#include <LiquidCrystal.h>

#include <avr/interrupt.h>

#include <util/delay.h>

#include <stdlib.h>

#define SET\_bit(PORT,BIT)  PORT|=(1<<BIT)

#define CLR\_bit(PORT,BIT)  PORT&=~(1<<BIT)

struct

{

  volatile unsigned int ISR1:1;

}FLAG;

const int pingPin = 7;//configuring as input pin for sensor

long readUltrasonic(int pin)

{

  SET\_bit(DDRD,pin);

  CLR\_bit(PORTD,pin);

  \_delay\_ms(2);

  SET\_bit(PORTD,pin);

  \_delay\_ms(5);

  CLR\_bit(PORTD,pin);

  CLR\_bit(DDRD,pin);

  return pulseIn(pin, HIGH);

}

long microsecondsToCentimeters(long microseconds)

{

  return microseconds / 29 / 2;

}

int main(void)

{

  long  inches, cm;

  Serial.begin(9600);

  SET\_bit(DDRB,PB0);

  CLR\_bit(DDRD,PD7);//  sensor

  CLR\_bit(DDRD,PD2);//ignition switch

  EICRA|=(1<<ISC00);

  EICRA&=~(1<<ISC01);// Any logical change will raise interrupt

  EIMSK|=(1<<INT0);//Local Interrupt enable

  sei();//

while(1)

{

if(FLAG.ISR1==1)

{

  cm = microsecondsToCentimeters(readUltrasonic(7));

if(PIND & (1<<PD2))

          {

            CLR\_bit(PORTB,PB0);

          }

else if(PIND & ~(1<<PD2))

{

  if(cm<250)//buzzer range

  {

    SET\_bit(PORTB,PB0);

  }

  else

  {

    CLR\_bit(PORTB,PB0);

  }

}

 }

}

          }

ISR(INT0\_vect)  //interrupt for switch

            {

              cli();

            FLAG.ISR1=1;

              sei();

            }

Regards,

Venktesh Naidu

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**From:** Rayeesa Momin   
**Sent:** Friday, September 14, 2018 3:57 PM  
**To:** Venktesh Naidu  
**Subject:**

#include <LiquidCrystal.h>

#include <avr/interrupt.h>

#include <util/delay.h>

#include <stdlib.h>

#include <stdint.h>

#define SET\_bit(PORT,BIT)  PORT|=(1<<BIT)

#define CLR\_bit(PORT,BIT)  PORT&=~(1<<BIT)

const uint8\_t pingPin = 7;

struct

{

  volatile unsigned int flag:1;

}flag\_bit;

long readUltrasonicDistance(int pin)  //function to  read sensor

{

  SET\_bit(DDRD,pin);

  CLR\_bit(PORTD,pin);

  //\_delay\_ms(2);

  SET\_bit(PORTD,pin);

// \_delay\_ms(5);

  CLR\_bit(PORTD,pin);

  CLR\_bit(DDRD,pin);

  return pulseIn(pin, HIGH);

}

long microsecondsToCentimeters(long microseconds)

{

  return microseconds / 29 / 2;

}

int main(void)

{

  float inches, cm;

  SET\_bit(DDRB,PB0);//8th pin buzzer

  CLR\_bit(DDRD,PD7);//SENSOR signal PIN

  SET\_bit(DDRB,PB1);//9th pin LED

  CLR\_bit(PORTB,PB1);

                CLR\_bit(DDRD,PD2);                                       // 2nd pin for switch

                EICRA|=(1<<ISC00);

    EICRA|=(1<<ISC01); // Any logical change will raise interrupt

    EIMSK|=(1<<INT0); //Local Interrupt enable

    sei();

while(1)

{

  cm = microsecondsToCentimeters(readUltrasonicDistance(pingPin));

if(flag\_bit.flag==1)//to check switch(engine) on condition

{

if(cm<25)        //too close ,buzzer on

{

SET\_bit(PORTB,PB0);

}

else if(cm<50 && cm>25)// within specified range ,warning led

{

//CLR\_bit(PORTB,PB0);

SET\_bit(PORTB,PB1);

}

else            // led and buzzer off

{

  CLR\_bit(PORTB,PB1);

  CLR\_bit(PORTB,PB0);

}

}

}

}

ISR(INT0\_vect)  //interrupt for switch

            {

                                                cli();

            flag\_bit.flag=1;

                                                sei();

            }