Experiment No. 5

Title: Write a program using Arduino to control LED (One or more ON/OFF).

Roll No:SAI&DC75 Batch: S9

Date of Performance: _ _ /_ _/_ _ _ _

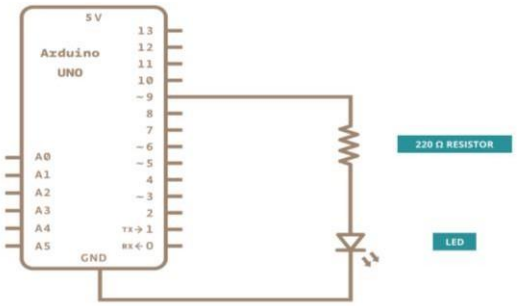
Date of Assessment: _ _ /_ _/_ _ _ _

Particulars	Marks
Attendance (05)	
Journal (05)	
Performance (05)	
Understanding (05)	
Total (20)	
Signature of Staff Member	

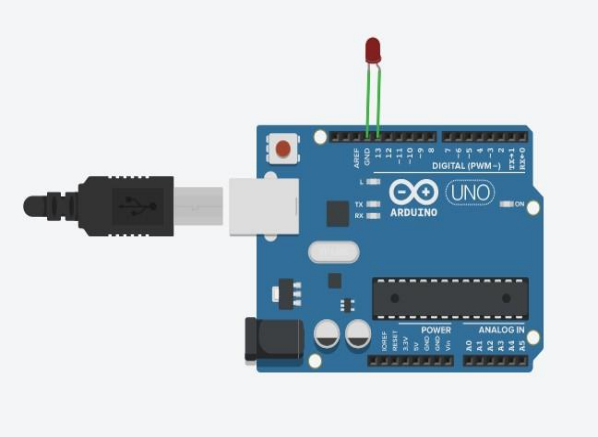
Program:-

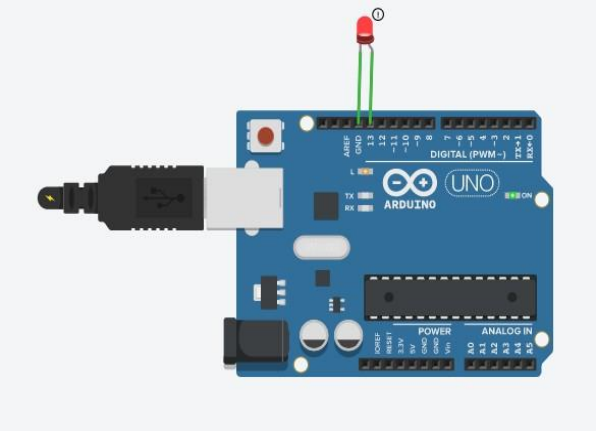
```
void setup()
{
  pinMode(13, OUTPUT);
}
void loop()
{
  digitalWrite(13, HIGH);
  delay(1000); // Wait for 1000 millisecond(s)
  digitalWrite(13, LOW);
  delay(1000); // Wait for 1000 millisecond(s)
}
```

Circuit Diagram:-



Output:-





Experiment No. 6

Title: Create a program that illuminates the green LED if the counter is less than 100, illuminates the yellow LED if the counter is between 101 and 200 and illuminates the red

Roll Batch:

Date of Performance: _ _ /_ _/_ _ _ _

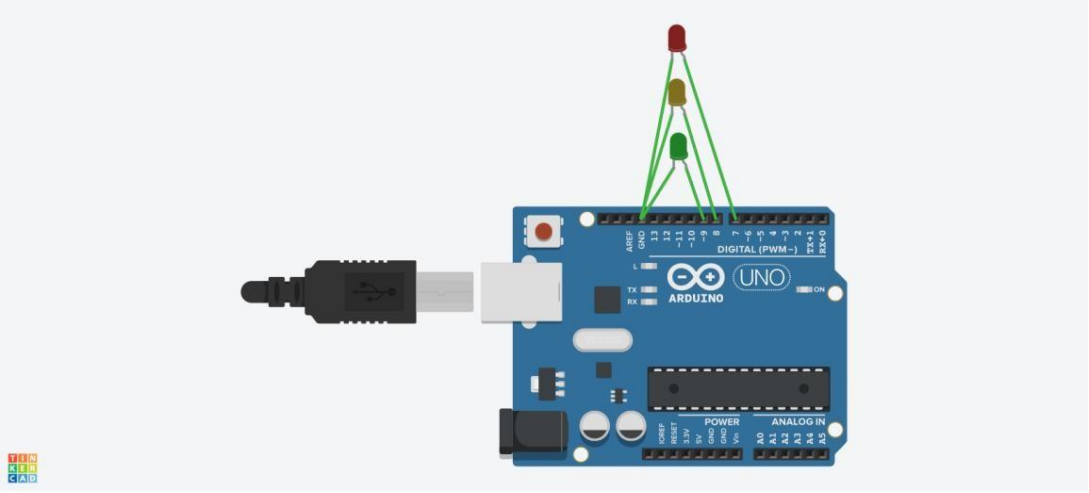
Particulars	Marks
Attendance (05)	
Journal (05)	
Performance (05)	
Understanding (05)	
Total (20)	
Signature of Staff Member	

Program:-

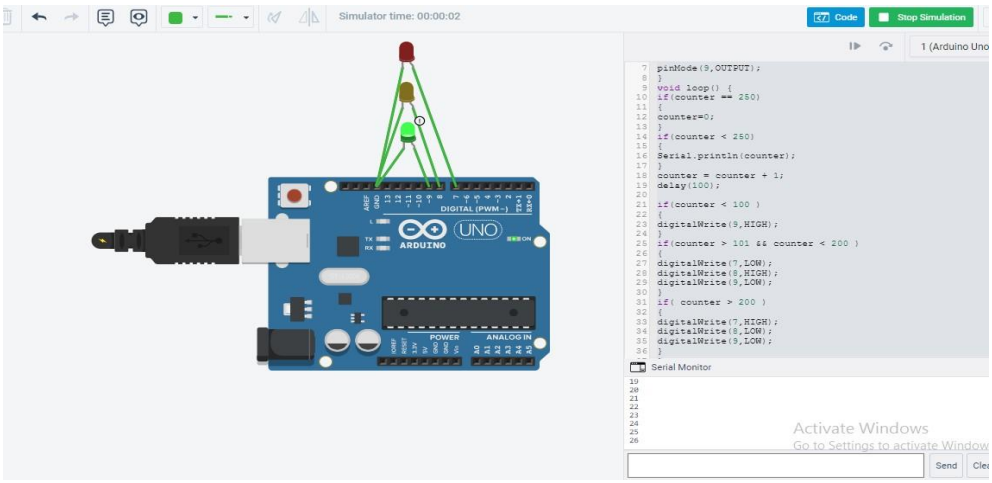
```
int counter = 0;
void setup()
{
Serial.begin(9600);
pinMode(7,OUTPUT);
pinMode(8,OUTPUT);
pinMode(9,OUTPUT);
}
void loop()  { if(counter
== 250)
{
counter=0;
}
if(counter < 250)
{
Serial.println(counter);
}
counter = counter + 1;
delay(100);

if(counter < 100 )
{
 digitalWrite(7,LOW);
digitalWrite(8,LOW);
digitalWrite(9,HIGH);
}
```

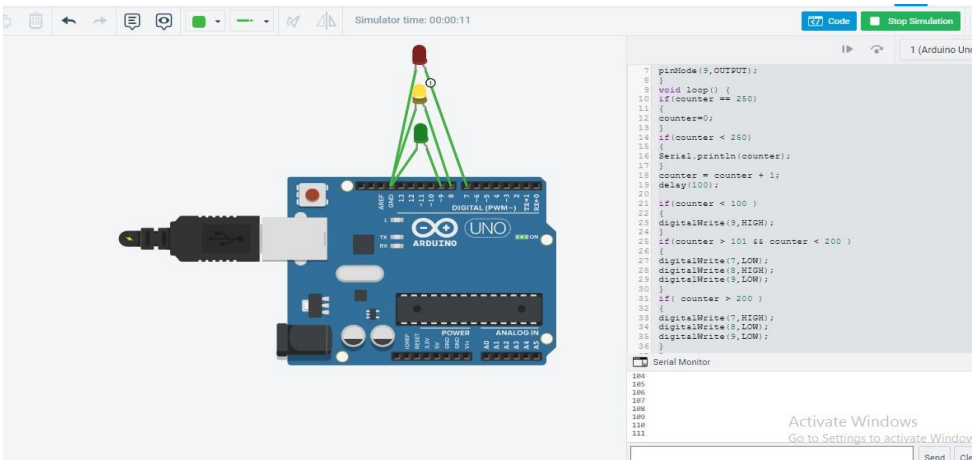
```
if(counter > 101 && counter < 200 )
{
digitalWrite(7,LOW);
digitalWrite(8,HIGH);
digitalWrite(9,LOW);
}
if( counter > 200 )
{
digitalWrite(7,HIGH);
digitalWrite(8,LOW);
digitalWrite(9,LOW);
}
}
```

