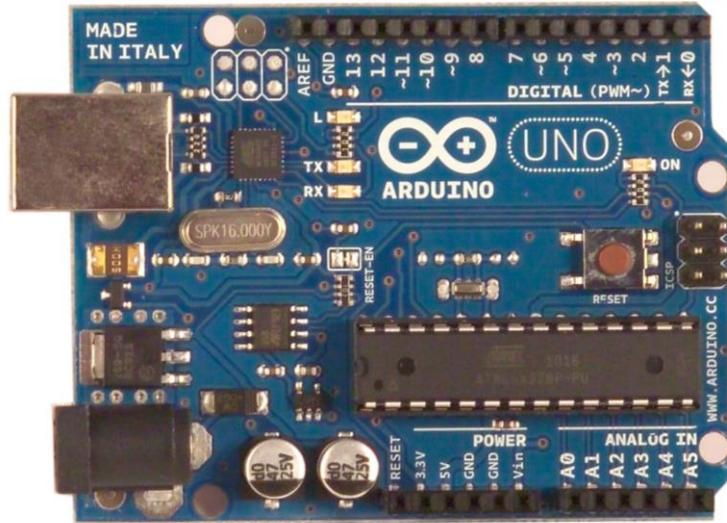




ABOUT ARDUINO

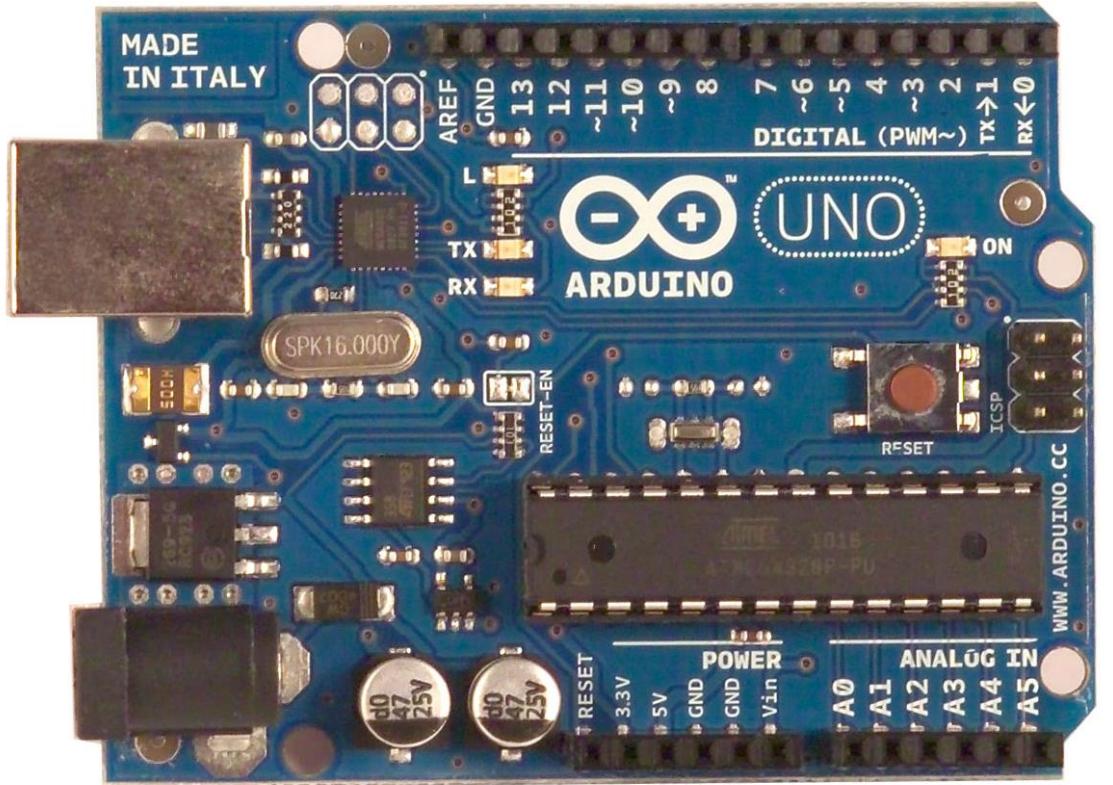
DR SARWAN SINGH
