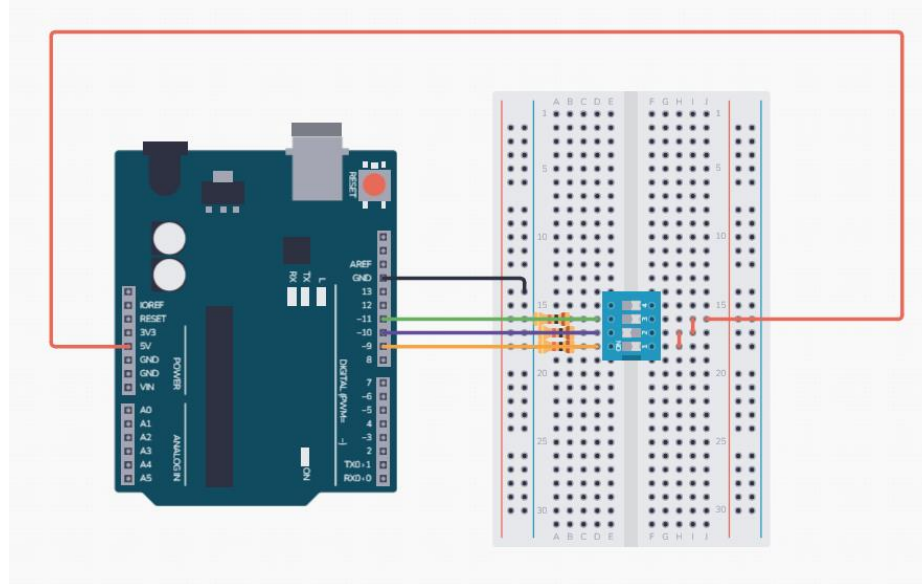


TECH 3230
Lab #4
Bitwise Operators and Input Pins
Ver 0.5

Purpose: To learn about input pins, bitwise operators, bit status testing and IO PORTS on the ATMELE 328p

Procedure:

1. Connect three switches with pull down resistors (1K) to PB1, PB2 and PB3



2. We will also use PB5 (built in LED on Arduino Uno)
3. Write a C program as follows:
 - a. Set up DDRB appropriately
 - b. in the while(1) loop
 - i. print the value of PINB in both hex and decimal format (%x and %d) use a TAB (\t) between the values and end with a CR and LF (\n\r)
 - ii. Test to see if PB1 is on
 1. If it is print "PB1 is ON\n\r"
 2. If it is not print "PB1 is OFF\n\r"
 - iii. Test to see if PB2 is on
 1. If it is print "PB2 is ON\n\r"
 2. If it is not print "PB2 is OFF\n\r"
 - iv. Test to see if PB3 is on
 1. If it is print "PB3 is ON\n\r"
 2. If it is not print "PB3 is OFF\n\r"

- v. Take PINB and shift it one place to the right and store it in CHAR variable named x.
- vi. Make all bits other than bits 0,1,2 zero (what bitwise function do you use to do this?)
- vii. Now go into a for loop, and loop x number of times and do the following inside the loop:
 - 1. Turn on the on board LED for 200ms
 - 2. Turn off the on board LED for 200ms

Demonstrate to the instructor and submit the project as a .zip file.