```
#include <Keypad.h>

#include <Password.h>


  //alarm variable//

int x = 0;
unsigned long time_now = 0;
int period = 1000;
int a=0, z;


//password funtions//

String newPasswordString; //hold the new password
char newPassword[6]; //charater string of newPasswordString
Password password = Password("1234"); //initialize password to 1234 //you can use password.set(newPassword) to overwrite it


byte maxPasswordLength = 6;     //most characters that caan be entered
byte currentPasswordLength = 0;     //starting keys
const byte ROWS = 4; // Four rows
const byte COLS = 4; // Four columns



//Define the keymap
```

```
char keys[ROWS][COLS] = {

{'1','2','3','A'},

{'4','5','6','B'},

{'7','8','9','C'},

{'*','0','#','D'}

};



//// Connect keypad ROW0, ROW1, ROW2 and ROW3 to these Arduino pins.

byte rowPins[ROWS] = {43, 45, 48, 46,}; //connect to row pinouts



// Connect keypad COL0, COL1, COL2 and COL3 to these Arduino pins.

byte colPins[COLS] = {44, 42, 40, 38,}; //connect to column pinouts



// Create the Keypad
```

```
Keypad keypad = Keypad( makeKeymap(keys), rowPins, colPins, ROWS, COLS );
```

```
#include <LiquidCrystal.h>

// initialize the library by associating any needed LCD interface pin
// with the arduino pin number it is connected to
const int rs = 12, en = 11, d4 = 10, d5 = 4, d6 = 3, d7 = 2;
LiquidCrystal lcd(rs, en, d4, d5, d6, d7);
```

```
//pir//
int ledPin = 8;             // LED
int pirPin = 27;              // PIR Out pin
int pirStat = 0;                   // PIR status


//ultrasonic//

#define trigPin 32

#define echoPin 30

int Buzzer = 6; // Connect buzzer pin to 8

//int ledPin= 8;  //Connect LEd pin to 6

int duration, distance; //to measure the distance and time taken


//soundSensor//

int soundSensor=7;

boolean LEDStatus=false;

const int buttonPin = 24;     // the number of the pushbutton pin

int buttonState = 0;         // variable for reading the pushbutton status







// the setup function runs once when you press reset or power the board

void setup() {


//set up pins as inouts or outputs//


pinMode(ledPin, OUTPUT);

pinMode(pirPin, INPUT);


pinMode(trigPin, OUTPUT);
```

```
        pinMode(echoPin, INPUT);

        pinMode(Buzzer, OUTPUT);




pinMode(soundSensor,INPUT);

  pinMode(buttonPin, INPUT);


  Serial.begin(9600);

   lcd.begin(16, 2);

   lcd.print("activate alarm");// Print a message to the LCD.




}




// the loop function runs over and over again forever



void loop() {


lcd.clear();



  my_key();


  while(x){
    Flash();

    my_key();

    My_Senors();
    my_key();

  }
}



void my_key(){

    //Serial.println(" Activate Alarm");
    //lcd.print("activat alarm");

  char key = keypad.getKey(); //waits for button pushed

   if (key != NO_KEY){  //when no password entered proceed...

