

MCKV Institute of Engineering
243, G.T. Road (N), Liluah, Howrah-711204
Lab Assignment
Year-2021

Subject:- Programming for Problem Solving
Code:- ES-CS 191
Stream:- Computer Science and Engineering
Credit:- 2

Tutorial Topic	Assignment No.	Problem Statement
Problem solving using computers	1	Write a program to print your name and your roll number in two lines.
	2	Declare an integer variable a, float b, char c, double d. Input the values, print value, address and the size of a, b, c, d.
Variable types and type conversions	3	Write a C program to swap two integer numbers without using any 3 rd variable.
	4	Write a program to calculate maturity amount using compound interest.
Branching and logical expressions	5	Write a program to check a given year is a leap year or not
	6	Input three numbers and find the maximum and minimum of them using Conditional operator (Ternary operator).
	7	Write a program to show the real roots of a quadratic equation.
	8	Write a program to generate a basic calculator which will perform addition, subtraction, division and multiplication of two integer numbers.

Loops: while and for loops	9	Write a program to calculate $y = \sum_{x=1}^5 x^x$
	10	Write a program to check a number is an Armstrong number or not
	11	Write a program to <u>check that</u> number is prime or not.
	12	Generate the following patterns: <div> <div>i.</div> <div> <pre> * *** ***** </pre> </div> <div>ii.</div> <div> <pre> abcde fgh i </pre> </div> </div>
1D Arrays: searching, sorting	13	Write a program to sort the elements of an integer array in Descending order. (Use Bubble or Insertion or Selection Sort)
	14	Write a program to find a key value from an integer array.

2Darrays and Strings	15	Write a program to multiply a 3X2 integer matrix by its' transpose.
	16	Calculate the frequency of the vowels(a, e, i, o, u) in statement given by the user.
	17	Write a program to show a string whether it is palindrome or not with and without using string library function.
	18	Write a program to show the abbreviation of a person's name.

Functions, call by value	19	Write a program to swap two integer values using Call by value.
	20	Write a program to swap two integer values using Call by address.
	21	Write a program to calculate $Y = \sum_{x=1}^5 \frac{1}{fact(x)}$ <p>Where fact() is user defined function to calculate factorial.</p>
Recursion, structure of recursive calls	22	Write a program to calculate GCD of two integer numbers using recursion.
	23	Write a program to show Fibonacci series by recursion upto n-terms.
	24	Calculate the value of Ackermann(1,2)

Pointers, structures and dynamic memory allocation	25	Write a program to create a structure with the fields as name, roll no and marks (integer).From this create a student database. Display the name of all the students having highest marks. Use dynamic memory allocation for better memory utilization.
File handling	26	Write a program to create a filename "Profile.txt" and write your details in that file and copy the content of that file into another file "myProfile.txt".