SNS COLLEGE OF TECHNOLOGY

Coimbatore-35
An Autonomous Institution

Accredited by NBA – AICTE and Accredited by NAAC – UGC
with 'A+' Grade
Approved by AICTE, New Delhi & Affiliated to Anna
University, Chennai

DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

INTRODUCTION TO ARCHITECTING SMART IoT DEVICES
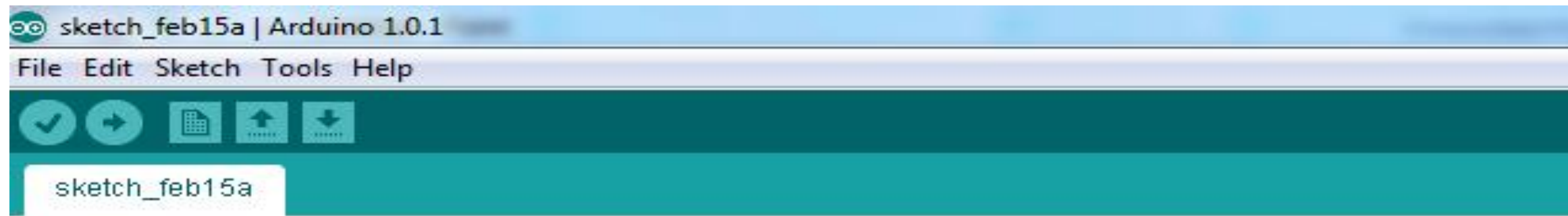
II YEAR/ IV SEMESTER

UNIT 2 – MICROCONTROLLER AND INTERFACING TECHNIQUES FOR IoT DEVICES