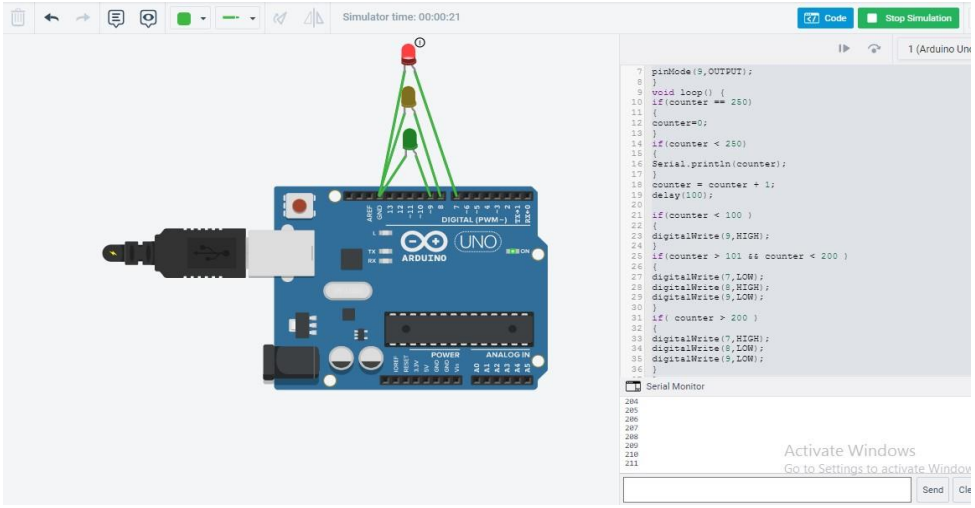
Circuit Diagram:-



Output:-


Simulator time: 00:00:02
Code
Stop Simulation
1 (Arduino Uno
pinMode(9,OUTPUT);
}
void loop() {
if(counter == 250)
{
counter=0;
}
if(counter < 250)
{
Serial.println(counter);
}
counter = counter + 1;
delay(100);
if(counter < 100)
{
digitalWrite(9,HIGH);
}
if(counter > 101 && counter < 200)
{
digitalWrite(7,LOW);
digitalWrite(8,HIGH);
digitalWrite(9,LOW);
}
if(counter > 200)
{
digitalWrite(7,HIGH);
digitalWrite(8,LOW);
digitalWrite(9,LOW);
}
Serial Monitor
Activate Windows
Send


Simulator time: 00:00:11
Code
Stop Simulation
pinMode(9,OUTPUT);
}
void loop() {
if(counter == 250)
{
counter=0;
}
if(counter < 250)
{
Serial.println(counter);
}
counter = counter + 1;
delay(100);
if(counter < 100)
{
digitalWrite(9,HIGH);
}
if(counter > 101 && counter < 200)
{
digitalWrite(7,LOW);
digitalWrite(8,HIGH);
digitalWrite(9,LOW);
}
if(counter > 200)
{
digitalWrite(7,HIGH);
digitalWrite(8,LOW);
digitalWrite(9,LOW);
}
Serial Monitor
Activate Windows


Simulator time: 00:00:21
Code
Stop Simulation
pinMode(9,OUTPUT);
}
void loop() {
if(counter == 250)
{
counter=0;
}
if(counter < 250)
{
Serial.println(counter);
}
counter = counter + 1;
delay(100);
if(counter < 100)
{
digitalWrite(9,HIGH);
}
if(counter > 101 && counter < 200)
{
digitalWrite(7,LOW);
digitalWrite(8,HIGH);
digitalWrite(9,LOW);
}
if(counter > 200)
{
digitalWrite(7,HIGH);
digitalWrite(8,LOW);
digitalWrite(9,LOW);
}
Serial Monitor
Activate Windows
Send

Experiment No. 7

Title: Create a program so that when the user enters ‘b’ the blue light blinks, ‘g’ the green light is illuminated ‘y’ the yellow light is illuminated

Roll Batch:

Date of Performance: _ _ /_ _/_ _

_ _

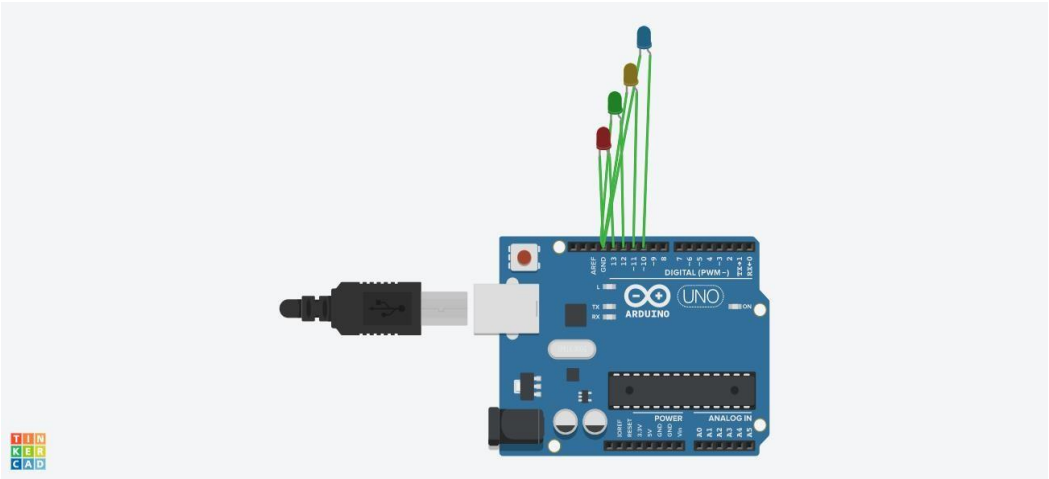
Particulars	Marks
Attendance (05)	
Journal (05)	
Performance (05)	
Understanding (05)	
Total (20)	
Signature of Staff Member	

Program:-

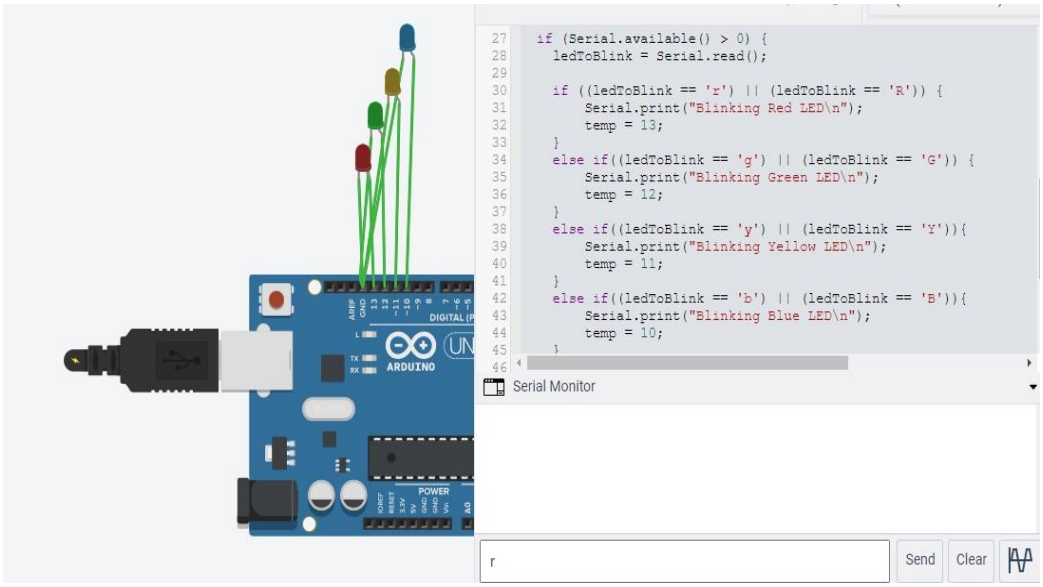
```
int RED = 13;
int  GREEN  = 12;
int YELLOW = 11;
int  BLUE  = 10;
char ledToBlink; void
setup()  {
  pinMode(RED,OUTPUT);
  pinMode(YELLOW,OUTPUT);
  pinMode(BLUE,OUTPUT);
  pinMode(GREEN,OUTPUT);
  Serial.begin(9600);
}
void loop() { int
  temp;
  if (Serial.available()  > 0) {
          ledToBlink = Serial.read();
    if ((ledToBlink == 'r') || (ledToBlink == 'R')) { Serial.print("Blinking
          Red LED\n");
          temp = 13;
    }
    else if((ledToBlink == 'g') || (ledToBlink == 'G')) {
          Serial.print("Blinking  Green LED\n");
          temp = 12;
    }
    else if((ledToBlink  == 'y') || (ledToBlink  == 'Y')){
                Serial.print("Blinking Yellow LED\n");
```

