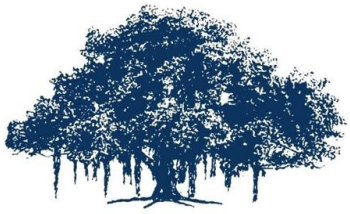

INTERNATIONAL INSTITUTE OF INFORMATION TECHNOLOGY

HYDERABAD

Lab Report-1

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Group No: 37
Teams Group No: 10
Course: Digital Systems and Microcontrollers Lab

Contents

1 Experiment-1

1.1 Objective:

1) To get familiarized with the digital tool kit
2) Using the test kit to implement a not gate

1.2 Components Required:

Breadboard,Power Supply,Not Gate,LED bulbs for input and Output,Switches,Connecting Wires

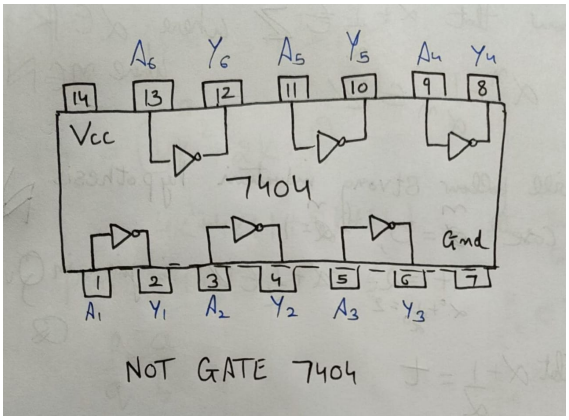

Figure 1: fig 1.2 NOT GATE IC 7404

Figure 2: fig 1.3 Another view of IC 7404

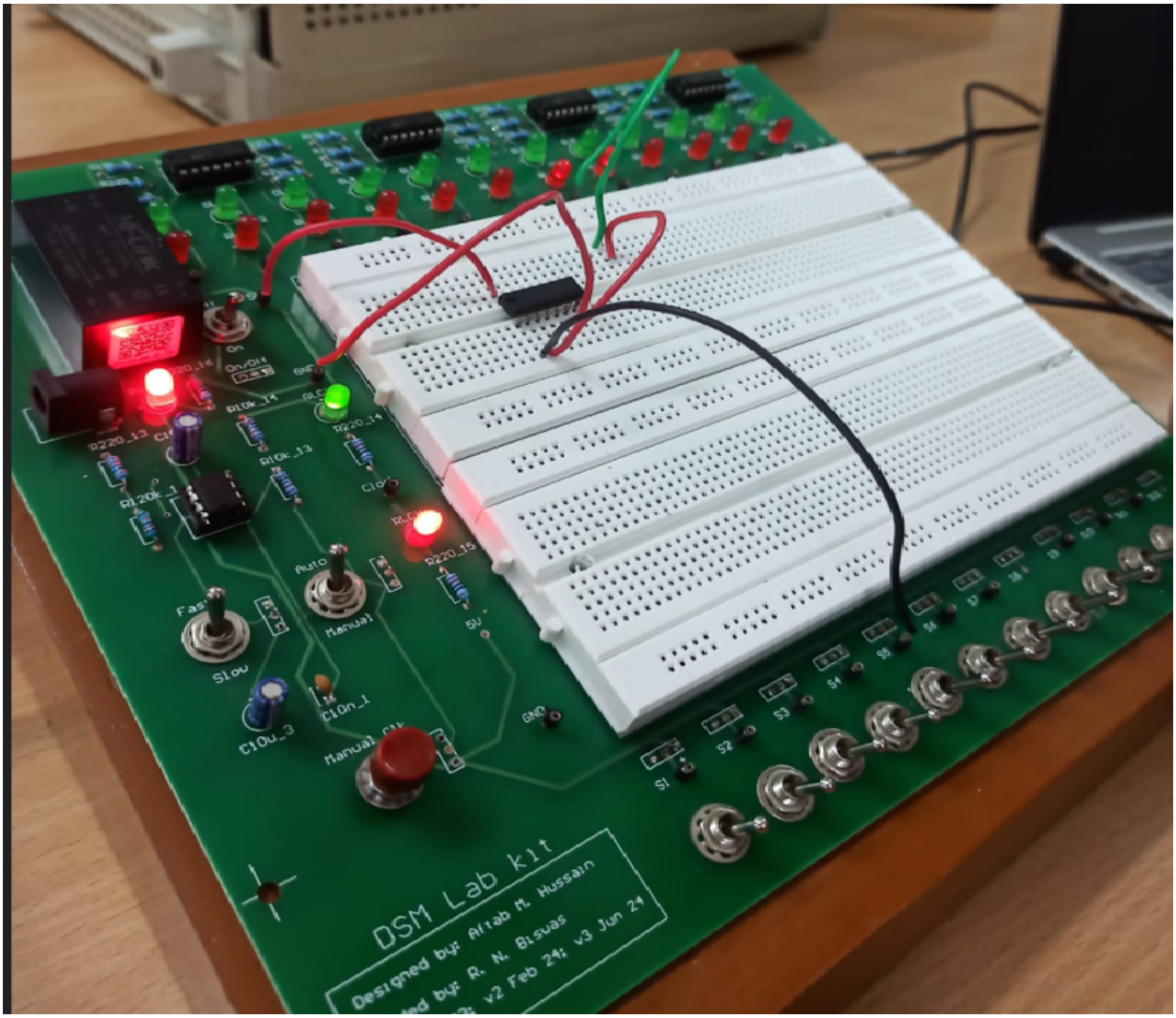

Figure 3: Enter Caption

1.3 Truth Table

Truth table for NOT gate

Input	Output	LED State
0	1	ON (Red)
1	0	OFF (Green)

Table 1: Truth table for NOT gate

Figure 4: Enter Caption

1.4 Procedure:

1) On the breadboard, place the IC ,one of the input gates i.e 1,3... will be connected with the input wire.

