

1) What is C language?

C is a high-level programming language developed by Dennis Ritchie at AT&T Bell Labs in 1972.

It is a general-purpose, structured, and powerful language used to develop system software and application software.

- C is a middle-level language (C supports both low-level and high-level features).
- It is fast, efficient, and portable across different computer systems.
- C is widely used for operating system, compilers, embedded system, and applications.
- C supports modular programming using function.
- Many modern languages like C++, Java, Python are influenced by C.

2) Application of C Programming?

1. System Programming

C is widely used for developing operating system, device, and system utilities.

Example: Linux is written in C.

## 9. Embedded Systems

- C is used in programming microcontrollers, robotics, and other embedded devices.
- Example: ATM machines, traffic lights, washing machines.

## 10. Application Software Development

- Many desktop and console applications are developed using C.
- Example: Word Processors, Spreadsheets, and simple games.

## 11. Compiler and Interpreter Development

- C is used to create compilers, interpreters, and other programming language tools.
- Example: GCC (GNU Compiler Collection) is written in C.

## 12. Database Programming

- C is used to develop database management system.
- Example: MySQL database engine.

- ## 6. Graphics and Game Programming
- C supports graphics programming for game development using libraries like OpenGL.
  - Example: Simple 2D games and simulation programming.

## 7. Network Programming

- C is used to develop network protocols and communication software.
- Example: FTP, HTTP servers, and client-server applications.

### Conclusion:

C is a versatile and powerful language, which can be used for system software, application software, embedded systems, and many other fields.

3) What is variable?

A variable is a named storage location in a program that is used to store data values.

The value stored in a variable can change.

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### What is variable?

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The value stored in a variable can change execution, so it is called

### c) doubles

- Used to store decimal numbers with double precision (more accurate than float).
- Example: double salary = 12345.678;

### d). char

- Stores a single character.

- Example: char grade = 'A';

## 2) Derived Data types

These are created from basic data types:

### a) Arrays

- Collection of similar data types.
- Example: int Marks[5];

### b) Pointers

- Stores the address of another variable.
- Example: int \*ptr;

### c) Functions

- Blocks of code that perform tasks and return values.

### d) Structures

- Used to store different data types under one name.

- Example:

```
C  
Struct Student {  
    int roll;  
    char name [20];  
}
```

### c) Unions

- Similar to structures but shares memory among members.

## 3. User-Defined Data types

These allow programmers to define their own types.

### a) typedef

- Used to create a new name for an existing data type.
- Example: `typedef int number;`

### b) enum

- Used to assign names to integer constants for better understanding.

### c) void Data Type

- `void` indicates "no value".  
... in functions that do not return any value

## Conclusion

C Programming supports different data types to handle various kinds of data efficiently. The basic types store simple values, derived types are used for complex data structures. User-defined types improve readability, and void represents the absence of value. Understanding data types is essential for writing efficient and error-free C Programs.

5)

What is Format specifier?

In C Programming, a Format Specifier is a function placeholder used in input/output functions like printf() and scanf() to specify the compiler what types of value to expect and how to interpret it.

Key Points:

1. Format specifiers begin with the Percent symbol (%) followed by a character that represents the data type.
2. They are used in printf() to display values and in scanf() to read values.

from the User.

3. Using the wrong Format specifier may cause errors or unexpected behavior.

Datatype	Format specifier	Example
Integer	%d	int a=10; printf("%d", a);
Float	%F	float b=3.14; printf("%f", b);
Double	%lf	double c=3.14159; printf("%lf", c);
Character	%c	char ch='A'; printf("%c", ch);
String	%s	char str[]="Hello"; printf("%s", str);
Unsigned int	%u	unsigned int x=100; printf("%u", x);
Octal	%o	int y=10; printf("%o", y);
Hexadecimal	%x	int z=255; printf("%x", z);

Example code:

8.8: tripist  
A: 10010

```
#include<stdio.h>
```

```
int main()
```

```
{
```

```
    int age = 20;
```

```
    float height = 5.8;
```

```
    char grade = 'A';
```

```
    char name[] = "Anusha";
```

```
    printf("Name: %s\n", name);
```

```
    printf("Age: %d\n", age);
```

```
    printf("Height: %.1f\n", height);
```

```
    printf("Grade: %c\n", grade);
```

```
    return 0;
```

```
}
```

```
Output:
```

Name : Anusha

Age : 20

Height : 5.8

Grade : A