

Interrupts

Interrupts are a mechanism by which a normal sequence of events can be prevented. There are multiple types of interrupts, that are caused by different situations. - Program Interrupts - This could be caused by an overflow error, or a division by zero - Timer - Generated by internal processor timer - Used in a pre-emptive multi-tasking - I/O - From an I/O controller - Hardware failure - I.e a memory parity error

The interrupt cycle is added to the instruction cycle, and the processor checks for interrupt, indicated when there is an interrupt signal. If there is an interrupt pending, the processor suspends the execution of the current program, and saves the context. Then set PC to start address of the interrupt handler routine. Then it processes the interrupt before restoring the context and continuing the interrupted program.

Multiple Interrupts

Disable interrupts are processed in the sequence as they occur. Whilst one interrupt is being handled, the rest are left pending. The processor will ignore further interrupts until the current interrupt has been handled.

Define priorities, this allows interrupts to be assigned a priority, meaning a low-priority interrupt can be interrupted by a high-priority interrupt.