CHAPTER: 6 SENSOR INTERFACING

TEMPERTURE – SENSOR

PRACTICAL: 6A

AIM: To interface TEMPERTURE LM35 – SENSOR using Arduino.

ARDUINO CODE:

```
/***********************
 * Author: Shreejicharan
 * Title: To Display Temperature on Virtual Terminal using Proteus
 * Date: 27/05/2017
 * Time: 6:00
 * Email: shreejicharanelectronics@gmail.com
 ***********************/
float temp;
int tempPin = A1;

void setup(){
  Serial.begin(9600);
}

void loop(){
  temp = analogRead(tempPin);
  temp = temp*0.48828125;
  Serial.print("TEMPRATURE = ");
  Serial.print(temp);
  Serial.print("*C");
  Serial.println();
  delay(1000);
}
```

SIMULATION:
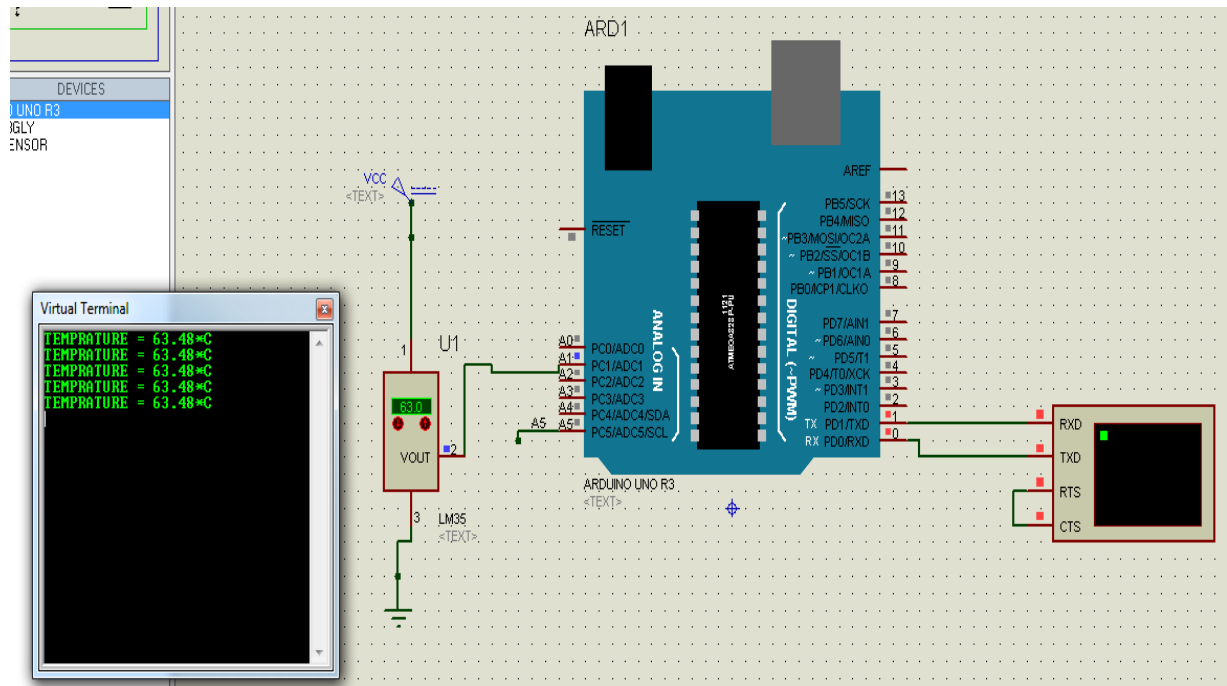
CHAPTER: 6 SENSOR INTERFACING

PIR – SENSOR

PRACTICAL: 6B

AIM: To interface PIR – SENSOR using Arduino.

