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

C programming is one of the most powerful and widely-used languages in the tech industry. It forms the foundation of many software systems and is known for its speed, efficiency, and close-to-hardware capabilities. Here are three real-world applications where C is extensively used:

1. Embedded Systems

One of the most common uses of C programming is in embedded systems. These are small computing systems that are part of a larger device, like a car or a washing machine. For example, C is used in Electronic Control Units (ECUs) in vehicles. These units control vital functions like the engine, airbags, braking systems, and even power steering. C is preferred here because it allows direct control over hardware and uses minimal resources, which is essential in devices with limited processing power.

2. Operating Systems

Another major area where C is heavily used is in developing operating systems. A popular example is the Linux kernel, which is written almost entirely in C. The reason for this is that C provides low-level access to memory and system processes, which is necessary for managing hardware components and system resources. Even parts of Microsoft Windows and many UNIX-based systems are written in C.

3. Game Development

C is also used in the field of game development, especially in building game engines. For instance, the original versions of games like Doom and Quake were developed using C. The language helps developers manage memory more efficiently and execute complex algorithms quickly, which is important for real-time performance in games. Some modern game engines still use C or a mix of C and C++ for performance-critical modules.