

## EXPERIMENT - 01

### LCD BLINKING WITH PUSH BUTTON

Aim: write an embedded C program to interface LCD and push button with Arduino Uno

Software Used: Arduino UNO and Simulator.

```
Program:  
const int ButtonPin = 4;  
const int ledPin = 12;
```

```
int ButtonState =
```

```
void Setup()
```

```
{  
pinMode (ledPin, OUTPUT);  
pinMode (ButtonPin, INPUT);
```

```
}  
void loop()
```

```
{  
buttonState = digitalRead (ButtonPin),
```

```
if (buttonState == HIGH)
```

```
digitalWrite (ledPin, HIGH),
```

```
delay (500),
```

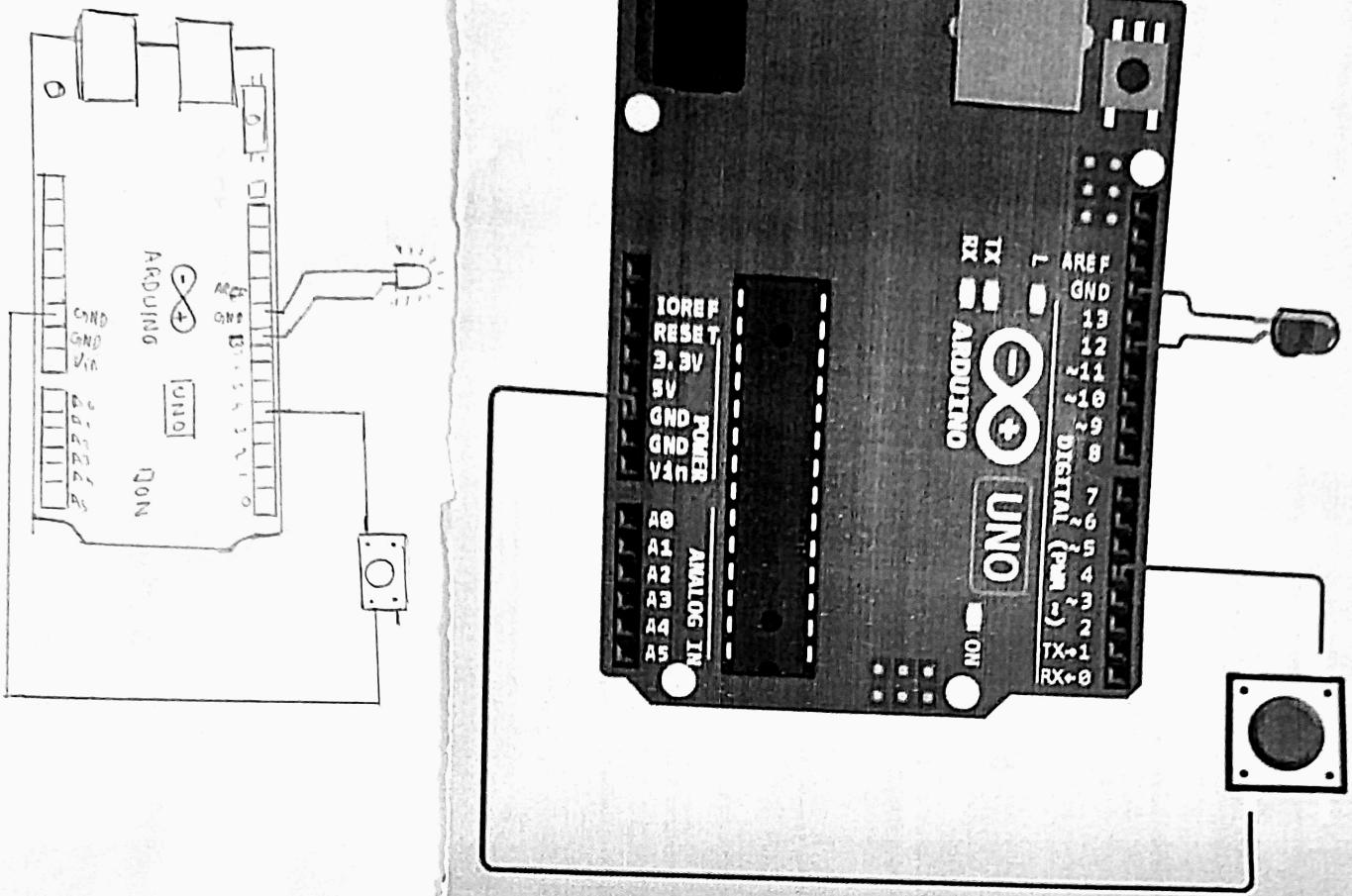
```
digitalWrite (ledPin, LOW),
```

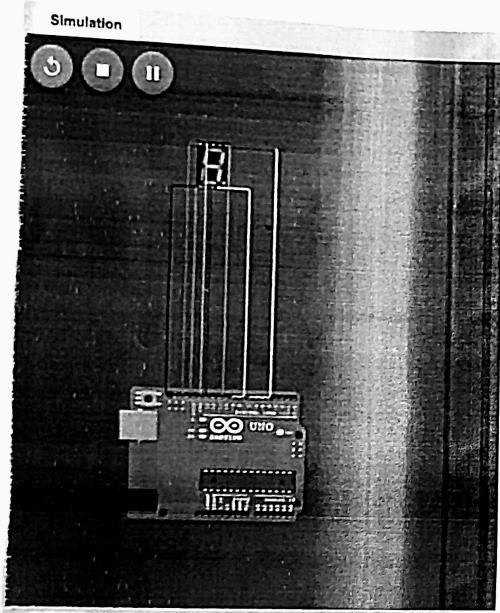
```
delay (500),
```

```
}  
else
```

```
{  
digitalWrite (ledPin, LOW);
```

```
}
```





## EXPERIMENT - 02

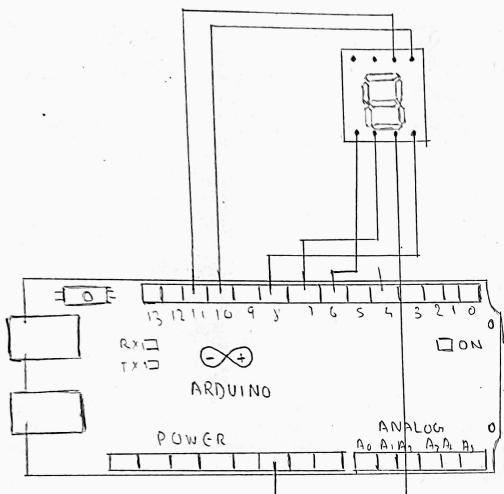
### INTERFACING SEVEN SEGMENT DISPLAY ARDUINO

Aim: Write an embedded program to interface seven segment display with Arduino UNO

Software used: Arduino UNO, and simulator.

Program:

```
int a = 13  
int b = 12  
int c = 11  
int d = 10  
int e = 9  
int f = 8  
int g = 7  
void setup () {  
PinMode (a, OUTPUT)  
PinMode (b, OUTPUT)  
PinMode (c, OUTPUT)  
PinMode (d, OUTPUT)  
PinMode (e, OUTPUT)  
PinMode (f, OUTPUT)  
PinMode (g, OUTPUT)  
