Exp:01 **Date:**

LED CONTROL USING ARDUINO BOARD

Aim: To control LED Using Arduino Uno board

Apparatus:

S. No.	Apparatus	Range/Rating	Quantity
1	Universal Board		1
2	Arduino board		1
3	Led		1
4	12V Adaptor		1
5	Power jack		1
6	USB Cable		1
7	Jumper Wires		Required

Hardware Procedure:

- LED pin is Connected to Arduino Uno pin of 2.
- Power jack is connected to the Arduino Uno.
- USB connector is connected to Arduino Uno to monitor.
- Connect the 12V power supply to development board.
- Check the output from the development board.

Software Procedure:

1. Click on Arduino IDE
2. Click on file
3. Click on New
4. Write a Program as per circuit Pin connections
5. Click on Save
6. Click on Verify
7. Click on Upload the code into Arduino Uno by using USB cable.

Program:

```
const int led = 2;

void setup() {
pinMode(led, OUTPUT);
}
void loop()
 {
digitalWrite(led, HIGH);
delay(1000);
digitalWrite(led, LOW);
delay(1000);
digitalWrite(led, HIGH);
delay(1000);
digitalWrite(led, LOW);
delay(1000);
}
```

Precautions:

- Take care about given power supply (12V).
- Jumper wires given carefully whenever given circuit connection.

RESULT: LED is successfully controlled by Arduino microcontroller Board.

Conclusion:

Viva questions:

Exp: 02 **Date:**

POTENTIOMETER AND IR SENSOR INTERFACING WITH ARDUINO

Aim: To Interface Potentiometer and IR Sensor Using Arduino Uno board

Apparatus:

S. No.	Apparatus	Range/Rating	Quantity
1	Universal Board		1
2	Arduino board		1
3	POT sensor		1
4	IR Sensor		
5	12V Adaptor		1
6	Power jack		1
7	USB Cable		1
8	Jumper Wires		Required

Hardware Procedure:

- LED pin is Connected to Arduino Uno pin of 11 & 12.
- POT pin is connected to the Arduino pin A1.
- IR Sensor Pin is connected to the Arduino Pin 4.
- Power jack is connected to the Arduino.
- USB connector is connected to Arduino Uno to monitor.
- Connect the 12V power supply to development board.
- Check the output from the development board.

Software Procedure:

1. Click on Arduino IDE
2. Click on file
3. Click on New
4. Write a Program as per circuit Pin connections
5. Click on Save
6. Click on Verify
7. Click on Upload the code into Arduino Uno by using USB cable.

Program:

```
#define LED_PIN 11
#define POTENTIOMETER_PIN A1
void setup() {
  // put your setup code here, to run once:
pinMode(4,INPUT);
pinMode(12,OUTPUT);//LED
pinMode(LED_PIN, OUTPUT);
}
void loop() {
  // put your main code here, to run repeatedly:potentiometer loop
  int potentiometerValue = analogRead(POTENTIOMETER_PIN);
int brightness = potentiometerValue / 4;
analogWrite(LED_PIN, brightness);
//ir loop
if(digitalRead(4)==LOW){
digitalWrite(12,HIGH);
}
else {
digitalWrite(12,LOW);
}

}
```

Precautions:

- Take care about given power supply (12V).
- Jumper wires given carefully whenever given circuit connection.

RESULT: Both Analog and Digital Sensors data are successfully measured by Arduino.

Conclusions:

Viva Questions:

Exp: 03 **Date:**

MEASUREMENT TEMPERATURE AND HUMIDITY USING ARDUINO

Aim: To Measure the Temperature and humidity Using Arduino Uno board

Apparatus:

S. No.	Apparatus	Range/Rating	Quantity
1	Universal Board		1
2	Arduino board		1
3	Temperature Sensor		1
4	12V Adaptor		1
5	Power jack		1
6	USB Cable		1
7	Jumper Wires		Required

Hardware Procedure:

- Temperature Sensor is connected to Arduino Uno pin 7
- Power jack is connected to the Arduino.
- USB connector is connected to Arduino Uno to monitor.
- Connect the 12V power supply to development board.
- Check the output from the development board.

Software Procedure:

1.Click on Arduino IDE

2. Click on file

3.Click on New

4.Write a Program as per circuit Pin connections

5. Click on Save

6.Click on Verify

7.Click on Upload the code into Arduino Uno by using USB cable.

Program:

```
#include <dht.h>

dht DHT;

#define DHT11_PIN 7

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

void loop(){
  int chk = DHT.read11(DHT11_PIN);
  Serial.print("Temperature = ");
  Serial.println(DHT.temperature);
  Serial.print("Humidity = ");
  Serial.println(DHT.humidity);
  delay(2000);
}
// To download  a DHT11 library  zip file using below link.

//https://www.circuitbasics.com/how-to-set-up-the-dht11-humidity-sensor-on-an-arduino
// go to sketch icon in arduino and include library add .zip library to go to browse the download path.
```

Precautions:

- Take care about given power supply (12V).

