

Regulation GRBT-20	Godavari Institute of Engineering & Technology (Autonomous)	I B.Tech I Sem.			
Course Code	PROBLEM SOLVING & PROGRAMMING IN C LAB CSE & ECE				
Teaching	Total contact hours-36	L	T	P	C
Prerequisite(s): Basic knowledge of Mathematics, Logical Ability		0	0	3	1.5

Course Objective(s):

- To provide exposure to problem solving through programming.
- To train the student to the basic concepts of C-programming language.
- The course involves a lab component which is designed to give the student hands-on experience with the concepts.

Course Outcome(s):

After successful completion of this course, a student will be able to-

- CO-1: Obtain the knowledge about different languages used in computer programming and basic terminology used in the computer programming.
- CO-2: Write algorithm, flow chart, and structure of C program and make use of different C tokens inside C program.
- CO-3: Develop program by using Control structure, different looping and Jump statement.
- CO-4: Implement applications of Array, Structure and String inside the program. Also acquire the knowledge of different FILE operations.
- CO-5: Obtain knowledge about accessing the memory in the program and also to develop the program by using different types of function calls.


Programs:

1. Write a C Program to
 - a) Calculate the area of triangle using the formula
 $\text{Area} = (s (s-a) (s-b) (s-c))^{1/2}$, where $s = (a+b+c)/2$
 - b) To find the largest of three numbers using ternary operator.
 - c) To swap two numbers without using a temporary variable.
2. Write a C program that perform the following operations:
 - a) Reading and writing a complex number
 - b) Addition of two complex numbers
3. Write a C program to
 - a) 2's complement of a number is obtained by scanning it from right to left and complementing all the bits after the first appearance of a 1. Thus 2's complement of 11100 is 00100. Write a C program to find the 2's complement of a binary number.
 - b) Find the roots of a quadratic equation.
 - c) Take two integer operands and one operator form the user, Performs the operation and then prints the result. (Consider the operators +, -, *, /, % and use Switch Statement)

11. In
4. Write a C Program to print the following patterns
 - a) Floyd's triangle
 - b) Pyramid
 - c) Pascal Triangle
 5. Write a C program to
 - a) Check whether the given number is Armstrong number or not.
 - b) Check whether the given number is palindrome or not.
 - c) Find the sum of individual digits of a positive integer and find the reverse of the given number.
 - d) A Fibonacci sequence is defined as follows: the first and second terms in the sequence are 0 and 1. Subsequent terms are found by adding the preceding two terms in the sequence. Write a C program to generate the first n terms of the sequence.
 - e) Generate all the prime numbers between 1 and n, where n is a value supplied by the user.
 6. Write a C Program to
 - a) Print the multiplication table of a given number n up to a given value, where n is entered by the user.
 - b) Enter a decimal number, and calculate and display the binary equivalent of that number.
 - c) Enter a binary number, and calculate the decimal equivalent of that number.
 7. Write a C program to
 - a) Interchange the largest and smallest numbers in the array.
 - b) Implement a linear search.
 - c) Implement binary search.
 8. Write a C program to
 - a) Examples which explore the use of structures, union and other user defined variables.
 - b) Declare a structure for calculating the percentage achieved by 3 students, by considering the structure elements as name, pin no, mark1, mark2, mark3.
 9. Write C Programs
 - a) For the following string operations without using the built in functions to
 - i. length of a string
 - ii. reverse a string
 - iii. append a string to another string
 - iv. compare two strings
 - b) Write a C Programs to check whether the given string "MADAM" is palindrome or not without using the built in functions.
 10. Write a C program
 - a) Use functions to perform the following operations:
 - i. To insert a sub-string in to given main string from a given position.
 - ii. To delete n Characters from a given position in a given string.
 - b) To replace a character of string either from beginning or ending or at a specified location


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11. Write a C Programs for the following string operations with and without using the built in functions
 - a) To reverse a string using pointers.
 - b) To concatenate two strings by using pointer.

12. Write a C programs that use both recursive and non-recursive functions for the following
 - a. To find the factorial of a given integer.
 - b. To find the GCD of two given integers.
 - c. To find Fibonacci sequence.


13. Write C programs to
 - a) Find the area of triangle by using call by value and call by reference concepts.
 - b) Pointer based function to exchange value of two integers using passing by address.

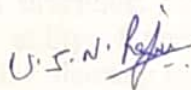
14. Write C programs to
 - a) Read and display the data from a file.
 - b) Copy the data from one file to another file.

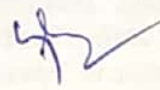
CO-PO Mapping:

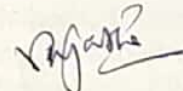
(1: Slight [Low]; 2: Moderate [Medium]; 3: Substantial [High]; '-' : No Correlation)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	-	-	-	-	-	-	-	-	-	-	-
CO2	-	-	2	-	-	-	-	-	-	-	-	-
CO3	-	-	-	-	3	-	-	-	-	-	-	-
CO4	-	-	-	-	3	-	-	-	-	-	-	-
CO5	-	-	-	-	3	-	-	-	-	-	-	-


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