CODING :

```
#include <WiFi.h>//library for wifi
#include <PubSubClient.h>//library for MQtt
#include "DHT.h"// Library for dht11
#define DHTPIN 15     // what pin we're connected to
#define DHTTYPE DHT22   // define type of sensor DHT 11
#define LED 2

DHT dht (DHTPIN, DHTTYPE);// creating the instance by passing pin and
typr of dht connected
```

```
void callback(char* subscribetopic, byte* payload, unsigned int
payloadLength);
```

```
//-------credentials of IBM Accounts------
```

```
#define ORG "0eut3p"//IBM ORGANITION ID
#define DEVICE_TYPE "ESP32_Controller"//Device type mentioned in ibm
watson IOT Platform
#define DEVICE_ID "mohan123"//Device ID mentioned in ibm watson IOT
Platform
#define TOKEN "37Dlx1Y7xEzNtbDm?W"     //Token
String data3;
float h, t;
```

```
//-------- Customise the above values --------
char server[] = ORG ".messaging.internetofthings.ibmcloud.com";//
Server Name
char publishTopic[] = "iot-2/evt/data/fmt/json";// topic name and type
of event perform and format in which data to be send
char subscribetopic[] = "iot-2/cmd/command/fmt/String";//
cmd  REPRESENT command type AND COMMAND IS TEST OF FORMAT STRING
char authMethod[] = "use-token-auth";// authentication method
char token[] = TOKEN;
char clientId[] = "d:" ORG ":" DEVICE_TYPE ":" DEVICE_ID;//client id
```

```
//-----------------------------------------
WiFiClient wifiClient; // creating the instance for wificlient
PubSubClient client(server, 1883, callback ,wifiClient); //calling the
