

What type of interrupts can occur within a computer system? If there are multiple interrupts, which interrupt type should have priority? (I/O event, error condition, service request)

In addition to I/O Events, Error conditions, and Service requests, interrupts may also be classified as “edge-triggered, level-triggered, and a combination of both (Rosenthal, 1995).” With edge-triggered occurring on the change of state of a signal, and level-triggered being an interrupt the CPU is actively looking for.

Pressing a key on a keyboard sends an edge-triggered interrupt to the CPU so that users may continue typing while other software is loading or processes are being executed. A low battery might be an example of a level-triggered interrupt, where the CPU sees the low-battery state and saves its machine state just before powering down.

Error conditions should have top priority for the Interrupt Service Routine (ISR), but how the different error conditions are assigned priority depends on the CPU or the software. Linux and Windows have Advanced Programmable Interrupt Controllers (APICs) which assigns priority and how to handle IRQs as is appropriate to the Operating System.

Rosenthal, Scott, *Interrupts might seem basic, but many programmers still avoid them.* SLTF Consulting. Retrieved January 28, 2009 from the SLTF website:
<http://www.sltf.com/articles/pein/pein9505.htm>

Evilbitz, Interrupts and Interrupt-Controllers. The Zana Zen. Retrieved January 28, 2009 from evilbitz website: <http://www.evilbitz.com/2006/12/08/interrupts-and-interrupt-controllers/>