TOPIC 1 – BASICS OF EMBEDDED C PROGRAMMING FOR ARDUINO

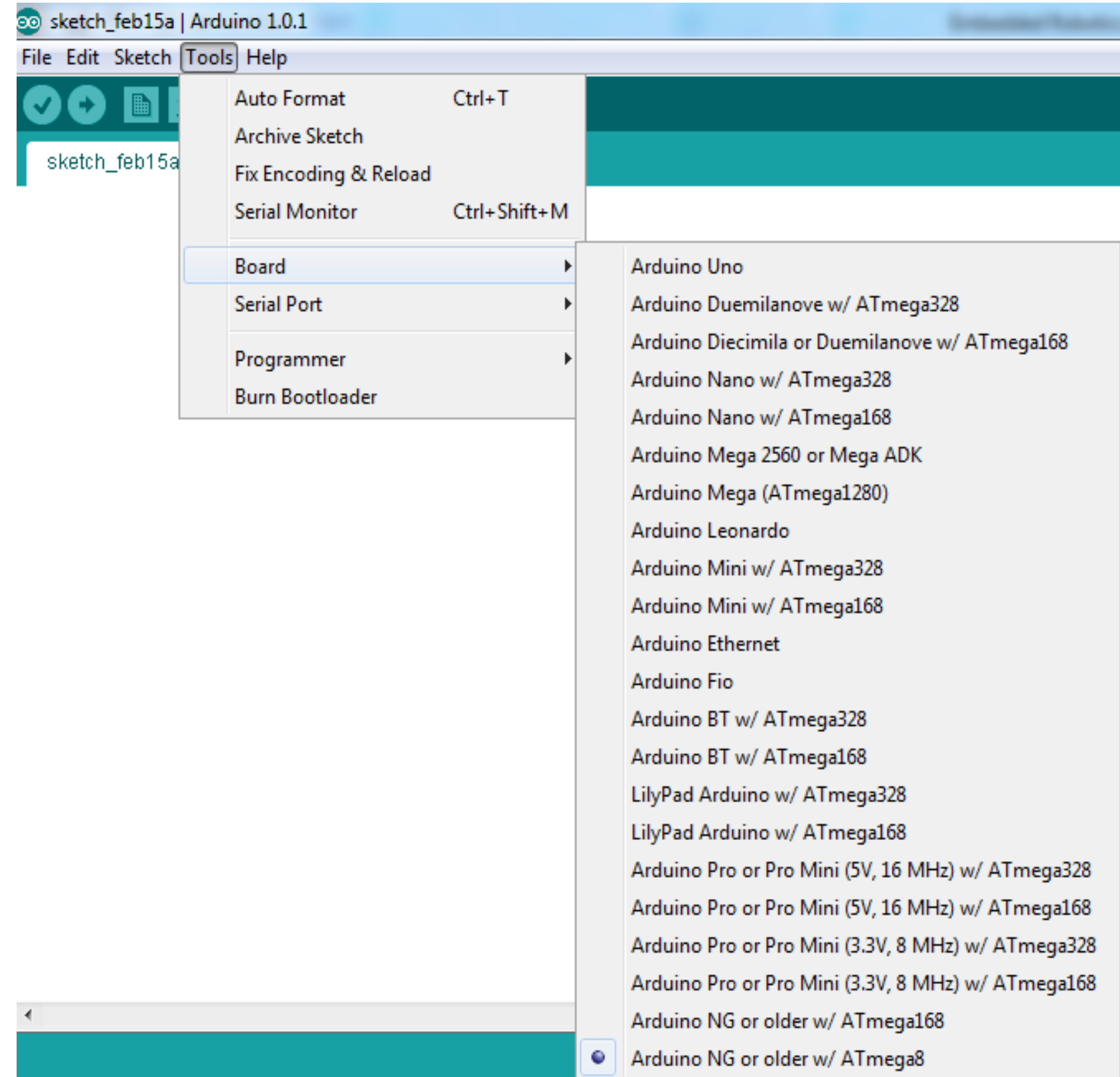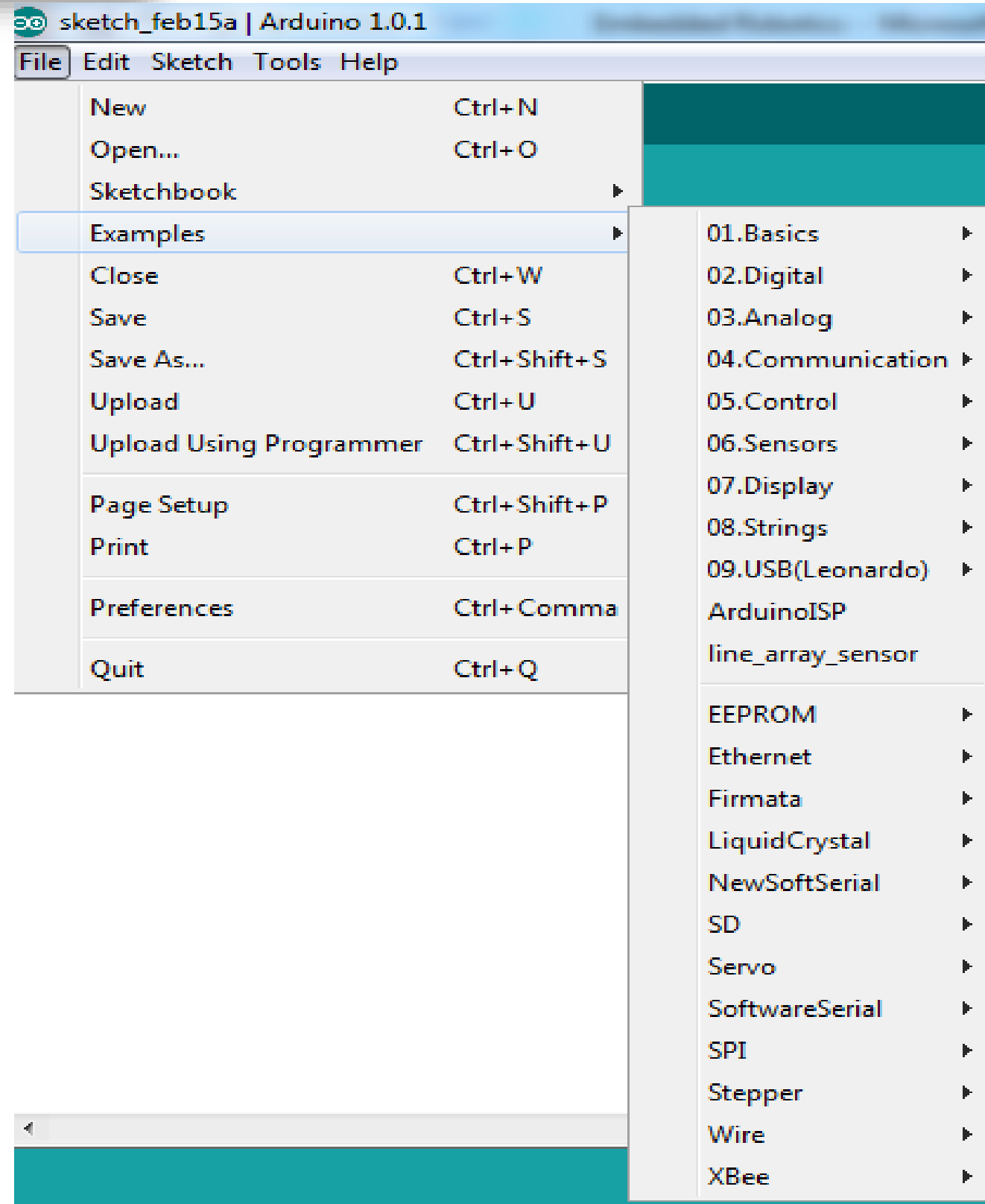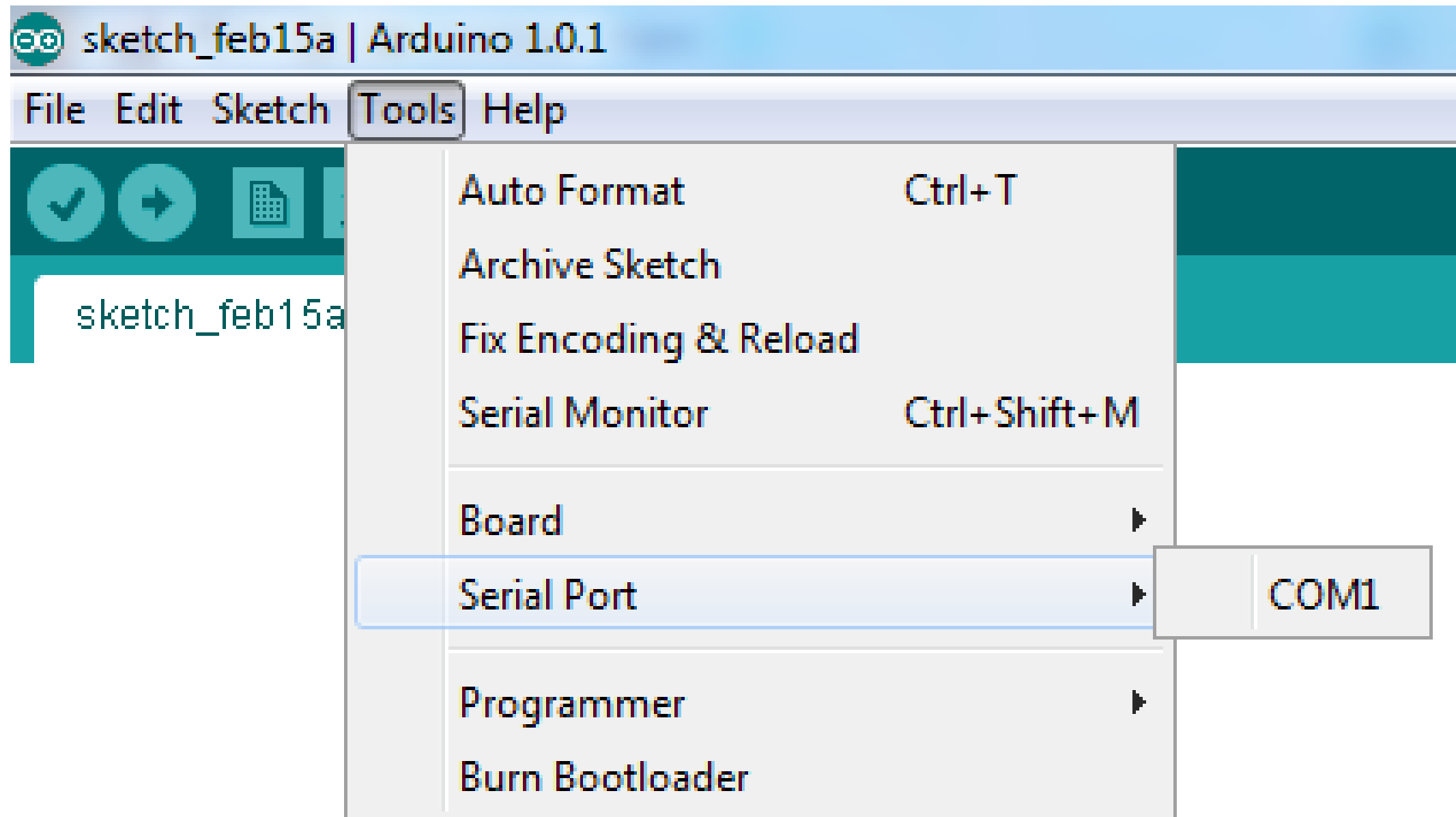# ARDUINO IDE

