

Program	Bachelor of Technology (B.Tech.) CSE & Bachelor of Computer Science (Honours)	Semester-1			
Type of Course	Engineering Science				
Prerequisite	-				
Course Objective	To understand the basics of programming and demonstrate fundamental program techniques.	nming			

	Teaching Scheme				Exami	ination Schei	me	
Lecture	Tutorial	Lab	Credit	Theory Marks		Practica	Total	
Lecture	Tutoriai	Lau		SEE	CIA	SEE	CIA	Marks
4	0	4	6	40	30	20	10	100

No.		Planning Description
1	Α	 Write an algorithm and Draw Flowchart for following. Calculate addition of two numbers. Calculate average of three numbers. Find area of circle. (pie*r*r) Find area of triangle. ((height*base)/2)
	В	Write an algorithm and Draw Flowchart for following. 1. Calculate simple interest. (principal * Roi * Time period)/100. 2. Calculate distance between two points.
	С	 Write an algorithm and Draw Flowchart for following. Convert temperature from Fahrenheit to Celsius. (Formula: c=(((f-32) *5))/9) Convert temperature from Celsius to Fahrenheit.
2	A	Write an algorithm and Draw Flowchart for following. 1. Convert given feet into inches. (feet*12) 2. Swap two numbers. (Using temporary variable) 3. Check whether the given number is odd or even. 4. Check whether given number is positive or negative.
	В	Write an algorithm and Draw Flowchart for following. 1. Find out smallest number from given three numbers. 2. Find out largest number from given three numbers.
	С	 Write an algorithm and Draw Flowchart for following Swap two numbers without using temporary variable. Accept three numbers from user and print them in ascending and descending order. (use only three conditions for each order)
3	Α	Write an algorithm and Draw Flowchart for following. 1. Display day name for the given number. 2. Calculate an age from current date to user's birth date
	В	 Write an algorithm and Draw Flowchart for following. Check whether the given year is leap year or not. [If a year can be divisible by 4 but not divisible by 100 then it is leap year but if it is divisible by 400 then it is leap year]. Evaluate the expressions using operator precedence. a) 10 + 20 * 30 b) 100 / 10 * 100 c) 5 * 4 / 4 % 3 d) 100 + 200 / 10 - 3 * 10 e) (10 - 4) + (20 / (2 * 5)) * 3 f) (3 + 8) % 35 - 28 / 7
	С	Write an algorithm and Draw Flowchart for following.



	 Input electricity unit charge and calculate the total electricity bill according to the given condition: For first 50 units Rs. 0.50/unit For next 100 units Rs. 0.75/unit For next 100 units Rs. 1.20/unit For unit above 250 Rs. 1.50/unit An additional surcharge of 20% is added to the bill. Calculate the angle between hour hand and minute hand.
4 A	 Write following programs in C. (Basic) Print "Hello World". Print your address i) using single printf ii) using multiple printf. Print addition of 2 numbers. (with & without scanf) Print average of three numbers. (with & without scanf) Print area of circle. (pie*r*r)
В	Write following programs in C. (Basic) 1. Print area of triangle. ((height*base)/2) 2. Print simple interest. (principal*roi*time period)/100) 3. Print temperature from Fahrenheit to Celsius. (Formula: c=(((f-32)*5))/9)
C	Write following programs in C. (Basic) 1. Convert seconds into hours, minutes & seconds and print in HH:MM: SS. [e.g. 10000 seconds = 02:46:40)] 2. Convert number of days into year, week & days. [e.g. 375 days mean 1 year, 1 week and 3 days] 3. Output of the following program. #include <stdio.h> Void main() { printf("includehelp.com\b\b\bOk\n"); } #include <stdio.h> Void main() { unsigned char c=290; printf("%d",c); } #include <stdio.h> Void main() { Int ok=-100; -100; printf("%d",ok); return 0; }</stdio.h></stdio.h></stdio.h>
5 A	Write following programs in C. (Decision Making: if, else) 1. Print given feet into inches. (inches = feet*12) 2. Swap two numbers. (Using temporary variable and without using temporary variable) 3. Check whether given number is positive or negative. 4. Check whether the given number is odd or even.



