ECE 375 Lab 2: Prelab

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Prelab Questions

The following questions and answers concern the ATmega128 I/O pins.

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?

The DDRB (DDRx + B) register is used to make this configuration. To configure all 8 outputs in this mode, the value b11111111 must be written to it. DDRx is short for “Data Direction Register X”, where 1 is output and 0 is input. As a caveat, all pull-ups are disable is SFIOR’s “pull up disable bit” is on.

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?

In this case, the PIND register must be read from to determine the values on the input ports.

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

Yes: The PORTx pins have two functions depending on the corresponding DDRx pins:

If the DDRx bit is unset, the corresponding PORTx bit determines if a pullup is present.

If the DDRx bit is set, the corresponding PORTx bit determines the driven pin value.