ARDUINO IDE

ARDUINO IDE

INTRODUCTION TO ARDUINO/INTRODUCTION TO
ARCHITECTING SMART IoT DEVICES/JAGADESH M/AP-
ECE/SNSCT

➢Open-source
  ➢makes it easy - write code and upload it to the board.
➢Runs on
  ➢Windows
  ➢Mac OS X
  ➢Linux
➢C++ Based codes
➢RTOS - Hard Task – Super Loop based approach

ARDUINO GETTING STARTED

- ➢ Get an Arduino board and USB cable
- ➢ Download the Arduino environment
- ➢ Connect the board
- ➢ Install the drivers
- ➢ Launch the Arduino application
- ➢ Code Program for the application
- ➢ Select your board
- ➢ Select your serial port
- ➢ Upload the program

ARDUINO

Digital Output
  Blinking of a LED
  Blinking of 2 LEDs in alternate fashion
Digital I/p and O/p
  LED controlled by button/switch
Digital O/p , Analog I/P and Serial monitor
  LED brightness controlled from potentiometer &
  viewed in serial monitor
  LED ON/OFF controlled w.r.t comparison of
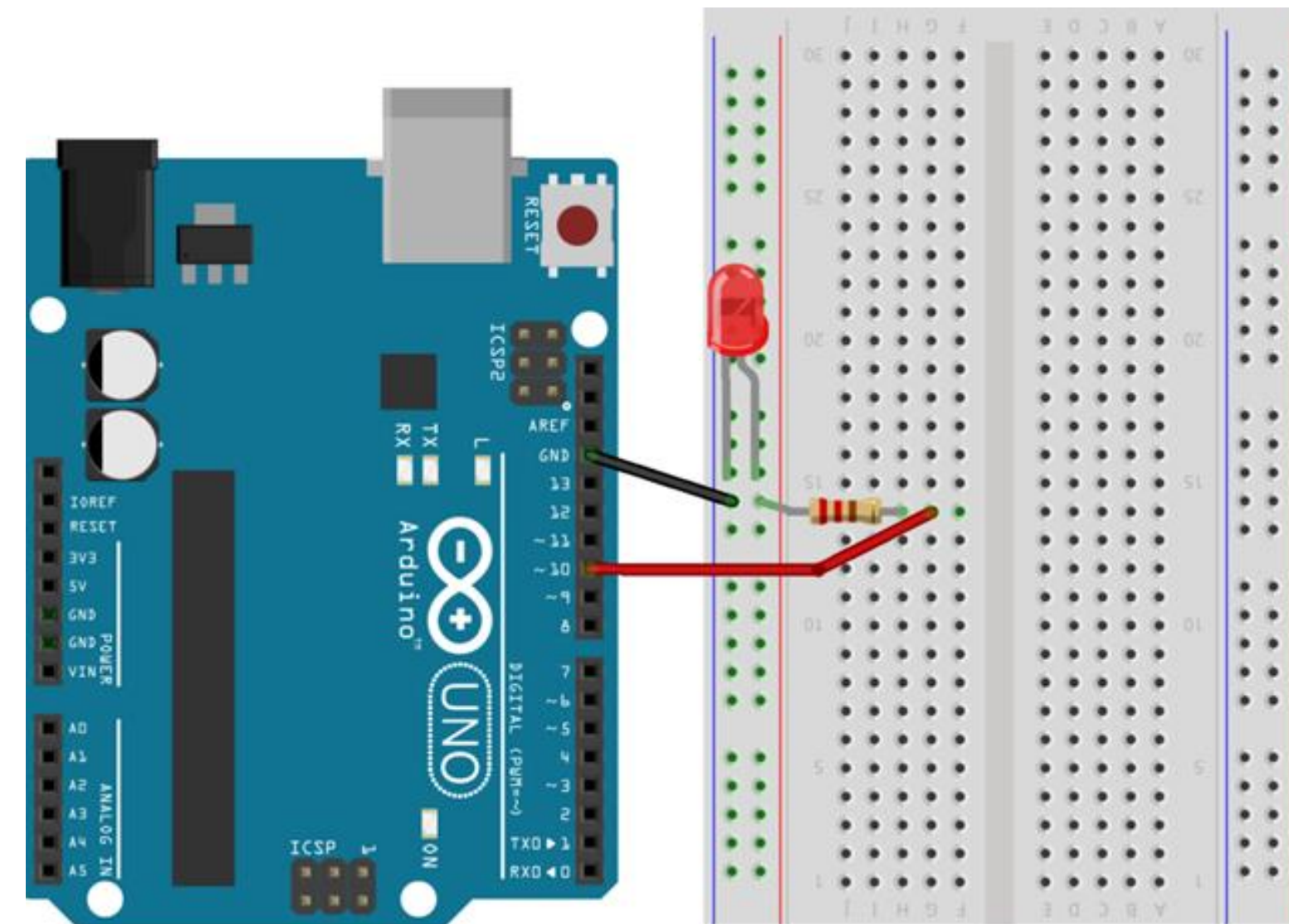 threshold & analog value from potentiometer
  input