}
```



```

void loop() {
  digitalWrite(a, 0);
  digitalWrite(b, 0);
  digitalWrite(c, 0);
  digitalWrite(d, 0);
  digitalWrite(e, 0);
  digitalWrite(f, 0);
  digitalWrite(g, 1);
  delay(500);

  digitalWrite(a, 1);
  digitalWrite(b, 0);
  digitalWrite(c, 0);
  digitalWrite(d, 0);
  digitalWrite(e, 1);
  digitalWrite(f, 1);
  digitalWrite(g, 0);
  delay(500);

  digitalWrite(a, 0);
  digitalWrite(b, 0);
  digitalWrite(c, 0);
  digitalWrite(d, 0);
  digitalWrite(e, 1);
  digitalWrite(f, 0);
  digitalWrite(g, 0);
  delay(500);

  digitalWrite(a, 0);
  digitalWrite(b, 1);
  digitalWrite(c, 0);
  digitalWrite(d, 0);
  digitalWrite(e, 0);
  digitalWrite(f, 0);
  digitalWrite(g, 0);
  delay(500);

  digitalWrite(a, 0);
  digitalWrite(b, 0);
  digitalWrite(c, 1);
  digitalWrite(d, 0);
  digitalWrite(e, 0);
  digitalWrite(f, 0);
  digitalWrite(g, 0);
  delay(500);

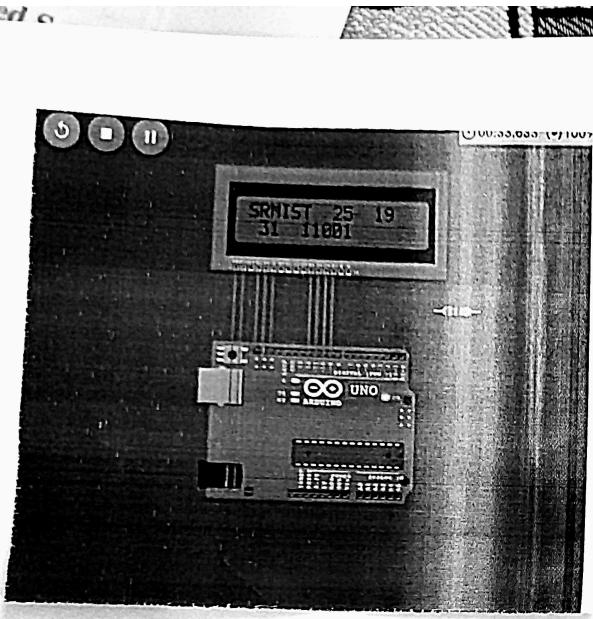
  digitalWrite(a, 0);
  digitalWrite(b, 0);
  digitalWrite(c, 0);
  digitalWrite(d, 1);
  digitalWrite(e, 0);
  digitalWrite(f, 0);
  digitalWrite(g, 0);
  delay(500);

  digitalWrite(a, 0);
  digitalWrite(b, 0);
  digitalWrite(c, 0);
  digitalWrite(d, 0);
  digitalWrite(e, 0);
  digitalWrite(f, 1);
  digitalWrite(g, 0);
  delay(500);
}