- Jumper wires given carefully whenever given circuit connection.
-

RESULT:

Conclusions:

Viva Questions:

Exp: 04 **Date:**

SOIL MONITORING USING ARDUINO

Aim: To measure the Soil monitoring Using Arduino Uno board

Apparatus:

S. No.	Apparatus	Range/Rating	Quantity
1	Universal Board		1
2	Arduino board		1
3	Soil monitoring Sensor		1
4	12V Adaptor		1
5	Power jack		1
6	USB Cable		1
7	Jumper Wires		Required

Hardware Procedure:

- Soil monitoring Sensor is connected to Arduino Uno Analog pin A0
- LED pin is Connected to Arduino Uno pin of 2 and 3.
- Power jack is connected to the Arduino.
- USB connector is connected to Arduino Uno to monitor.
- Connect the 12V power supply to development board.
- Check the output from the development board.

Software Procedure:

1.Click on Arduino IDE

2. Click on file

3.Click on New

4.Write a Program as per circuit Pin connections

5. Click on Save

6.Click on Verify

7.Click on Upload the code into Arduino Uno by using USB cable.

Program:

```
int WET= 3;
int DRY= 2;
int Sensor= 0; // Soil Sensor input at Analog PIN A0
int value= 0;
void setup() {
Serial.begin(9600);
pinMode(WET, OUTPUT);
pinMode(DRY, OUTPUT);

delay(2000);
}
void loop() {
Serial.print("MOISTURE LEVEL : ");
  value= analogRead(Sensor);
  value= value/10;
Serial.println(value);
if(value<50)
  {
digitalWrite(WET, HIGH);
  }
else
  {
digitalWrite(DRY,HIGH);
  }
delay(1000);
digitalWrite(WET,LOW);
digitalWrite(DRY, LOW);
}
```

Precautions:

- Take care about given power supply (12V).
- Jumper wires given carefully whenever given circuit connection.
-

RESULT:

Conclusions:

Viva Questions:

Exp: 05 **Date:**

AUTOMATIC CAR WIPER FOR RAIN SENSING

Aim: The design of automatic car wiper for rain sensing Using Arduino Uno board.

Apparatus:

S. No.	Apparatus	Range/Rating	Quantity
1	Universal Board		1
2	Arduino board		1
3	Rain detection sensor		1
4	Servo Motors		2
5	12V Adaptor		1
6	Power jack		1
7	USB Cable		1
8	Jumper Wires		Required

Hardware Procedure:

- Soil monitoring Sensor is connected to Arduino Uno Analog pin A0
- LED pin is Connected to Arduino Uno pin of 2 and 3.
- Power jack is connected to the Arduino.
- USB connector is connected to Arduino Uno to monitor.
- Connect the 12V power supply to development board.
- Check the output from the development board.

Software Procedure:

1.Click on Arduino IDE

2. Click on file

3.Click on New

4.Write a Program as per circuit Pin connections

5. Click on Save

6.Click on Verify

7.Click on Upload the code into Arduino Uno by using USB cable.

Program:

```
#include <Servo.h>
Servo my servo;

int sensor Pin = A0;
int sensor Value;
int limit = 250;

int pos = 0;

void setup(){
  Serial.begin(9600);
  pinMode(13,OUTPUT);
  myservo.attach(8);
}

void loop(){
  sensorValue=analogRead(sensorPin);
  Serial.print("Analog Value :  ");
  Serial.println(sensorValue);
  if(sensorValue > limit) {
    digitalWrite(13,HIGH);—
    for (pos = 0;pos&lt;= 180;pos +=2){
myservo.write(pos);
delay(15);
}
for(pos = 180;pos &gt;=0;pos -= 2){
myservo.write(pos);
delay(15);
}
}
else {
digitalWrite(13,LOW);
}
}
```

Precautions:

- Take care about given power supply (12V).
- Jumper wires given carefully whenever given circuit connection.
-

RESULT:

Conclusions:

Viva Questions:

```
#include <Servo.h>
Servo myservo;

int sensorPin = A0;
int sensorValue;
int limit = 250;

int pos = 0;

void setup(){
  Serial.begin(9600);
  pinMode(13,OUTPUT);
  myservo.attach(8);
}

void loop(){
  sensorValue=analogRead(sensorPin);
  Serial.print("Analog Value :  ");
  Serial.println(sensorValue);
  if(sensorValue > limit) {
    digitalWrite(13,HIGH);
```