

(1) What is C language?

C language is a general-purpose, high-level programming language that is widely used to develop system software, operating system, embedded system and many other applications. It was developed by Dennis Ritchie at Bell Labs in 1972.

Key features of C language:

- * Simple and efficient.
- * Structured programming language.
- * Fast execution (because it is close to hardware).
- * Portable (runs on many devices).
- * Rich library of built-in functions.
- * Supports pointers (direct memory access).
- * Used to build system-level programs like OS, compilers, drivers, etc.

2) Applications of C Programming?

1. Operating System?

C is used to build operating systems like:

- * UNIX
- * LINUX
- * Windows Components

Because C gives fast execution and direct hardware control.

2. Embedded System?

C is widely used in

- * Microcontrollers
- * Sensors
- * IoT devices
- * Automotive Systems

It works very well for hardware-level programming.

3. What is variable?

A variable in programming is a name given to a memory location where we store data. The value stored in a variable can change during the execution of a program, which is called a variable.

Simple Definition:

A variable is a container that holds a value which may change as the program runs.

Example in C:

C

```
int age = 20;
```

Here:

- * int → data type
- * age → Variable name
- * 20 → stored value

Key Points:

- * A variable stores data in memory
- * It has a name, type and value
- * Its value can be updated anytime
- * There are different data types in C programming.

4) What are different data types in C programming?
C Programming can be classified in several ways based on how Programs are written and executed:

1. Procedural Programming:

- * C is mainly a procedural language.
- * Program is divided into functions (procedures).
- * Follows a step-by-step (top down) approach.

2. Modular Programming:-

- * The complete program is divided into multiple modules / files.
- * Each module performs a specific task.
- * Helps in easy debugging and reusability.

3) Structured Programming:

- * Programs are written using control structures like if-else, loops, switch, functions.
- * Focus on clean, readable, and organized code.

5) What is Format Specifier?

Format specifier are symbols used in C programming to tell the compiler what type of data we want to read or print using function like printf() and scanf().

Common Format Specifiers in C.

Data type	Format Specifier
Integer	%d
Float	%f
Character	%c
String	%s
Double	%lf
Long integer	%ld
Unsigned integer	%u
Hexadecimal	%x (lowercase), %X (uppercase).