NIELIT CHANDIGARH

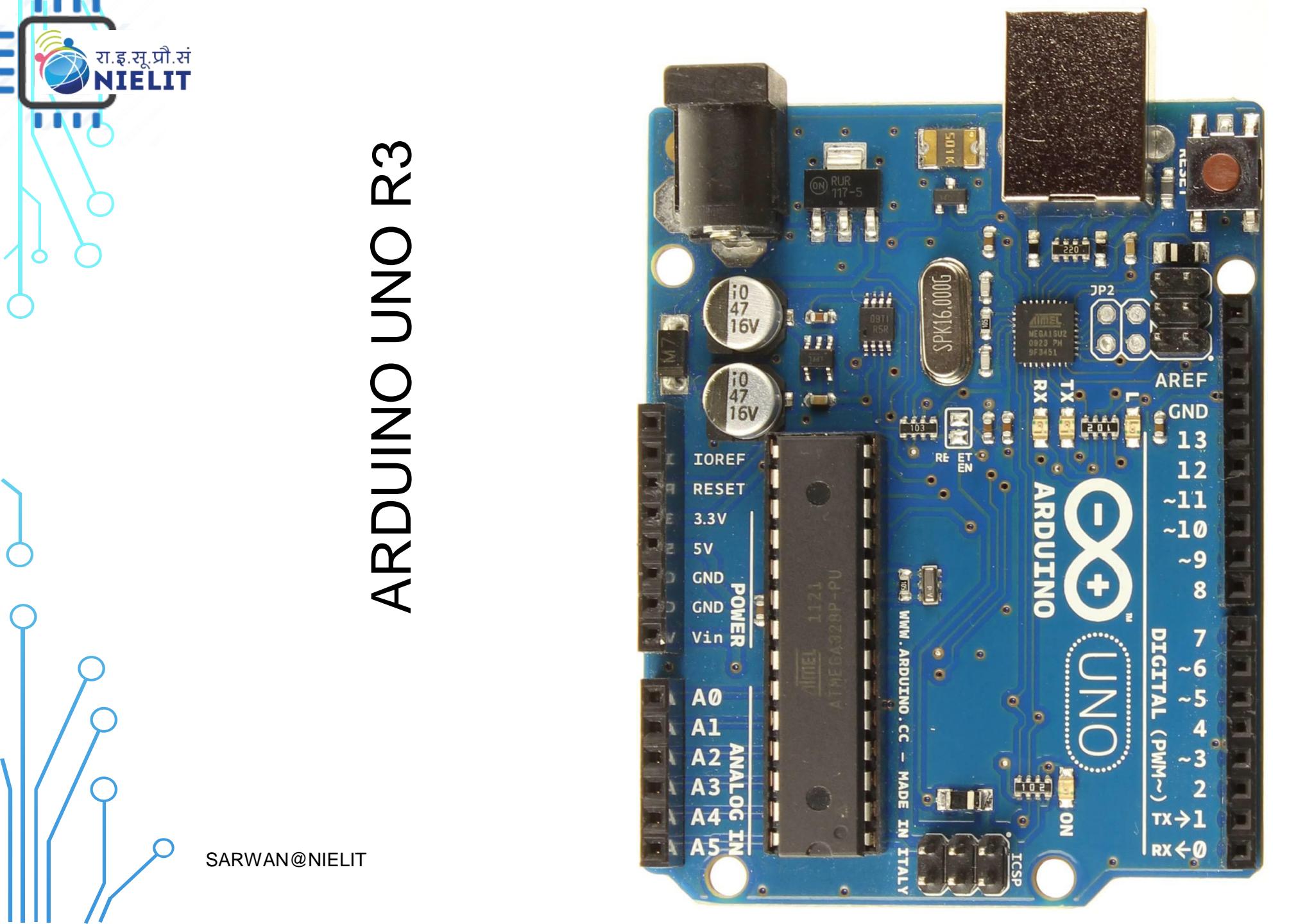
SARWAN@NIELIT.GOV.IN



WHAT IS AN ARDUINO ?

