

Practical No.: 9

Aim:-Interfacing IR Sensor with Arduino /NodeMCU/ Raspberry Pi to Detect Obstacle.

Hardware Requirements:

ArduinoUNO:Arduino is an open-source electronics platform based on easy-to-use hardware and software. Arduino boards are able to read inputs - light on a sensor, a finger on a button.

Breadboard :A thin plastic board used to hold electronic components (transistors, resistors, chips, etc.) that are wired together. It is used for Connections .It has many holes into which circuit components like ICs and resistors can be inserted.

IR Sensor :IR (Infrared)sensor is used for Obstacle detection. IR Sensor is used for small Distance.

Connecting Wires :Connecting wires allows an electrical current to travel from one point on a circuit to another because electricity needs a medium through which it can move.

LED :A light-emitting diode (LED) is a semiconductor device that emits light when an electric current flows through it. When current passes through an LED, the electrons recombine with holes emitting light in the process.

RESISTOR-Resistors are the most commonly used components in electronic circuits and devices. The main purpose of a resistor is to maintain specified values of voltage and current in an electronic circuit.

Software used:Tinkercad.

- **IR Sensor :-**

IR(Infrared)sensor is used for Obstacle detection.It having IR Transmitter (black LED) & IR Receiver (White LED).It's Digital Sensor.When Obstacle is detected IR Sensor will send digital 0 to Arduino and in case of absence of obstacle IR Sensor will send digital. IR Sensor is used for small Distance.IR sensors are now widely used in motion detectors, which are used in building services to switch on lamps or in alarm systems to detect unwelcome guests.

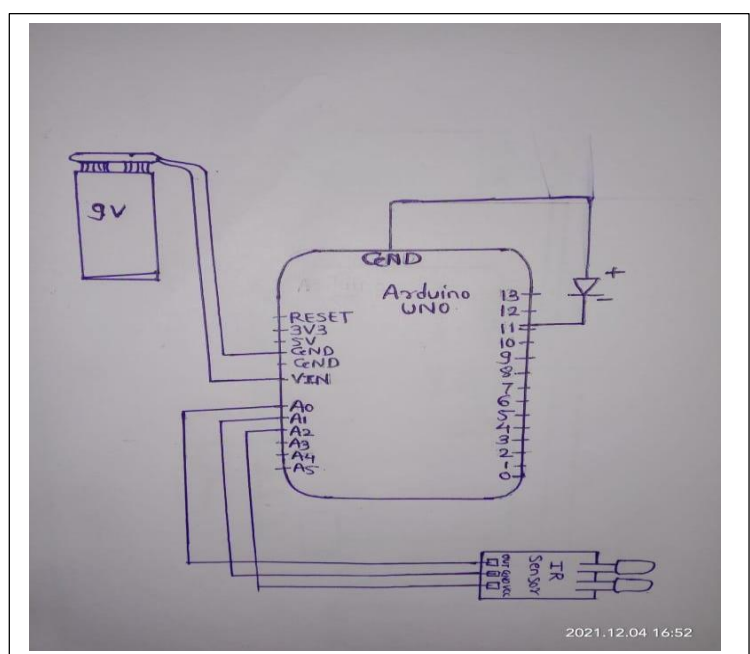
For this Practical we will only need:

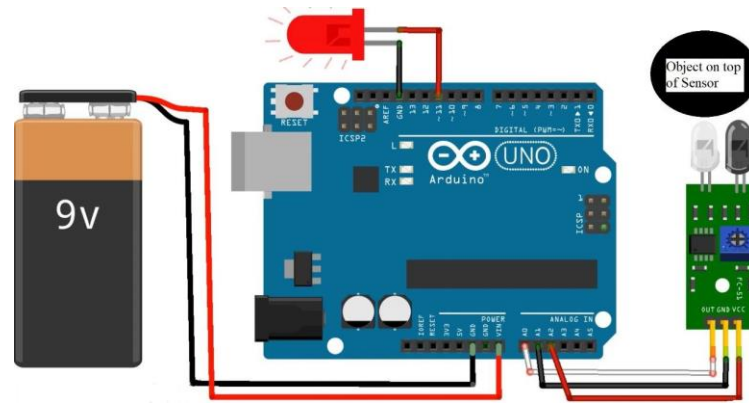
- d) Arduinouno
- e) IR Sensor.
- f) Resistor
- g) LED
- h) Breadboard
- i) Connecting wires