```

Result: The embedded program is written  
and simulated successfully.

دليه (500)!  
digitalwrite (g,0);  
digitalwrite (f,0);  
digitalwrite (e,0);  
digitalwrite (d,0);  
digitalwrite (c,0);  
digitalwrite (b,0);  
digitalwrite (a,0);  
  
دليه (500)!  
digitalwrite (g,0);  
digitalwrite (f,1);  
digitalwrite (e,0);  
digitalwrite (d,0);  
digitalwrite (c,1);  
digitalwrite (b,0);  
digitalwrite (a,0);



### EXPERIMENT - 03

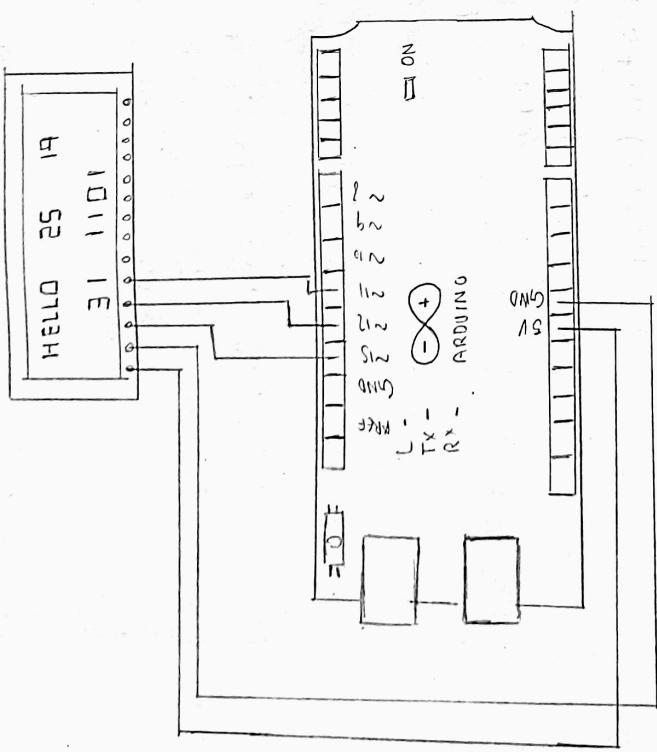
Aim: Write an embedded C program for LCD with Arduino Uno.

Software required: Arduino IDE with simulator.