2)Gate Number 14(Labelled Vcc) will be connected to the 5V source.

3)Gate Number 7(Gnd) will be connected to the grounding wire.

4)The clock control switch will be switched to fast.

5)The Vcc supply will be turned on.

1.5 Observation:

As we are using a not gate the output is reversed.

When the switch is turned off we get a red light indicating 1
When it is on we get the green light indicating the output to be a 0
This is exactly the opposite as expected.

1.6 Conclusion:

1) NOT gate are simple invertors i.e they convert HIGH voltage to LOW voltage and vice versa

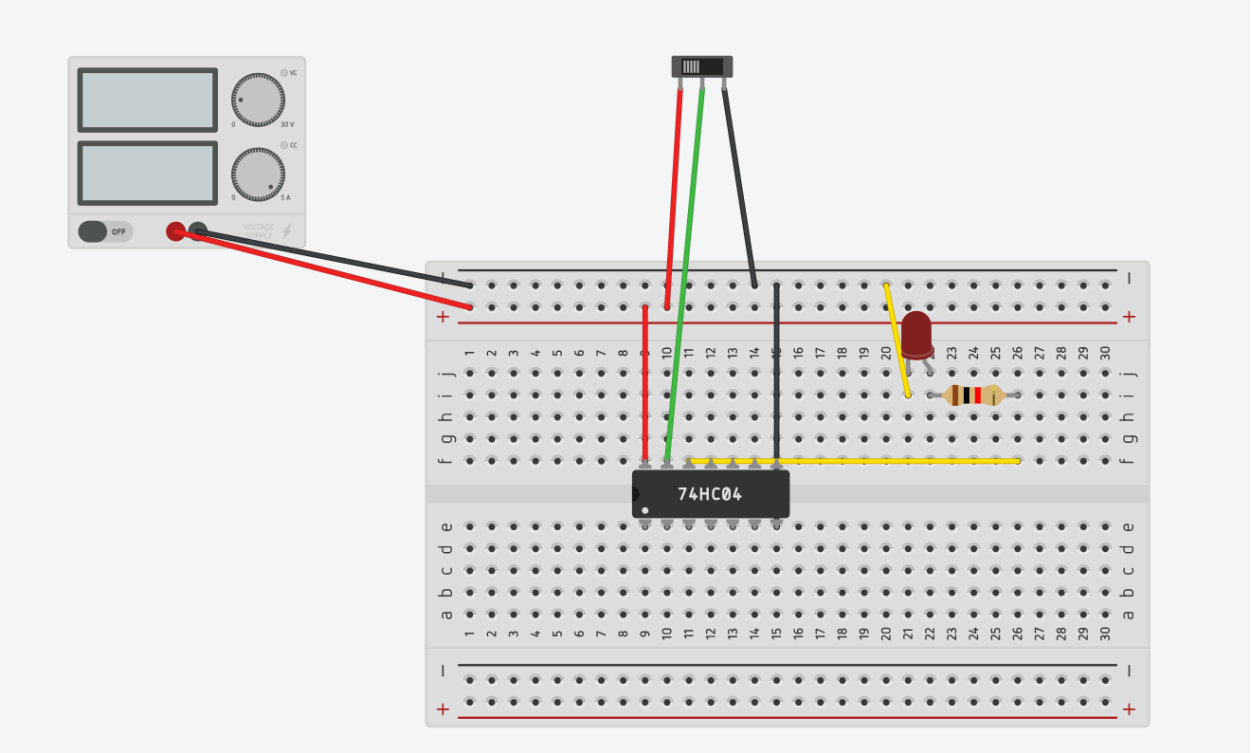

Figure 5: Enter Caption

Link to TinkerCAD:
Lab1 EX1

2 Experiment-2

2.1 Objective:

1)Operate a microcontroller using Arduino IDE
2)Use Arduino UNO to print "HELLO WORLD" on the serial monitor if the output of the NOTGATE is 1 and nothing if the output is 0

