

SOC Design

Week 7: Interrupts



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Interrupts

Interrupt is a signal emitted by hardware or software when a process or an event needs immediate attention.

It alerts the processor to a high-priority process requiring interruption of the current working process.

In I/O devices one of the bus control lines is dedicated for this purpose and is called the Interrupt Service Routine (ISR).

Interrupts

Polling

```
int main()
{
    while(1){

        if(switch = on ){
            getData(); }

        . . . .
    }
}
```

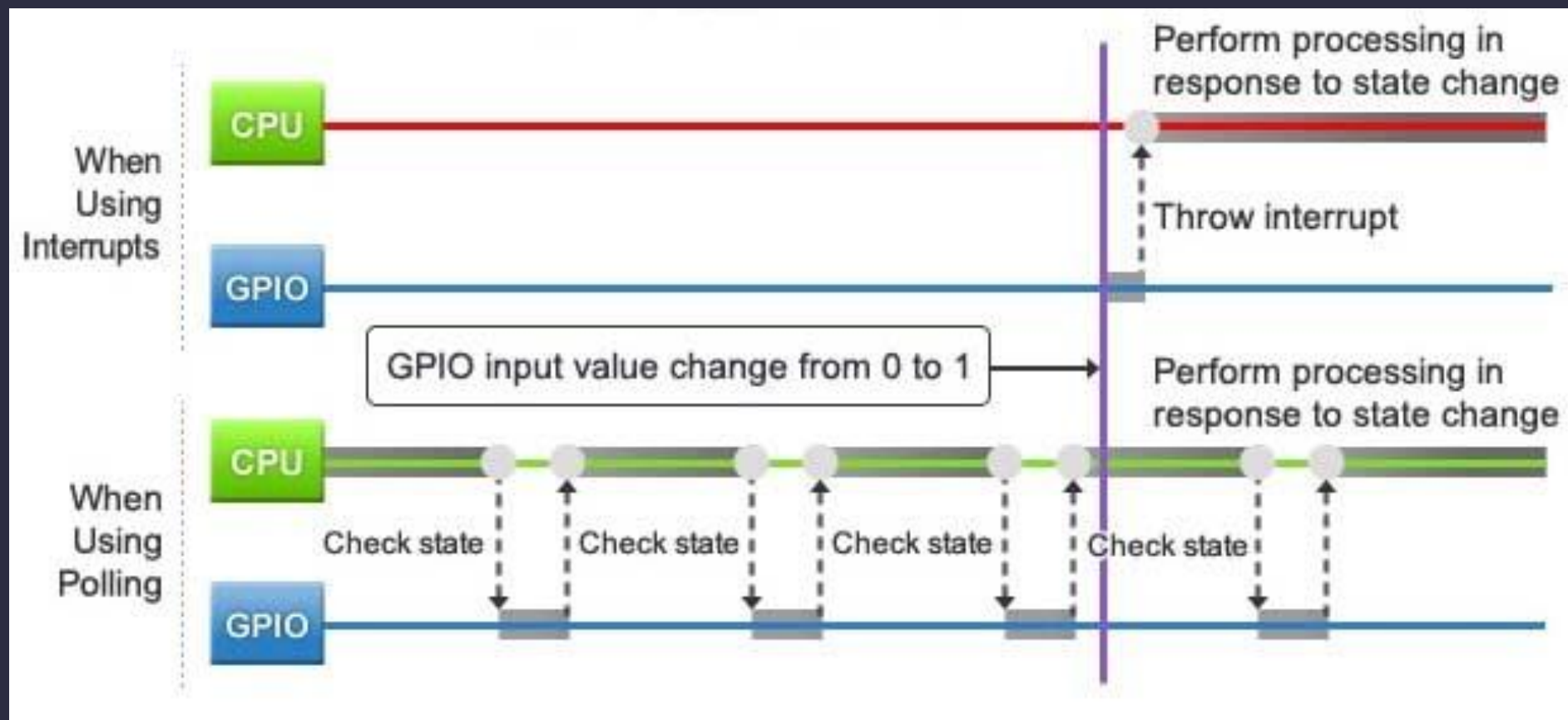
Interrupt

```
int main()
{
    while(1){
        . . . .
    }

    OnSwitch_ISR{
        getData()
    }
}
```

