

① What is C language?

C is a general-purpose, procedural programming language created in the 1972 by Dennis M. Ritchie at Bell Labs. It is one of the most influential programming languages in computer science.

Key Features:-

- Low-level control :- Offers direct access to memory through pointers.
- High performance :- Compiles to fast machine code, making it ideal for system programming.
- Portability :- C programs can run on many different computer architectures with minimal changes.
- Small, powerful standard library :- Provides essential functions without essential abstractions.
- Foundation for other languages :- C is heavily influenced by C++, Java, C#, Objective-C, Rust, and many others.

② What is the applications of C.

- C has a wide range of applications because it is fast, efficient, and close to the hardware. Here are the major areas where C is commonly used:

① Operating Systems:-

c is used to build core parts of operating system such as:

- Linux

- Unix

- Windows Kernel components its low-level control makes it ideal for managing memory and hardware.

② Embedded Systems :-

c is the dominant language for:

- Microcontrollers

- Firmware

- IoT devices

Because it generates compact, fast code that runs directly on hardware.

③ System Software:-

c is widely used to develop:

- compilers

- interpreters

- device drivers

- file systems

These requires direct hardware interaction and high performance.

④ Game Development:-

older and high-performance game engines or core engine parts are written in c due to speed and control.

⑤ Database Systems :-

Many popular DBMS are written in C, such as:

- MySQL
- PostgreSQL
- Oracle Database (core parts)

⑥ Networking :-

C is used for:

- Network drivers
- protocol implementations

• High performance servers (like NGINX)

③ What is Variable?

① A variable is a named storage location in a program that holds a value.

② A variable has a name.

③ It is a data type. (like int, float)

④ It holds a value. (like, 10, 3.14)

⑤ The value stored in a variable can change during program execution.

④ What are different data types in C?

C provides several data types to store different kinds of values. They are grouped into categories.

① Basic Data Types :-

These are the fundamental types.

Integers

Used to store whole numbers.

- int
- short
- long
- long long
- unsigned, int, unsigned long, etc.

Floating-Point Numbers:

Used to store real numbers (decimals).

- float
- double
- long double

Characters:

- stores a single character.
- char

② Derived Data Types:-

- Arrays → int arr[10];
- Pointers → int * ptr;
- Function → return accept values
- Structures → (struct)
- Unions (union);

③ Enumeration Data Type:-

Used to define a set of named integer constants.

- enum

④ Void Type:-

Represents "nothing" or "no value".

- void

⑤ What is Format specifier?

A format specifier in C is a symbol used inside functions to tell the compiler what type of data you want to print or read.

It acts as a placeholder for a variable's value.

- In C language, C needs to know,
what kind of value you are printing
- How to read input safely.

Data type	Format specifier
integer	%d or %i
float	%f
double	%lf
character	%c
string	%s
long integer	%ld
unsigned int	%u
pointer	%p
long long int	%lld
short int	%hd
long double	%Lf