- **Circuit Schematic and Circuit:**

- **Schematic**

- **Circuit :**



**Program :**

```

int LED = 13;
int obstaclePin = 8;
int hasObstacle = HIGH;

void setup()
{
  pinMode(LED, OUTPUT);
  pinMode(obstaclePin, INPUT);
}

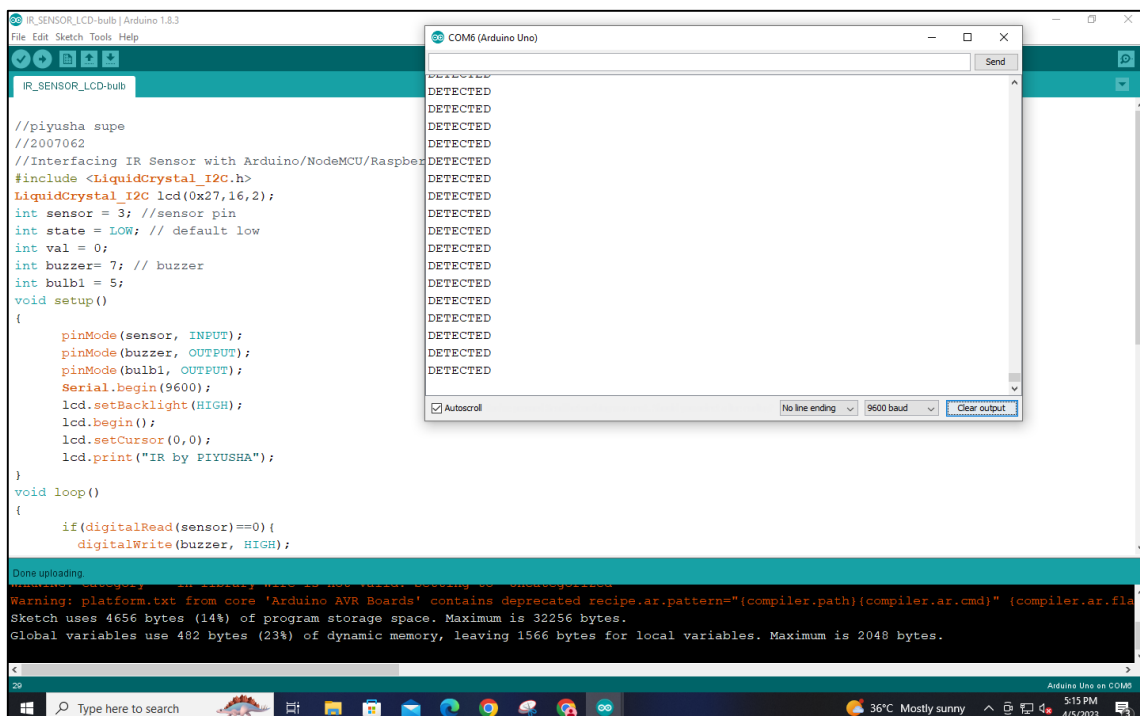
void loop() {
