volatile int encoderPosition; //Global variable (int)encoderPosition

unsigned long Time; //Time keeps track of time in ms

unsigned long timer; //timer keeps track of time in ms

#include <LiquidCrystal.h>

LiquidCrystal LcdDriver(11, 9, 5, 6, 7, 8 );

//Button enumerator

enum Button //Initializes an enumerator Button w/idle, wait, low

{

Idle, //enum variable Idle

Wait, //enum variable Wait

Low //enum variable Low

};

Button ButtonState;

int ButtonNextState(int input) //function that is to be called in loop

{

switch (ButtonState)

{

case Idle: //State where nothing is happening

{

if (input == LOW) //If button is LOW

{

Time = millis(); //Record time of high to low transition

ButtonState = Wait; //Move to Wait

digitalWrite(13, HIGH); //Turns the LED on

}

break;

}//end Idle

case Wait: // When Button LOW; Wait for 5 millis

{

if (input == HIGH) //If button is HIGH

{

ButtonState = Idle; //Sets the buttonstate to idle

}

else if (millis() - Time >= 5) //If 5 millis has passed

{

ButtonState = Low; //Setting button state to LOW

digitalWrite(13, LOW); //Turns LED off

return 1; //The button has been pressed

}

break; //Breaks out of the switch case

}//end Wait

case Low: //Sets Button to LOW

{

if (input == HIGH) //checks if the input is set to HIGH

{

ButtonState = Idle; //Sets the buttonstate to idle

}

break; //Breaks out of the switch case

}//end Low

}//end switch-case

return 0;

}//end ButtonNextStat

//MonitorA is an interrupt service routine

void MonitorA()

{

//Check if inputA = inputB

if (digitalRead(2) == digitalRead(3))

{

//Increment encoderPosition

encoderPosition+=1;

}

//Else, inputA != inputB, therefore

else

{

//Decrement encoderPosition

encoderPosition-=1;

}

}

//MonitorB is an interrupt service routine

void MonitorB()

{

if (digitalRead(2) == digitalRead(3))

{

//Decrement encoderPosition

encoderPosition-=1;

}

else

{

//Increment encoderPosition

encoderPosition+=1;

}

}

void setup()

{

timer = millis();

pinMode(13, OUTPUT); //activates pin 13 to receive output

pinMode(4, INPUT); //activates pin 4 to accept input

Button ButtonState = Idle; //initializes button buttonstate to idle

Serial.begin(9600); //sets baud rate to 9600

pinMode(2, INPUT); //activates pin 2 for input

pinMode(3, INPUT); //activates pin 3 for input

LcdDriver.begin(16, 2); //Begins the LCD

attachInterrupt(digitalPinToInterrupt(2), MonitorA, CHANGE); //Attaches ISR to pin 2 for detecting change

attachInterrupt(digitalPinToInterrupt(3), MonitorB, CHANGE); //Attaches ISR to pin 3 for detecting change

}

void loop()

{

if(millis() - timer >= 100)

{

LcdDriver.setCursor(0,0);

LcdDriver.clear();

if(ButtonNextState(digitalRead(4)))

{

encoderPosition--;

}//end if

LcdDriver.print("Enc Val: ");

LcdDriver.print(encoderPosition);

timer+=100;

}

}