Program:

```
#include <LiquidCrystal.h>
int rs=12, en=11, d4=5, d5=4, d6=3, d7=2;
LiquidCrystal Lcd(rs, en, d4, d5, d6, d7);
void setup() {
    Lcd.begin(16, 2);
}
void loop() {
    Lcd.home();
    Lcd.setCursor(0,0);
    Lcd.println("Hello");
    delay(1000);
    Lcd.println(25, DEC);
    delay(1000);
    Lcd.println(25, HEX);
    delay(1000);
    Lcd.setCursor(2,1);
}
```

Result: The embedded program is written and simulated successfully.



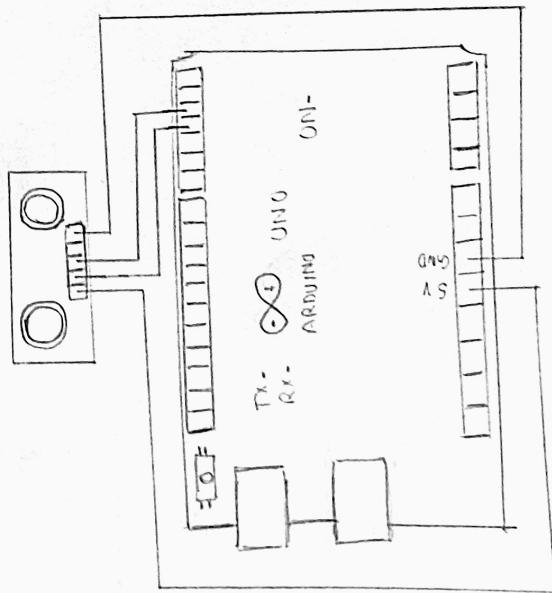
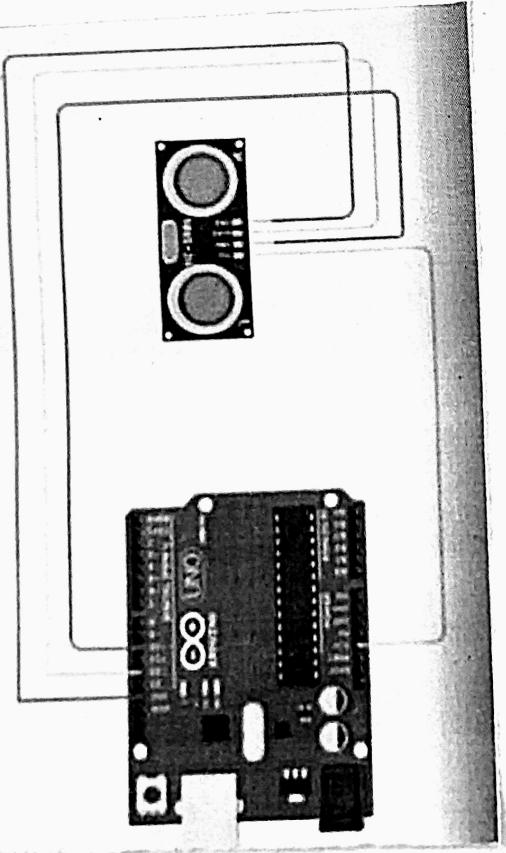
## Experiment - 04

Aim: Write an embedded c program for ultrasonic sensor (MC-SR04)

Software required: Arduino IDE simulator.

Program:-

```
#define echoPin 3
#define trigPin 4
long duration;
int distance;
void setup()
{
    Serial.begin(9600);
    pinMode(trigPin, OUTPUT);
    pinMode(echoPin, INPUT);
}
void loop()
{
    digitalWrite(trigPin, LOW);
    delayMicroseconds(2);
    digitalWrite(trigPin, HIGH);
    delayMicroseconds(20);
    digitalWrite(trigPin, LOW);
```



```
duration = PulseIn(echoPin, HIGH);  
distance = (duration * 0.034 / 2);  
Serial.print("Duration: ");  
Serial.print(duration);  
Serial.print("Distance: ");  
Serial.print(distance);  
Serial.print("Inches: ");  
Serial.print(inches);  
delay(1000);
```

3

Result: The embedded program is written and simulated successfully.