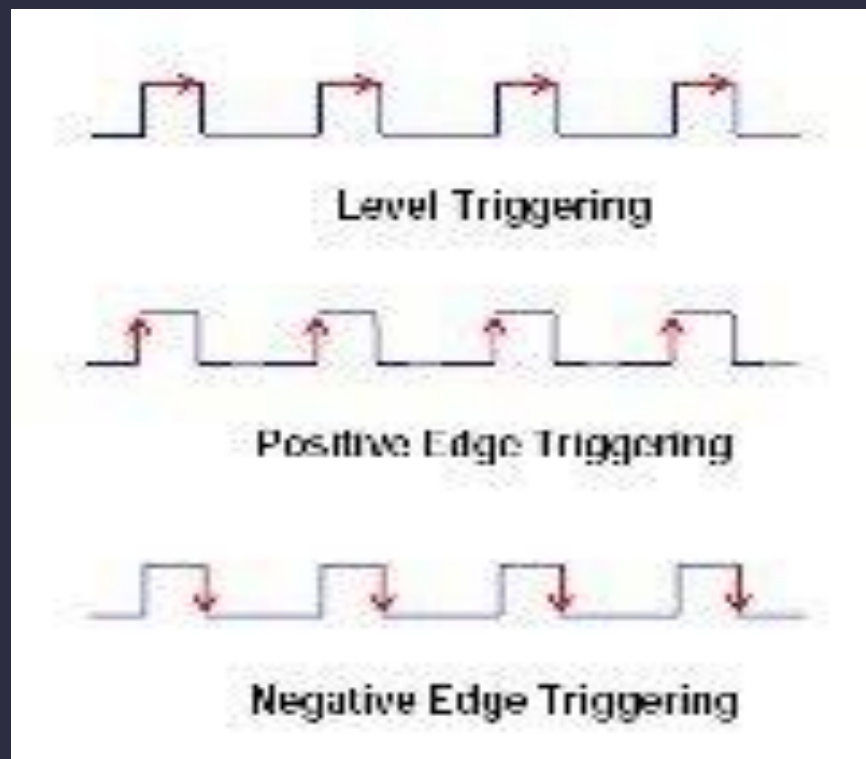
Polling vs Interrupt

Interrupts



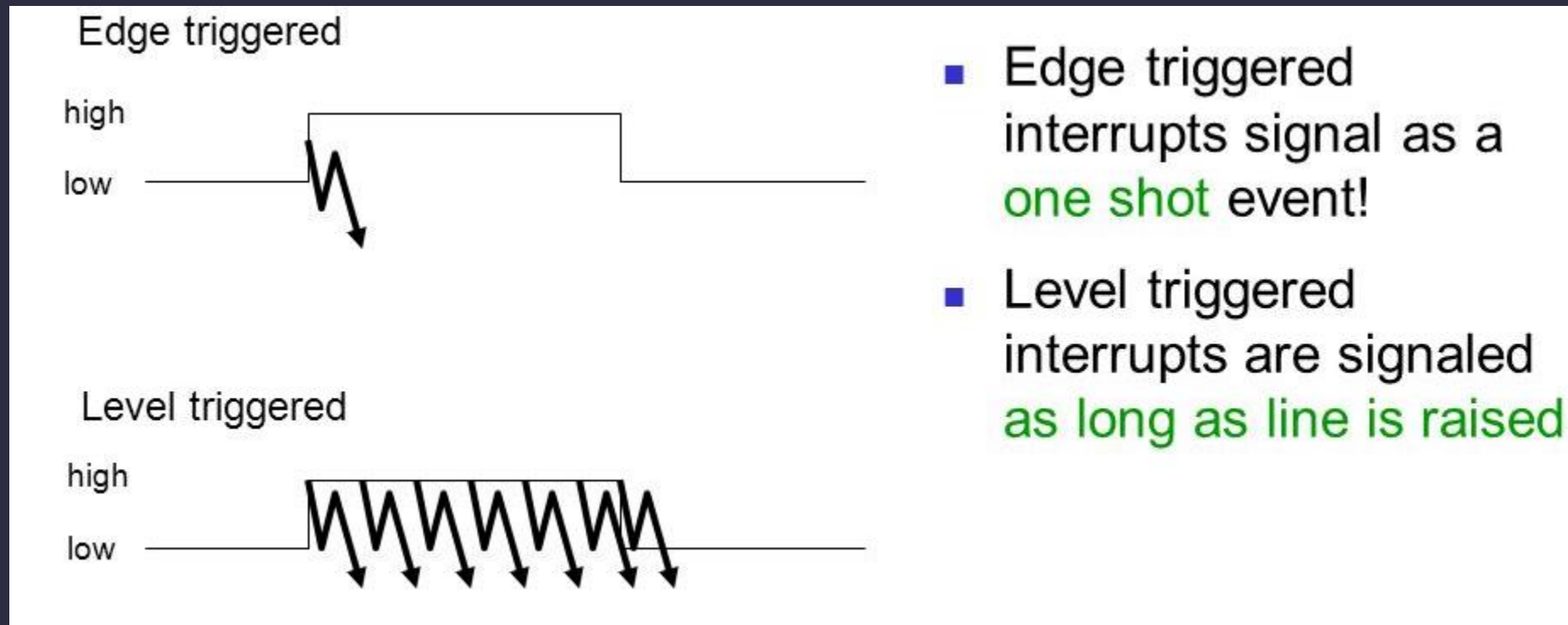
Polling vs Interrupt

Interrupts



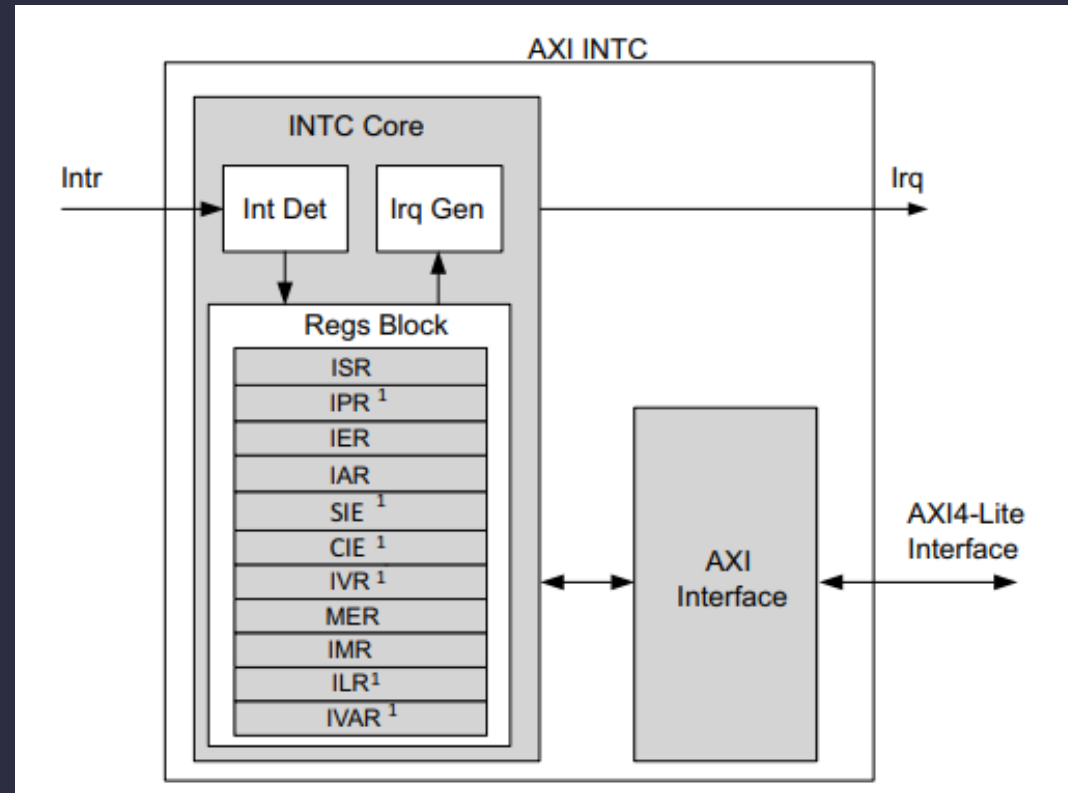
