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Module 2 Journal

While embedded and desktop systems both have non-volatile memory, they use different types. Desktop systems commonly use solid-state drives (SSD) or hard disk drives (HDD) that are separate components and can be removed and replaced. Embedded systems tend to use flash memory that is soldered to the board and is typically smaller. SSD and HDD memory also have larger capacities for data storage than flash memory. SSD’s also have higher read / write speeds than flash memory, but flash memory trades the speed for better power efficiency. The cost in memory is a factor also. Embedded systems tend to use lower-cost flash memory to keep the cost of the product it is used in down, while SSD’s are much more expensive.

One of the biggest differences between embedded systems and a desktop system is the scope of what they can do. An embedded system is usually dedicated to a single or narrow range of tasks such as they will control a microwave or a washing machine. A desktop system is designed to do many things – web browsing, gaming, software development, and office productivity to name a few. Embedded systems usually don’t have a traditional interface like a monitor, keyboard, and mouse while a desktop does. Embedded systems also focus on power consumption and use lite weight operating systems.

Microcontroller-based architectures have a microprocessor, memory, and input/output on a single chip. This makes them cost effective, low-power consumption, and real-time operation. ARM-based architectures are energy efficient, high performance, and easily scalable, Digital Signal Processor architecture is used for processing digital signals like audio and video. They have high throughput to efficiently process the signal, and typically use fixed-point arithmetic to be more efficient. There is also System-on-Chip architecture which basically has multiple components that create almost a mini desktop like system but is power efficient.