- 5. Find out largest number from given three numbers.
- 6. Check whether given character is vowel or consonant. (Using single if only)
- B Write following programs in C. (Decision Making: if, else)
 - 1. Shutdown Windows/Linux Shutdown Machine. [#include to be used for system () function]
 - 2. Display the current Date & Time. [#include for time and ctime function and time_t datatype.]
- C | C Write following programs in C.
 - 1. Print "Hello World" without using ';' symbol.
 - 2. Check whether the given number is odd or even without using % operator.
 - 3. Multiply and divide a number by 2 without using multiplication/division operator.
 - 4. Output of the following program

```
#include<stdio.h>
Void main()
  Int X=5;
   If(X==1){
     printf("%d",X);
  else{
     printf("%d",X);
}
2.
#include<stdio.h>
Void main()
  Int X=5:
  If(true){
     printf("hello");
  }
}
#include<stdio.h>
Void main()
{
  Int X=5;
   If(X<1)
     printf("hello");
  if(X==5)
     printf("hi");
else
     printf("hi");
```

- 6 A Write following programs in C. (Decision Making: Nested and Ladder if)
 - 1. Perform Addition, Subtraction, Multiplication and Division of 2 numbers as per user's choice.
 - 2. Enter basic salary of an employee and calculate Gross salary according to given conditions:
 - Basic Salary >= 10000: HRA = 20% of basic, DA = 80% of basic
 - Basic Salary >= 20000: HRA = 25% of basic, DA = 90% of basic
 - Basic Salary >= 30000: HRA = 30% of basic, DA = 95% of basic
 - 3. Check whether the entered character is upper case, lower case, digit or any special character.



