C Language Syllabus in Hinglish

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1. Introduction to C Language

- **C ka History aur Evolution**: C language ka introduction aur uski importance.
- **Structure of C Program**: Ek basic C program ka structure samjho (headers, main function, etc.).
- **Hello World Program**: Sabse pehle program likhna aur output dekhna.

2. Data Types and Variables

- **Data Types**: Int, float, char, double, etc. ka difference samjho.
- **Variables aur Constants**: Variables ka use, constants, aur unki initialization kaise karte hain.
- **Input and Output**: `scanf()` aur `printf()` ka use karke data input aur output kaise karein.

3. Operators

- **Arithmetic Operators**: +, -, *, /, %, etc.
- **Relational Operators**: >, <, ==, !=, >=, <=.
- **Logical Operators**: &&, ||, !.
- **Bitwise Operators**: &, |, ^, ~, <<, >>.
- **Assignment Operators**: =, +=, -=, *=, /=, etc.

4. Control Statements

- **If, If-Else, Else-If Ladder**: Condition check karna.
- **Switch Statement**: Multiple conditions ke liye switch ka use.
- **Loops**:
  - `for` loop
  - `while` loop

  - `do-while` loop
  - Loop ko break ya continue kaise karein.

5. Functions

- **Function ka Concept**: Function kaise banate hain, types of functions.
- **Function Declaration, Definition, and Calling**: Function ko kaise declare aur call karein.
- **Recursion**: Function apne aap ko call kare, yeh samajhna.

6. Arrays

- **One-dimensional Arrays**: Array ka use, initialization, aur access.
- **Two-dimensional Arrays**: Matrix ka use, 2D array ke operations.
- **Array Manipulation**: Sorting, searching arrays.

7. Strings

- **String ka Concept**: Strings ko handle karna, `char` array se.
- **String Functions**: `strlen()`, `strcpy()`, `strcmp()`, `strcat()`, etc.
- **String Operations**: String compare, concatenate, copy, etc.

8. Pointers

- **Pointer ka Introduction**: Pointer kya hota hai, pointer ka use kaise karein.
- **Pointer aur Arrays**: Pointer ka array ke saath relation.
- **Pointer to Functions**: Function pointers ka use.
- **Dynamic Memory Allocation**: `malloc()`, `calloc()`, `free()`.

9. Structures and Unions

- **Structure**: Structure ka definition aur use.
- **Accessing Structure Members**: Structure ke members ko kaise access karein.

- **Union**: Union ka concept aur difference from structure.

10. File Handling

- **File Operations**: File ko open, read, write, aur close karna.
- **File Modes**: `r`, `w`, `a`, `rb`, `wb`, etc.
- **Reading and Writing to Files**: `fscanf()`, `fprintf()`, `fgetc()`, `fputc()`.

11. Advanced Concepts

- **Dynamic Memory Management**: `malloc()`, `calloc()`, `realloc()`, `free()`.
- **Command Line Arguments**: Program ko command line se arguments pass karna.
- **Preprocessors**: `#define`, `#include`, `#ifdef`, etc.

12. Error Handling

- **Error Types**: Syntax errors, runtime errors, logical errors.
- **Debugging Techniques**: C me errors ko identify aur solve karna.

13. Miscellaneous

- **Macros**: C me macros ka use.
- **Bit Manipulation**: Bits ko manipulate karne ke techniques.
- **Linked Lists (Optional)**: Basic introduction to linked lists (node creation, insertion, deletion).

Practice Projects

- **Simple Calculator**: Functions and control statements ka use karke.
- **Banking System**: Structure aur file handling ka use.
- **Student Management System**: Arrays, structures, aur file handling ko integrate karna.
- **Tic-Tac-Toe Game**: Array aur loops ka use.

Important Notes

- **Practice Regularly**: C programming me practice bahut zaroori hai.
- **Understand the Logic**: Har program ko samajhne ki koshish karo, sirf code na likho.
- **Debugging**: Apne mistakes ko samjho aur unhe debug karo.