**TASK 1**

**TASK 2**

**int sensorValue;**

**int sensorLow = 1023;**

**int sensorHigh = 0;**

**const int LED\_PIN = 13;**

**void setup() {**

**Serial.begin(9600);**

**pinMode(LED\_PIN, OUTPUT);**

**digitalWrite(LED\_PIN, HIGH);**

**// calibrate for the first five seconds after program runs**

**while (millis() < 5000) {**

**sensorValue = analogRead(A0);**

**if (sensorValue > sensorHigh) {**

**sensorHigh = sensorValue;**

**}**

**if (sensorValue < sensorLow) {**

**sensorLow = sensorValue;**

**}**

**}**

**// turn the LED off, signaling the end of the calibration period**

**digitalWrite(LED\_PIN, LOW);**

**}**

**void loop() {**

**sensorValue = analogRead(A0);**

**float voltage=(0.05\*(sensorValue/10.23));**

**float resistance=((4700\*voltage)/(5-voltage));**

**Serial.println(resistance);**

**// map the sensor values to a wide range of pitches**

**int pitch = map(sensorValue, sensorLow, sensorHigh, 50, 4000);**

**// play the tone for 20 ms on pin 8**

**tone(8, pitch, 20);**

**// wait for 10 ms to give sound time to play**

**delay(10);**

**}**

**TASK 3**

**int sensorValue;**

**int sensorLow = 1023;**

**int sensorHigh = 0;**

**const int LED\_PIN = 13;**

**const int SWITCH = 3;**

**void setup() {**

**Serial.begin(9600);**

**pinMode(LED\_PIN, OUTPUT);**

**digitalWrite(LED\_PIN, HIGH);**

**// calibrate for the first five seconds after program runs**

**while (millis() < 5000) {**

**sensorValue = analogRead(A0);**

**if (sensorValue > sensorHigh) {**

**sensorHigh = sensorValue;**

**}**

**if (sensorValue < sensorLow) {**

**sensorLow = sensorValue;**

**}**

**}**

**// turn the LED off, signaling the end of the calibration period**

**digitalWrite(LED\_PIN, LOW);**

**}**

**void loop() {**

**sensorValue = analogRead(A0);**

**float voltage=(0.05\*(sensorValue/10.23));**

**float resistance=((4700\*voltage)/(5-voltage));**

**Serial.println(resistance);**

**int switch\_state = digitalRead(SWITCH);**

**if (switch\_state == HIGH){**

**digitalWrite(LED\_PIN, HIGH);**

**}else{**

**digitalWrite(LED\_PIN, LOW);**

**}**

**// map the sensor values to a wide range of pitches**

**int pitch = map(sensorValue, sensorLow, sensorHigh, 50, 4000);**

**// play the tone for 20 ms on pin 8**

**tone(8, pitch, 20);**

**// wait for 10 ms to give sound time to play**

**delay(10);**

**}**

**TASK 4**

**int sensorValue;**

**int sensorLow = 0;**

**int sensorHigh = 1023;**

**const int GRN2 = 4;**

**const int AMB = 5;**

**const int RED2 = 6;**

**const int LED\_PIN = 13;**

**const int SWITCH = 3;**

**void setup() {**

**Serial.begin(9600);**

**pinMode(LED\_PIN, OUTPUT);**

**pinMode(GRN2, OUTPUT);**

**pinMode(AMB, OUTPUT);**

**pinMode(RED2, OUTPUT);**

**digitalWrite(LED\_PIN, HIGH);**

**// calibrate for the first five seconds after program runs**

**while (millis() < 5000) {**

**sensorValue = analogRead(A0);**

**if (sensorValue > sensorHigh) {**

**sensorHigh = sensorValue;**

**}**

**if (sensorValue < sensorLow) {**

**sensorLow = sensorValue;**

**}**

**}**

**// turn the LED off, signaling the end of the calibration period**

**digitalWrite(LED\_PIN, LOW);**

**}**

**void loop() {**

**sensorValue = analogRead(A0);**

**float voltage=(0.05\*(sensorValue/10.23));**

**float resistance=((4700\*voltage)/(5-voltage));**

**Serial.println(resistance);**

**int switch\_state = digitalRead(SWITCH);**

**if (switch\_state == HIGH){**

**digitalWrite(LED\_PIN, HIGH);**

**}else{**

**digitalWrite(LED\_PIN, LOW);**

**}**

**// map the sensor values to a wide range of pitches**

**int pitch = map(sensorValue, sensorLow, sensorHigh, 50, 4000);**

**if (pitch >= 50 && pitch <=1000){**

**digitalWrite(GRN2,LOW);**

**digitalWrite(AMB,LOW);**

**digitalWrite(RED2,LOW);**

**}else if (pitch >= 1001 && pitch <=2000){**

**digitalWrite(GRN2,HIGH);**

**digitalWrite(AMB,LOW);**

**digitalWrite(RED2,LOW);**

**}else if (pitch >= 2001 && pitch <=3000){**

**digitalWrite(GRN2,HIGH);**

**digitalWrite(AMB,HIGH);**

**digitalWrite(RED2,LOW);**

**}else if (pitch > 3001 && pitch <=4000){**

**digitalWrite(GRN2,HIGH);**

**digitalWrite(AMB,HIGH);**

**digitalWrite(RED2,HIGH);**

**}**

**Serial.print("Pitch");**

**Serial.println(pitch);**

**delay(100);**

**// play the tone for 20 ms on pin 8**

**tone(8, pitch, 20);**

**// wait for 10 ms to give sound time to play**

**delay(10);**

**}**