l	eger number and check the last digit of number is even or odd.
	of five subjects. Calculate percentage and print class accordingly. Fail below 35, Pass Class to 45, Second Class between 46 to 60, First Class between 61 to 70, Distinction if more than
1. Input electri - For first - For next - For unit - An addit 2. Determine t 3. Three sides	programs in C. (Decision Making: Nested and Ladder if) icity unit charge and calculate the total electricity bill according to the given condition: 50 units Rs. 0.50/unit to 100 units Rs. 0.75/unit to 100 units Rs. 1.20/unit above 250 Rs. 1.50/unit tonal surcharge of 20% is added to the bill. he roots of the equation ax²+bx+c=0. So of a triangle are entered through the keyboard, WAP to check whether the triangle is equilateral, scalene or right-angled triangle.
1. Find the sec 2. In digital we from 0 to 25 Y and K va White=Max(green/255)/	programs in C. (Decision Making: Nested and Ladder if) cond largest number among three user input numbers. orld colors are specified in RGB format, with values of R, G, and B varying on integer scale 55. Colors are mentioned in Cyan-Magenta-Yellow-Black (CMYK) format with values of C, M, arying on a real scale from 0.0 to 1.0. Convert RGB color to CMYK as per formula: - (red/255,green/255,blue/255) - Cyan=(white - red/255)/white - Magenta=(white - Yellow=(white - blue/255)/white - Black=1 - white Note: if RGB values are all 0, then lues are all 0 and the K value is 1.
 Print day na Print numbe Perform Ad switch. Find out large 	programs in C. (Decision Making: SwitchCase, Conditional Operator) ame of week using switch. er of days in a month using switch. Idition, Subtraction, Multiplication and Division of 2 numbers as per user's choice using gest number from given 3 numbers using conditional operator. her number is even number or odd number using conditional operator.
B Write following 1. Read 3 num	programs in C. (Decision Making: SwitchCase, Conditional Operator) bers, multiply largest number from first two numbers to third one using conditional. her character is an alphabet or not using conditional operator.
1. Print day r	programs in C. (Decision Making: SwitchCase, Conditional Operator) name of week using switch. ber of days in a month using switch.
8 A Write following 1. Print 1 to 2. Print odd r 3. Print numl 4. Print sum	programs in C. (While Loop) 10 then modify program Print 1 to n using while and do while loop. numbers between 1 to 10 then modify 1 to n using while and do while loop. bers between two given numbers which is divisible by 2. of 1 to n numbers. mbers from user print count of odd, even numbers
1. Print number 2. Print all inter	programs in C. (While Loop) er and its square root for 0 to 9. eger greater then 100 and less than 200 that are divisible by 7 but not divisible by 5. 0 numbers in series 1, 4, 7, 10
1. Calculate s 2. Print sum o 3. Take two n (without us 4. Take two n	programs in C. (While Loop) um and average of the square of frst 10 integers whose square has last digit 3. of series 1 + 4 + 9 + 16 + 25 + 36 +n. umbers input from user and perform a division operation and find out quotient and reminder ing / and % operator) also note that a smaller number should divide a bigger number. umbers input from user and perform a multiplication without using a * operator.
9 A Write following	programs in C. (While Loop)



```
1. Print sum of series 1 - 2 + 3 - 4 + 5 - 6 + 7 \dots n.
          2. Print multiplication table of a given number.
          3. Calculate x^y without using power function.
          4. Find factorial of the given number.
          5. Find factors of the given number.
          Write following programs in C. (While Loop)
          1. Print all uppercase and lowercase alphabets.
          2. Get a decimal number from user and convert it into roman digits. (Symbol: I:1, IV:4, V:5, IX:9,
              X:10, XL:40, L:50, XC:90, C:100, CD:400, D:500, CM:900, M:1000)
          C Write following programs in C. (While Loop)
      C
          1. Convert given number in words. (i.e. n=3456 ◊ output: Three Four Five Six)
          2. Convert decimal number to binary. (i.e. n=11 ◊ output: 1101
          3. Output of the following program
              void main()
                int a=25;
                while(a <= 27)
                   printf("%d ", a);
                   a++;
              #include <stdio.h>
              void main()
                while(0)
                 printf("Hello");
10
          Write following programs in C. (While Loop)
          1. Find out sum of first and last digit of a given number.
          2. Find the sum and average of different numbers which are accepted by user as many as user wants.
          3. Find whether the given number is prime or not.
          4. Print digits of given number.
          5. Print given number in reverse order.
          Write following programs in C. (While Loop)
          1. Check whether the given number is perfect or not.
          2. Find whether the given number is prime or not using flag.
          3. Check whether the given number is palindrome or not.
          C Write following programs in C. (While Loop)
          1. Check whether the given number is Armstrong or not.
          2. Find HCF and LCM of two numbers.
          3. Output of the following program.
              #include<stio.h>
              int main()
              int i = 0, j = 0;
              while (i<5,j<10)
                |++;
```



```
J++;
               printf("%d %d", i, j);
           Write following programs in C. (For Loop)
11
           1. Print 1 to 10 then modify program print 1 to n.
           2. Print sum of 1 to n numbers.
           3. Print multiplication table of a given number.
           4. Calculate x^y without using power function.
           5. Find factorial of the given number.
           Write following programs in C. (For Loop)
           1. Print the Fibonacci Series.
           2. Count frequency of digits in an integer.
           3. Print all ASCII character with their values.
           Write following programs in C. (For Loop)
           1. Swap first and last digits of a number.
           2. Calculate without using power function and without using multiplication.
12
           Write following programs in C. (Nested For Loop)
           1. Print following patterns
             (a)
                                   (b)
                                                           (c)
                                                                                 (d)
                                                          5
                                   1
                                                                                 1
             **
                                   12
                                                          54
                                                                                 22
             ***
                                   123
                                                           543
                                                                                 333
             ***
                                   1234
                                                          5432
                                                                                 4444
                                   12345
                                                          54321
                                                                                 55555
           Write following programs in C. (Nested For Loop)
           1. Find the sum of 1 + (1+2) + (1+2+3) + (1+2+3+4) + ... + (1+2+3+4+.... + n).
           2. Estimate the value of the mathematical constant e. (Formula: e = 1 + \frac{1}{1!} + \frac{1}{2!} + \frac{1}{3!} + \frac{1}{4!} \dots)
           Write following programs in C. (Nested For Loop)
           1. Print Pascal triangle.
           2. Output of the following program.
               #include <stdio.h>
               Void main
                  Int i=0, j=0:
                  For(i=0;i<5;i++)
                    For(j=0;j<1)
                      Break;
                  Printf("Darshan University\n");
13
           Write following programs in C. (Nested For Loop)
           1. Print following patterns
```