ARDUINO CODE:

```
/**********************
 * Author: Shreejicharan
 * Title: To interface PIR – SENSOR using Arduino.
 * Date: 27/05/2017
 * Time: 6:00
 * Email: shreejicharanelectronics@gmail.com
 **********************/

  #define pirPin 2
  int calibrationTime = 30;
  long unsigned int lowIn;
  long unsigned int pause = 5000;
  boolean lockLow = true;
  boolean takeLowTime;
  int PIRValue = 0;

  void setup()
  {
      Serial.begin(9600);
       pinMode(pirPin, INPUT);
  }

  void loop()
  {
      PIRSensor();
  }
```
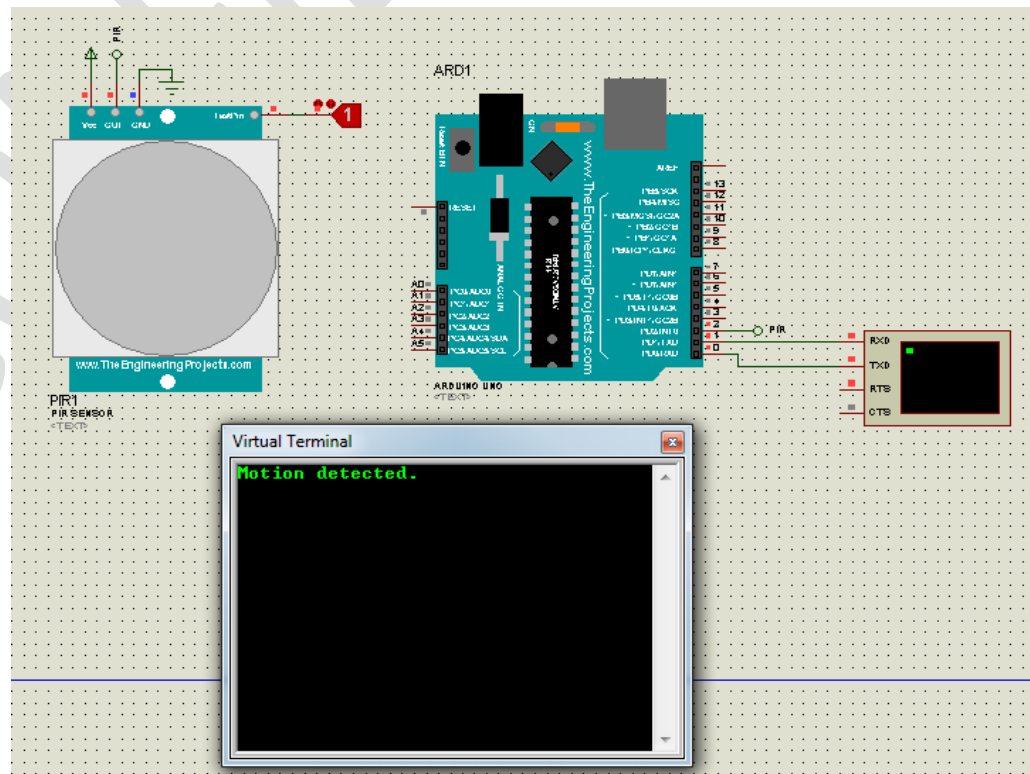
```
void PIRSensor()
    {
        if(digitalRead(pirPin) == HIGH)
        {
          if(lockLow)
          {
             PIRValue = 1;
             lockLow = false;
             Serial.println("Motion detected.");
             delay(50);
          }
          takeLowTime = true;
        }
        if(digitalRead(pirPin) == LOW)
        {
          if(takeLowTime){lowIn = millis();takeLowTime = false;}
          if(!lockLow && millis() - lowIn > pause)
          {
             PIRValue = 0;
             lockLow = true;
             Serial.println("Motion ended.");
             delay(50);
          }
        }
    }
```

SIMULATION:

CHAPTER: 6 SENSOR INTERFACING

ULTRASONIC – SENSOR

PRACTICAL: 6C

AIM: To interface Ultrasonic – SENSOR using Arduino.