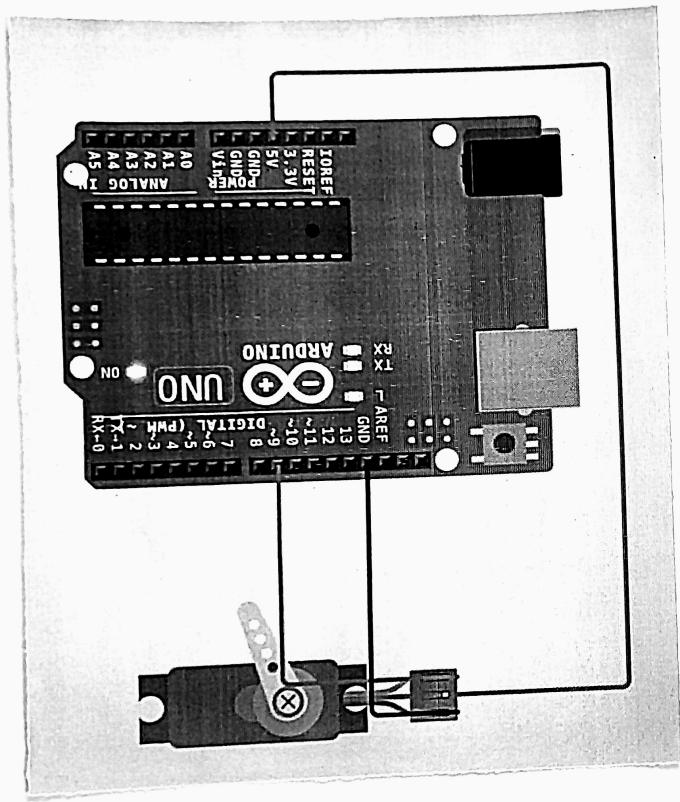
## EXPERIMENT - US

Aim:- Write an embedded c program for servo motor.

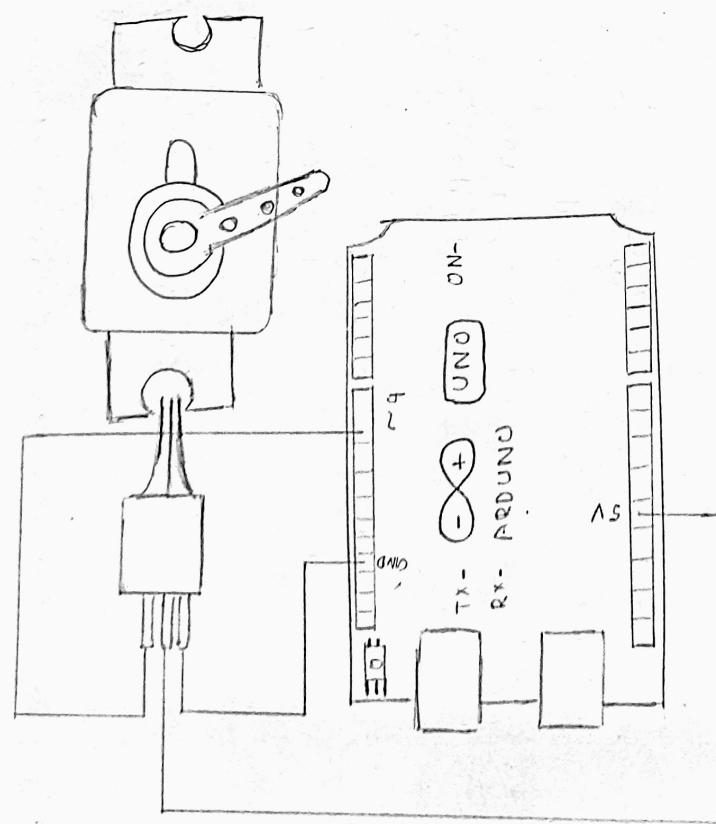
Software required: Arduino IDE simulator.