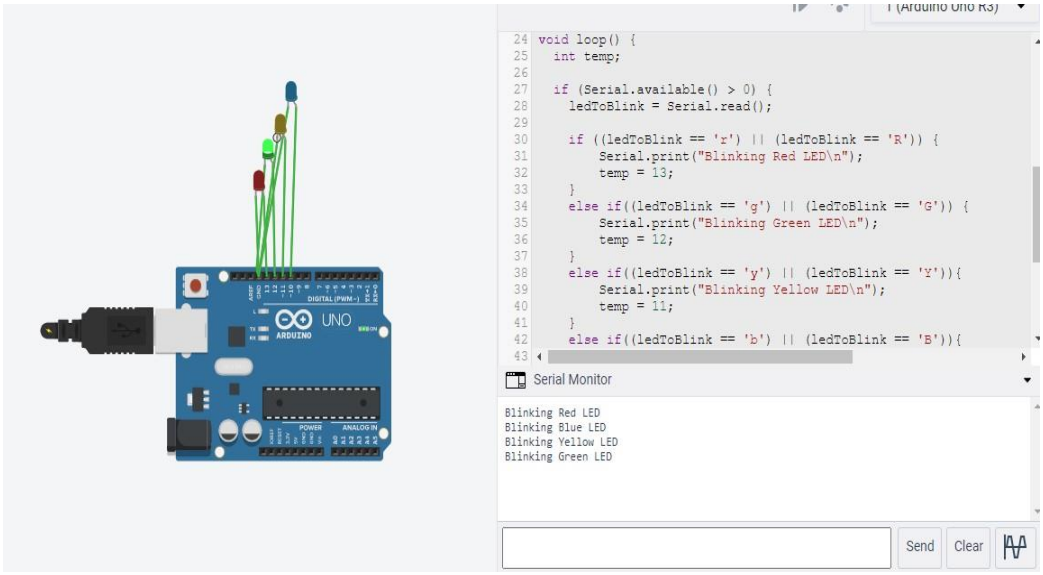
```
        temp = 11;
    }
    else if((ledToBlink == 'b') || (ledToBlink == 'B')){
        Serial.print("Blinking Blue LED\n");
        temp = 10;
    }
    else{
        Serial.print("\nInvalid Choice Try Again \n");
    }

    digitalWrite(temp, HIGH);
    delay(1000);
    digitalWrite(temp, LOW);
  }
}
```

Circuit Diagram:-



Output:-


if (Serial.available() > 0) {
ledToBlink = Serial.read();
if ((ledToBlink == 'r') || (ledToBlink == 'R')) {
Serial.print("Blinking Red LED\n");
temp = 13;
}
else if((ledToBlink == 'g') || (ledToBlink == 'G')) {
Serial.print("Blinking Green LED\n");
temp = 12;
}
else if((ledToBlink == 'y') || (ledToBlink == 'Y')){
Serial.print("Blinking Yellow LED\n");
temp = 11;
}
else if((ledToBlink == 'b') || (ledToBlink == 'B')){
Serial.print("Blinking Blue LED\n");
temp = 10;
}
Serial Monitor
r
Send
Clear


void loop() {
int temp;
if (Serial.available() > 0) {
ledToBlink = Serial.read();
if ((ledToBlink == 'r') || (ledToBlink == 'R')) {
Serial.print("Blinking Red LED\n");
temp = 13;
}
else if((ledToBlink == 'g') || (ledToBlink == 'G')) {
Serial.print("Blinking Green LED\n");
temp = 12;
}
else if((ledToBlink == 'y') || (ledToBlink == 'Y')){
Serial.print("Blinking Yellow LED\n");
temp = 11;
}
else if((ledToBlink == 'b') || (ledToBlink == 'B')){
Serial Monitor
Blinking Red LED
Blinking Blue LED
Blinking Yellow LED
Blinking Green LED
Send
Clear

Experiment No. 10

Title: Write a program read the temperature sensor and send the values to the serial monitor on the computer.

Roll No:SA&DC75 Batch: S9

Date of Performance: _ _ /_ _/_ _ _ _

Date of Assessment: _ _ /_ _/_ _ _ _

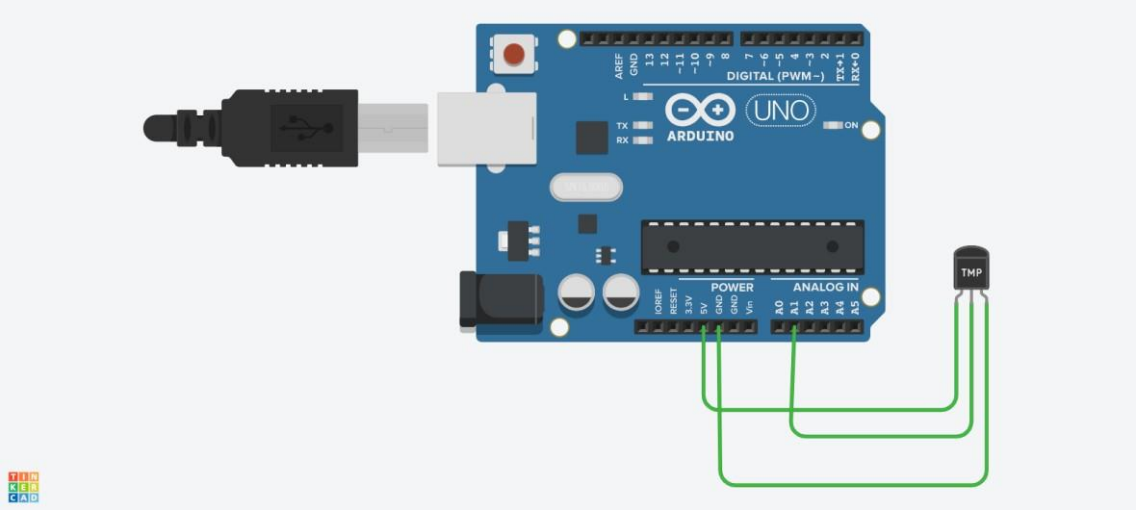
Particulars	Marks
Attendance (05)	
Journal (05)	
Performance (05)	
Understanding (05)	
Total (20)	
Signature of Staff Member	