ARDUINO HELLO WORLD

Steps:

- Selection of digital Pins(2 to 13)
  - 13 has LED connected to it
- Pin configuration as Output
- Action of pin –
  - Digital O/p –
    - Write the value onto the pin
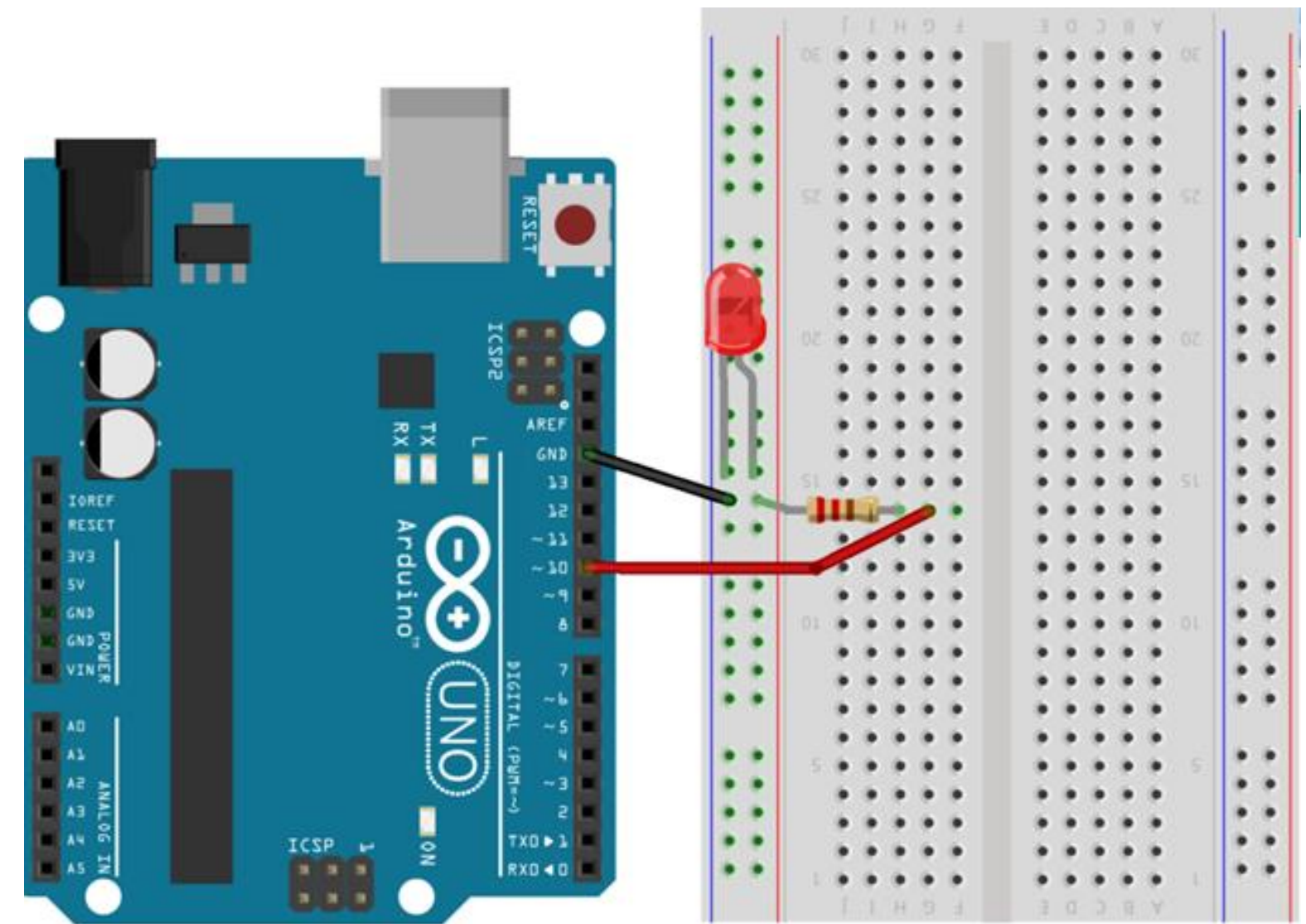 - Digital I/p -