predefined client id by passing parameter like server id,portand
wificredential
```

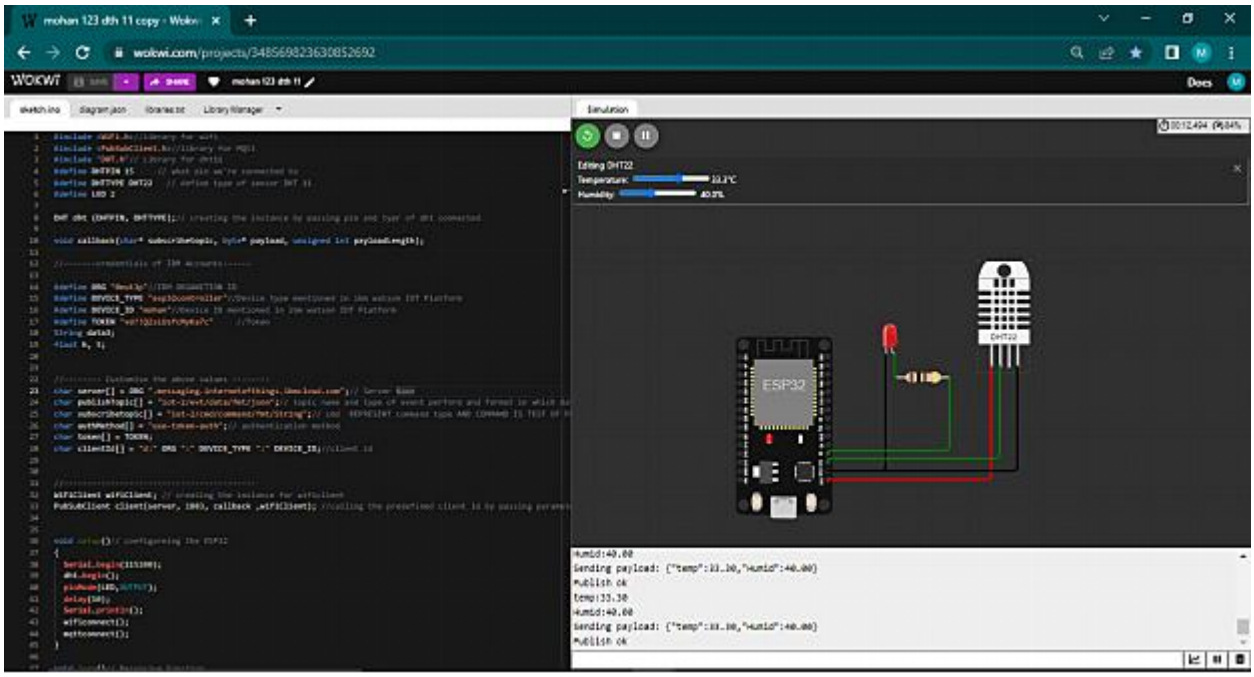
```
void setup()// configureing the ESP32
{
```

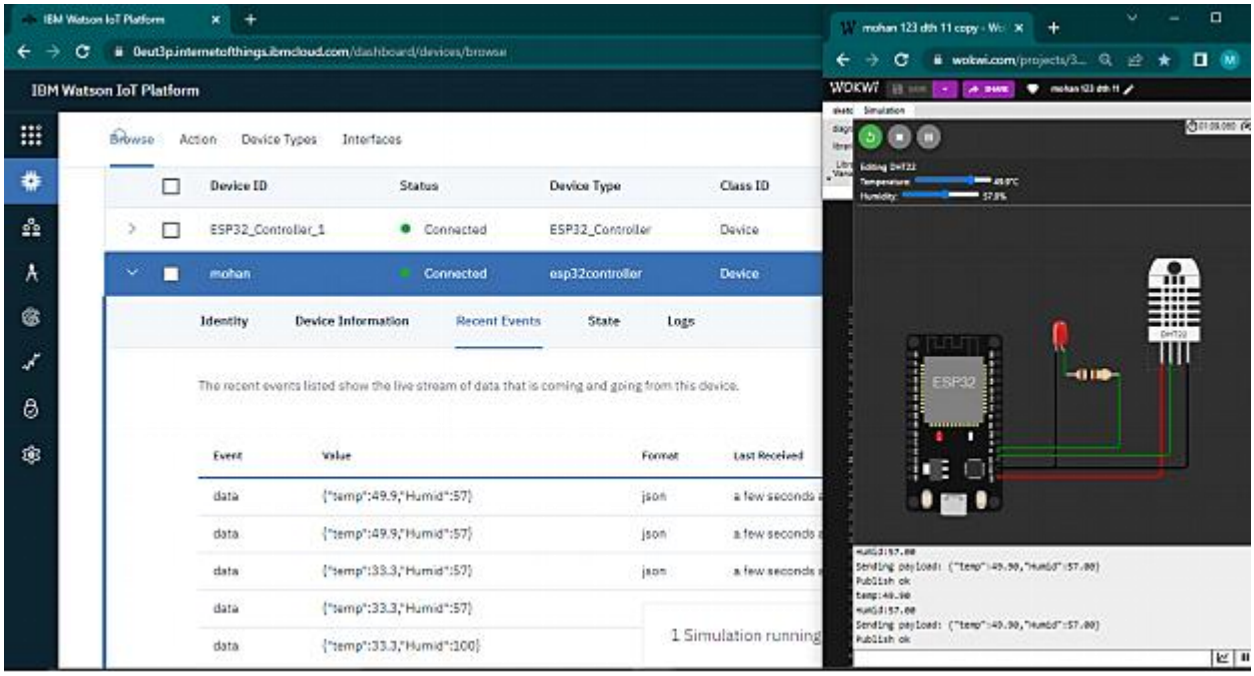
```
  Serial.begin(115200);
  dht.begin();
  pinMode(LED,OUTPUT);
  delay(10);
  Serial.println();
  wificonnect();
  mqttconnect();
}

void loop()// Recursive Function
{

  h = dht.readHumidity();
  t = dht.readTemperature();
  Serial.print("temp:");
  Serial.println(t);
  Serial.print("Humid:");
  Serial.println(h);

  PublishData(t, h);
  delay(1000);
  if (!client.loop()) {
    mqttconnect();
  }

}


/*.....................................retrieving to
Cloud.............................*/

void PublishData(float temp, float humid) {
