❖ **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

- **Description**: C is the dominant language used in programming embedded systems such as microcontrollers, sensors, and hardware interfaces.
- **Why C?**: It provides low-level memory access, efficient performance, and direct control over hardware.
- **Examples**:
    - Washing machines, microwave ovens, smart TVs.
    - Automotive software (like engine control units).
    - Medical devices (e.g., pacemakers, blood pressure monitors).

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2. Operating Systems

- **Description**: Most modern operating systems are either written entirely in C or have C as their core language.
- **Why C?**: It offers low-level system access, portability, and excellent performance.
- **Examples**:
    - **Linux kernel** – written almost entirely in C.
    - **UNIX** – originally developed in C.
    - **Windows portions** – like drivers and kernel components are in C.

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3. Game Development

- **Description**: C is used for building high-performance game engines and graphics rendering systems.
- **Why C?**: Games demand speed and memory efficiency, both of which C handles well.
- **Examples**:
    - **Doom (original)** and **Quake** – iconic games written in C.
    - Many **game engines** like id Tech and early versions of Unreal Engine use C or C++ (which is based on C).