SCS2213 Electronics and Physical Computing

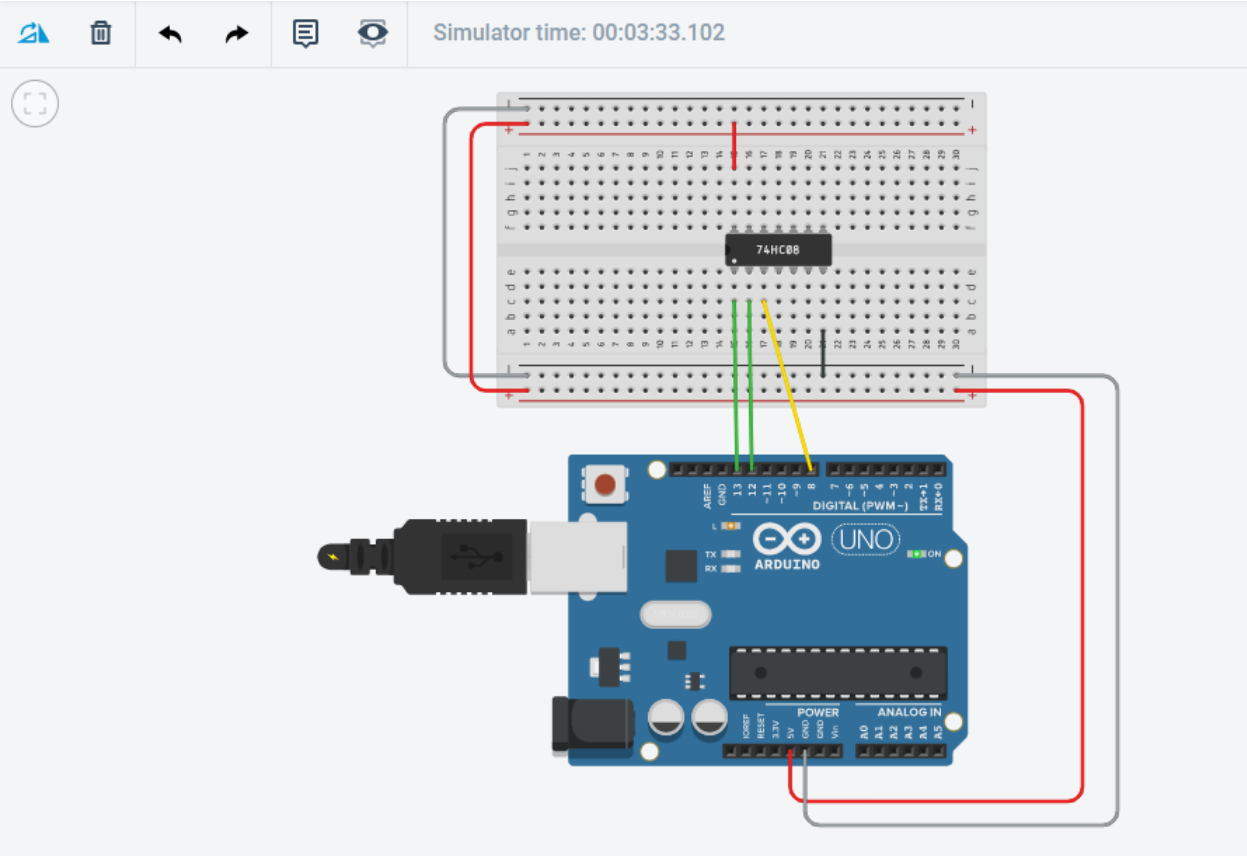
Exercise on Lecture 10

Index Number : 18000322

Develop an Arduino based system (sketch and wiring diagram) to discover the truth table (logic function) of an unknown logic element. State any assumptions you make.

Wiring diagram

Sketch the circuit for the AND gate with 2 inputs.

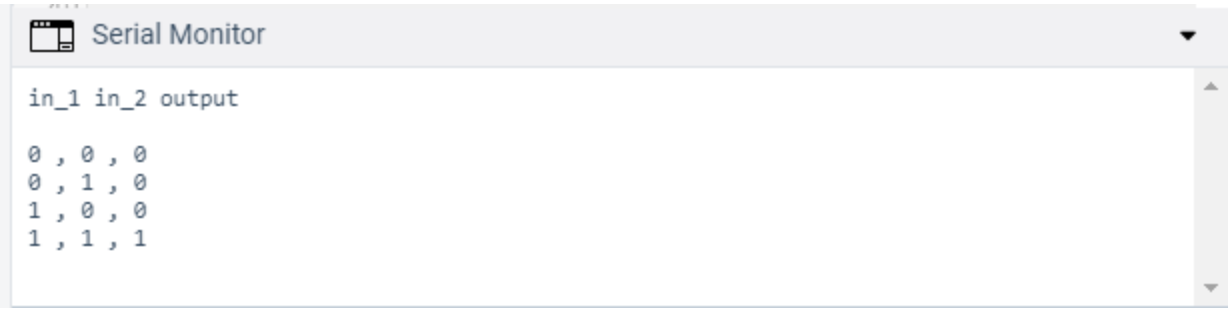


Sketch

```
int input1 = 13;
int input2 = 12;
int output_pin = 8;

void setup()
{
  pinMode(input1, OUTPUT);
  pinMode(input2, OUTPUT);
  pinMode(output_pin, INPUT);

  Serial.begin(9600);

}

void loop()
{
  //header
  Serial.print("in_1");
  Serial.print(" ");
  Serial.print("in_2");
  Serial.print(" ");
  Serial.print("output");
  Serial.println();
  Serial.println();
```

```
//00

digitalWrite(input1, LOW);
digitalWrite(input2, LOW);

int result = digitalRead(output_pin);

Serial.print(0);
Serial.print(" , ");
Serial.print(0);
Serial.print(" , ");
Serial.println(result);

//01

digitalWrite(input1, LOW);
digitalWrite(input2, HIGH);

result = digitalRead(output_pin);

Serial.print(0);
Serial.print(" , ");
Serial.print(1);
Serial.print(" , ");
Serial.println(result);
```

```
  //10

  digitalWrite(input1, HIGH);
  digitalWrite(input2, LOW);
  result = digitalRead(output_pin);

  Serial.print(1);
  Serial.print(" , ");
  Serial.print(0);
  Serial.print(" , ");
  Serial.println(result);

  //11

  digitalWrite(input1, HIGH);
  digitalWrite(input2, HIGH);

  result = digitalRead(output_pin);

  Serial.print(1);
  Serial.print(" , ");
  Serial.print(1);
  Serial.print(" , ");
  Serial.println(result);

  while(1){
  }
}
```



Assumption

In this circuit I used Quad 2-Input AND Gates.