

# Two kinds of interrupts

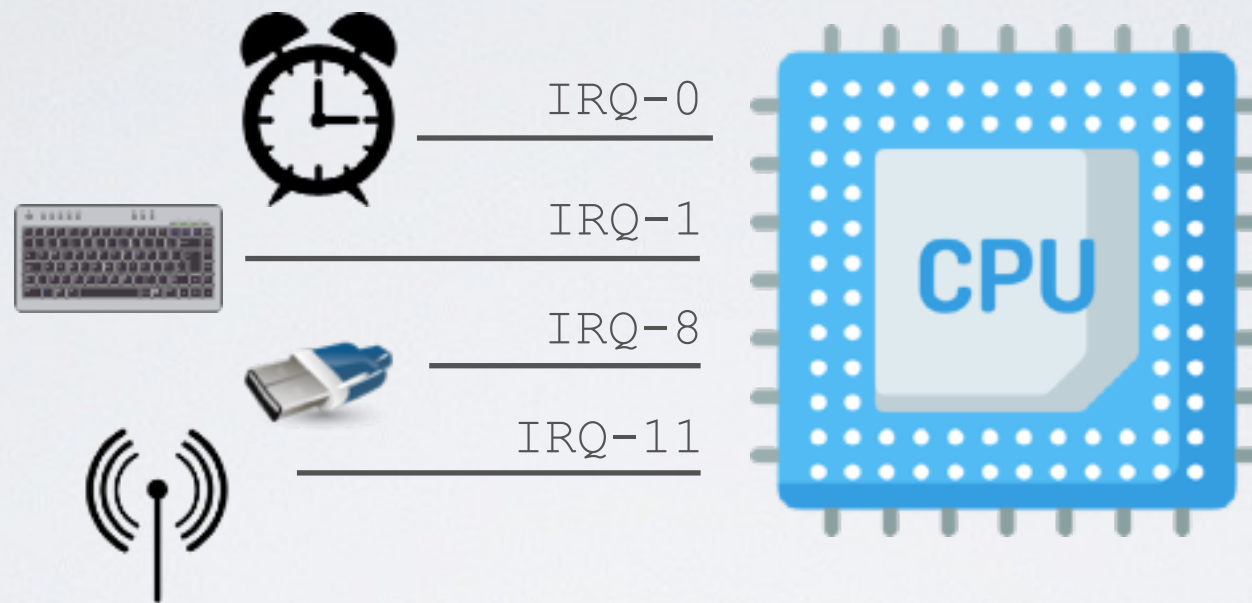
## **External Interrupts a.k.a hardware interrupts**

caused by an I/O device that needs some attention (asynchronous)

## **Internal Interrupts a.k.a system calls, exceptions and faults** caused by executing instructions (synchronous)

- fault
  - e.g divide by zero
  - e.g page fault (coming later with memory management)
- trap - x86 `int` instruction (intended by the programmer)
  - e.g `int $0x80` for Linux system call trap
  - e.g `int $0x30` for Pintos system call trap

# External Interrupt - the naive implementation



- ➔ I/O devices are wired to **Interrupt Request lines** (IRQs)
- Not flexible (hardwired)
- CPU might get interrupted all the time
- How to handle interrupt priority