2.7   PROGRAMMING IN 'C'

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RATIONALE

Developing a software for real world problems essentially requires a thorough knowledge and understanding of problem solving process. C language is a vehicle in the present industrial context which provides opportunity to use logical thinking abilities for acquisition of programming skills. This will be reinforced by the practical exercises. Hence this subject.

DETAILED CONTENTS

1.   Algorithm and Programming   (6 Hrs)
      Problem solving techniques – algorithms and flowcharts, basics of programming language, steps in development of a program, program compilation and debugging

2.   Program Structure   (6 Hrs)
      Input/output statements, assignment statements, constants, variables and data types, operators and expressions, use of header files and library functions

3.   Control Structures   (8 Hrs)
      Introduction, decision making with if – statement, if – else and Nested if, while and do-while, until, for loop, switch and break statements

4.   Functions   (6 Hrs)
      Introduction to functions, global and local variables, function definition, declaration and function call, parameters and parameter passing techniques – call by value/ reference

5.   Arrays   (5 Hrs)
      Introduction to arrays, array declaration and initialization, single and multidimensional array, arrays of characters

6.   Pointers   (5 Hrs)
      Introduction to pointers, address operator and pointers, declaring and initializing pointers, assignment through pointers, pointers and functions, pointers and arrays

7.   Structures and Unions   (4 Hrs)
      Declaration of structures, accessing structure members, structure initialization, arrays of structure, unions, differences between structure and union

8.   Strings   (4 Hrs)
      Introduction, declaring and initializing string variables, reading and writing strings, string handling functions, array of strings

9.   Files   (4 Hrs)
     Introduction, file reading/writing in different modes, file manipulation using standard
     function types.

INSTRUCTIONAL STRATEGY

Students should be given clear idea about the basic concepts of programming. In practical session
student should be asked to write algorithm and then write program for the algorithm and run on
computer. It is required that students should maintain records (files with printouts).

LIST OF PRACTICALS

1.   Programming exercises on executing and editing a C program.
2.   Programming exercises on defining variables and assigning values to variables.
3.   Programming exercises on arithmetic and relational operators.
4.   Programming exercises on arithmetic expressions and their evaluation
5.   Programming exercises on formatting input/output using printf and scanf.
6.   Programming exercises using if statement.
7.   Programming exercises using if – Else.
8.   Programming exercises on switch statement.
9.   Programming exercises on do – while statements.
10. Programming exercises on for – statement.
11. Programming exercises on function – Call by value/reference
12. Programs on one-dimensional array.
13. Programs on two-dimensional array.
14. Simple programs on string handling functions.
15. Simple programs using pointers.
16. Simple programs using structures.
17. Simple programs for reading from a file and writing into a file

RECOMMENDED BOOKS

1.   Programming in C by Schaum Series, McGraw Hills Publishers, New Delhi.

2.   Let Us C by Yashwant Kanetkar; BPB Publication, New Delhi.

3.   Exploring C by Yashwant Kanetkar; BPB Publications, New Delhi.

4.   Application Programming in C by RS Salaria, Khanna Book Publishing Co. (P) Ltd., New

     Delhi.

5.   Programming in C by R Subburaj, Vikas Publishing House Pvt. Ltd., Jangpura, New Delhi.

6.   Programming with C Language by C Balaguruswami, Tata McGraw Hill, New Delhi.

7.   Programming in C by BP Mahapatra, Khanna Publishers, New Delhi

SUGGESTED DISTRIBUTION OF MARKS

Topic No.	Time Allotted (Hrs)	Marks Allotted (%)
1	6	12
2	6	14
3	8	16
4	6	12
5	5	10
6	5	10
7	4	8
8	4	10
9	4	8
Total	**48**	**100**