    - Read the value from pin

```
int LED = 9;

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

void loop()
{
  digitalWrite(LED, HIGH);
  delay(1000);
  digitalWrite(LED, LOW);
  delay(1000);
}
```
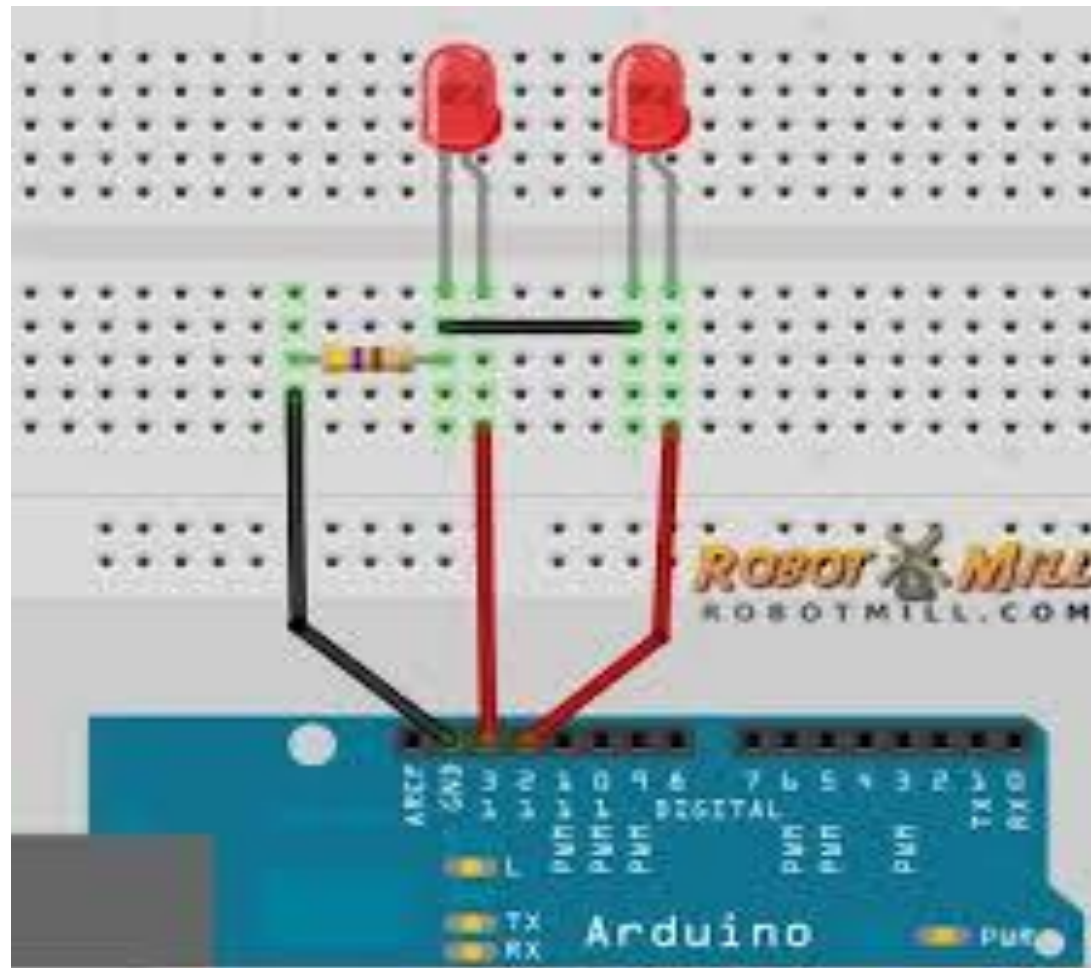
ARDUINO PROGRAM

