103 Introduction to Programming Language

Unit-I **[20%]**

Introduction to programming :
What is programming?, Problem solving methods with examples-Algorithm and Flowchart, Types of Programming languages, Characteristics of higher level language, Some Programming languages

Overview of C:
Introduction, Importance of C, Sample C programs, Basic structure of C programs, Programming style, Executing a C program.

Constants, Variables and data Types :
Introduction, Character Set, C tokens, Keywords and Identifiers, Constants, Variables, Data types, Declaration of Variables, Defining symbolic constants.

Unit-II **[15%]**

Operators and Expression :
Introduction, Arithmetic of Operators, Relational Operators, Logical Operators, Assignment Operators, Increment and Decrement Operators, Conditional Operators, Bit-wise Operators, Special Operators, Arithmetic Expressions, Evaluation of expressions, Precedence of arithmetic operators, Type conversions in expressions, Mathematical function.

Managing Input and Output Operators :
Introduction, reading a character, writing a character, Formatted input, Formatted output.

Unit-III **[10%]**

Decision Making branching :
Introduction, Decision making with IF statement, Simple IF statement, the IF ELSE statement, Nesting of IF … ELSE statements, The ELSE IF ladder, The switch statement, the turnery (? :) Operator, the GOTO statement.

Decision Making Looping :
Introduction, the WHILE statement, the DO statement, The FOR statement, Jumps in loops Break and continue.

Unit-IV **[10%]**

Array :
Introduction, One-dimensional arrays, Two-dimensional arrays, Initialization of two-dimensional arrays, Concept of
Multimensional arrays.
Handling of Character strings :
Introduction, Declaring and initializing string variables, Reading string from terminal, Writing string to screen, Arithmetic operations on characters, Putting string together, String Operations : String Copy, String Compare, String Concatenation And String Length, String Handling functions, Table of strings.

Unit-V **[25%]**

User-Defined Functions :
Introduction, Need for user-defined functions, The form of C function, Return values and their types, Calling a function, category of functions, No arguments and no return values, Arguments with return values, Handling of non-integer functions, Nesting of functions, Recursion, Functions with arrays, The scope and Lifetime of variables in functions, Ansi C functions.

Structures and Unions :

Introduction, Structure definition, Giving values to members, Structure initialization, Comparison of structures, Arrays of structures, Arrays within structures, Structures within Structures, Structures and functions, Unions, Size of structures, Bit fields.

Unit-VI **[20%]**

Pointers :

Introduction, Understanding pointers, Accessing the address of variable, Declaring and initializing pointers, Accessing a variable through its pointer, Pointer expressions, Pointer increments and scale factor, Pointers and arrays, Pointers and character strings, Pointers and Functions, Pointers and structures.

File Management in C :

Introduction, Defining files and its Operations, Error handling during I/O operations, Random access files, Command line arguments.

The Preprocessors :

Introduction, Macro Substitution, File inclusion, Compiler control directives

Text Book:

1. Programming in ANSI C, Balaguruswamy, Tata McGraw-Hill

Reference Books:

1. The Complete Reference, Herbert schildt Fourth Edition
2. Programming in C Ansi standard, M.T.Savaliya, Atul Prakashan
3. Let Us C , Yashwant Kanetkar, BPB Publications
4. Programming with C, Gottfried, McGraw-Hill International.

(Practical)

1. Write a c program to print rollno, name and address.
2. Write a C program to find the area and volume of sphere. Formulas are Area = 4*PI*R*R Volume = 4/3*PI*R*R*R.
3. Write a c program to evaluate simple interest I = PRN / 100.
4. Write a c program to enter a distance in to K.M and convert it in to meter, feet, inches and centimeter.
5. Write a c program to interchange two nos.
6. Write a C program to convert centigrade into Fahrenheit.
   Formula : C=(F-32)/1.8.
7. Write a c program to print a no in to hexadecimal and octal no.
8. Write a C program to find that the accepted no is Negative, or Positive or Zero.
9. Write a c program for summation, subtraction, multiplication, division of two no using arithmetic operator.
10. Write a c program to display days into months, weeks and reminder days.
11. Write a c program to find out the largest value from given three no using conditional operator.
12. Checked whether entered char is capital, small, digit or any special character.
13. Write a c program to prepare pay slip using following data.
    Da = 10% of basic, Hra = 7.50% of basic, Ma = 300, Pf = 12.50% of basic, Gross = basic + Da + Hra + Ma, Nt = Gross – Pf.
14. Write a c program to read marks and your program will display grade.

Marks	Grade
100 – 80	Dist
60 – 79	First
50 – 59	Second
35 – 49	Pass
0 – 34	Fail

15. Write a c program to read no 1 to 7 and print relatively day Sunday to Saturday.
16. Write a c program to find out the max. and min. no from given 10 no.
17. Write a c program to find out the largest no of given 3 no using if…else
18. Write a c program to checked enter no is palindrome or not, Armstrong or not.
19. Find out the sum of given four digit no.
20. Write a C program to find the sum of digits of accepted no.
21. Write a C program to find the sum of first 100 natural nos.