  mqttconnect();//function call for connecting to ibm
  /*
     creating the String in in form JSon to update the data to ibm
cloud
  */
  String payload = "{\"temp\":";
  payload += temp;
  payload += "," "\"Humid\":";
  payload += humid;
  payload += "}";


  Serial.print("Sending payload: ");
  Serial.println(payload);


  if (client.publish(publishTopic, (char*) payload.c_str())) {
    Serial.println("Publish ok");// if it sucessfully upload data on
the cloud then it will print publish ok in Serial monitor or else it
will print publish failed
```

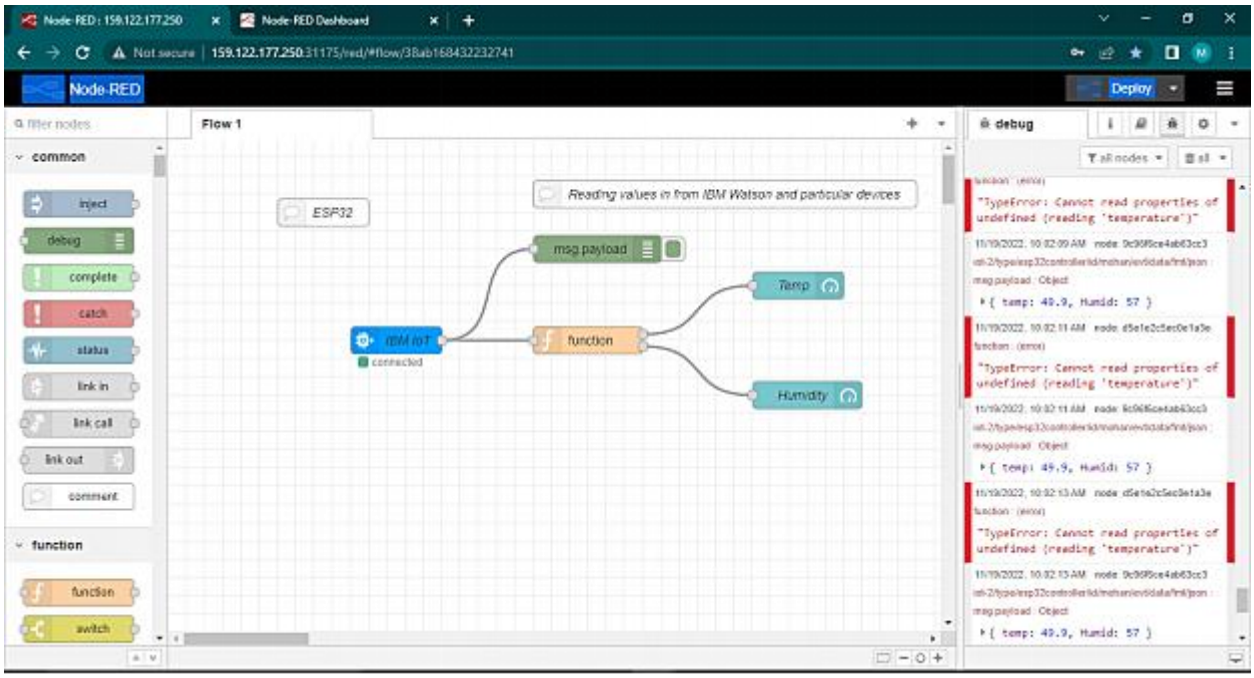
```
  } else {
    Serial.println("Publish failed");
  }

}
```

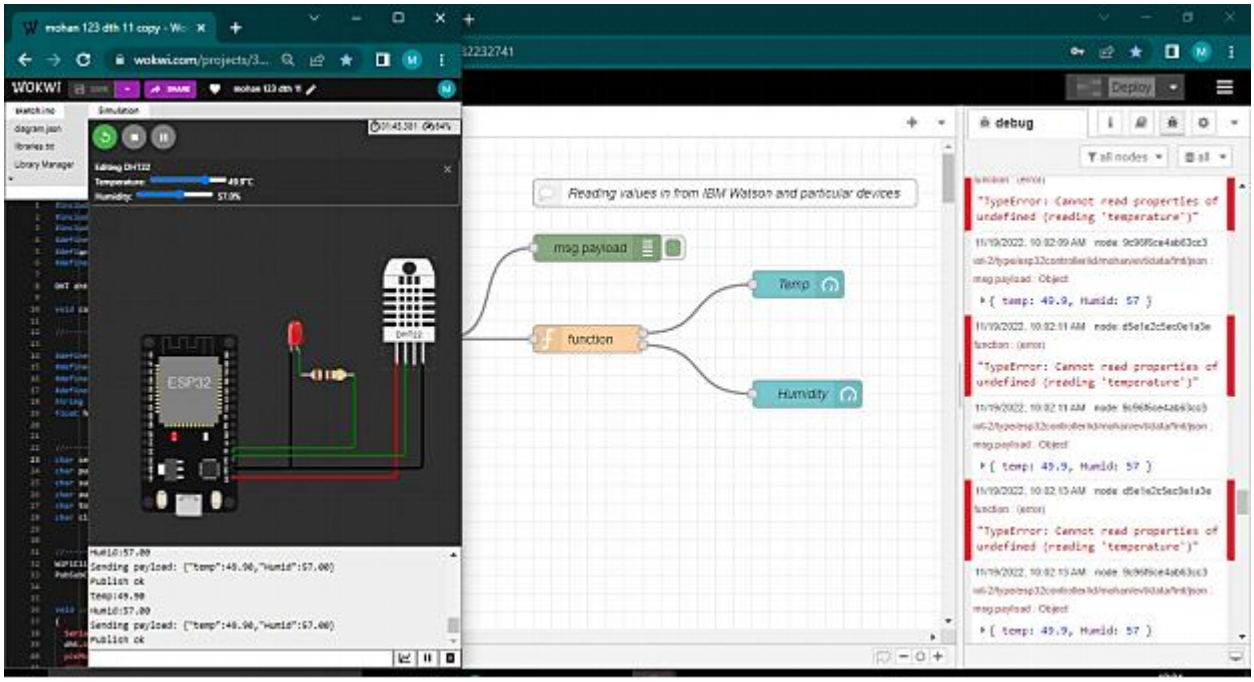
```
void mqttconnect() {
  if (!client.connected()) {
    Serial.print("Reconnecting client to ");
