**1.**

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

**Ans –**

**1. Embedded Systems**

>Description: Embedded systems are small computing systems that perform specific tasks within larger mechanical or electrical systems.

* Examples:

>Washing machines, microwaves, and air conditioners (use microcontrollers programmed in C).

>Medical devices, such as pacemakers and diagnostic machines.

* Why C is used:

>Direct access to hardware using pointers.

>Efficient memory usage and fast execution.

>Portability across different microcontroller platforms.

* **2. Operating Systems**

>Description: Operating systems manage hardware and software resources on computers and mobile devices.

* Examples:

>Linux, Windows, and UNIX kernels are primarily written in C.

* Why C is used:

>Low-level memory access (manipulating RAM, registers).

>Ability to write device drivers and kernel-level code.

>Speed and efficiency are critical for system-level software.

**-> 3. Game Development**

>Description: C is used in game engines and performance-critical parts of games.

* Examples:

>Older engines like Doom and Quake were written in C.

>Modern engines (like Unreal Engine) use C++ but often rely on C libraries for performance-heavy tasks.

* Why C is used:

>High-performance graphics and logic calculations.

>Real-time processing with minimal lag.