ECE 375 PRELAB 1

Lab Time: Tuesday 4-6

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QUESTIONS

1. Suppose you want to configure Port B so that all 8 of its pins are configured as outputs. Which I/O register is used to make this configuration, and what 8-bit binary value must be written to configure all 8 pins as outputs?

   Section 5.2.1 of the textbook shows that to configure the port for output, the value 1 should be written to all pins in the register DDRX (DDRB). This would be the binary value of 11111111. Illustration 5.5 helps to make this point

2. Suppose all 8 of Port D's pins have been configured as inputs. Which I/O register must be used to read the current state of Port D's pins?

   Section 5.2.1 states that PORTX is used to output data onto the pins, while PINX is used to input data from the pins. This means that we would have to use PINDn. N represents the bit position of each pin within.

3. Does the function of a PORTx register differ depending on the setting of its corresponding DDRx register? If so, explain any differences.

   PORTx does depend on the DDRx value. This is because DDRx exists to control whether lines function as input or output. A zero one of the DDRx pins indicates input, and a one indicates output. A 0 onto here causes Tri-State buffer 4 to become high impedance, allowing PINx to connect to Px. Conversely, a 1 enables this buffer and allows for a connection between PORTx and Px. It is also worth noting that when configured as an input by DDRx, PORTxn can have a 1 written to it, activating a pull-up register. This all comes from Section 5.2.1

REFERENCE