Program:-

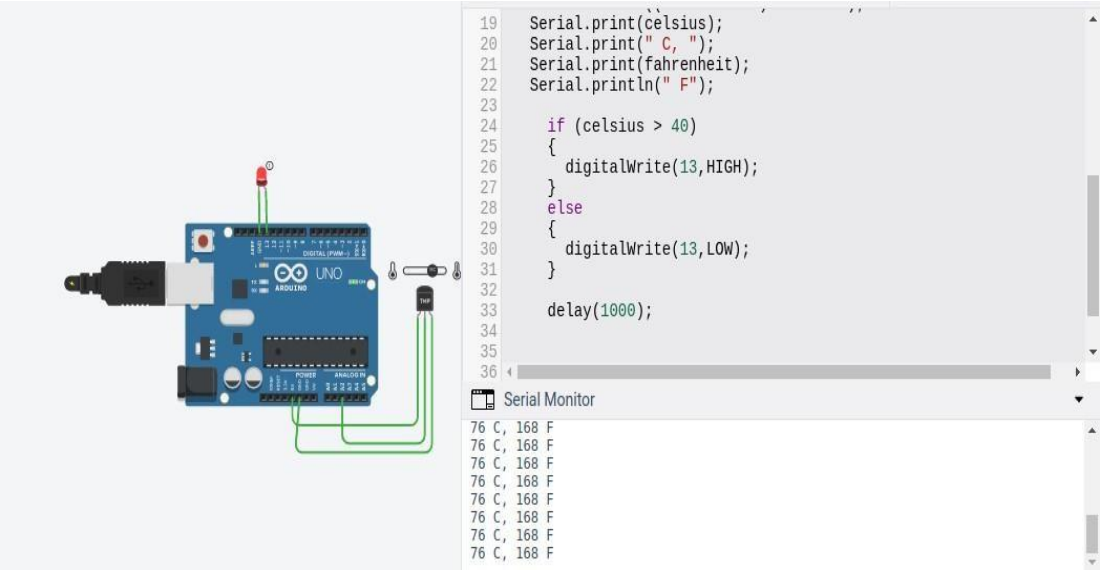
```
int baselineTemp = 0; int celsius = 0; int fahrenheit = 0; void setup()
{
  pinMode(A2, INPUT);
pinMode(13, OUTPUT);
  Serial.begin(9600);
}
void loop()
{
  celsius = map(((analogRead(A2) - 20) * 3.04), 0, 1023, -40, 125);
fahrenheit = ((celsius * 9) / 5 + 32);
  Serial.print(celsius);
  Serial.print(" C, ");

Serial.print(fahrenheit)
;  Serial.println(" F");
if (celsius > 40)
   {
     digitalWrite(13,HIGH);
   }
   else
   {
     digitalWrite(13,LOW);
   }
```

```
  delay(1000);
 }
```

Circuit Diagram:-



Output:-



Experiment No. 11

Title: Write a program so it displays the temperature

Roll Batch:

Date of Performance: _ _ /_ _/_ _

_ _

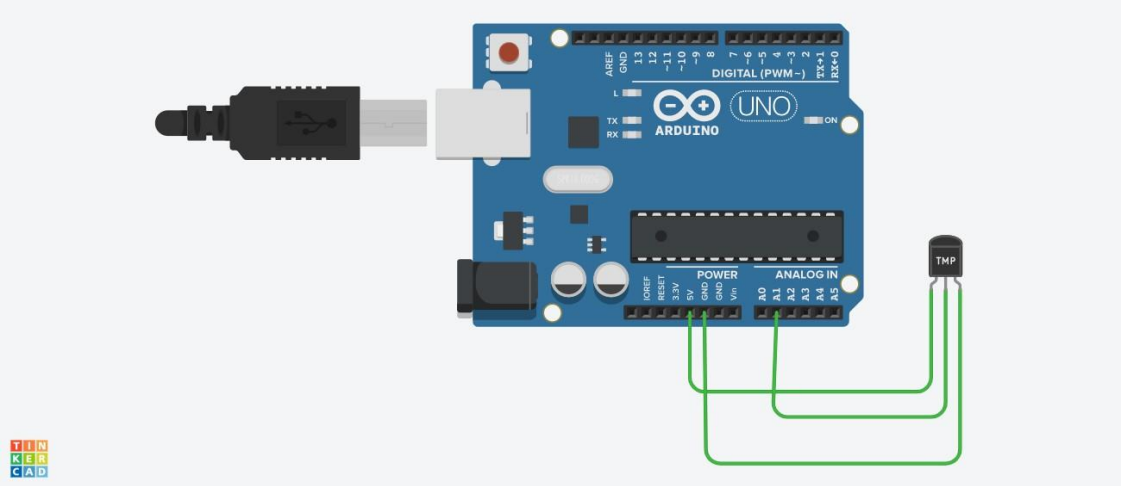
Particulars	Marks
Attendance (05)	
Journal (05)	
Performance (05)	
Understanding (05)	
Total (20)	
Signature of Staff Member	

Program:-

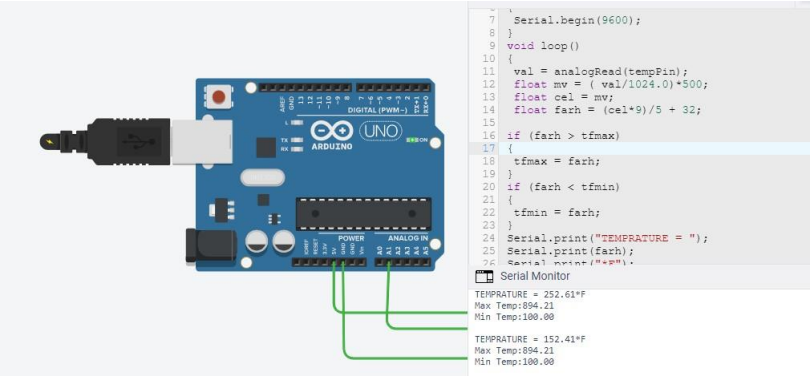
```
int val;
int tempPin = 0;
float tfmax;
float tfmin = 100;
void setup()
{
 Serial.begin(9600);
}
void loop()
{
 val = analogRead(tempPin);
 float mv = ( val/1024.0)*500;
 float cel = mv;
 float farh = (cel*9)/5 + 32;

if (farh > tfmax)
{
 tfmax = farh;
}
if (farh < tfmin)
{
 tfmin = farh;
}
Serial.print("TEMPRATURE =
"); Serial.print(farh);
Serial.print("*F");
Serial.println();
```

```
Serial.print("Max Temp:");
Serial.print(tfmax);
Serial.println();
Serial.print("Min Temp:");
Serial.print(tfmin);
Serial.println();
Serial.println(); delay(2000);
}
```

Circuit Diagram:-



Output:-



Experiment No. 12

Title: Write a program to show the temperature

Roll No: Batch:

Date of Performance: _ _ /_ _/_ _

_ _

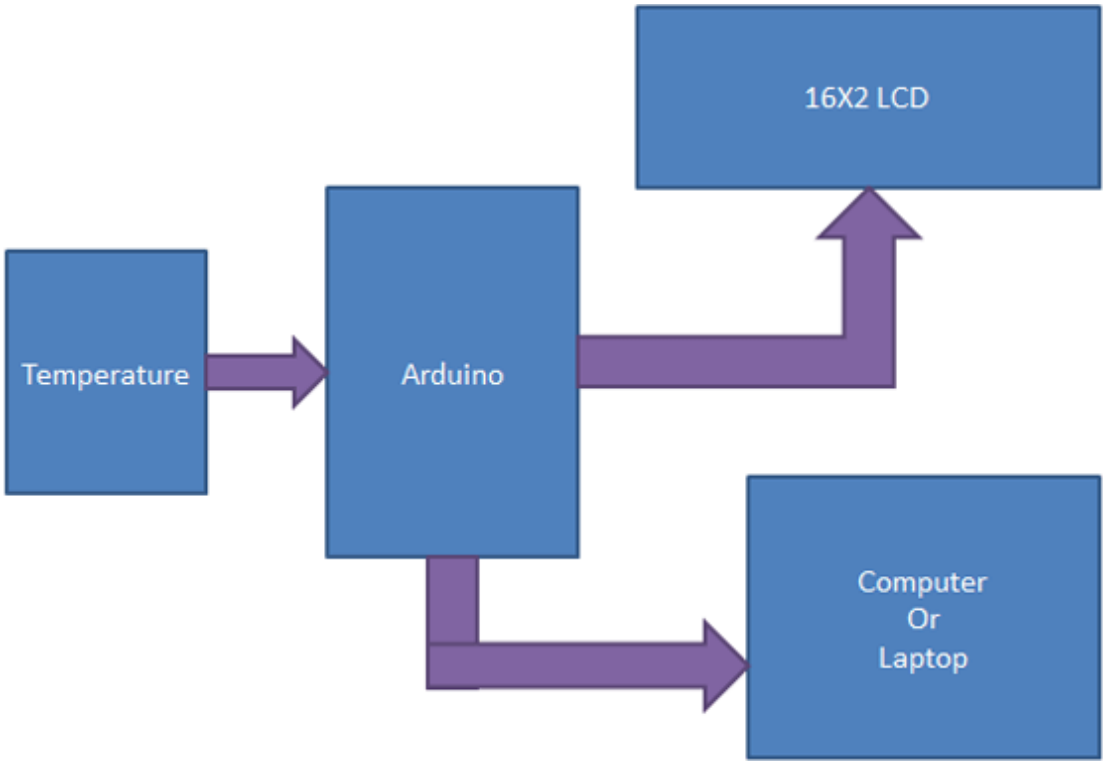
Particulars	Marks
Attendance (05)	
Journal (05)	
Performance (05)	
Understanding (05)	
Total (20)	
Signature of Staff Member	