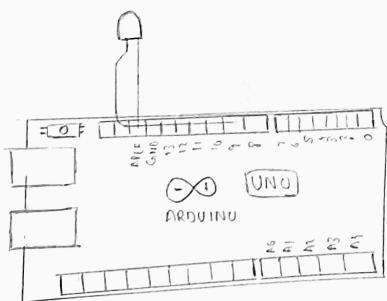
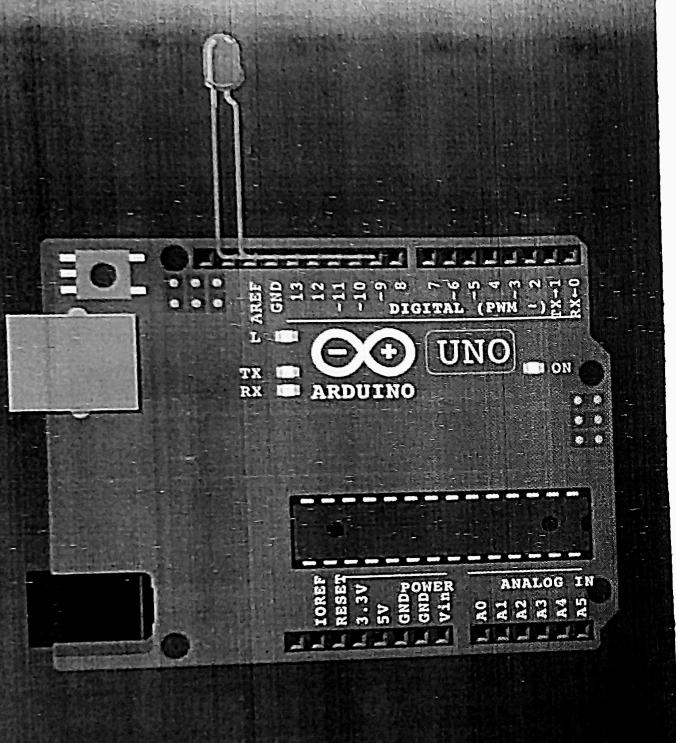
Program:

```
#include <Servo.h>
Servo myservo;
int pos;
void setup() {
    myservo.attach(10);
}
void loop() {
    for (pos = 0; pos <= 180; pos++) {
        myservo.write(pos)
        delay(10);
    }
    for (pos = 180; pos >= 0; pos--) {
        myservo.write(pos)
        delay(10);
    }
}
```



Result: The embedded program is written and simulated successfully.





### EXPERIMENT - 06

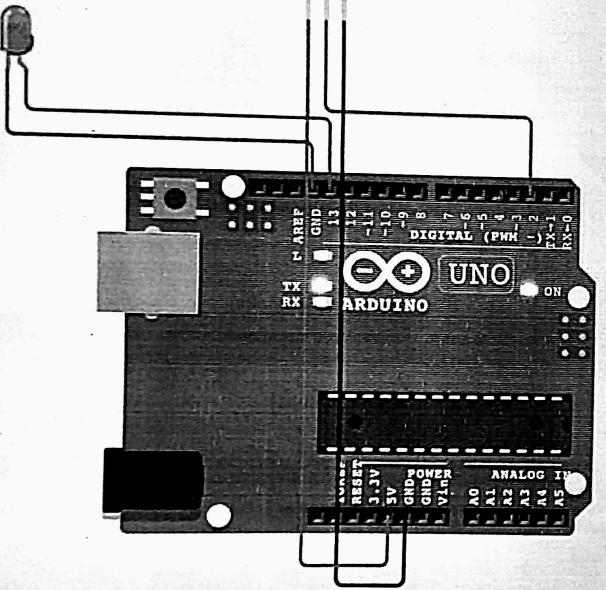
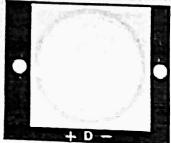
Aim: Write an embedded C program for LED with PWM pins.

Software required: Arduino IDE with Simulator.

Program:

```
void setup() {  
    pinMode(13, OUTPUT);  
}  
  
void loop() {  
    analogWrite(13, 64);  
    delay(5000);  
    analogWrite(13, 127);  
    delay(5000);  
    analogWrite(13, 191);  
    delay(5000);  
    analogWrite(13, 255);  
    delay(5000);  
    analogWrite(13, 0);  
    delay(5000);  
}
```

Result: The embedded program is written and simulated successfully



### EXPERIMENT - 07

Aim: Write an embedded c program for a PIR motion sensor.

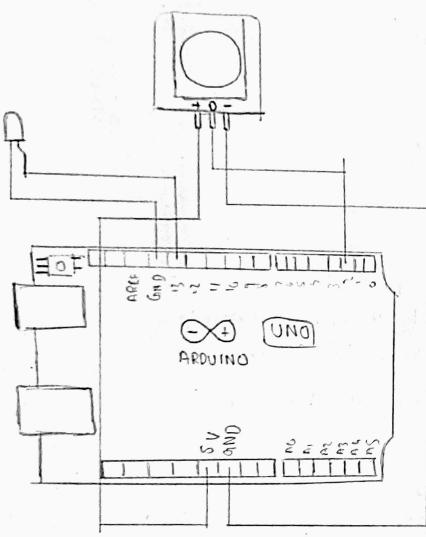
Software required: Arduino IDE with Simulator.

