

# Document Title: C Language Learning Roadmap

- **Introduction**
  - What is C language?
  - Why learn C language?
  - Applications of C language
- **Getting Started**
  - **Setting up your development environment**
    1. Text editor or IDE
    2. C compiler
  - **Basic C program structure**
    1. #include statement
    2. main function
    3. return statement
- **Core Concepts**
  - **Variables**
    1. Data types (int, float, char, etc.)
    2. Declaring and initializing variables
  - **Operators**
    1. Arithmetic operators (+, -, \*, /)
    2. Assignment operators (=, +=, -=, etc.)
    3. Comparison operators (==, !=, <, >, etc.)
    4. Logical operators (&&, ||, !)
  - **Expressions**
    1. Combining variables, operators, and constants
    2. Order of operations (PEMDAS)

- **Input and Output**
  - 1. Using scanf and printf functions
  
- **Control Flow**
- **Decision making (if-else statements)**
- **Looping (for, while, do-while loops)**
  
- **Functions**
  - Defining and calling functions
  - Function arguments and return values
- **Pointers and Memory Management**
  - Understanding pointers
  - Array manipulation using pointers
  - Structures and unions
  - Memory allocation (malloc, calloc, free)
- **Advanced Topics (Optional)**
  - File I/O
  - Preprocessor directives (#define, #include)
  - Linked lists
- **Practice and Projects**
  - Solving coding problems
  - Building C language projects
- **Conclusion**
  - Summary of your learning journey
  - Next steps for further learning