Program:-

```
#include <SoftwareSerial.h>
SoftwareSerial bt(8, 9); // RX, TX


#include "dht.h"
#define dataPin A0

dht DHT;
int i = 0;
int temp;
int hum;

void setup() {

 Serial.begin(9600);
 bt.begin(9600);
 Serial.println("Ready");

 delay(2000);

pinMode(13, OUTPUT);

}

void loop(){
  int readData = DHT.read11(dataPin);

  hum = DHT.humidity; temp
  = DHT.temperature;


Serial.println();

Serial.println(hum);
  Serial.print("Humidity: ");

Serial.print(",");

Serial.print("Temp: ");
Serial.println(temp);
Serial.print("o"); //degree symbol
Serial.print("C ");
Serial.print(",");

 bt.print(temp); //send distance to MIT App bt.print(";");
 bt.print(hum); //send distance to MIT App
 bt.println(";");
```

```
  if(temp> 31)
  {
     digitalWrite(13, HIGH);    // turn the LED on (HIGH is the voltage
     level) delay(1000);             // wait for a second
  }
  else
  {
     digitalWrite(13, LOW);  // turn the LED on (HIGH is the voltage
     level) delay(1000);             // wait for a second
  }

  delay(1000);
}
```

Diagram:-



Experiment No. 14

Title: Understanding the connectivity of Raspberry- Pi /Arduino circuit with IR sensor. Write an Application to detect obstacle and

Roll Batch:

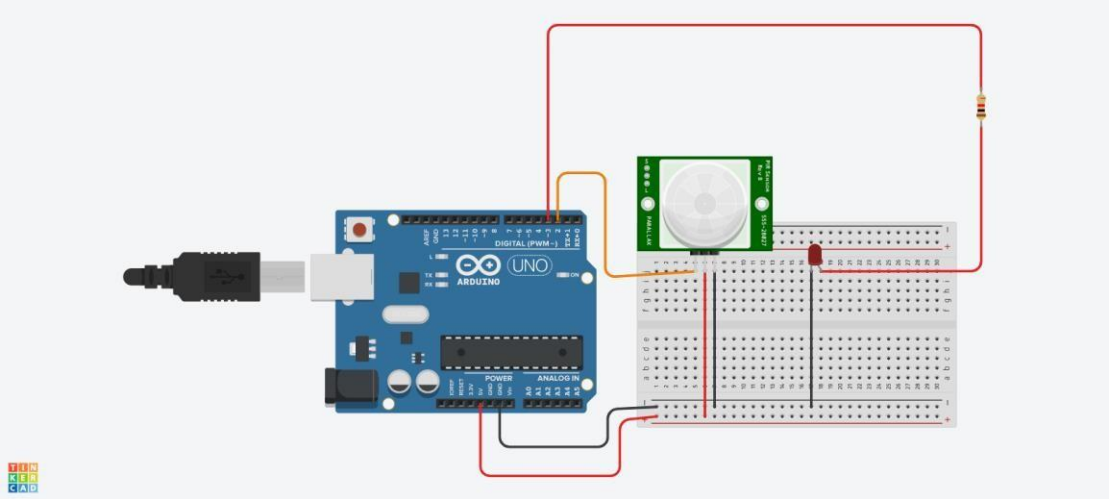
Date of Performance: _ _ /_ _/_ _ _ _

Particulars	Marks
Attendance (05)	
Journal (05)	
Performance (05)	
Understanding (05)	
Total (20)	
Signature of Staff Member	

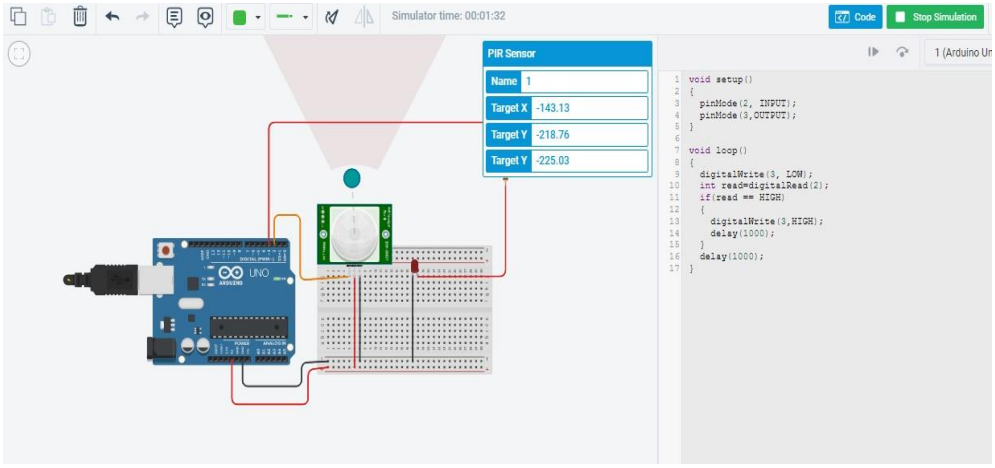
Program:-

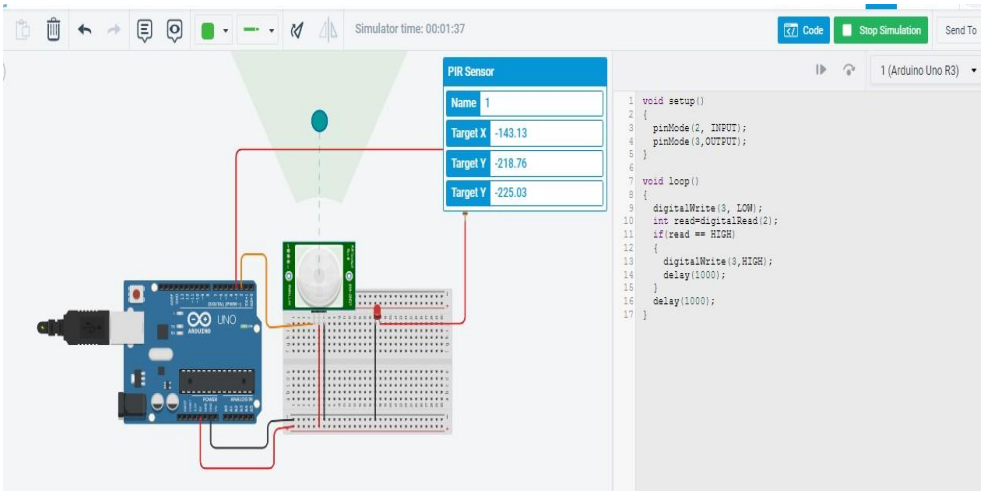
```
void setup()
{
  pinMode(2,  INPUT);
  pinMode(3,OUTPUT);
}
void loop()
{
  digitalWrite(3,  LOW);
  int read=digitalRead(2);
  if(read == HIGH)
  {
    digitalWrite(3,HIGH);
    delay(1000);
  }
  delay(1000);
}
```

Circuit Diagram:-



Output:-


Simulator time: 00:01:32
Code
Stop Simulation
PIR Sensor
Name 1
Target X -143.13
Target Y -218.76
Target Y -225.03
1 (Arduino Un
1 void setup()
2 {
3 pinMode(2, INPUT);
4 pinMode(3,OUTPUT);
5 }
6
7 void loop()
8 {
9 digitalWrite(3, LOW);
10 int read=digitalRead(2);
11 if(read == HIGH)
12 {
13 digitalWrite(3,HIGH);
14 delay(1000);
15 }
16 delay(1000);
17 }


Simulator time: 00:01:37
Code
Stop Simulation
Send To
PIR Sensor
Name 1
Target X -143.13
Target Y -218.76
Target Y -225.03
1 (Arduino Uno R3)
1 void setup()
2 {
3 pinMode(2, INPUT);
4 pinMode(3,OUTPUT);
5 }
6
7 void loop()
8 {
9 digitalWrite(3, LOW);
10 int read=digitalRead(2);
11 if(read == HIGH)
12 {
13 digitalWrite(3,HIGH);
14 delay(1000);
15 }
16 delay(1000);
17 }

