Experiment 2 : Connect Arduino board with IR Sensor and glow LED when object detection **,**LED off when object not detected

Aim: The principal aim of this experiment is to interface a sensor with the microcontroller and to glow LED LED when object detection **,**LED off when object not detected

1. COMPONENTS REQUIRED

a) Arduino UNO
b) Breadboard
c) IR Sensor
d) Jumper wires

a. ARDUINO UNO:

Arduino UNO is a microcontroller board based on the ATmega328P. It has 14 digital input/output pins (of which 6 can be used as PWM outputs), 6 analog inputs, a 16 MHz ceramic resonator, a USB connection, a power jack, an ICSP header and a reset button. It contains everything needed to support the microcontroller; simply connect it to a computer with a USB cable or power it with a AC-to-DC adapter or battery to get started. You can tinker with your UNO without worrying too much about doing something wrong, worst case scenario you can replace the chip for a few dollars and start over again.

Arduino UNO

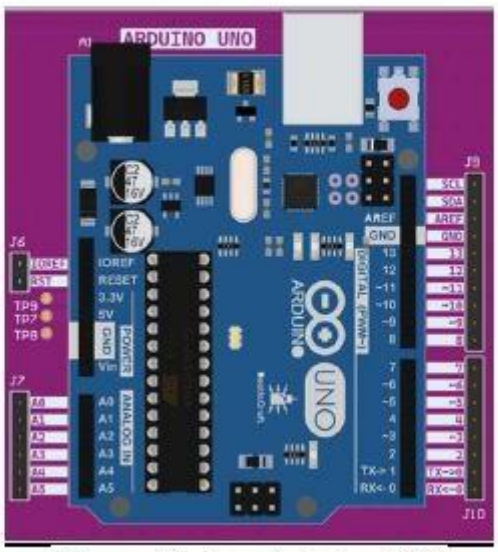

Figure No:1 – Arduino UNO

b. BREADBOARD:

Breadboards are one of the most fundamental pieces when learning how to build circuits. Breadboards are commonly utilized while prototyping temporary circuits. It is useful to designers because it allows components to be removed and replaced easily.

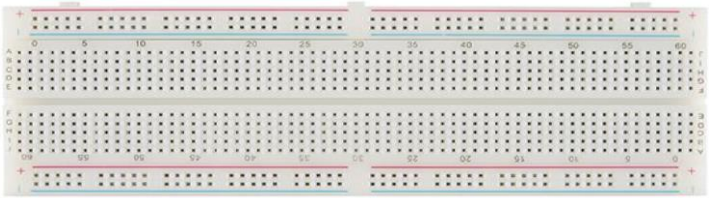

Figure 1.1 – Breadboard

IR Sensor: An **IR (Infrared) sensor** is an electronic device that detects infrared radiation (heat) from objects and converts it into an electrical signal. These sensors are widely used for motion detection, proximity sensing, temperature measurement, and object detection.

2.SOFTWARE

Software is a generic term to refer to the scripts and programs that run on a microprocessor or microcontroller and execute specific tasks.

2.1 GET START WITH ARDUINO IDE

Follow the steps to install Arduino IDE:

Step 1: Browse for the URL - ' https://www.arduino.cc/en/software '

Step 2: In DOWNLOAD OPTIONS, choose Windows/Linux/Mac OS accordingly.

Step 3: Select - JUST DOWNLOAD. The download will start!

Step 4: Run the downloaded setup file.

3. PROGRAM

```
// Aurdino Digital Pin 7 to IR Sensor OUT

//Aurdino  digital

void setup() {

  // put your setup code here, to run once:

pinMode(7,INPUT);
```

```
pinMode(2,OUTPUT);
Serial.begin(9600);
}

void loop() {
  // put your main code here, to run repeatedly:
bool Ir_value=digitalRead(7);
if(Ir_value == 1){
  digitalWrite(2,1);  //LED on
  Serial.println("object or person detected...");
}
else
{
  digitalWrite(2,0);  //LED off
  Serial.println("object or person not detected...");
}
delay(1000);
}
```

4. Results

Glow LED when object detection**,** LED off when object not detected from the IR sensor using the microcontroller unit is successfully implemented.