  hasObstacle = digitalRead(obstaclePin);

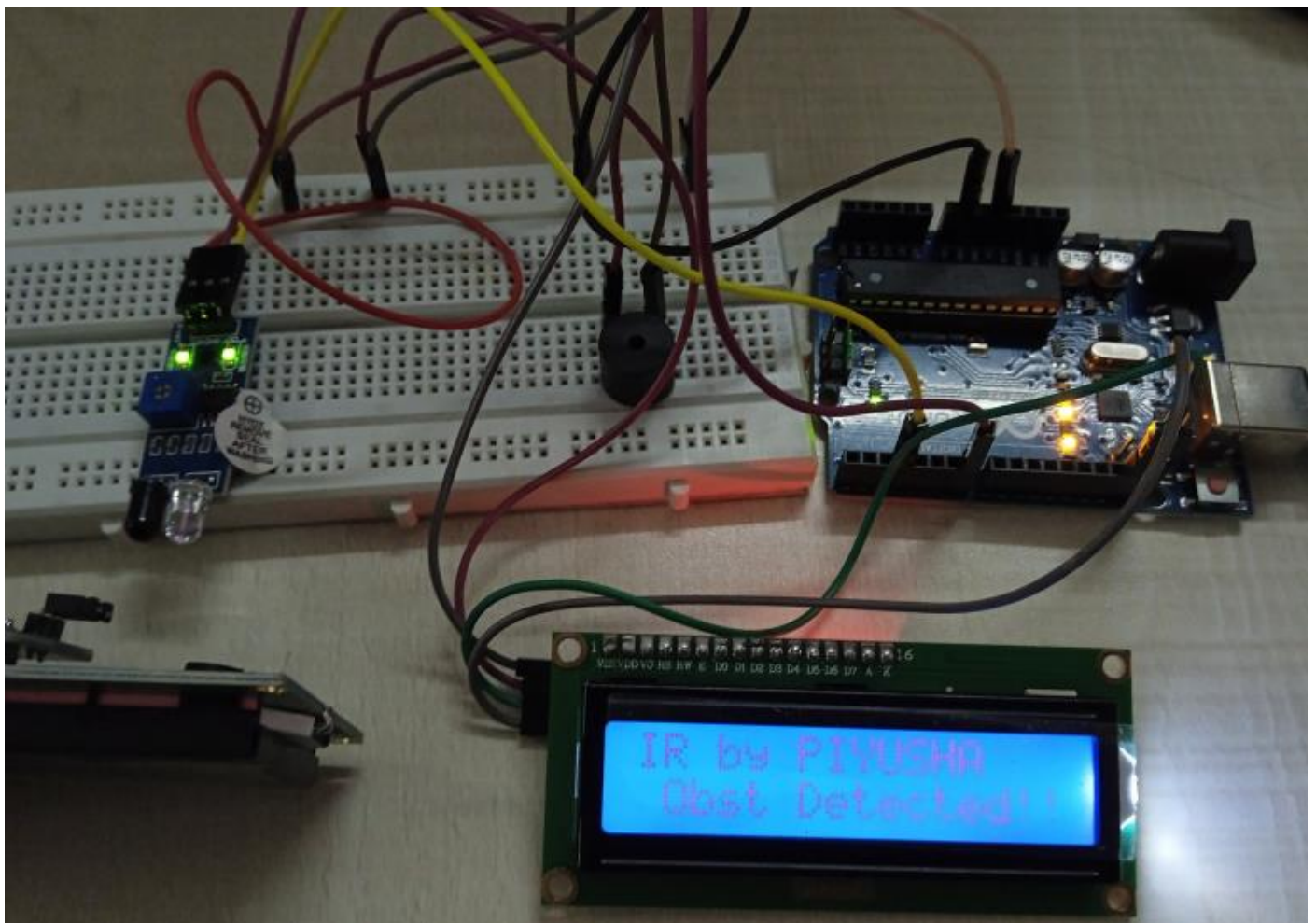
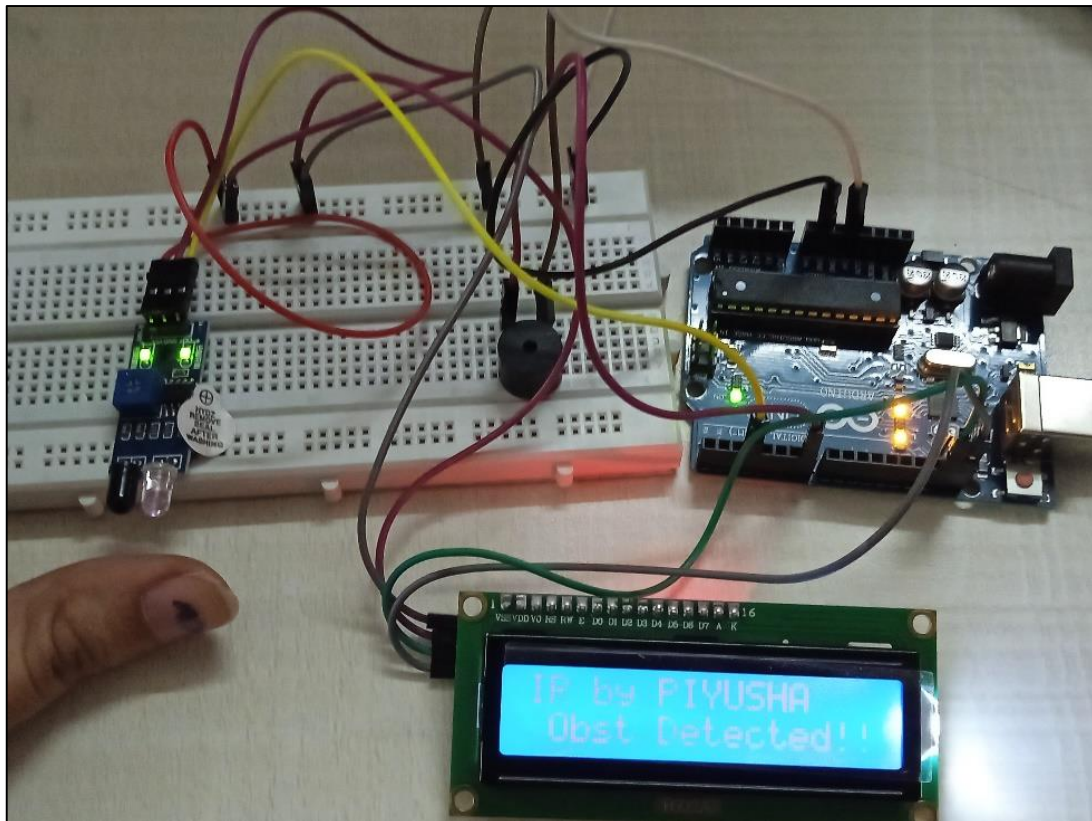
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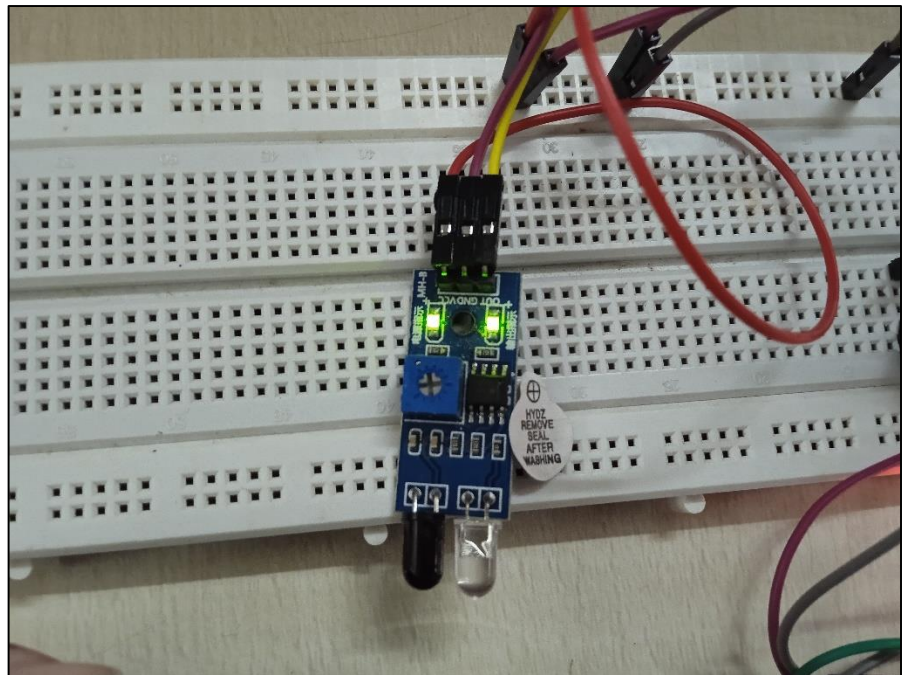
    if (hasObstacle == LOW)
    {
      digitalWrite(LED, HIGH);
    }
    else
    {
      digitalWrite(LED, LOW);
    }
    delay(200);
  }

```

ACTUAL IMPLEMENTATION ON HARDWARE CIRCUIT:



The light on the sensor glows on receiver side when the obstacle is detected



Conclusion: Thus we successfully Interfaced IR Sensor with Arduino to Detect Obstacle

Knowledge	Skill	Presentation	Assessment	Total