) Write a Program that finds all prime divisors of number.
- 15) Write a program to compute e^x by $1+x+x^2/2!+x^3/3!+.....$
- 16) Write a Program to compute first N numbers of Fibonacci series.

FUNCTIONS: (LAST DATE: 15-09-2018)

- 17) Write a function that returns smallest of three integers.
 - 18) An integer is said to be a perfect number if its factors, including 1 (but not number itself), sum to the number, for example 6 is a perfect number because $6=1+2+3$. Write a function perfect that determines if parameter number is a perfect number. Use this function in a program that factor of each perfect number o confirm that the number is indeed perfect.
 - 19) Write a function that determines if a number is prime or not. Write a program that prints all prime numbers lying between 1 and 10,000.
 - 20) Write a function that takes an integer value and returns the number with its digits reversed.
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- 21) Write a recursive function to find length of a string.
- 22) Write a recursive function to find n^{th} number of the Fibonacci series.
- 23) Write a recursive function to compute n^{C}_r and then generate Pascal series.
- 24) Write a recursive function to compute average of n-array of floats.
- 25) Write a recursive function to compute GCD of two integers.
- 26) Write a recursive function to convert a number from a given base to another base.
- 27) Write a recursive function to show the possible movements of disks of tower of Hanoi from one needle to another needle for n disks.
- 28) Write a function distance that calculates the distance between two points (x, y1) and (x2, y2). All numbers and return values should be of type double.
- 29) Write a recursive function to check whether a given word is palindrome or not.

ARRAYS: (LAST DATE : 30-09-2018)

- 30) Use single scripted variable to solve the following problem. A company pays its salesperson on a commission basis. The salesperson receives Rs. 1000/= per week plus 9% of their gross sales for that week. Write a program that will input each salesperson's gross sales for last week and determines how many of the salesperson's gross sales for last week and also determines how many of salesperson earned salaries in each of the following range (assume that Salesperson's salary is truncated to an integer amount).
Rs 1200-1299, 1300-1399, 1400-1499, 1500-1599,----- 2000 and over.
- 31) Write a program to search an element using linear search.
- 32) Write a program to search an element using binary search.
- 33) Write a program to find frequency of each number in an array.
- 34) Write a program to sort an array using Selection sort.
- 35) Write a program to sort an array using Bubble Sort.
- 36) Write a program to add, subtract and multiply two matrices using one-dimensional array.
- 37) Write a program to find inverse of a matrix.
- 38) Write a program to generate a circular matrix.
- 39) Write a recursive function to find maximum from an array of n-elements.

POINTERS: (LAST DATE : 15-10-2018)

- 40) Write a function to compare two strings.
- 41) Write a function to find length of a string.
- 42) Write a function to find frequency of each character in a string.
- 43) Write a function that counts number of white spaces in a string.
- 44) Write a program that reads date in dd/mm/yyyy format and prints the date in dd Month name, YYYY format.
- 45) Write a program that prints word equivalent of an amount.

STRUCTURES: (LAST DATE : 25-10-2018)

- 46) Write a program to implement all arithmetic operations on rational numbers.
- 47) Write a program to implement all arithmetic operations on Complex numbers.
- 48) Write a program to implement all date functions.

FILES: (LAST DATE : 10-11-2018)

- 49) Write a program to copy content of one file to another file.
- 50) Write a program to rename a file.
- 51) Write a program to count number of keyword in a C program.
- 52) Write a program to generate pay slip of employee. Use suitable assumption.
- 53) Write a program for inventory control. Use suitable assumption.
- 54) Write a program that is equivalent to ls command of LINUX.
- 55) Write a program that is equivalent to FIND command of LINUX.