Interrupt Types

Interrupts



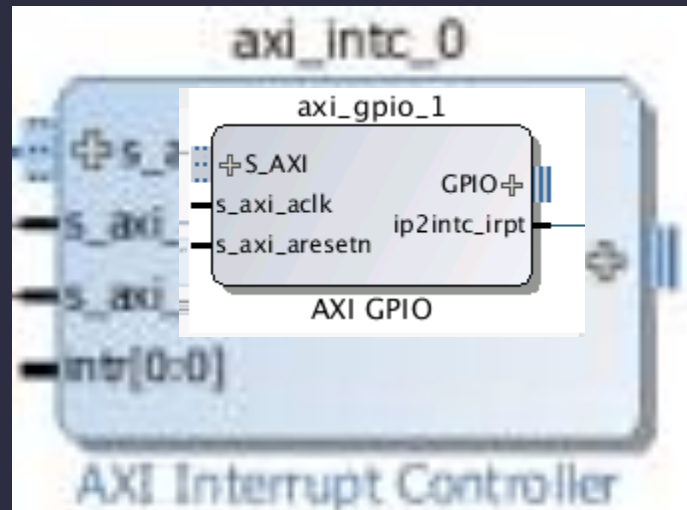
Interrupt Types

Interrupts



Xilinx Interrupt Controller

Interrupts



Xilinx Interrupt Controller

Interrupts



AXI GPIO with Interrupt