		(a)	(b)	(c)		(d)				
		****	12345	(5)	*	(-)	1			
		****	1234		* *		1 2			
		***	123		* * *	1	23			
		**	12		***	1	234			
		*	1	;	****	1 2	3 4 5			
	В	Write following p	-	C. (Nested For	Loop)					
		 Print followin 	g patterns							
		(a)	(b)	(c)	(d)	(e)				
		1	1	* * * * *	1	*	* *	* *		
		23	01	***	A B	*		*		
		456	010	* * * * *	123	*		*		
		7 8 9 10 11 12 13 14 15	1010 10101	*	C D E F 1 2 3 4 5	*	* *	* *		
					12343					
14	Α	Write following p								
		1. Read n numb						mboro		
		 Count numbe Count numbe 						mbers.		
		4. Find Max, Mir					Ders.			
		5. Read five per					nerso	n havinc	ı heinht areate	r than 170 and
		weight less th	•	ina mongini ama			p0.00		, noight groute	in that if you are
	В	Write following p	rograms in (C. (Array)						
		1. Count numbe			of an array.					
		2. Calculate the				of n ele	ements	s in an a	rray.	
		3. Sort elements	s of an array	in an ascendir	ng order.					
	С	Write following p	orograms in (C. (Array)						
			•	nents in an arı	•					
										nbers are 3,6,9)
			•			-			•	place such that
							of the	elemen	its should be I	kept the same.
		Then return the number of unique elements in nums. Consider the number of unique elements of nums to be k, to get accepted, you need to do the following								
		things:								
		-	arrav niime e	uch that the fr	st k elements	of num	s con	tain the	unique elemer	nts in the order
		_	•	•					•	as well as the
		size of nums		io ilittiany. Titi	c remaining c		01 110	iiio uic	not important	do wen do the
		Return k.								
15	Α	Write following p	rograms in (C. (Array)						
		1. Copy all elem			er.					
		2. Count total n	umber of neg	jative element	s in array.					
		Count number		s divisible by 3	3 in array.					
		Search eleme								
		5. Input a string			nt string and l	ength of	string].		
	В	Write following p	-	· • ·						
		1. Delete all dup			•					
		2. Reverse elem		•	•	•				
		3. Swap first ele			second idst d	11u 50 0l	1.			
	С	C Write following			oncional arra	,				
		 Find two larg Insert new va 		s in a one dime	ensional array	1.				
		L. IIISEITIIEW Võ	aiue iii tile St	nicu anay.						



		3. Given an integer array nums and an integer val, remove all occurrences of val in nums inplace. The order of the elements may be changed. Then return the number of elements in nums which are not equal to val.
		Consider the number of elements in nums which are not equal to val be k, to get accepted, you need to do the following things:
		Change the array nums such that the first k elements of nums contain the elements which are not equal to val. The remaining elements of nums are not important as well as the size of nums. Return k.
16	A	 Write following programs in C. (2D Array) Read values in two-dimensional array and print them in matrix form. Count number of positive, negative and zero elements from 3 X 3 matrix. Read and store the roll no and marks of 20 students using 2D array. Perform Addition of two matrices.
	В	Write following programs in C. (2D Array) 1. Print Transpose of a matrix. 2. Perform Multiplication of two matrices. 3. Read a matrix and print diagonal elements and its sum.
	С	C Write following programs in C. (2D Array) 1. Check a given matrix is a sparse matrix or not. 2. Print the upper triangular matrix.
17	Α	 Write following programs in C. (Pointer) Print value and address of a variable. Demonstrate int, float, double and char pointer. Calculate sum of two numbers using pointer. Swap value of two numbers using pointer. Store n elements in an array and print the elements using pointer.
	В	Write following programs in C. (Pointer) 1. Copy one array to another using pointers. 2. Swap two arrays using pointers. 3. Add two matrix using pointers.
	С	Write following programs in C. (Pointer) 1. Find length of string using pointers. 2. Sort array using pointers.
18	A	 Write following programs in C. (User Defined Function) Add two numbers using function. Find maximum and minimum between two numbers using function. Count simple interest using function. Return the maximum of three floating-point numbers. Swap two numbers using call by value and call by reference.
	В	Write following programs in C. (User Defined Function) 1. Generate Fibonacci series of N given number using function name fibbo(). 2. Check whether a number is prime, Armstrong or perfect number using functions. (create custom library) 3. Find all prime numbers between given interval using functions.
	С	 Write following programs in C. (User Defined Function) Create a menu driven program to implement own string.h library. (without using built-in string functions) Create a function that converts amount into words. (i.e. 9241: Nine Thousand Two Hundred Forty-One)
19	A	 Write following programs in C. (User Defined Functions and Built-In String Functions) 1. Find factorial of a number using function and recursive function. 2. Pass an array in function to print array elements. 3. Use string handling functions strlen(), strcmp(), strcpy(), strcat(), strrev(), strlwr() and strupr() 4. Find a character from given string.



