# Research and provide three real-world applications where C programming is extensively used, such as in embedded systems, operating systems, or game development.

Ans:- Here are **three real-world applications** where **C programming** is extensively used:

**1. Embedded Systems**

**Description:**

Embedded systems are specialized computing systems that perform dedicated functions within larger systems — such as microcontrollers and firmware.

**Why C is Used:**

* Direct hardware interaction using pointers.
* Efficient memory usage.
* Fast execution speed, which is crucial for real-time systems.

**Examples:**

* Washing machines, microwaves, and air conditioners.
* Automotive control systems (e.g., ABS, ECU).
* Medical devices like pacemakers and blood pressure monitors.

**2. Operating Systems**

**Description:**

Operating systems manage hardware and software resources of a computer.

**Why C is Used:**

* Provides low-level access to memory and system resources.
* Enables fine control over hardware components.
* C was used to develop Unix, and parts of Linux, Windows, and MacOS kernels.

**Examples:**

* Linux Kernel is mostly written in C.
* Windows system drivers and internal utilities.
* Mobile OS layers (e.g., Android HAL).

**3. Game Development (Game Engines)**

**Description:**

Games and game engines often require high-performance computation, graphics rendering, and precise control over memory.

**Why C is Used:**

* Offers fast execution and fine memory management.
* Used in game engines or performance-critical modules.
* Ideal for writing core rendering engines or physics engines.

**Examples:**

* Doom, Quake, and other legacy games by id Software.
* C-based engines used for handheld consoles or mobile platforms.
* Used in conjunction with C++ in large game projects.

# Install a C compiler on your system and configure the IDE. Write your first program to print "Hello, World!" and run it.

Ans:- **Step 1: Install a C Compiler:**

**For Windows (Using Dev-C++):**

**Step 1: Download Dev-C++**

1. Go to the official download page:  
    [https://sourceforge.net/projects/orwelldevcpp/](%20https:/sourceforge.net/projects/orwelldevcpp/)  
   *(You can also use Embarcadero Dev-C++ or Orwell Dev-C++)*
2. Click Download and wait for the installer**.**

**🔹 Step 2: Install Dev-C++**

1. Run the downloaded .exe file.
2. Follow the setup wizard and install Dev-C++ in the default directory.
3. Launch Dev-C++ after installation.

**🔹 Step 3: Configure Dev-C++**

1. When you launch for the first time, choose your preferred language and font settings.
2. Dev-C++ automatically detects the MinGW/GCC compiler, so no extra setup is required.

**🔹 Step 4: Write Your First C Program**

1. Go to File → New → Source File.
2. Type the following code:

#include <stdio.h>

main()

{

printf("Hello, World!\n");

}

1. Save the file as hello.c (File → Save As).

**Step 5: Compile and Run the Program**

1. Click Execute → Compile & Run or press F11.
2. The program will compile and a console window will open showing:

**Output:**

Hello, World!

# Write a C program that includes variables, constants, and comments. Declare and use different data types (int, char, float) and display their values.

Ans:-