- **Open Source** electronic prototyping **platform** based on flexible **easy to use** hardware and software.



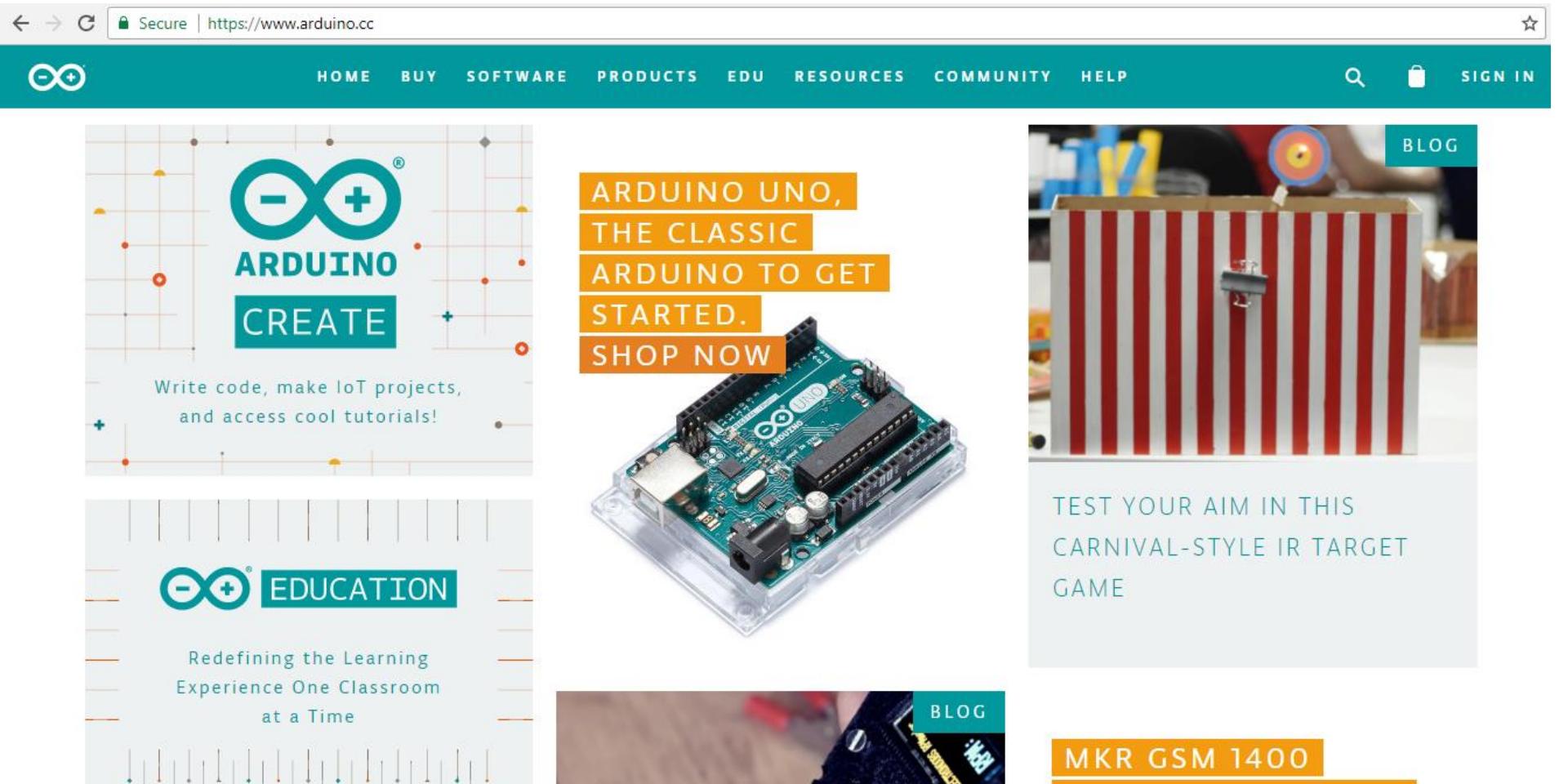


ARDUINO UNO R3

SARWAN@NIELIT

ARDUINO

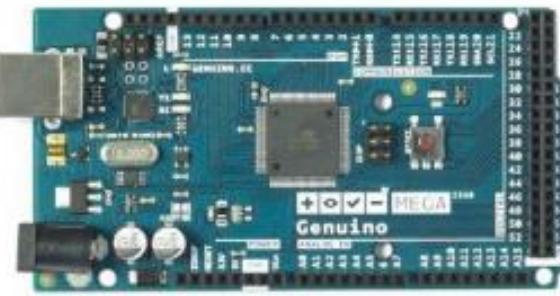
- Arduino is an open-source electronics prototyping platform based on flexible, easy-to-use hardware and software.
- Founded by Massimo Banzi and David Cuartielles in 2005.
- An open-source hardware platform based on Atmel AVR microcontroller and a C++ based IDE.
- In-Expensive, Simple and easy to learn programming.
- Controller independent programming language.
- One language compatibility with all boards.
- Single software for programming, compiling and burning the code.



The screenshot shows the Arduino website homepage. At the top, there's a navigation bar with links for HOME, BUY, SOFTWARE, PRODUCTS, EDU, RESOURCES, COMMUNITY, and HELP. A search icon, a shopping cart icon, and a SIGN IN button are also present. The main content area features several sections: 1) A "CREATE" section with the Arduino logo and text: "ARDUINO CREATE Write code, make IoT projects, and access cool tutorials!". 2) An "EDUCATION" section with the Arduino logo and text: "EDUCATION Redefining the Learning Experience One Classroom at a Time". 3) A central promotional section for the Arduino Uno with the text: "ARDUINO UNO, THE CLASSIC ARDUINO TO GET STARTED. SHOP NOW" and an image of the Uno board in a clear acrylic case. 4) A "BLOG" section showing a photograph of a red and white striped target board with a small electronic component attached, with the text: "TEST YOUR AIM IN THIS CARNIVAL-STYLE IR TARGET GAME". 5) A "BLOG" section showing a close-up of a circuit board with the text: "MKR GSM 1400".



