
Proj_1C and Proj_1C1 Pin_Change_Interrupt

PROGRAM 3 A REACTION TIME TESTER

Test your reactions by attempting to shoot the LEDS down using switch_3 (the RH one).

SOME OF THE THINGS THIS PROGRAM INTRODUCES:

1. Interrupts (Signals generated by the Atmega HW):
An interrupt is a signal that interrupts normal program flow, which then temporarily leaves the main routine and jumps to a special subroutine known as an ISR (Interrupt Service Routine).

On this PCB Interrupts can be generated by timers, by pressing a key on the PC or by operating one of the project pcb switches.

At the end of the ISR program flow returns to where it was when the interrupt occurred.
- 2 config_sw3_for_PCI This is a project macro that sets up switch_3 to generate Pin Change interrupts (PCI).
3. ISR(PCINT0_vect){}: This is the Interrupt Service Routine (ISR) that is called every time sw_3 is pressed or released. Note that program flow returns immediately when the switch is released so that it is only switch presses that have any effect.
4. Global variables: Note that variables PORT_1 and mask are available to both the main routine and also to the ISR. (Note they are also volatile because of their use by the ISR.)
5. More complex logic: Not really of interest at this stage. This has been added in an attempt to produce something interesting and its study may usefully be delayed.
6. The statement if(m == 1) which means execute the next statement if m equals 1, but if it equals anything else skip the next statement.