    Serial.println(server);
    while (!!!client.connect(clientId, authMethod, token)) {
      Serial.print(".");
      delay(500);
```

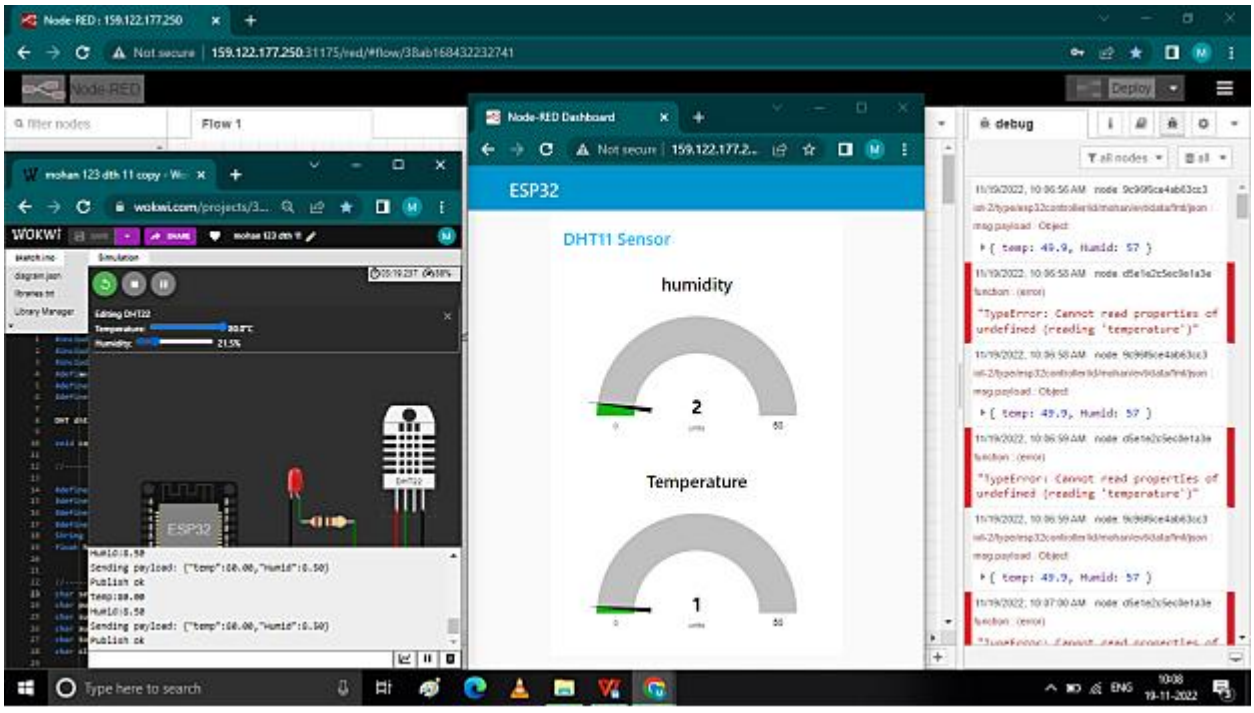
```
    }
```

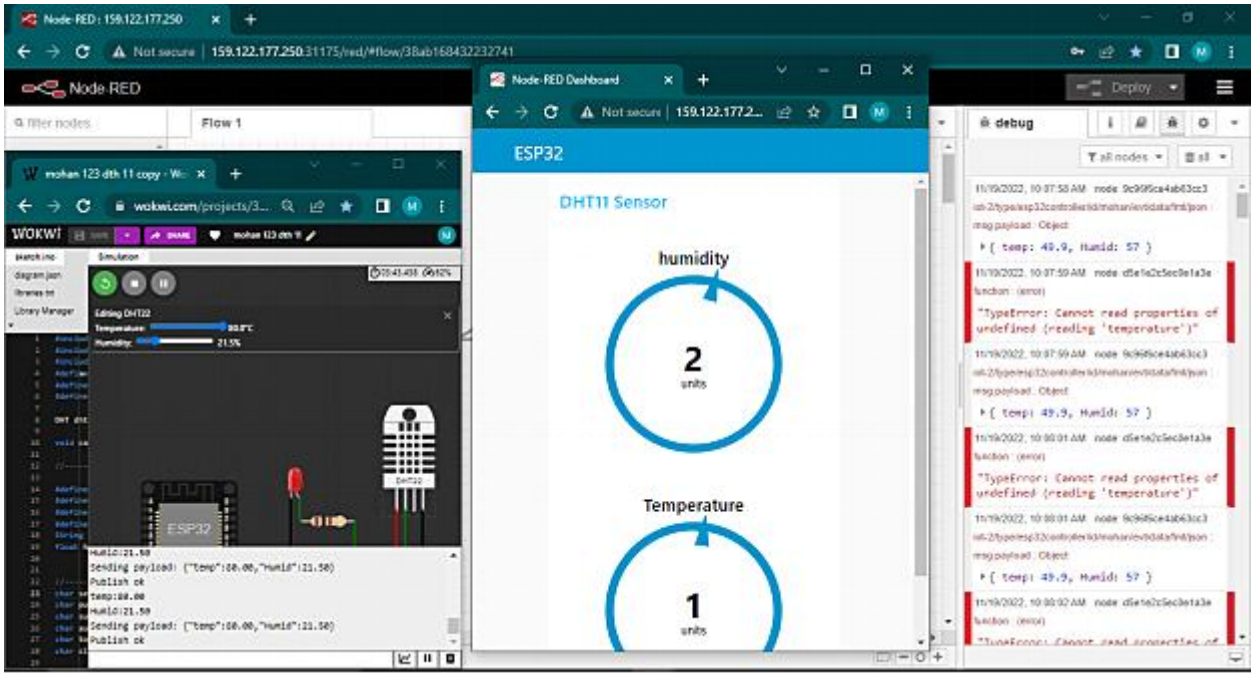



IBM Watson IoT Platform
Browse
Action
Device Types
Interfaces
Device ID
Status
Device Type
Class ID
ESP32_Controller_1
Connected
ESP32_Controller
Device
mohan
Connected
esp32controller
Device
Identity
Device Information
Recent Events
State
Logs
The recent events listed show the live stream of data that is coming and going from this device.
Event
Value
Format
Last Received
data
{"temp":49.9,"Humid":57}
json
data
{"temp":49.9,"Humid":57}
json
data
{"temp":33.3,"Humid":57}
json
data
{"temp":33.3,"Humid":57}
