# UART

- IER register
    - bit0: Receiver Data Available Interrupt Enable(1) or Disable(0).
    - bit1: Transmit Holding Register Empty Interrupt Enable(1) or Disable(0).
    - bit2: Receiver Line Status Interrupt Enable(1) or Disable(0).
- IIR register
    - bit0: Interrupt pending (0) or no Interrupt pending (1).
    - bit[3:1]: Interrupt ID
        - RDA Interrupt [010]
            - When new data is received.
        - CTI Interrupt [110]
            - When Char time out is done.
        - THRE Interrupt [001]
            - When current data is transmitted, THRE Interrupt is raised.
        - RLS Interrupt [011]
            - When status on RX line is changed (due to receive some data or break signal or ...)

# Timer

- MCR:
    - bit0 -- Interrupt on match with MR0.
        - Enable(1) or Disable(0)
- IR:
    - bit0 -- Interrupt is raised (1) when matched with MR0.
        - Interrupt should be cleared by writing 1.

## Interrupt Programming

- Enable interrupt in peripheral.
    - MCR |= BV(MCR_MR0I);
- Enable interrupt in NVIC.
    - NVIC_EnableIRQ(TIMER0_IRQn);

- Implement ISR.
    - Toggle LED.
    - Clear the interrupt
        - IR |= BV(IR_MR0);

# RTC

- Two types of time
    - Absolute time / Wall time
        - Time of day
        - Hardware: RTC
    - Relative time
        - Time duration
        - Hardware: Timer, SysTick, RIT, ...
- RTC shows time of day (Absolute time).
- Usually RTC is running even if power supply for cct is off (using battery).
- RTC provides: sec, min, hours, day_of_month, month, year, day_of_week.