2.2 Components Required:

Arduino IDE,Arduino UNO,Cable (to connect to a laptop),Hex inverter,Battery

2.3 Procedure:

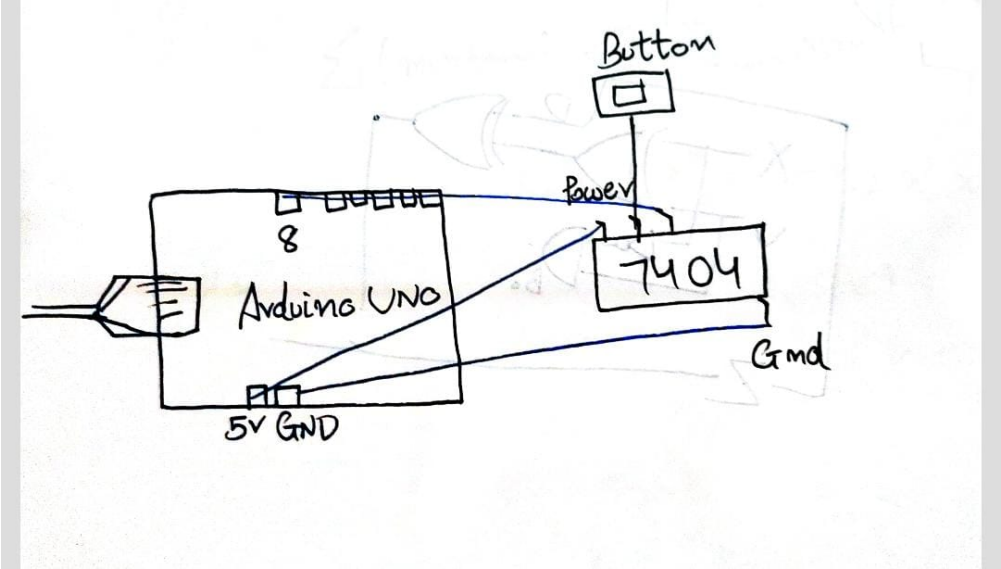

Figure 6:

1)Connect the microcontroller to a laptop
2)In Arduino IDE configure the connection
3)Connect the Hex inverter to the arduino 3)Write the code below

```
void setup() {
  Serial.begin(9600);
  pinMode(8, INPUT);
}

void loop() {
  int notOutput = digitalRead(8);

  if (notOutput == HIGH) {
    Serial.println("HELLO WORLD");
  } else {
    Serial.println("");
  }

  delay(1000);
}

