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

1. Embedded Systems (Microcontrollers & IoT Devices)

- **Use Case:** C is the primary language for programming microcontrollers like Arduino, PIC, and ARM-based systems.
- **Reason:** It provides low-level hardware access, efficient memory usage, and real-time performance.
- **Example:**
    - Automotive systems (airbag controllers, ABS, engine control units).
    - Home appliances (washing machines, microwaves).
    - IoT devices (smart thermostats, wearable fitness trackers).

2. Operating Systems

- **Use Case:** Most operating systems are written in C (with some assembly for hardware-level tasks).
- **Reason:** C provides direct access to memory and hardware while still being portable across different machines.
- **Example:**
    - **Linux Kernel** – written mostly in C.
    - **Windows and macOS components** – heavily rely on C.
    - **Android OS** – its core libraries and kernel are C-based.

3. Game Development & Graphics Engines

- **Use Case:** High-performance games and graphics engines use C (and C++) to handle resource-intensive tasks.
- **Reason:** C allows direct memory management, high-speed execution, and efficient use of hardware resources like GPUs.
- **Example:**
    - **Unreal Engine** (originally in C/C++).
    - Early **video games** (like Doom, Quake) were developed in C.
    - Game consoles (PlayStation, Nintendo, Xbox) firmware and SDKs use C.