**2-3 Journal: Embedded vs. Desktop Systems**

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**Non-Volatile Memory (NVM) in an Embedded System and a Desktop System**

According to DevX, NVM can be defined as “a type of computer memory that retains stored data even when the power is turned off.” (DevX, 2024, para 1). Examples of an NVM are devices such as flash drives for embedded systems and read-only memory (ROM) for desktop systems. NVM within an embedded system and a desktop system can differ by power consumption and storage capacity. With embedded systems, power consumption is much less than desktop systems. The embedded systems typically run on batteries or low-power grids, reducing power consumption, while desktops require continuous power. Also, the storage capacity is limited for embedded systems compared to desktop systems. It cannot hold a lot of data for embedded systems such as a flash drive, but it is a portable and convenient device. As for desktop systems, most of the hardware can surpass the storage capacity of an embedded system.

**Differences Between an Embedded Systems and Desktop Systems**

The critical differences between embedded and desktop systems are their functionality, costs, and storage systems. According to Blogs, “Embedded systems are dedicated to specific tasks. On the contrary, PCs are generic computing platforms.” (Blogs, 2022, para 8). Using the example of a flash drive, the sole purpose is to store limited data. In contrast, a desktop system can multitask applications such as storing data, streaming music, and even playing video games simultaneously. Another critical difference is the cost. Due to the limited tasks an embedded system can offer, the price will be lower than the desktop system, which offers various functions and features, making the desktop system much more expensive. Since the embedded system is not as capable as the desktop system, it would need to be addressed that the storage and memory space would be less than the desktop system. The desktop system’s large memory and storage space can handle many more applications than an embedded system.

**Advantages of Various Embedded System Architectures**

The advantages of various embedded system architectures are efficiency, flexibility, and scalability. Without efficiency, embedded systems can perform complex tasks to optimize running applications. Embedded system architectures can dedicate data and instructions that enable access quicker to the memory to enhance performance. Without flexibility, embedded system architectures cannot effortlessly reprogram and adapt to different tasks. A flexible embedded system architecture can save time and resources by quickly adapting to its environment. Lastly, scalability can ensure systems can adapt to the needs and requirements over time. With scalability, embedded system architectures can expand their system capabilities and improve the overall performance when distributing the various tasks. Advantages such as efficiency, flexibility, and scalability for embedded system architectures enable the devices to perform functions for all devices promptly.

**References**

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