

Paper: 204 / Subject: Advanced ‘C’ Programming

Credits 4

Total Hrs/Week: 4

Aim: To introduce to the students the advanced topics of ‘C’ language.

Prerequisite: Fundamental knowledge of computer programming using ‘C’ language.

1. Pre-processor Directives

- 1.1. Macro Definitions (#define, #undef)
- 1.2. File Inclusion (#include)
- 1.3. Conditional Compilation (#ifdef, #ifndef, #if, #endif, #else, #elif)

2. Arrays

- 2.1. Multi-Dimensional Character Array
- 2.2. Passing Array to user defined functions (Discuss this topic after discussing the topic on User Defined Functions)

3. Structure & Union

- 3.1. Defining Structure
- 3.2. Processing Structure
- 3.3. Array of Structures.
- 3.4. Structure & Pointer
- 3.5. Passing Structure to functions
- 3.6. Self Referential Structures
- 3.7. Defining Union
- 3.8. Comparison between Structure & Union

4. User Defined Functions

- 4.1. Definition & Accessing of a function
- 4.2. Function prototype
- 4.3. Recursive functions
- 4.4. Call by Value
- 4.5. Call by Reference (Discuss this topic after discussing the topic on Pointers)

5. Pointers

- 5.1. Pointer Variable Declaration & Memory Storage
- 5.2. Address and value operators
- 5.3. Pointer Arithmetic
- 5.4. Passing pointers to functions
- 5.5. Pointer to Array
 - 5.5.1. Pointer to One-Dimensional Array
 - 5.5.2. Pointer to Multi-Dimensional Array
- 5.6. Array of Pointers

6. File Handling in C

- 6.1. Types of Files in C
 - 6.2. Defining, Opening & Closing a File
 - 6.3. Read, Write & Append operations in a File
 - 6.4. Reading & Writing Records (Structures) to a File
 - 6.5. Random Access of Files
 - 6.5.1. File positions: *ftell()* and *fseek()*
 - 6.5.2. *rewind()*
 - 6.5.3. *fflush()*
- 7. Other Features of C**
- 7.1. Command Line Arguments
 - 7.2. Storage Classes & their use
 - 7.2.1. Automatic Storage Class
 - 7.2.2. Register Storage Class
 - 7.2.3. Static Storage Class
 - 7.2.4. Extern Storage Class
 - 7.3. Enumerated Data Type (*enum*)
 - 7.4. Type Definitions (*typedef*)
 - 7.5. Bitwise Operators
 - 7.5.1. Shift Operators (Right Shift & Left Shift)
 - 7.5.2. The AND Operator & AND Masking
 - 7.5.3. The OR Operator & OR Masking
 - 7.5.4. The XOR Operator & XOR Masking

Reference Books:

1. Programming in C - Balaguruswami - TMH
2. C Programming Language - Kernigham & Ritchie - TMH
3. The spirit of C - Cooper H & Mullish H - Jaico Pub.
4. Programming in C - Stephan Kochan – CBS
5. Mastering Turbo C - Kelly & Bootle – BPB
6. C Language Programming - Byron Gottfried –TMH
7. Mastering Turbo C - Stan Kelly – BPB
8. Let us C – Yashwant Kanetkar - BPB Publication
9. Magnifying C – Arpita Gopal, PHI
10. Problem Solving with C – Somashekara PHI
11. Programming with ANSI and TURBO C - Ashok Kamthane, Pearson Education
12. Programming in C by Pradip Dey & Manas Ghosh, Oxford