Program:

```
int ledPin = 13;
int inputPin = 2;
int pirState = LOW;
int val = 0;

void setup() {
    pinMode(ledPin, OUTPUT);
    pinMode(inputPin, INPUT);
    Serial.begin(9600);
}

void loop() {
    val = digitalRead(inputPin);
    if (val == HIGH) {
        digitalWrite(ledPin, HIGH);
        if (pirState == LOW) {
            Serial.println("Motion detected!");
            pirState = HIGH;
        }
    } else {
        digitalWrite(ledPin, LOW);
        if (pirState == HIGH) {
            Serial.println("Motion ended!");
            pirState = LOW;
        }
    }
}
```



Result: The embedded program is written and simulated successfully.

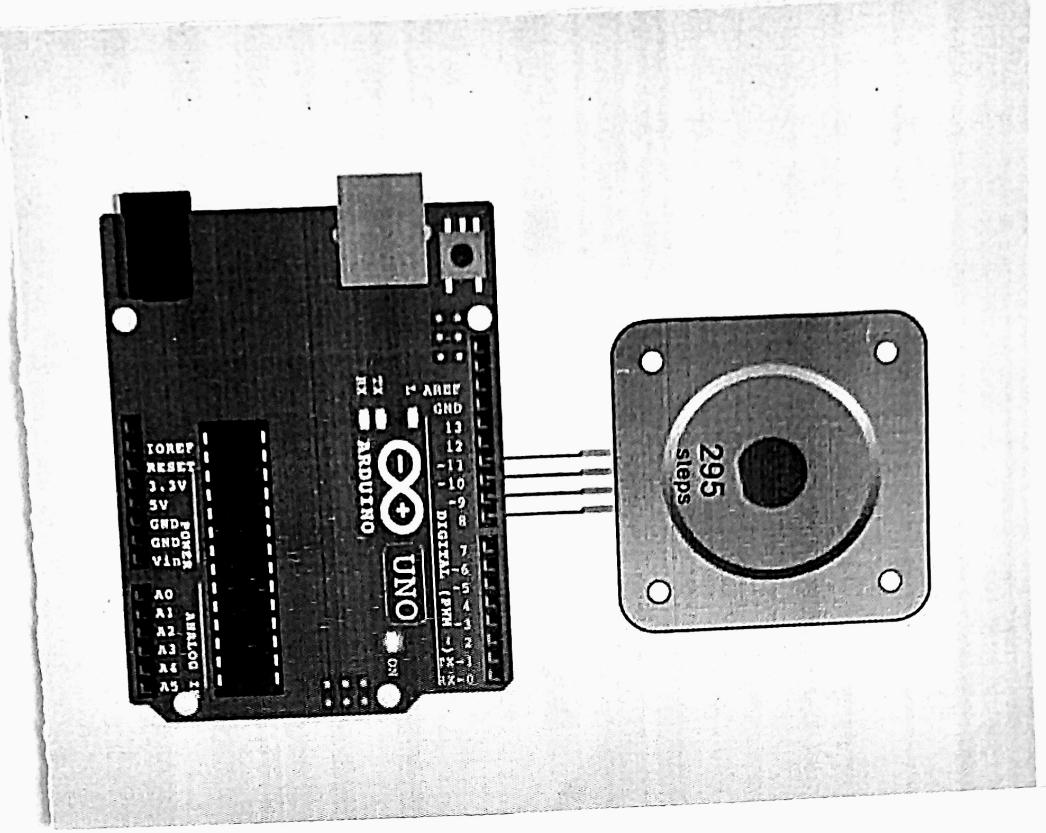
## EXPERIMENT - 08.

Aim: Write an embedded C program interfacing stepper motor using Arduino Motor

Software required: Arduino IDE with Simulator.

```
#include <Stepper.h>
const int stepsPerRevolution = 200;
Stepper mystepper(stepsPerRevolution, 8, 9, 10, 11);
void setup()
{
    mystepper.setSpeed(60);
    Serial.begin(9600);
}

void loop()
{
    Serial.println("clockwise");
    mystepper.step(100);
    delay(500);
    Serial.println("counter-clockwise");
    mystepper.step(-100);
    delay(500);
}
```



Result: The embedded program is written and simulated successfully.