      delay(60);

      switch (key){ //gets input and stores to compare later

      case 'A': break;
    case 'B': break;
                      // 4 inputs
    case 'C': break;

    case 'D': break;


    case '#': checkPassword(); break;    // when # is pressed the password is checked

    case '*': resetPassword(); break;   // if * is pressed it resets the input to start again eg.wrong input

    default: processNumberKey(key);   //checks

    }

  }

}



void processNumberKey(char key) {

  Serial.print(key); // prints out key on serial monitor
  lcd.clear(); //clears lcd
  lcd.print(key);  //prints out keys on lcd

  currentPasswordLength++;
  password.append(key);

  if (currentPasswordLength == maxPasswordLength) {    //if the password entered matches the length or correct password

    checkPassword();                              // checks passowrd

  }

}



void checkPassword() {

  if (password.evaluate()){       // if passowrd is right
    countdown();     //does the countodwon function
    lcd.clear();   //clears lcd
    Serial.println(" Alarm activated.");    // prints to serial monitor
    lcd.print("Alarm Activated");          // prints to lcd

    x=x^1;

  } else {

    Serial.println(" Wrong passwowrd!");         //prints to serial monitor
    lcd.print("wrong password");                //prints to lcd

  }
```

```
   resetPassword();                         // reset function

}



void resetPassword() {              // if passowrd is wrong , brings length back to zero and starts again

   password.reset();

   currentPasswordLength = 0;

}



void Flash(){

  digitalWrite(12, HIGH);   // turn the LED on (HIGH is the voltage level)

  delay(1000);    // wait for a second

  digitalWrite(12, LOW);    // turn the LED off by making the voltage LOW

  delay(1000);

                      // wait for a second
```

```
}

void My_Senors() {

  pirStat = digitalRead(pirPin);

if (pirStat == HIGH) {           // if motion detected

  digitalWrite(ledPin, HIGH);  // turn LED ON

  Serial.println("Hey I got you!!!");     // prints serial

   lcd.setCursor(0, 1);

   lcd.clear();                         //prints lcd

  lcd.print("Intruder");




      digitalWrite(ledPin,HIGH);      // led lights up

     digitalWrite(Buzzer,HIGH);       //buzzer buzzes

My_Restart();

}


else {

  digitalWrite(ledPin, LOW); // turn LED OFF if we have no motion

  digitalWrite(Buzzer, LOW); // buzzer of if no motion

}

digitalWrite(trigPin, HIGH);

   delayMicroseconds(10);

   digitalWrite(trigPin, LOW);

   duration = pulseIn(echoPin, HIGH);

   distance = (duration/2) / 29.1;

   //when distance is greater than or equal to 500 OR less than or equal to 0,the buzzer and LED are off

 if (distance >= 5 || distance <= 0)    // distance settings

       {

       Serial.println("no object detected");   //serial print
```

```
    digitalWrite(Buzzer,LOW);       // buzzer off
    digitalWrite(ledPin,LOW);       //led off
    }
 else {  // if object is detected....
  countdown();
    Serial.println("object detected \n");  //prints to serial monitor
    Serial.print("distance= ");       //prints distance to serial monitor
    Serial.print(distance);    //prints the distance if it is between the range 0 to 200

   digitalWrite(Buzzer,HIGH);      //sounds buzzer if if detection
    digitalWrite(ledPin,HIGH);    //lights led
    lcd.clear();           // clears lcd
    lcd.print("intruder");      //prints to lcd
   My_Restart();
}
int SensorData=digitalRead(soundSensor);
 if(SensorData==1){

  if(LEDStatus==false){
    LEDStatus=true;
                  // when sound is deteced and 5v on
    digitalWrite(Buzzer,HIGH);  //sounds buzzer
    digitalWrite(ledPin,HIGH);  // lights led
    lcd.print("sound alert");
  }
  else{               // no sound deteced
    LEDStatus=false;
    digitalWrite(ledPin,LOW);   // led off
  }
 }
}
void countdown(){      //countdown function
 lcd.clear();         // clears lcd

 lcd.print("Activation in... ");     //prints lcd

 for(z=5;z>0;z--){       // for 5 seconds going downwards 5..4..3..2..1..

  Serial.println(z);     //prints to serial monitor

  lcd.setCursor(8, 1);

  lcd.print(z);       // prints to lcd

  My_Delay();
}

}
void My_Restart() {
  buttonState = digitalRead(buttonPin);     //reads the button
  //  buttonState = digitalRead(buttonPin);
    if (buttonState == HIGH) {   //when button is pressed and 5v run

 lcd.clear();
 lcd.print("alarm deactivated");      //prints to lcd
 digitalWrite(Buzzer,LOW);           //turns off buzzer
    digitalWrite(ledPin,LOW);     // turns off led
```

```
}
}


void My_Delay()  {

time_now = millis();

while(millis() < time_now + period)  {

// wait appox. [period] ms


}

}
```