22. Write a C program to find the sum of first 100 odd nos. and Evan nos.
23. Write a C program to find sum of that nos. which are dividable by 3 between 100 and 300.
24. Write a C program to display first 25 Fibonacci nos.
25. Write a C program to display first 5 Armstrong nos.
26. Write a C program to find factorial of accepted nos.
27. Write a C program to find the sum and average of different nos which are accepted by user as many as user wants.
28. Write a C program to print the accepted no and its reverse no.
29. Write a C program to find x1+ x2+ x3+ x4+.....+xn.
30. Write a C program to find 1+1/2+1/3+1/4+....+1/n.
31. Write a C program to find 1+1/2!+1/3!+1/4!+.....+1/n!.
32. Write a c program to generate following output.

1.
```
*
* *
* * *
* * * *
* * * * *
```

2.
```
* * * * *
* * * *
* * *
* *
*
```

3
```
*
* *
* * *
* * * *
* * * * *
```

4.
```
A
A B
A B C
A B C D
A B C D E
```

5.
```
A
B C
D E F
G H I J
K L M N O
```

6.
```
1
121
12321
1234321
123454321
```

7.
```
*
* *
*  *
*   *
* * * * *
```

8.
```
1
2 3
4 5 6
7 8 9 10
```

9.
```
1
0 1
1 0 1
0 1 0 1
1 0 1 0 1
```

10
```
********************
***----------**
***----------*
***
***
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***----------***
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****----------***
***----------***
**----------***
```

11.
```
**********
*  *
*  *
*  *
*  *
*  *
*  *
*  *
**********
```

33. Write a c program to print first 5 prime nos.
34. Write a c program to input N no and find out the sum, average, max, min, total even no and total odd no. [with out use of array]
35. Write a c program to accept 10 numbers and print the number, which is odd or even.
36. Write a C program to arrange accepted nos. in ascending order. and also in descending order.
37. Write a c program to display the two matrix on screen and perform the addition of two matrix and print on screen.
38. Count Howmany Characters, Words, lines, spaces, tabs into given text.

39. Find the median from given nos.
40. Write a c program to check the no. is Palindrome or not using function.
41. Write a function Exchange to interchange the values of two variables, say x and y. illustrate the use of this function in a calling function.
42. Write a c program to use recursive calls to evaluate F(x) = x – x3 / 3! + x5 / 5 ! – x7 / 7! + ……..
43. Write a function prime that returns 1 if its argument is a prime number and return zero otherwise.
44. Write a function that will scan a character string passed as an argument and convert all lowercase character into their uppercase equivalents.
45. Write a c program using global variable, static variable.
46. Find the NPR, NCR with using user define function. NPR = N!/(N-R)!. NCR = N!/(R!*(N-)!).
47. Define a structure type struct personal that would contain person name, date of joining and salary using this structure to read this information of 5 people and print the same on screen.
48. Design a structure student_record to contain name, branch and total marks obtained. Develop a program to read data for 10 students in a class and print them.
49. Create two structure named Metric and British, which store the values of distances. The metric structure stores the values in meters and centimeters and British structure store the values in feet and inches. Write a c program that read values for the structure variables and adds values contained in one variable of metric to the contents of another variable of British. The program should display the result in the format of feet and inches or meters and centimeters as required.
50. Write a c program to print the value and address of the element.
51. Write a c program to accept 10 numbers and sort them with use of pointer.
52. Write a c program to swap the two values using pointers.
53. Write a c program with structure and pointer.
54. Create one text file store some information into it and print the same information on terminal.
55. A file named data contains series of integer no. Write a c program to read that no. and then write all odd no into file named odd no. and write all even no into file named even no. Display all the contents of these file on screen.
56. Write a c program to read data from keyboard, write it to a file called input and Display data of input file on the screen.
57. Write a c program to read markdata which contains rollno, name, sub1, sub2, sub3 file and generate the annual examination results are tabulated as follows:

Rollno Name Sub1 Sub2 Sub3 Total per% Class

……

58. Write a c program to input employee no, employee name and basic and to store output into empdata file in following format.

A/c Department of M.Sc.(CA & IT)

Emp-No Name Basic DA HRA MA PF GROSS NET-PAY

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1 xyz 5000 2500 500 100 500 8100 7600

2

3

DA = 50% of Basic HRA =10% of Basic

MA = 100 PF = 10% of Basic

GROSS = BASIC + DA + HRA + MA NET-PAY = GROSS – PF

59. Write a c program to read empin data file which contains empno, empname and basic. To create empout data file as per practical no 58 format.
60. write a program to work as a dos type command using command line argument.