1. What is c language ?

C is a high-level programming language created in the early 1970's by Denis Ritchie at bell labs. It is one of the most influential language in computer science.

Key features of c :-

* Fast and efficient - great for system level programming.
* Low-level acess can interact directly white memory.
* Portable-c programs can run on many different computers with little changes.
* Foundation for many languages - c. influenced. C++, Java, c++, Python, Go, Rust and many more.

What is used for c

* Game changes.
* compilers and interpreters.

2. Applications of c programing.

1. operating systems

c is used to develop major part of

1. Windows.
2. Linux.
3. Macos because of Provides low-level memory acess and high performance.

5. What is format Specifier.

A format specifier is a place holder used inside formatted strings (mainly in C, C++, Java, python's old-style formating, etc) that tells the language what type of data you want to print and how to print it.

Think of it as giving instructions like:

* This is an integer.
* This is a floating-point number.
* Show 2 decimal places.
* print as a character.

Common Format Specifiers (c/c++ especially).

Specifier	Meaning.
%d	integer (decimal)
%f	Floating-point number.
%.2f	Floating-a point with 2 decimal places.
%c	single character.
%S	String.
%U	Unsigned string.
%Ld	Long integer.
%X	Hexa decimal (upper Case).
%P	Pointer address.

* Function

Functions also have types (return types).

3. Enumeration :- (enum).

Used to assign names to integer constants.

enum week { mon, Tue, wed };

4. Void :-

Represents "nothing" or "no value".

void fun( ) → function returns nothing.

void * ptr → generic pointer.

5. Type modifiers :-

These changes the size/behaviour of basic types

Signed.

Unsigned.

Short.

long.

Example :- Unsigned int x;

long long int y;

Example (c)

C

```
int age = 21;
float gpa = 8.75;
printf("Age : %d, GPA : %.2f", age, gpa);
```

Output

```
Age : 21, GPA : 8.75
```

* Double

stores double-precision decimal numbers.

Example : double c = 3.141592;

* Char

stores a single character.

Example : char d = 'A';

2. Derivied data types :-

These are built using basic types.

* Array

Collection of similar data types.

int arr[5];

* Pointer

stores the address of another variable.

int *p;

* Structure

combines variables of different types.

struct student { int id; char name[20]; };

* Union

Similar to struct, but all members share the same memory.

Union data {int a; float b;};

3. What is variable?

A variable programing is a named storage location in memory that holds a value which can change during the execution of a program.

Simple defination.

A variable is like a container or box where you store data (numbers, characters, etc) and use it your programm.

Example in C programm.

```
C
int age = 20;
```

Here

* int → data type.
* age → variable.
* 20 → valued stored in the variable.

4. What are different data types in C-Programming.

1. Primary data types :-

These are fundamental types.

* int

  Stores whole numbers (integers).

  Example : int a = 10;

* Float

  Stores single-precision decimal numbers.

  Example : int Float b = 3.14;

2. Embeded system

C is the most widely used language in

1. Micro controllers.
2. IOT devices.
3. Medical devices.

3. Game development.

C is used to build.

* Game engine (like early version of unreal Engine).
* High-Performance graph modules.

4. Compilers and interpreter

Many Programming language compiler written in C. Such as.

* python (c python implementation).
* C++

5. System Software.

C is used to develope.

* Device drivers.
* File systems.
* Networking Softwaze.