3.4 PROGRAMING IN C

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RATIONALE

Computers play a vital role in present day professional life of technician's. People working in the field of computer industry, use computers in solving problems more easily and effectively. In order to enable the students use the computers effectively in problem solving, this course offers the modern programming language C along with exposition to various applications of computers.

COURSE OUTCOMES

After undergoing the subject, the students will be able to:

CO1: Identify various control structures, variables and implement them.
CO2: Practice pointer in an array and structure.
CO3: Use structures and union for handling data.
CO4: Explain and execute member functions in C language.
CO5: Describe and implement array in C language.
CO6: Perform the execution of pointers in C language.

DETAILED CONTENTS

UNIT I

Basics of C Programming

1.1 Steps in development of a program, Flow charts, Algorithm development
1.2 Programme Debugging, I/O statements, Constants, variables and data types
1.3 Operators & Expressions, Unformatted and Formatted IOS, Data Type Casting
1.4 Decision making with IF – statement, IF – Else and Nested IF
1.5 While and do-while, for loop, Break. Continue, goto and switch statements

UNIT II

Pointers and Functions

2.1 Introduction to pointers, Address operator and pointers
2.2 Declaring and initializing pointers, Single pointer,
2.3 Introduction to functions, Function Declaration, calling, definition
2.4 Parameter Passing, Call - by value/reference, Global and Local Variables

UNIT III

Arrays and Strings

3.1 Introduction to Arrays
3.2 Array Declaration, Length of array
3.3 Single and muti dimensional array
3.4 Arrays of characters
3.5 Introduction of Strings
3.6 String declaration and definition
3.7 String related function i.e. strlen, strcpy, strcmp
3.8 Passing an array to function
3.9 Pointers to an array and strings.

UNIT IV

Structures and Unions

4.1 Declaration of structures
4.2 Accessing structure members
4.3 Structure Initialization
4.4 Pointer to a structures,
4.5 Unions

UNIT V

File Handling

5.1 Opening and Closing of File
5.2 Modes of Accessing Files
5.3 Reading and Writing in the File

PRACTICAL EXERCISES

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 print f and scan f and their return type values.
6. Programming exercises using if statement.
7. Programming exercises using if – Else.
8. Programming exercises on switch statement.

9. Programming exercises on do – while, statement.
10. Programming exercises on for – statement.
11. Simple programs using pointers.
12. Programs on one-dimensional array.
13. Programs on two-dimensional array.
14. Programs for putting two strings together. (ii) Programs for comparing two strings.
15. Simple programs using functions
16. Simple programs using structures.
17. Simple programs using union.
18. Program on Reading and Writing data to a file.

RECOMMENDED BOOKS

1. Yashwant Kanetkar, "Let us C".
2. E Balaguruswami, "Programming in ANSI C", Tata McGraw Hill Education Pvt. Ltd., New Delhi.
3. RS Salaria, "Problem Solving and Programming in C", Khanna Book Publishing Co (P) Ltd. New Delhi.
4. Reema Thareja, "Programming in C", Oxford University Press, New Delhi.
5. Gottfried, "Programming in C", Schaum Series, Tata McGraw Hill Education Pvt. Ltd., New Delhi.
6. Yashwant Kanetkar, "Exploring C", BPB Publications, New Delhi.
7. R Subburaj, "Programming in C", Vikas Publishing House Pvt. Ltd., Jangpura, New Delhi.
8. M.H. Lewin, "Elements of C", Khanna Publishers, New Delhi.
9. Stephen G Kochan, "Programming in C".
10. BP Mahapatra, "Programming in C", Khanna Publishers, New Delhi.
11. Ajay Mittal, "Programmming in C: A Practical Approach", Pearson Publication.
12. e-books/e-tools/relevant software to be used as recommended by AICTE/HSBTE/NITTTR.

SUGGESTED WEBSITES

1. http://swayam.gov.in

INSTRUCTIONAL STRATEGY

This is a programming skill based subject and topics taught in the class should be practiced in the lab regularly for development of required skills in the students. This subject contains five units of equal weight age with hands on practice for programming skill development.