

## EXPERIMENT TITLE. 07

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**Branch:** CSE BTECH

**Section/Group:** 26 (B)

**Semester:** 2<sup>ND</sup>

**D.O.P**

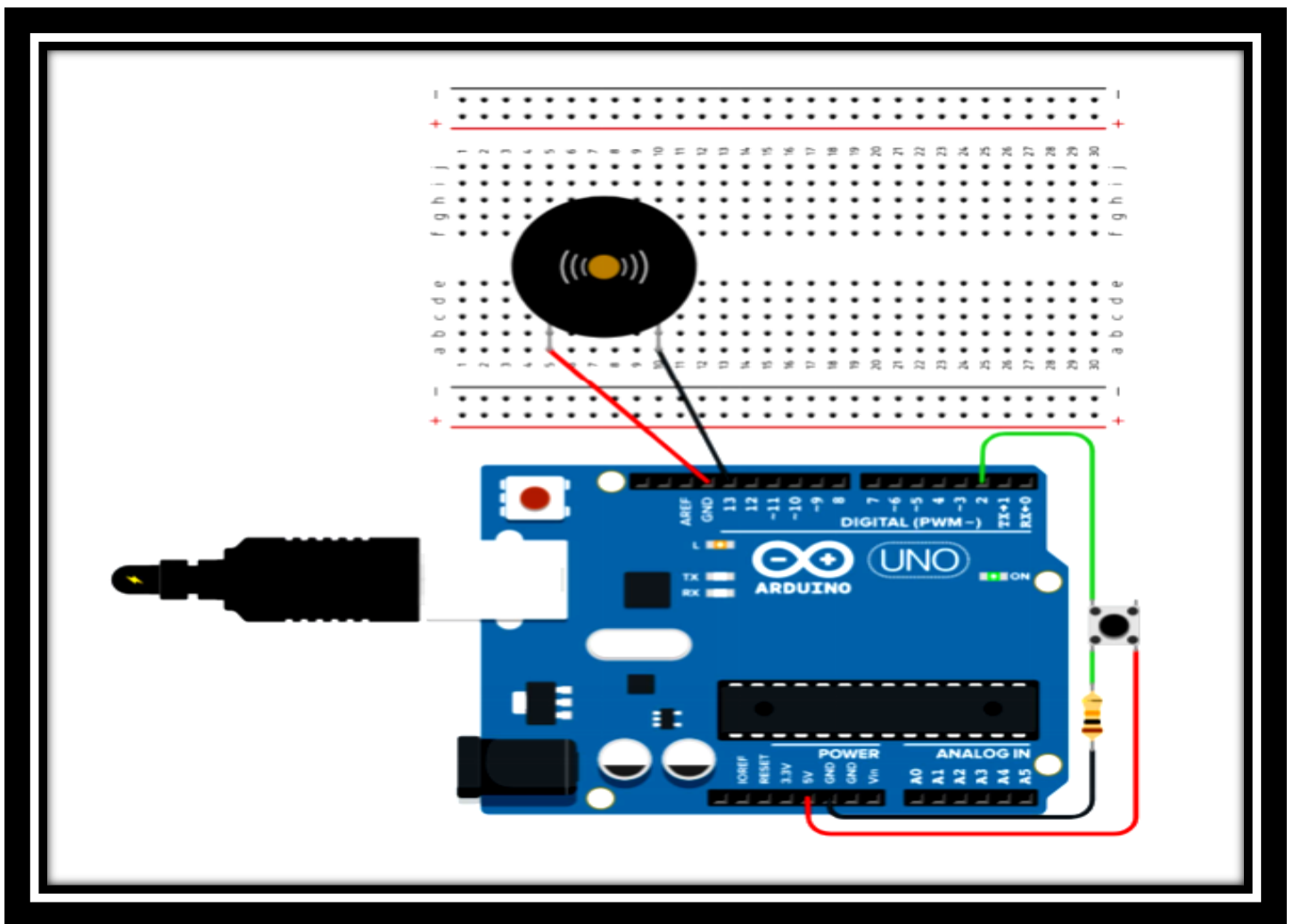
**Subject Name:** BEEE Lab

**1. Aim:** To design a doorbell with a push button.

**2. Apparatus:**

- ❖ Arduino.
- ❖ Push button.
- ❖ Resistance 10k ohm.
- ❖ Wires.
- ❖ Breadboard.

## ❖ CIRCUIT DIAGRAM :



#### 4. Steps for experiment:

- The circuit:
- Pushbutton attached to pin 2 from +5V
- 10K resistor attached to pin 2 from ground
- LED attached from pin 13 to ground (or use the Built-in LED on most Arduino boards)

#### ❖ State change detection (edge detection)

Often, you don't need to know the state of a digital input all the time, but you just need to know when the input changes from one state to another. For example, you want to know when a button goes from OFF to ON. This is called state change detection, or edge detection. This example shows how to detect when a button or button changes from off to on and on to off

CODE :

```
increment the counter
  if (buttonState == HIGH) {
    // if the current state is HIGH, then the button
    // went from off to on
    buttonPushCounter += 1;int buttonState = 0;

int lastButtonState = 0;

int buttonPushCounter = 0;

void setup()
{
  pinMode(2, INPUT);
  Serial.begin(9600);

  pinMode(13, OUTPUT);
}

void loop()
{
  // read the pushbutton input pin
  buttonState = digitalRead(2);
  // compare the buttonState to its previous state
  if (buttonState != lastButtonState) {
    // if the state has changed, in
    Serial.println("on");
    Serial.print("number of button pushes: ");
    Serial.println(buttonPushCounter);
  } else {
    // if the current state is LOW, then the button
```

```
    // went from on to off
    Serial.println("off");
}
// delay a little bit to avoid debouncin
delay(5); // Wait for 5 millisecond(s)
}
// save the current state as the last state, for
// the next time through the loop
lastButtonState = buttonState;
// turns on the LED every four button pushes by
// checking the modulo of the button push counter.
// the modulo function gives you the remainder of
// the devision of two numbers
if (buttonPushCounter % 4 == 0) {
    digitalWrite(13, HIGH);
} else {
    digitalWrite(13, LOW);
}
}
```

## 1. Calculations/Theorems /Formulas used etc:



**NO**

**2. Observations/Discussions:**

NO

**3. Percentage error (if any or applicable):**

NO

**4. Result/Output/Writing Summary:**



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Designing of doorbell was verified after uploading the program.

**5. Graphs (If Any): Image /Soft copy of graph paper to be attached here: NO**

❖ **Learning outcomes (What I have learnt):**

- 1. Understand the concept of Arduino UNO.**
- 2. Design of circuit using push button and Arduino.**
- 3. Verify the circuit using programming.**

**Evaluation Grid:**

Sr. No.	Parameters	Marks Obtained	Maximum Marks
1.	Worksheet completion including writing learning objectives/Outcomes.(To be submitted at the end of the day).		10
2.	Post Lab Quiz Result.		5
3.	Student Engagement in Simulation/Demonstration/Performance and Controls/Pre-Lab Questions.		5
	Signature of Faculty (with Date):	Total Marks Obtained:	





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