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Pre-lab 2

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?

a) By setting DDRB to 0b11111111 we can set all 8 pins on Port B.

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?

a) In order to read the output signals present on Port D's 8 pins, we will need to utilize the PIND register.

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

a) Yes, the state of each DDRx (Data Direction Register) bit effects the corresponding PORTx bit. Setting the DDRx binary values to a one results in output while a zero would correspond to an input signal.

Case 1~ When the DDRx is set to an input register, then setting the PORTx bit controls the state of a pull up resistor within the device via a tri-state buffer. A one sets the pin to a (floating) Hi-Z state while a zero enables the pull up resistor.

Case 2~ When DDRx is set to 0 (output register) then the setting of the PORTx bit value will dictate the active state of that pin. Intuitively, a zero signifies low output, while a one means that the output signal will follow a high output behavior.

I watched a helpful youtube video from a link on microchip.com's website. Then I dug through last week's sample code and found some statements that seemed to match the descriptions.