ARDUINO CODE:

```
/**********************
 * Author: Shreejicharan
 * Title: To interface Ultrasonic sensor using Arduino.
 * Date: 27/05/2017
 * Time: 6:00
 * Email: shreejicharanelectronics@gmail.com
 **********************/

const int pingPin = 7; // Trigger Pin of Ultrasonic Sensor
const int echoPin = 6; // Echo Pin of Ultrasonic Sensor

void setup()
{
  Serial.begin(9600); // Starting Serial Terminal
}

void loop()
{
  long duration, inches, cm;
  pinMode(pingPin, OUTPUT);
  digitalWrite(pingPin, LOW);
  delayMicroseconds(2);
  digitalWrite(pingPin, HIGH);
  delayMicroseconds(10);
  digitalWrite(pingPin, LOW);

  pinMode(echoPin, INPUT);
  duration = pulseIn(echoPin, HIGH);
  inches = microsecondsToInches(duration);
  cm = microsecondsToCentimeters(duration);

  Serial.print(inches);
  Serial.print("in, ");
  Serial.print(cm);
  Serial.print("cm");
  Serial.println();
```
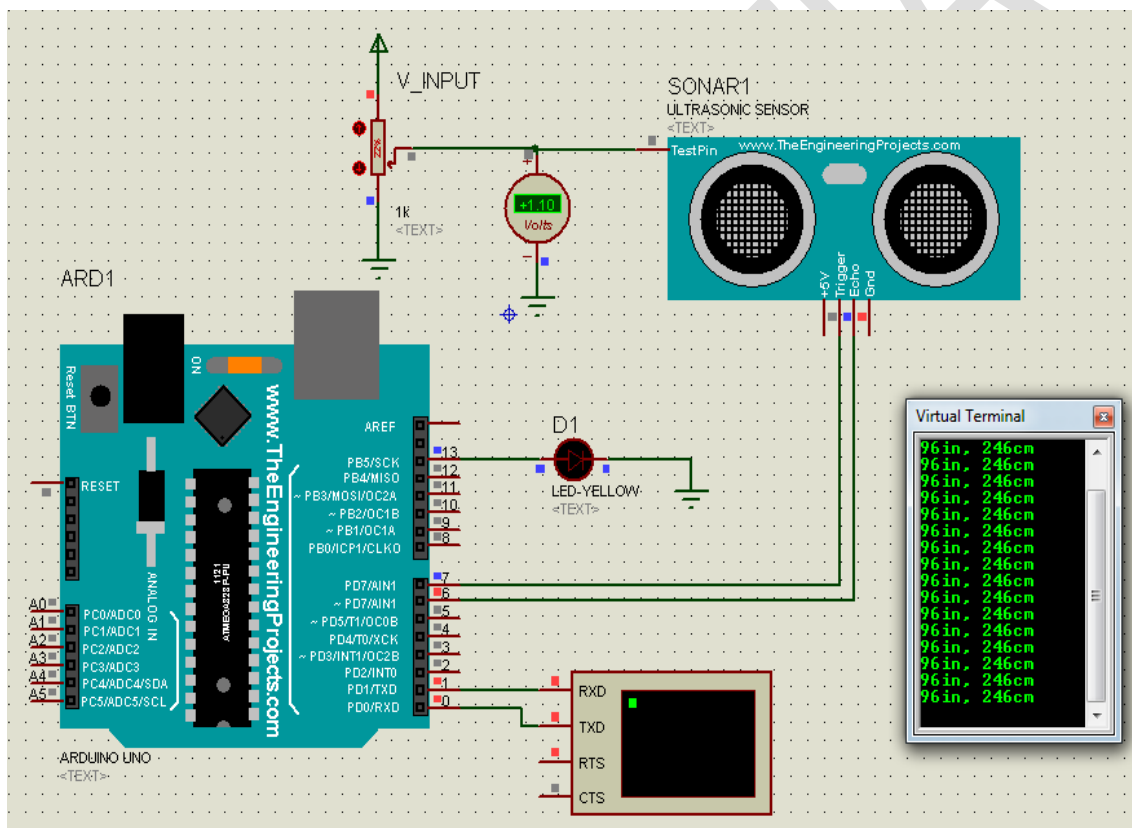
```
  delay(100);
}

long microsecondsToInches(long microseconds)
{
 return microseconds / 74 / 2;
}

long microsecondsToCentimeters(long microseconds)
{
  return microseconds / 29 / 2;
}
```

SIMULATION:

CHAPTER: 6 SENSOR INTERFACING

LDR – SENSOR

PRACTICAL: 6D

AIM: To interface LDR – SENSOR using Arduino.

ARDUINO CODE:

```
/**********************
 * Author: Shreejicharan
 * Title: To interface LDR using Arduino.
 * Date: 27/05/2017
 * Time: 6:00
 * Email: shreejicharanelectronics@gmail.com
 **********************/

The circuit:
 * LCD RS pin to digital pin 12
 * LCD Enable pin to digital pin 11
 * LCD D4 pin to digital pin 5
 * LCD D5 pin to digital pin 4
 * LCD D6 pin to digital pin 3
 * LCD D7 pin to digital pin 2
 * LCD R/W pin to ground
 */

// include the library code:
#include <LiquidCrystal.h>
#define sensor A0

// initialize the library with the numbers of the interface pins
LiquidCrystal lcd(12, 11, 5, 4, 3, 2);

#define sensor A0
#define BUZZER 0
void setup(){
  // set up the lcd's number of columns and rows:
  lcd.begin(16, 2);
  pinMode(sensor, INPUT);
  pinMode(BUZZER, OUTPUT);
```

```
  lcd.setCursor(0,0);
  lcd.print("SENSOR VALUE");
}

void loop(){
  int sensorValue = analogRead(sensor);
  //0.24/stepsize = 0.24V/4.88mV ~ 50
  if (sensorValue>50){
   digitalWrite(BUZZER,HIGH);
  }else{
   digitalWrite(BUZZER,LOW);
  }
  lcd.setCursor(0,1);
  lcd.print(sensorValue);
  delay(20);
  lcd.print("   ");
}
```

SIMULATION: