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Proj_2A_reaction_time_tester THE LAST of PROJ_1A:

Press SW2 and the leds scan across the display. Release it fast enough when they line up and the display will flash.

Lower leds sweep as for Proj_1A, when the display increments the next segment is illuminated. At the same time the upper leds increment by 1,2 or 3 leds in random order. Therefore it is only occasionally that a pair of segments are illuminated. This is when SW2 should be released.

DISCOVERING MORE ABOUT THE ATMEGA HW

1. Power on Reset (POR). This is the condition of the microcontroller immediately after power has been applied. Data memory is clear and operation starts with the main routine. This program like most of them will start when power is applied. There is no need to connect the PCB to a PC.

Other resets used in these projects are a reset pin (the external reset) that re-initiates operation immediately after programming, the watch dog timer that initiates a reset if it is allowed to time out and the brown out reset (BOR) that generates are reset if the supply voltage droops excessively.

2. EEPROM memory. This is memory that can be used to hold data that must not be lost when power is removed or an external reset or watch dog timeout occurs.

INTRODUCING RANDOM NUMBER GENERATION

1. Project subroutine PRN_16bit_GEN() The random number generator project subroutine "PRN_16bit_GEN()" can generate 2^16 -1 (65535) different numbers.

Note there is a similar routine "PRN_8bit_GEN()" that can generate 255 different numbers. These generators use the top two locations of the EEPROM.

Google "LFSR" (Linear-Feedback Shift Register) for details of random number generation.

OPERATION

Only use switch_2 the middle switch: Press it to start the display and when the segments line up release it immediately and they will flash.