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1  /*
2   * main.c
3   *
4   * Created: 21/02/2023 10:20:03 PM
5   * Author: Kirollos, Marwa, Ramadan
6   */
7  #define F_CPU 1000000
8  #include <avr/io.h>
9  #include <util/delay.h>
10
11 #define get_bit(reg,bitnum) ((reg & (1<<bitnum))>>bitnum)
12 int main() {
13     float duty_cycle = 0;
14
15     DDRA=0b11110000; // Set the first 2 pins of PORTA as inputs to read push buttons
16     DDRB=0b11111111; // Set Pin3 (OC0) in Port B as output
17     DDRD=0b11111111;
18
19     TCCR0=0b01110101; // Configure TCCR0 as explained in the article
20     OCR0=255; // Set OCR0 to 255 for initial duty cycle = 0 and the motor is not rotating
21     while(1) {
22         if ((get_bit(PINA,0) == 1)) {
23             // Place your code here (Increase the duty cycle)
24             if(duty_cycle < 1.0) {
25                 duty_cycle += 0.1;
26             }
27             else
28                 duty_cycle = 1;
29         }
30         if ((get_bit(PINA,1) == 1)) {
31             // Place your code here (Decrease the duty cycle)
32             if(duty_cycle > 0) {
33                 duty_cycle -= 0.1;
34             }
35             else
36                 duty_cycle = 0;
37         }
38         if ((get_bit(PINA,2) == 1)) {
39             PORTD = 1;
40         }
41         if ((get_bit(PINA,3) == 1)) {
42             PORTD = 2;
43         }
44         // Place your code here (Apply the change in duty cycle to OCR0)
45         OCR0 = 255 - 255*duty_cycle; // d = (255-OCR0)/255 // 255 - d*255
46         _delay_ms(250);
47     }
48     return 0;
49 }
```