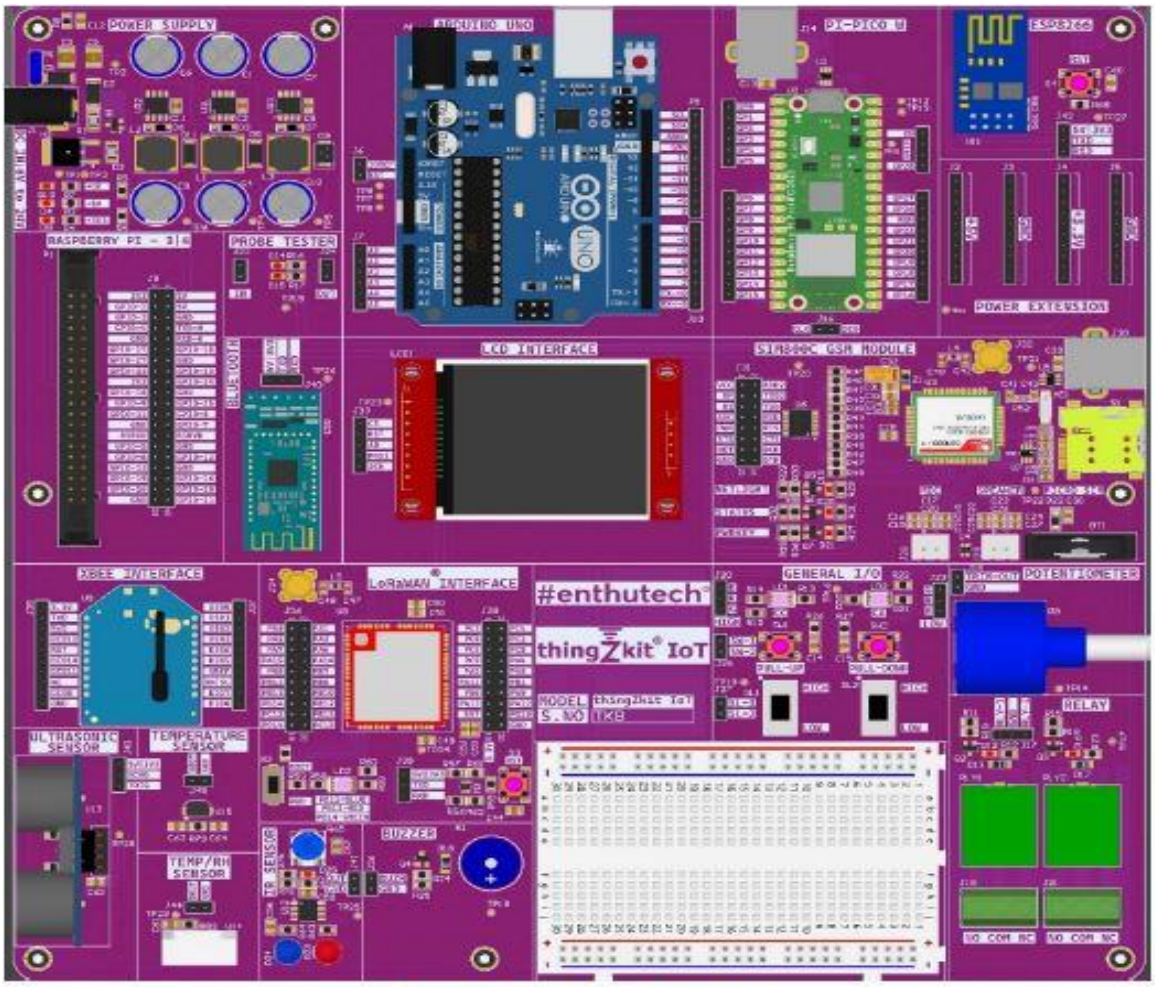

Fig. No 1: thingZkit IoT