```

Figure 7: Hello World

2.4 Output:

Figure 8: Output

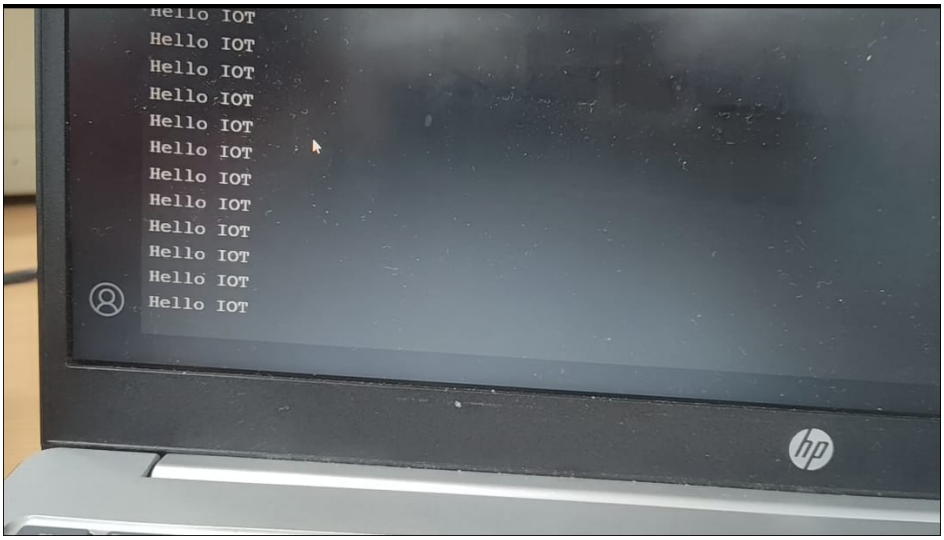

Figure 9: We printed Hello IOT for example

2.5 Conclusion:

microcontrollers are simple to operate but can perform a great variety of tasks

2.6 TINKERCAD

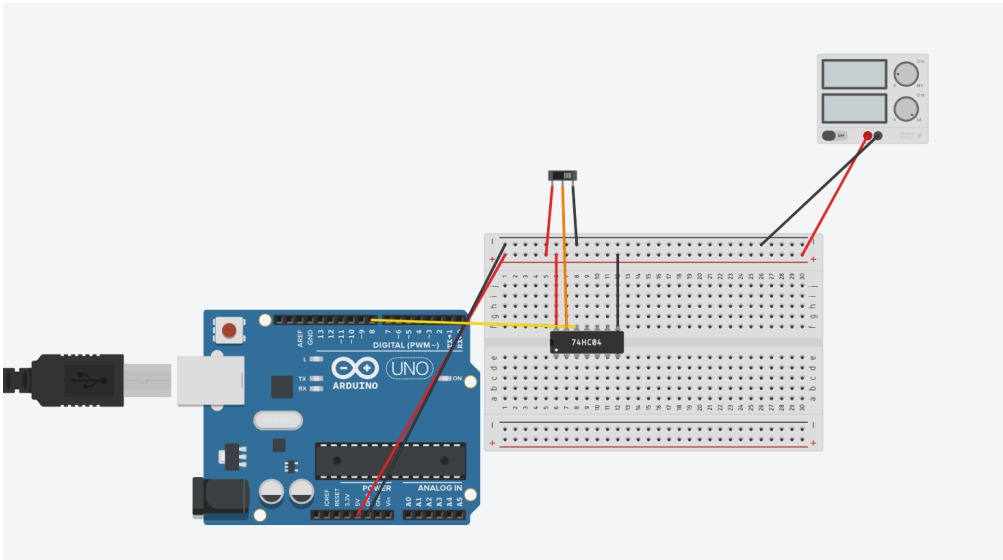

Figure 10: Tinkercad

Link

3 Experiment-3

3.1 Objective:

Use Arudino UNO to control and operate an LED

3.2 Equipment Required:

Arduino UNO,Arduino IDE,connecting wires,LED,Breadboard

3.3 Procedure:

1)Launch Arduino IDE

2)Set the LED on the breadboard

3)Connect the smaller end to GND on the board

4) the longer end to an output of your choice for example 8

5) write the following code on the IDE

6)Push the code to the board

Unsaved – sketch_aug15c.ino

```
LED_PIN 8
void setup() {
  // put your setup code here, to run once:
  pinMode(8,OUTPUT);

}

void loop() {
  // put your main code here, to run repeatedly:
digitalWrite(8, HIGH);
delay(1000);
digitalWrite(8, LOW);
delay(1000);

}
```

Figure 11: Instructions

3.4 Output:

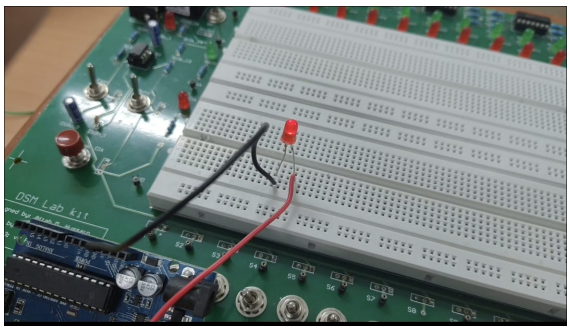

Figure 12: ON

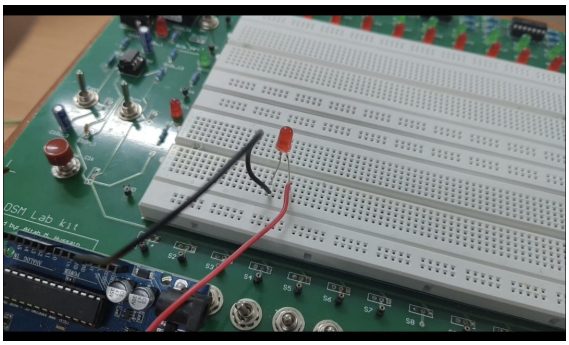

Figure 13: OFF

3.5 Result:

From the code the following can be observed:
1)Output is taken from the 8th outlet

2)There is a 1 second or a 1000ms delay in the blinking of the LED

3.6 TinkerCAD:

https://www.tinkercad.com/things/7pD8WVQIa46-experiment-3