1) What is C Programming?

C is a **general-purpose, procedural programming language** developed by **Dennis Ritchie in 1972** at Bell Laboratories.
It is used to develop system software and application software by providing **low-level memory access**, **structured programming**, and **high performance**.
C acts as a bridge between **high-level languages** and **machine-level programming**.

2) Features of C Programming

- **Simple and Efficient**
  C has a small set of keywords and a clear syntax, making programs fast and efficient.

- **Structured Language**
  Supports functions, loops, and conditional statements for better code organization.

- **Portable**
  C programs can run on different machines with little or no modification.

- **Low-Level Access**
  Allows direct manipulation of memory using pointers.

- **Fast Execution**
  Compiled language with minimal runtime overhead.

- **Rich Library Support**
  Provides standard libraries like `stdio.h`, `stdlib.h`, etc.

- **Extensible**
  New features can be added using user-defined functions.

3) Applications of C Programming

- **Operating Systems**
  Used in development of OS like UNIX, Linux kernels.

- **Embedded Systems**
  Widely used in microcontrollers and real-time systems.

- **System Software**
  Compilers, assemblers, device drivers.

- **Game Development**
  Used for performance-critical game engines.

- **Database Systems**
  Core components of databases are often written in C.

- **Network Programming**
  Used for protocol implementations and network drivers.

4) Difference between Compiler and Interpreter

Feature	Compiler	Interpreter
Translation	Translates entire program at once	Translates line by line
Execution Speed	Faster execution	Slower execution
Error Handling	Errors shown after compilation	Stops at first error
Output	Generates executable file	No separate executable
Memory Usage	More (stores executable)	Less
Examples	C, C++, Java	Python, JavaScript