Experiment No. 15

Title: Study of ThingSpeak – an API and

Roll Batch:

Date of Performance: _ _ /_ _/_ _

_ _

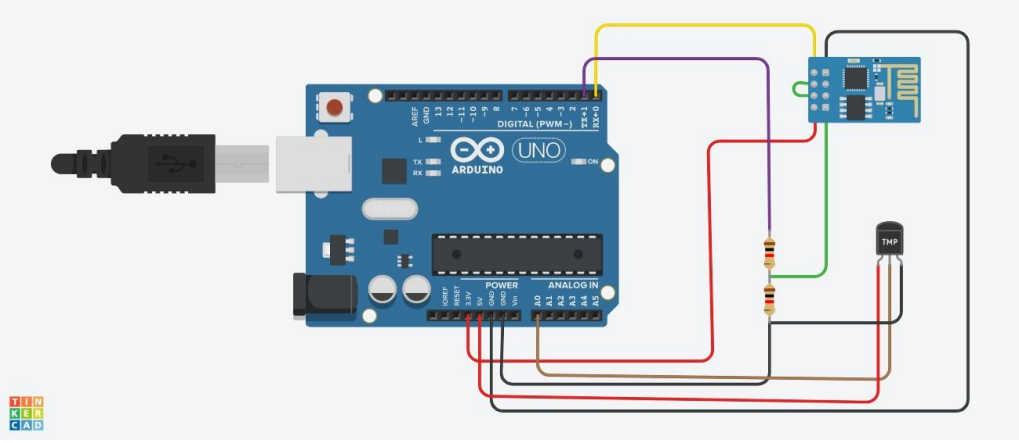
Particulars	Marks
Attendance (05)	
Journal (05)	
Performance (05)	
Understanding (05)	
Total (20)	
Signature of Staff Member	

Program:-

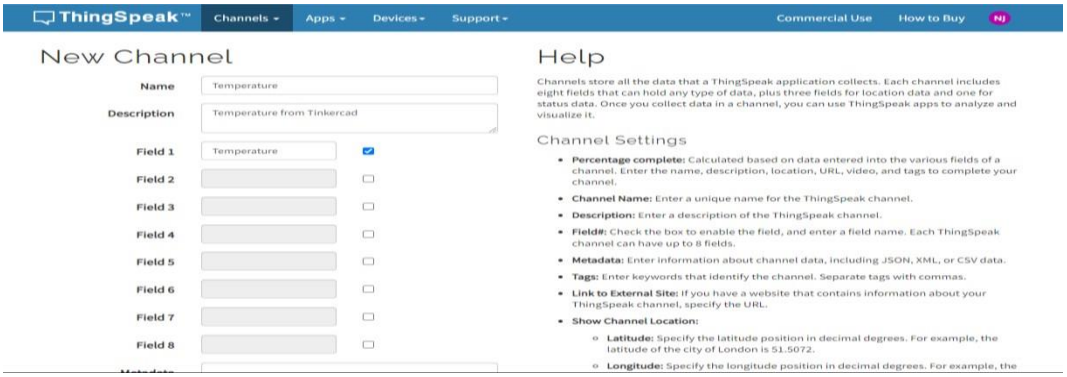
```
String ssid    = "Simulator Wifi"; // SSID to connect to
String password = ""; // Our virtual wifi has no password
String host    = "api.thingspeak.com"; // Open Weather Map API
const int httpPort  = 80;
String url     = "/update?api_key=TBRSBCUPJXYW5F7P&field1=";
int setupESP8266(void) {
  // Start our ESP8266 Serial Communication
  Serial.begin(115200);   // Serial connection over USB to computer
  Serial.println("AT");      // Serial connection on Tx / Rx port to ESP8266
  delay(10);        // Wait a little for the ESP to respond
  if (!Serial.find("OK")) return 1;
  // Connect to 123D Circuits Simulator Wifi
  Serial.println("AT+CWJAP=\"" + ssid + "\",\"" + password + "\"");
  delay(10);        // Wait a little for the ESP to respond
  if (!Serial.find("OK")) return 2;
  // Open TCP connection to the host:
  Serial.println("AT+CIPSTART=\"TCP\",\"" + host + "\"," + httpPort);
  delay(50);        // Wait a little for the ESP to respond
  if (!Serial.find("OK")) return 3; return
  0;
}
void anydata(void) {
  int temp = map(analogRead(A0),20,358,-40,125);
  // Construct our HTTP call
  String httpPacket = "GET " + url + String(temp) + " HTTP/1.1\r\nHost: " + host +
"\r\n\r\n";
```

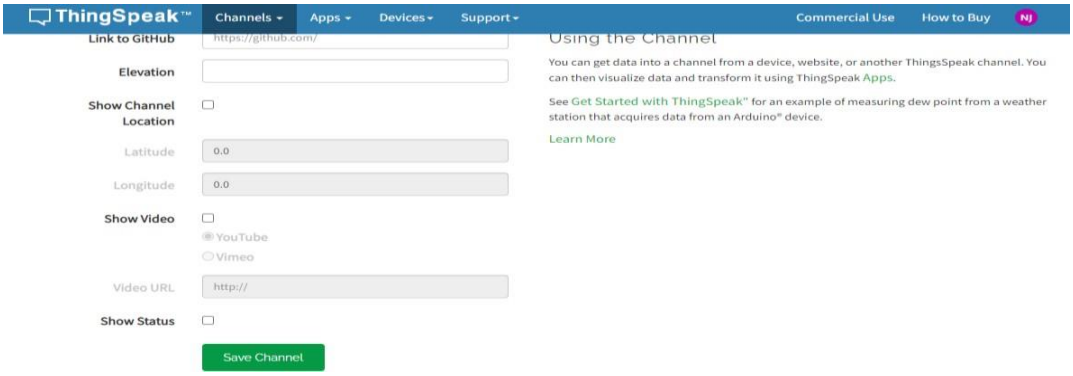
```
  int length = httpPacket.length();
  // Send our message length
  Serial.print("AT+CIPSEND=");
  Serial.println(length);
  delay(10); // Wait a little for the ESP to respond if (!Serial.find(">")) return -1;
  // Send our http request
  Serial.print(httpPacket);
  delay(10); // Wait a little for the ESP to respond
  if (!Serial.find("SEND OK\r\n")) return;
}
void setup() {
  setupESP8266()
  ;
}
void loop() {
 anydata();
 delay(10000);
}
```

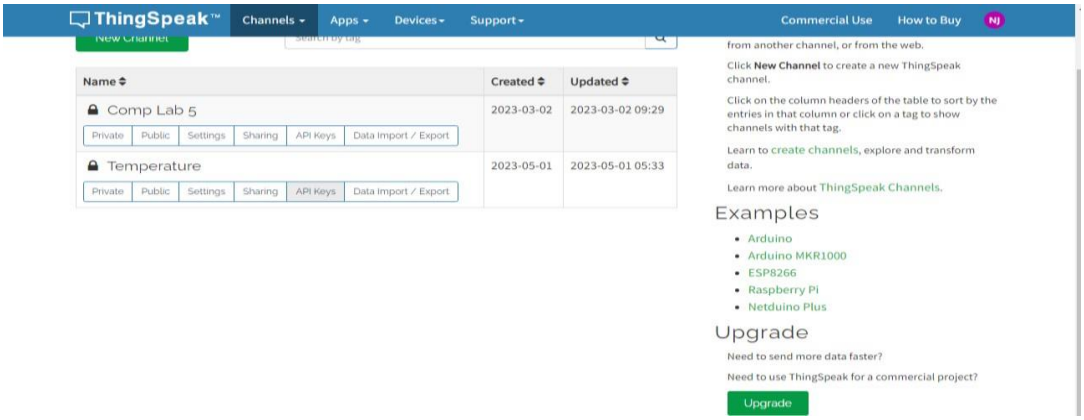
Circuit Diagram:-



Output:-


ThingSpeak™
Channels
Apps
Devices
Support
Commercial Use
How to Buy
NJ
New Channel
Name
Temperature
Description
Temperature from Tinkercad
Field 1
Temperature
Field 2
Field 3
Field 4
Field 5
Field 6
Field 7
Field 8
Help
Channels store all the data that a ThingSpeak application collects. Each channel includes eight fields that can hold any type of data, plus three fields for location data and one for status data. Once you collect data in a channel, you can use ThingSpeak apps to analyze and visualize it.
Channel Settings
Percentage complete: Calculated based on data entered into the various fields of a channel. Enter the name, description, location, URL, video, and tags to complete your channel.
Channel Name: Enter a unique name for the ThingSpeak channel.
Description: Enter a description of the ThingSpeak channel.
Field#: Check the box to enable the field, and enter a field name. Each ThingSpeak channel can have up to 8 fields.
Metadata: Enter information about channel data, including JSON, XML, or CSV data.
Tags: Enter keywords that identify the channel. Separate tags with commas.
Link to External Site: If you have a website that contains information about your ThingSpeak channel, specify the URL.
Show Channel Location:
Latitude: Specify the latitude position in decimal degrees. For example, the latitude of the city of London is 51.5072.
Longitude: Specify the longitude position in decimal degrees. For example, the


