

I Year I Semester

Code: 20ES1007

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C PROGRAMMING

Course Objectives

The objectives of C Programming are

1. To learn about the computer systems, computing environments, developing of a computer program and Structure of a C Program
2. To gain knowledge of the operators, selection, control statements and repetition in C
3. To learn about the design concepts of arrays, strings, enumerated structure and union types. To learn about their usage.
4. To assimilate about pointers, dynamic memory allocation and know the significance of Pre-processor.
5. To assimilate about File I/O and significance of functions.

Course Outcomes:

Upon the completion of the course the student will learn

1. To write algorithms and to draw flow charts for solving problems, so as to convert flowcharts / algorithms to C Programs, compile and debug programs
2. To use different operators, data types and write programs that use two-way/multi-way selection
3. To decompose a problem into functions and to develop modular reusable code
4. To design and implement programs to analyze the different pointer applications
5. To apply File I/O operations

UNIT-I

Basics of C: Algorithm and Flowchart, Introduction to Computers: Creating and running Programs, Computer Numbering System, Storing Integers, Storing Real Numbers, Introduction to the C Language: Background, C Programs, Identifiers, Variable, Types, Constants, Input/output, Programming Examples, Structure of a C, Type Conversion Statements, Simple Programs.

UNIT-II

Operators and Control Statements: Operators, Operator Precedence and Associativity, Evaluating Expressions, Selection & Making Decisions: Two Way Selection, Multi way Selection, Repetition: Concept of Loop, Pre-test and Post-test Loops, Initialization and Updating, Event and Counter Controlled Loops, Loops in C, Other Statements Related to Looping, Looping Applications-Summation, Powers, Smallest and Largest, Programming Examples.

UNIT-III

Arrays & Strings:

Arrays: Concepts Using Array in C, Array Application, Two Dimensional Arrays, Multi-dimensional Arrays, Programming Example– Calculate Averages

Strings: String Concepts, C String, String Input / Output Functions, Arrays of Strings, String Manipulation Functions

UNIT-IV

Functions: Designing, Structured Programs, Function in C, User Defined Functions, Inter Function Communication, Standard Functions, Passing Array to Functions, Recursion Scope, Storage Classes and Type Qualifiers.

Pointers: Introduction, Pointers to pointers, Compatibility, Pointer Applications: Arrays and Pointers, Pointer Arithmetic and Arrays, Memory Allocation Function, Array of Pointers, Programming Application, Command Line Arguments.

UNIT-V

Structures, Unions, Types & Files: Derived Types: Structures-Declaration, Definition and Initialization of Structures, Accessing Structures, Nested Structures, Array of Structures, Structures and functions, Pointers to Structures, Self-referential structures, Unions, typedef, bit-fields, Enumerated Types, File Handling: Defining and Opening a file, Closing Files, Input / output Operations on Files.

Text Books:

1. Programming for Problem Solving, Behrouz A. Forouzan, Richard F. Gilberg, CENGAGE.
2. The C Programming Language, Brian W. Kernighan, Dennis M. Ritchie, 2e, Pearson.

Reference Books:

1. C in Depth, Srivastava Deepali, BPB Publications.
2. Computer Fundamentals and Programming, Sumithabha Das, Mc Graw Hill.
3. Programming in C, Ashok N. Kamthane, Amit Kamthane, Pearson.
4. Computer Fundamentals and Programming in C, Pradip Dey, Manas Ghosh, OXFORD.