data
{"temp":33.3,"Humid":100}
1 Simulation running
ESP32
Sending payload: {"temp":49.90,"Humid":57.00}
Publish ok
temp:49.90
Sending payload: {"temp":49.90,"Humid":57.00}
Publish ok


Node-RED
Deploy
Flow 1
common
inject
debug
complete
catch
status
link in
link call
link out
comment
function
function
switch
ESP32
Reading values in from IBM Watson and particular devices
msg payload
IBM IoT
connected
function
Temp
Humidity
debug
"TypeError: Cannot read properties of undefined (reading 'temperature')"
{ temp: 49.9, Humid: 57 }


Reading values in from IBM Watson and particular devices
msg.payload
function
Temp
Humidity
debug
ESP32


Node-RED Dashboard
ESP32
DHT11 Sensor
humidity
Temperature
debug
Flow 1

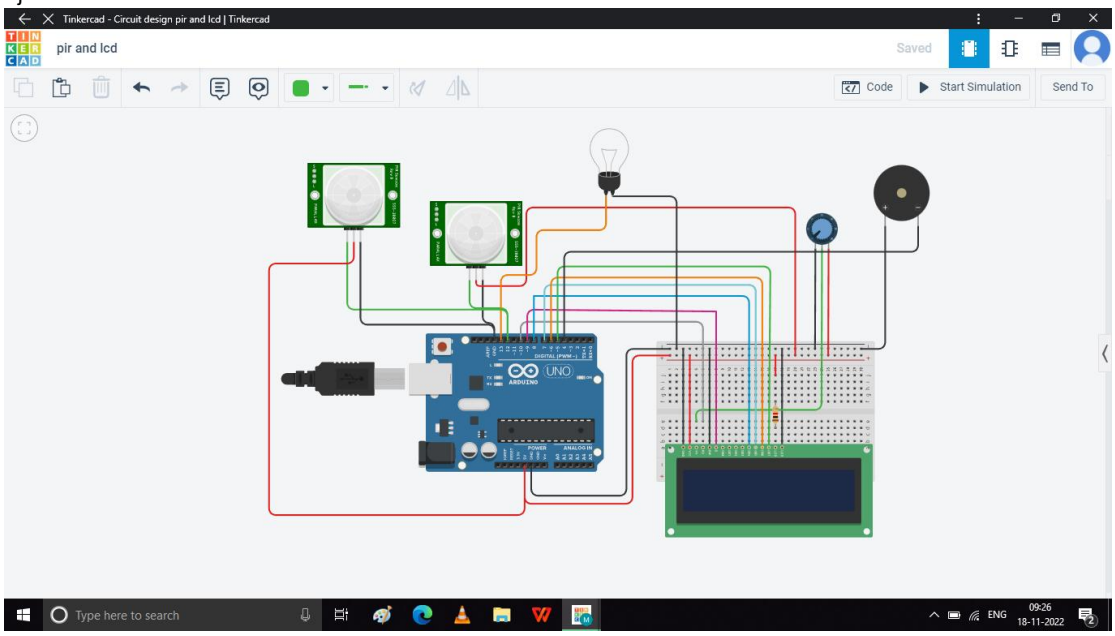