ThingSpeak™
Channels
Apps
Devices
Support
Commercial Use
How to Buy
NJ
Link to GitHub
https://github.com/
Elevation
Show Channel Location
Latitude
0.0
Longitude
0.0
Show Video
YouTube
Vimeo
Video URL
http://
Show Status
Save Channel
Using the Channel
You can get data into a channel from a device, website, or another ThingsSpeak channel. You can then visualize data and transform it using ThingSpeak Apps.
See Get Started with ThingSpeak" for an example of measuring dew point from a weather station that acquires data from an Arduino® device.
Learn More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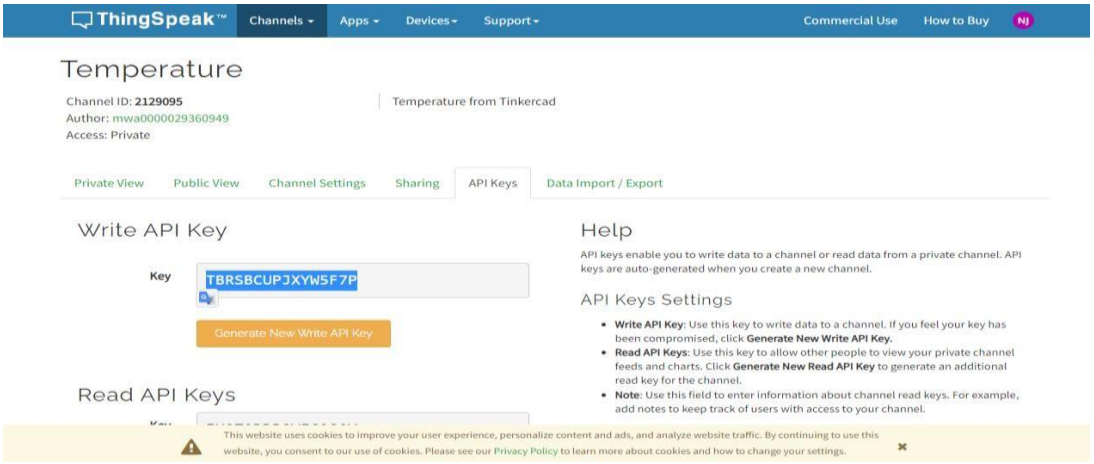
NJ
New Channel
Name
Created
Updated
Comp Lab 5
2023-03-02
2023-03-02 09:29
Private
Public
Settings
Sharing
API Keys
Data Import / Export
Temperature
2023-05-01
2023-05-01 05:33
Private
Public
Settings
Sharing
API Keys
Data Import / Export
from another channel, or from the web.
Click New Channel to create a new ThingSpeak channel.
Click on the column headers of the table to sort by the entries in that column or click on a tag to show channels with that tag.
Learn to create channels, explore and transform data.
Learn more about ThingSpeak Channels.
Examples
Arduino
Arduino MKR1000
ESP8266
Raspberry Pi
Netduino Plus
Upgrade
Need to send more data faster?
Need to use ThingSpeak for a commercial project?
Upgrade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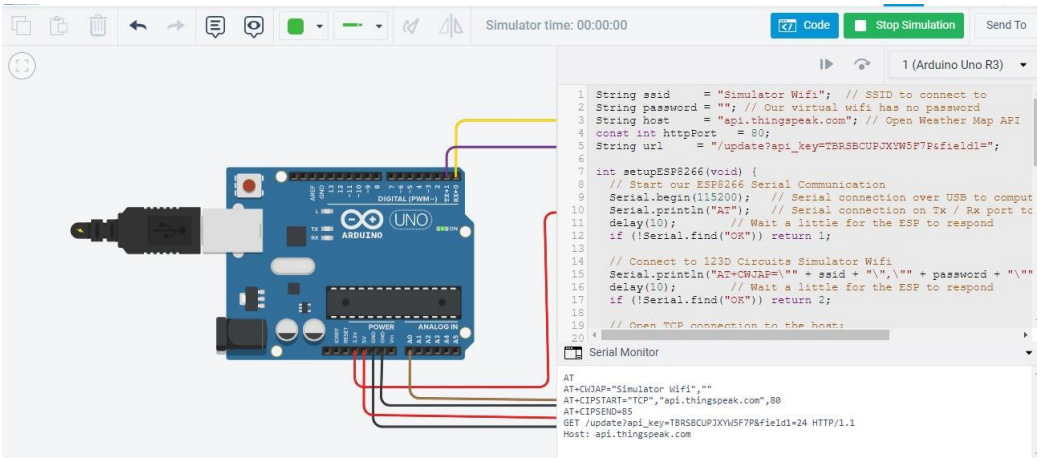
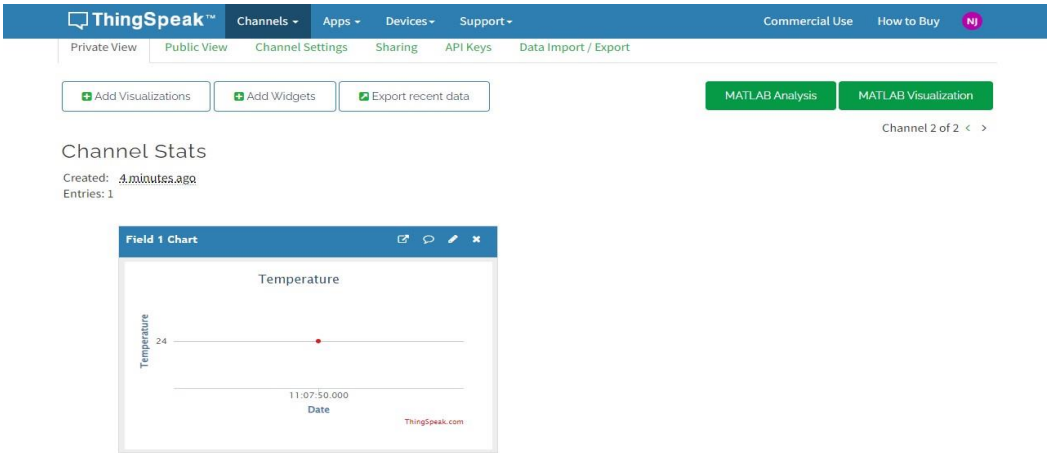
NJ
Temperature
Channel ID: 2129095
Author: mwa0000029360949
Access: Private
Temperature from Tinkercad
Private View
Public View
Channel Settings
Sharing
API Keys
Data Import / Export
Write API Key
Key
TBRSBCUPJXYW5F7P
Generate New Write API Key
Read API Keys
Help
API keys enable you to write data to a channel or read data from a private channel. API keys are auto-generated when you create a new channel.
API Keys Settings
Write API Key: Use this key to write data to a channel. If you feel your key has been compromised, click Generate New Write API Key.
Read API Keys: Use this key to allow other people to view your private channel feeds and charts. Click Generate New Read API Key to generate an additional read key for the channel.
Note: Use this field to enter information about channel read keys. For example, add notes to keep track of users with access to your channel.
This website uses cookies to improve your user experience, personalize content and ads, and analyze website traffic. By continuing to use this website, you consent to our use of cookies. Please see our Privacy Policy to learn more about cookies and how to change your settings.


