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Prelab 6

ECE 375

1. Interrupts are best used for asynchronous, urgent, and infrequent events. This involves an interrupt flag being set up, and when that flag is set a procedure begins immediately. Polling routinely checks for flags being set, and executes a routine upon finding a set flag. Because they are not immediate, they are best used for non-urgent tasks.
2. Interrupts
   1. EICRA: (INT 0->3)
      1. 0 bit -> Whether the low level of INTx generates an interrupt request.
      2. 1 bit -> Any logic change on INTx generates an interrupt request.
      3. 2 bit -> The falling edge of INTx should generate an interrupt request.
      4. 3 bit -> The rising edge of INTx should generate an interrupt request.
   2. EICRB: same as EICRA but for INTs 4->7
   3. EIMSK: in this register, a bit is set to enable the related interrupt. For example, if bit 2 is set the INT2 interrupts are enabled.
3. An interrupt vector is the memory location of an interrupt handler, which allows us to queue up interrupts.
4. Interrupt Vectors:
   1. Timer/Counter0 Overflow -> TIM0\_OVF\_vect
   2. External Interrupt 5 -> INT5\_vect
   3. Analog Comparator -> ANALOG\_COMP\_vect
5. Interrupt Detection
   1. Rising edge 6, 18
   2. Falling edge 3, 9
   3. Low level 4, 5, 10-17
   4. High level 1,2,7-9, 19-21

References:

<https://sites.google.com/site/qeewiki/books/avr-guide/external-interrupts-on-the-atmega328>

<http://stackoverflow.com/questions/3072815/polling-or-interrupt-based-method>

<http://www.cse.unsw.edu.au/~cs9032/slides/wk7.pdf>