		E. Danlage a character in given atring
		5. Replace a character in given string.
	В	Write following programs in C. (User Defined Functions)
		Find power of any number using recursion.
		2. Scan a character string passed as an argument and convert all lowercase string to uppercase string.
		3. Swap elements of two integer arrays using user define function.
	С	Write following programs in C. (User Defined Functions)
		Find reverse of any number using recursion.
		2. C Program fnd nCr (Combination) and nPr (Permutation).
		(Formula: nCr = n!/(r!*(n-r)!), nPr = n!/(n-r)!)
20	Α	A Write following programs in C. (String)
		Find weather given string is palindrome or not.
		Using a String pointer remove a space and special character from string.
	В	Write following programs in C. (String)
		1. Copy a one string's value in another string using a string pointer.
		2. Manual implementation of strlen(), strcpy() and strcmp() function.
	С	Write following programs in C.(String)
		Manual implementation of strncmp(), strncpy(), strncat() function.
21	Α	Write following programs in C. (Structure and Union)
		Create, declare and initialize structure employee.
		2. Create a structure book with book title, author, publication, and price. Read data of 3 books and display.
		3. Demonstrate difference between structure and union.
		4. Create structure student with name, percentage and age. Read data of 5 students using array of structure
	В	Write following programs in C. (Structure and Union)
		Demonstrate structure pointer.
		2. Demonstrate nested structure.
	С	Write following programs in C. (Structure and Union)
		Add two distances in feet and inches using structure.
		2. Add two times hh, mm and ss using structure.
22	Α	Write following programs in C. (File Handling)
		1. Create, open and close a file.
		2. Count chars, spaces, tabs and new lines in a file.
		3. Demonstrate functions fprintf(), fscanf(), fputc(), fgetc(), fseek() and rewind().
		4. Append one file at the end of other. 5. Copy one file to another file.
		5. Copy one file to another file.
	В	Write following programs in C. (File Handling)
		Print contents of file in reverse order.
		2. Capitalize first letter of each word in file.
		3. Merge alternate lines from two file.
	С	Write following programs in C. (File Handling)
		Capitalize the first letter of every word in a file.
		2. Delete all blank lines in a file then insert a blank line after the third line in a file.
23	Α	Write following programs in C. (Structure and File Handling)
		1. Read a data into Student structure (roll number, name and backlogs) and store the data in to student.txt
		file. Now open a file in read mode and find out a students' roll number who has more than 5 backlogs.
	В	Write following programs in C. (Structure and File Handling)
		1. Now modify the backlogs of any 1 student to 3 and store the data into file again and verify the data
		stored into file by printing onto console.
	С	C Write following programs in C. (Function, Structure and File Handling)
		1. Perform 23-A and 23-B using a function (Do not use a global structure variable)
24	Α	Write following programs in C. (Dynamic Memory Allocation)



		 Allocate and de-allocate memory for int, char and float variable at run time. Calculate the sum of n numbers entered by the user using malloc(). Calculate the sum of n numbers entered by the user using calloc(). Allocate dynamic memory for structure variable.
	С	Write following programs in C. Given an integer array nums of length n, you want to create an array ans of length 2n where ans[i] == nums[i] and ans[i + n] == nums[i] for 0 <= i < n (0-indexed). specifically, ans is the concatenation of two nums arrays. <p>Return the array ans. Input: nums = [1,2,1] Output: [1,2,1,1,2,1] Explanation: The array ans is formed as follows: - ans = [nums[0],nums[1],nums[2],nums[0],nums[1],nums[2]] - ans = [1,2,1,1,2,1]</p>
25	С	Write following programs in C. You are given a string s, which contains stars *. In one operation, you can: Choose a star in s. Remove the closest non-star character to its left, as well as remove the star itself. Return the string after all stars have been removed. Note: The input will be generated such that the operation is always possible. It can be shown that the resulting string will always be unique
26	С	Write following programs in C. We have two special characters: The first character can be represented by one bit 0. The second character can be represented by two bits (10 or 11). Given a binary array bit that ends with 0, return true if the last character must be a one-bit character. Example 1: Input: bits = [1,0,0] Output: true Explanation: The only way to decode it is two-bit character and one-bit character. So the last character is one-bit character.
27, 28	С	Tic-Tac-Toe is a classic and highly engaging 2-player game that has been enjoyed by people of all ages for generations. In this simple yet strategic game, players take turns marking spaces on a 3x3 grid with either an "X" or an "O." The Functionality of the Tic-Tac-Toe game using C language are mentioned below: The game is played between the computer and the user. The computer starts the game and marks its move with 'O'. The user enters their move by selecting a number between 1 and 9. The game continues until either the computer or user wins or the game ends in a draw. After the game, the result is displayed, showing whether the computer or user wins, or if it's a draw.
29, 30	C	The telecom industry is one of the busiest and most rapidly growing sectors globally, with major companies handling large amounts of data every day. Data managed by these companies are quite large so, we can manage these data using certain applications and huge databases. With C language we can create an application using basic knowledge of C like struct, array, string, etc. The Functionality of the Telecom billing system are mentioned below: Add new records View list of records





	Modify records
	View payment
	Search Records
	Delete records