Simulator time: 00:00:00
Code
Stop Simulation
Send To
1 (Arduino Uno R3)
String ssid = "Simulator Wifi"; // SSID to connect to
String password = ""; // Our virtual wifi has no password
String host = "api.thingspeak.com"; // Open Weather Map API
const int httpPort = 80;
String url = "/update?api_key=TBRSBCUPJXYW5F7P&field1=";
int setupESP8266(void) {
// Start our ESP8266 Serial Communication
Serial.begin(115200); // Serial connection over USB to comput
Serial.println("AT"); // Serial connection on Tx / Rx port to
delay(10); // Wait a little for the ESP to respond
if (!Serial.find("OK")) return 1;
// Connect to 123D Circuits Simulator Wifi
Serial.println("AT+CWJAP=\"" + ssid + "\",\"" + password + "\"
delay(10); // Wait a little for the ESP to respond
if (!Serial.find("OK")) return 2;
// Open TCP connection to the host:
Serial Monitor
AT
AT+CWJAP="Simulator Wifi",""
AT+CIPSTART="TCP","api.thingspeak.com",80
AT+CIPSEND=85
GET /update?api_key=TBRSBCUPJXYW5F7P&field1=24 HTTP/1.1
Host: api.thingspeak.com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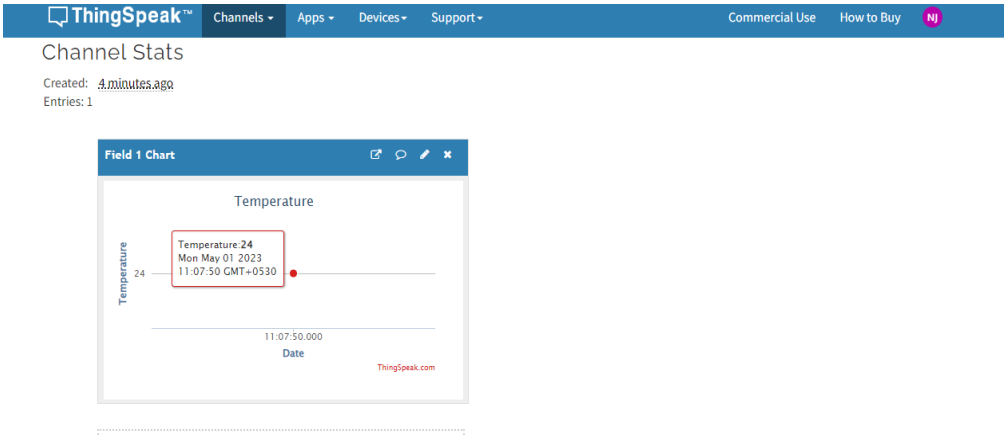
Private View
Public View
Channel Settings
Sharing
API Keys
Data Import / Export
Add Visualizations
Add Widgets
Export recent data
MATLAB Analysis
MATLAB Visualization
Channel 2 of 2
Channel Stats
Created: 4 minutes ago
Entries: 1
Field 1 Chart
Temperature
Temperature
24
11:07:50.000
Date
ThingSpeak.com


ThingSpeak™
Channels
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How to Buy
NJ
Channel Stats
Created: 4 minutes ago
Entries: 1
Field 1 Chart
Temperature
Temperature:24
Mon May 01 2023
11:07:50 GMT+0530
Temperature
24
11:07:50.000
Date
ThingSpeak.com

Experiment No. 16

Title: Write an application to control the

Roll Batch:

Date of Performance: _ _ /_ _/_ _

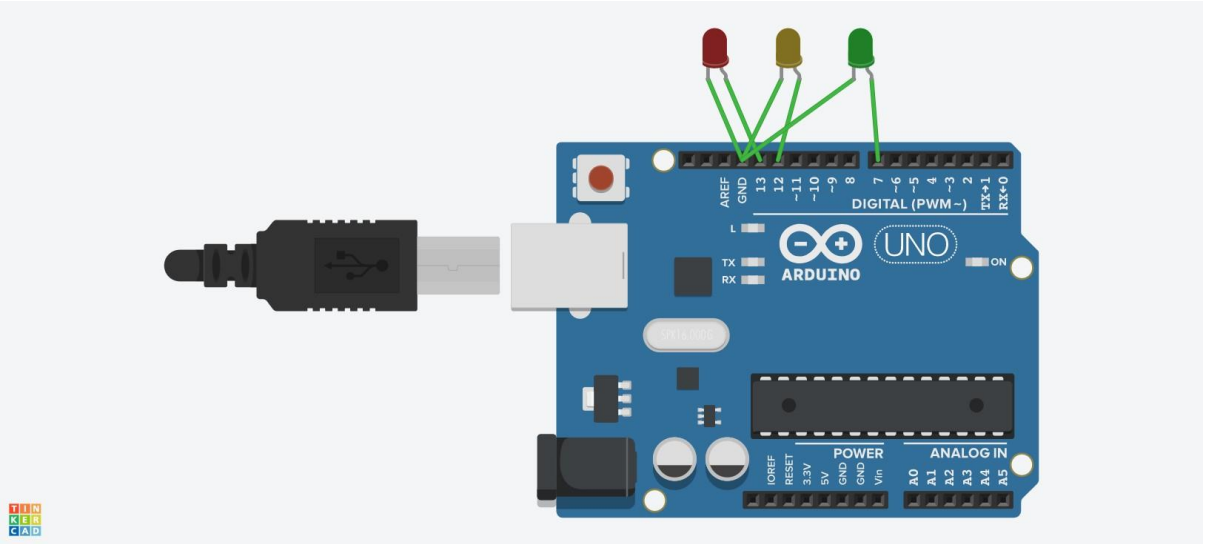
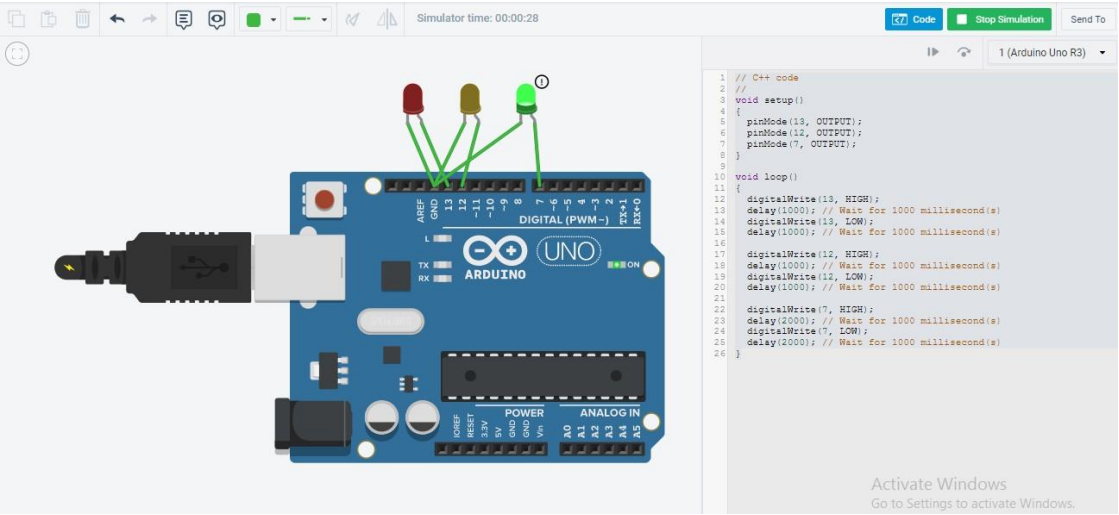
_ _

Particulars	Marks
Attendance (05)	
Journal (05)	
Performance (05)	
Understanding (05)	
Total (20)	
Signature of Staff Member	

Program:-

```
void setup()
{
  pinMode(13,  OUTPUT);
  pinMode(12,  OUTPUT);
  pinMode(7,  OUTPUT);
}
void loop()
{
  digitalWrite(13,  HIGH);
  delay(1000); // Wait for 1000 millisecond(s)
  digitalWrite(13,  LOW);
  delay(1000); // Wait for 1000 millisecond(s)
  digitalWrite(12,  HIGH);
  delay(1000); // Wait for 1000 millisecond(s)
  digitalWrite(12,  LOW);
  delay(1000); // Wait for 1000 millisecond(s) digitalWrite(7,
  HIGH);
  delay(2000); // Wait for 1000 millisecond(s) digitalWrite(7,
  LOW);
  delay(2000); // Wait for 1000 millisecond(s)
}
```

Circuit Diagram:-



Output:-