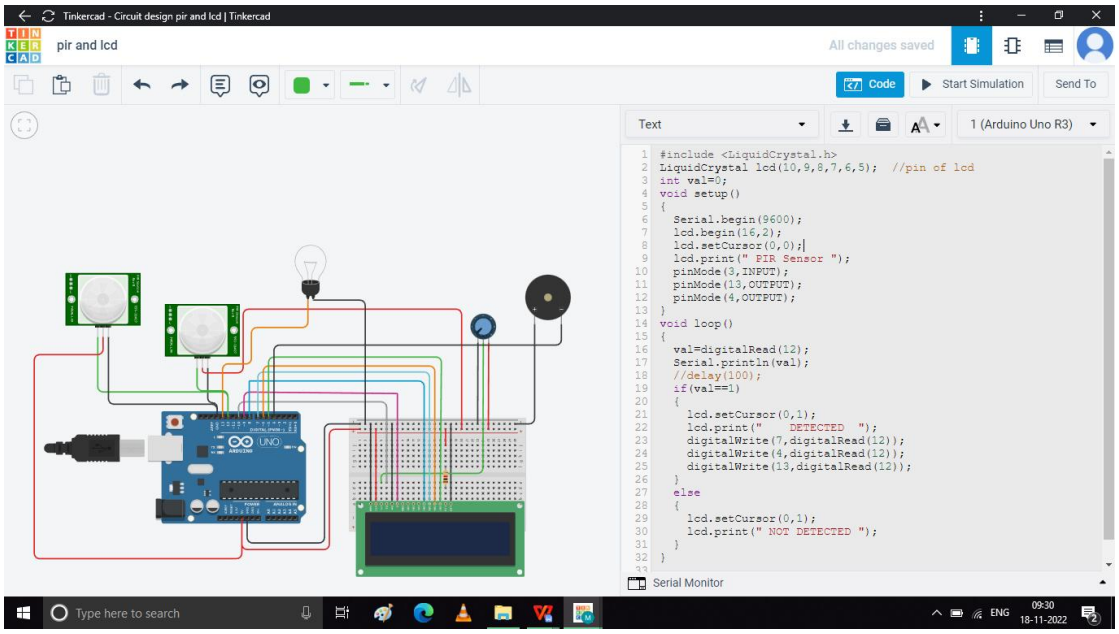
Tinkercad

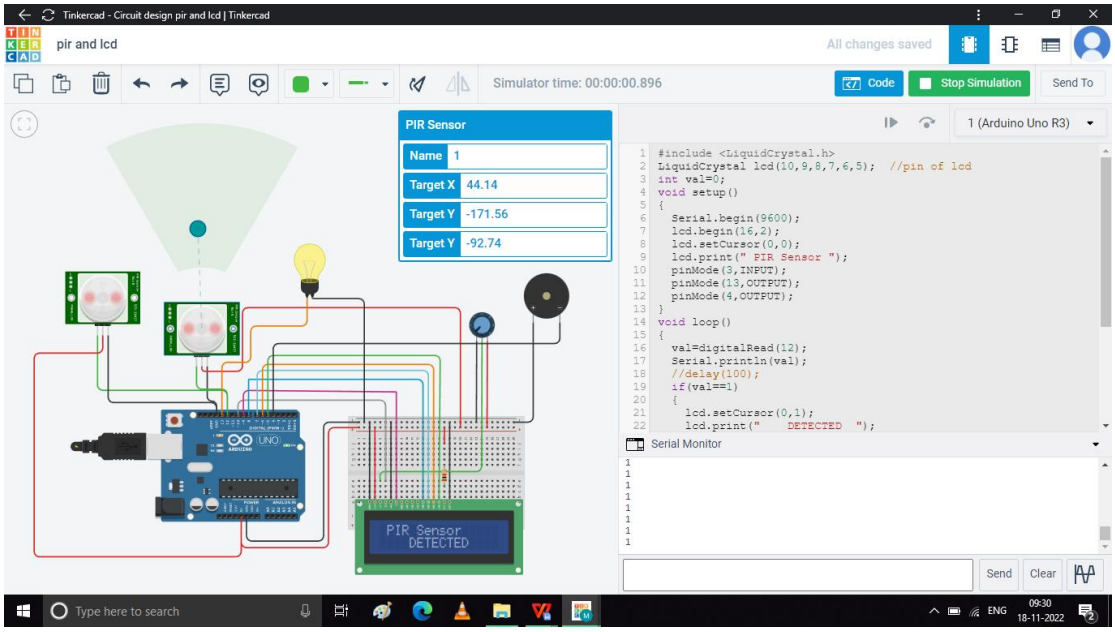
Program:

```
#include "LiquidCrystal.h"         //Library of lcd
LiquidCrystal lcd(10,9,8,7,6,5); //pin of lcd
int val = 0 ;
void setup()
{
 Serial.begin(9600);
 lcd.begin(16,2);
 lcd.setCursor(0,0);
 lcd.print("  PIR Sensor   ");
 pinMode(3,INPUT);
 pinMode(13,OUTPUT);
 pinMode(4,OUTPUT);
}
void loop()
{
 val = digitalRead(12);  //  pir sensor output pin connected
 Serial.println(val);  // see the value in serial mpnitor in Arduino IDE
 //delay(100);
 if(val == 1 )
 {
  lcd.setCursor(0,1);
  lcd.print("    DETECTED     ");
  digitalWrite(7,digitalRead(12));
  digitalWrite(4,digitalRead(12));
  digitalWrite(13,digitalRead(12));
 }
 else
 {
```

```
  lcd.setCursor(0,1);
  lcd.print("  NOT DETECTED      ");
 }
}
```






Tinkercad - Circuit design pir and lcd | Tinkercad
pir and lcd
All changes saved
Simulator time: 00:00:00.896
Code
Stop Simulation
Send To
PIR Sensor
Name 1
Target X 44.14
Target Y -171.56
Target Y -92.74
1 (Arduino Uno R3)
#include <LiquidCrystal.h>
LiquidCrystal lcd(10,9,8,7,6,5); //pin of lcd
int val=0;
void setup()
{
Serial.begin(9600);
lcd.begin(16,2);
lcd.setCursor(0,0);
lcd.print(" PIR Sensor ");
pinMode(3,INPUT);
pinMode(13,OUTPUT);
pinMode(4,OUTPUT);
}
void loop()
{
val=digitalRead(12);
Serial.println(val);
//delay(100);
if(val==1)
{
lcd.setCursor(0,1);
lcd.print(" DETECTED ");
Serial Monitor
1
1
1
1
1
1
1
1
Send
Clear
PIR Sensor
DETECTED
Type here to search
ENG
09:30
18-11-2022