BLINKING OF 2 LEDS IN ALTERNATE FASHION

Resistor end1: Gnd
LED1 +ve   : pin 8
LED2 +ve   : pin 9
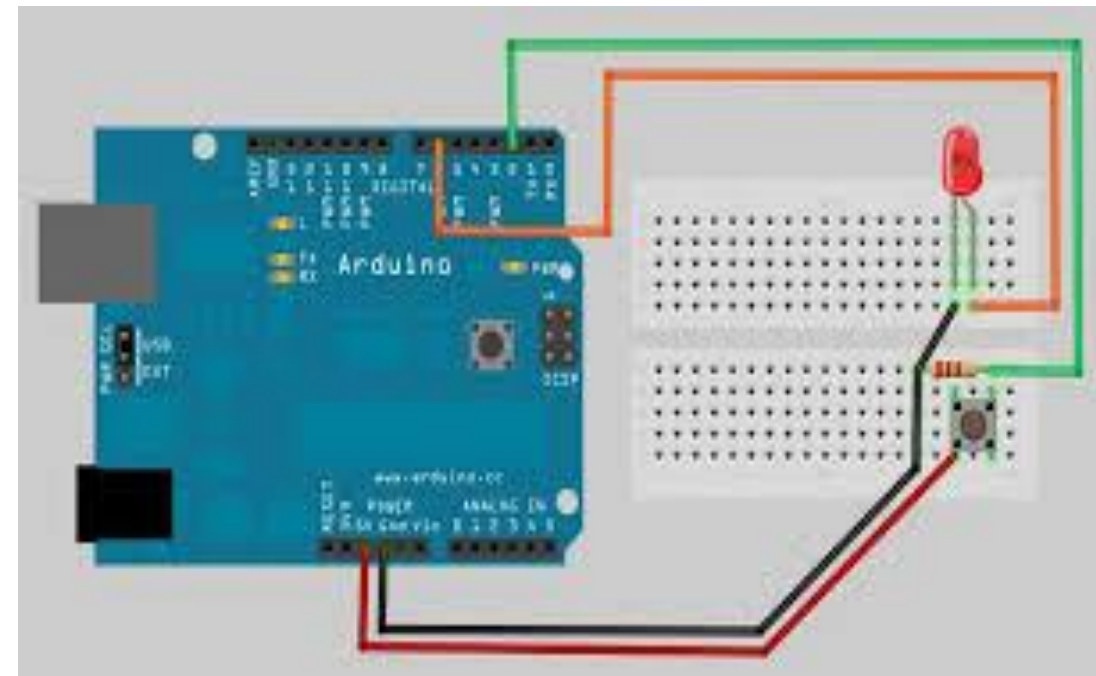**LED1 &2 –ve : Resistor end2**

```
int LED1=8
int LED2 = 9;
void setup()
{
pinMode(LED1, OUTPUT);
pinMode(LED2, OUTPUT);
}
void loop()
{
digitalWrite(LED1, HIGH);
digitalWrite(LED2, LOW);
delay(1000);
digitalWrite(LED1, LOW);
digitalWrite(LED2, HIGH);
delay(1000);
}
```

