Exercises

1. What are the valid input voltage ranges for your MCU with VDD = 3.3V? With 5V?

|  |  |  |
| --- | --- | --- |
| VDD | 3.3 | 5 |
| Min VIL |  |  |
| Max VIL |  |  |
| Min VIH |  |  |
| Max VIH |  |  |

1. Examine the schematic for your board. How many GPIO ports are there? How many bits are available for each port?
2. Calculate the resistor values needed to limit current through the blue and red LEDs of Figure 8 to 18mA each. Assume the supply voltage is 3V.

|  |  |  |
| --- | --- | --- |
| LED Color | Red | Blue |
| VDD |  |  |
| VLED |  |  |
| ILED |  |  |
| RSeries |  |  |

1. Use a multimeter to measure the actual VDD on your MCU board.
2. What values need to be written to which registers in order to set a port as a digital input, with the resistive pull-up enabled?
3. Modify the LCD driver code presented in this chapter to use the first port, pins 0-3 for the data bus and pins 4-6 for control lines E, R/~W, and RS respectively.