- **H/W circuit**

Resistor end1: Gnd
Button end1   :
LED +ve   : pin2
LED –ve   :
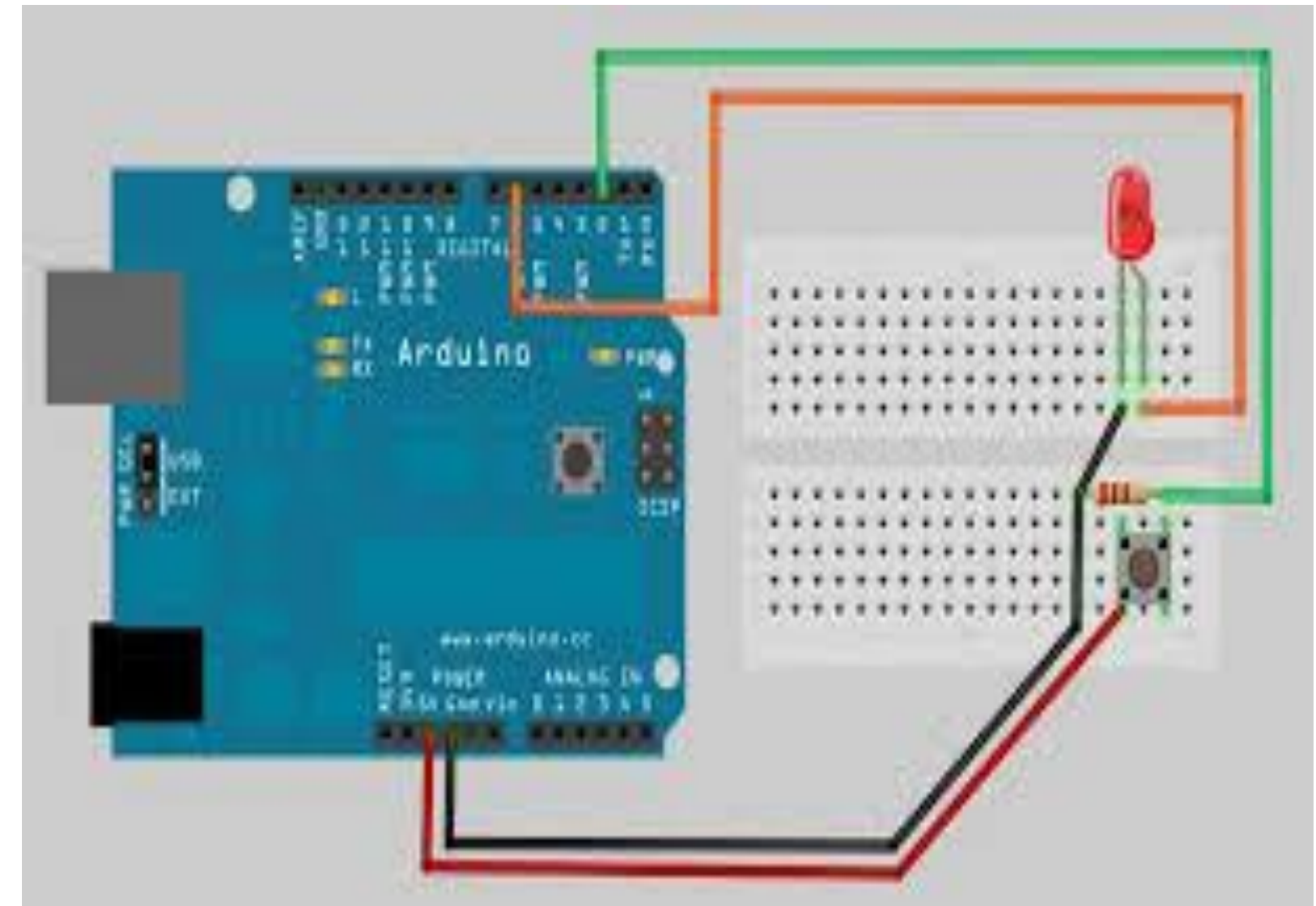**Resistor end2 :**
Button end2   :

ARDUINO PROGRAM

```
const int SWITCH = 3;
int LED1 =8;

void setup()
{
pinMode(LED1, OUTPUT);
}
void loop()
{
  if ( digitalRead(SWITCH) == HIGH)
  {
 digitalWrite(LED1, HIGH);
  }
  else
  {
 digitalWrite(LED1, LOW);
  }
}
```

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