Different types of Arduinos



Arduino Mega 2560



Arduino Uno

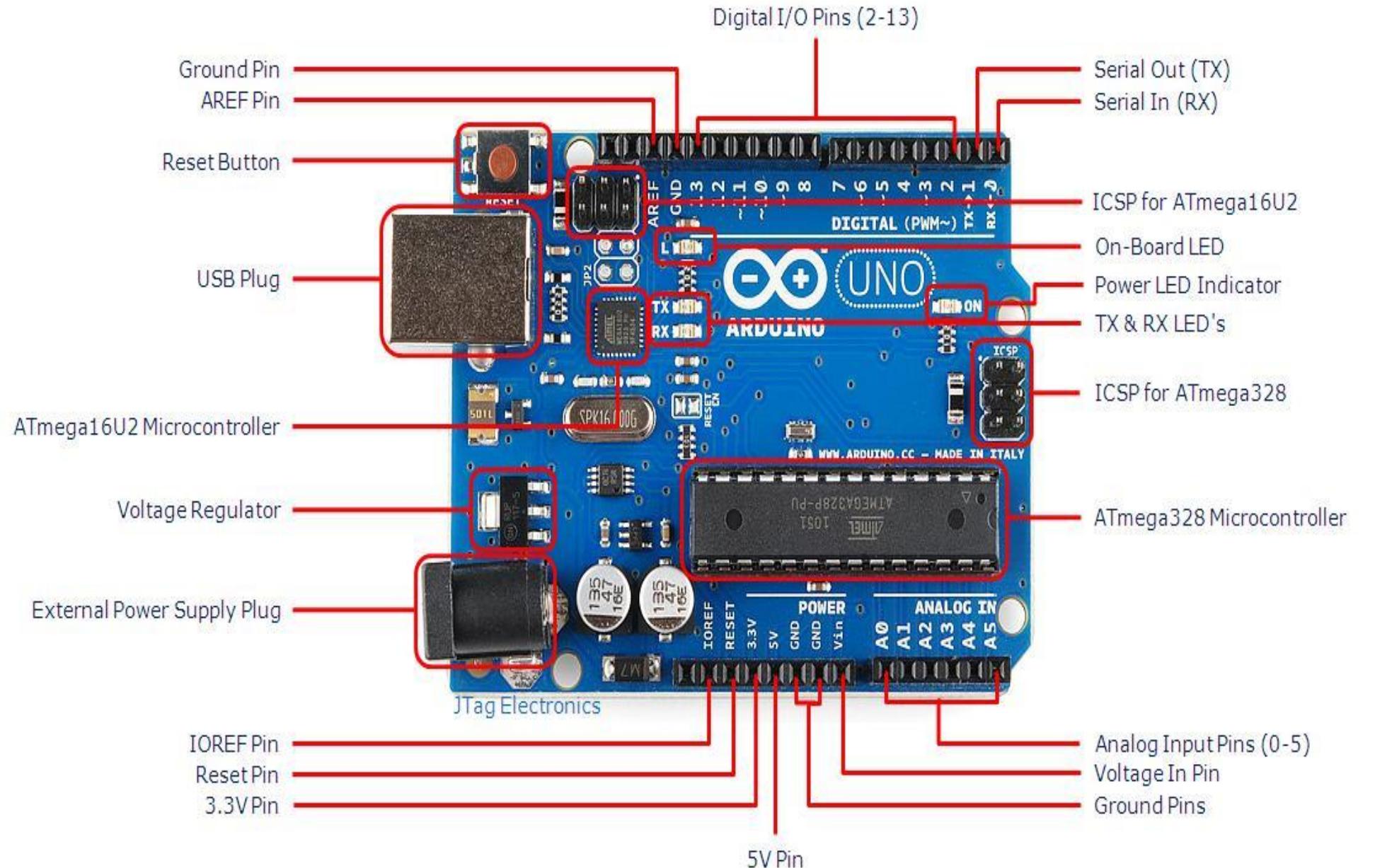


Arduino YUN

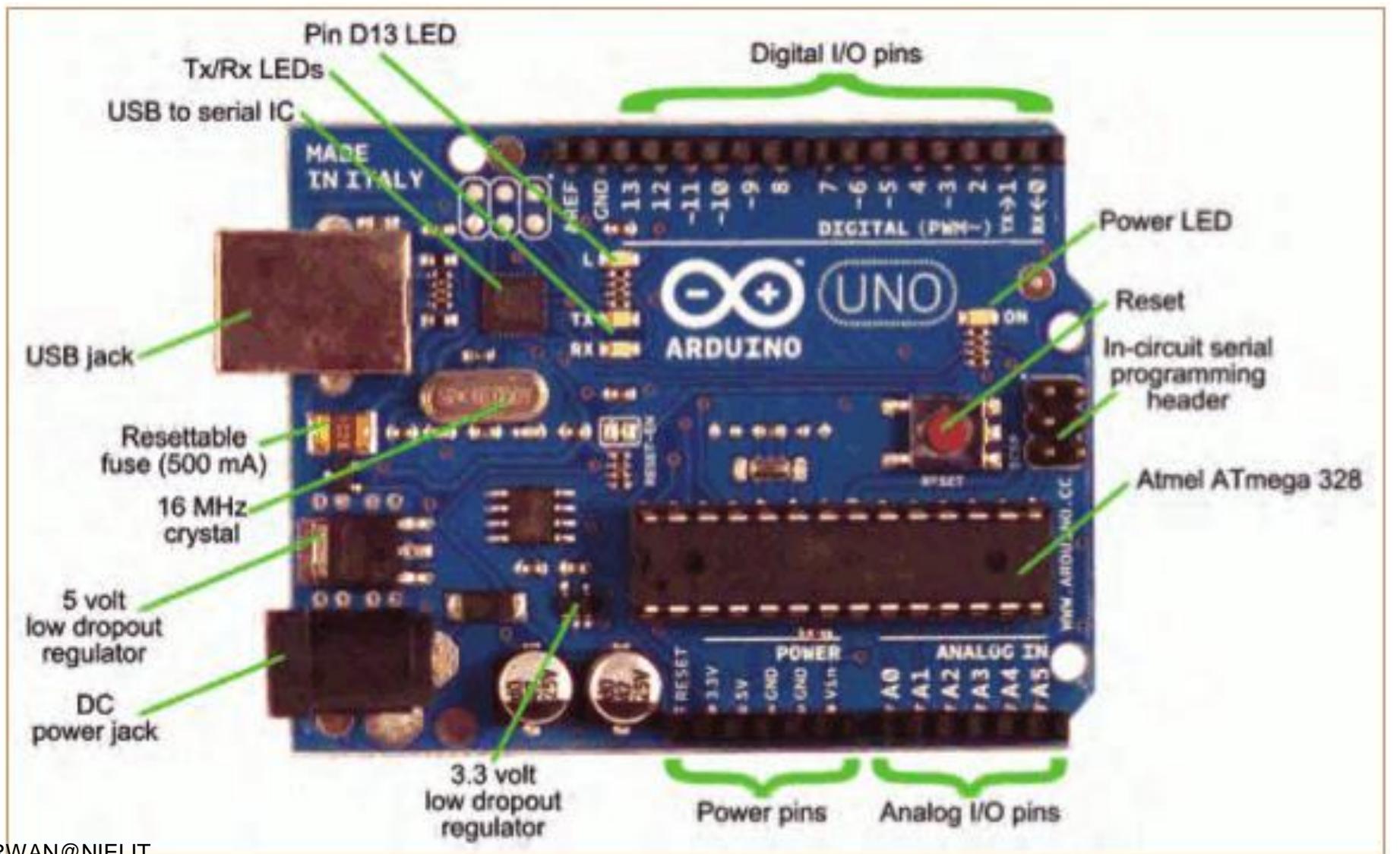


HTTP://WWW.ARDUINO.CC/

- Arduino is an open-source electronics prototyping platform based on flexible, easy-to-use hardware and software. It's intended for artists, designers, hobbyists, and anyone interested in creating interactive objects or environments.
 - Processor: 16 Mhz ATmega328
 - Flash memory: 32 KB
 - Ram: 2kb
 - Operating Voltage: 5V
 - Input Voltage: 7-12 V
 - Number of analog inputs: 6
 - Number of digital I/O: 14 (6 of them PWM)



MEET ARDUINO UNO



SARWAN@NIELIT

GETTING STARTED

- Check out: <http://arduino.cc/en/Guide/HomePage>
 1. Download & install the Arduino environment (IDE)
 2. Connect the board to your computer via the USB cable. If needed, install the drivers
 3. Launch the Arduino IDE
 4. Select your board
 5. Select your serial port
 6. Open the blink example
 7. Upload the program



SARWAN@NIELIT

A screenshot of the Arduino IDE version 1.6.7. The window title is "sketch_oct10a | Arduino 1.6.7". The menu bar includes File, Edit, Sketch, Tools, Help, and a "Menu Bar" item. Below the menu is a toolbar with icons for file operations. The main area is labeled "Button Bar" and contains the code for the sketch:

```
void setup() {
  // put your setup code here, to run once:

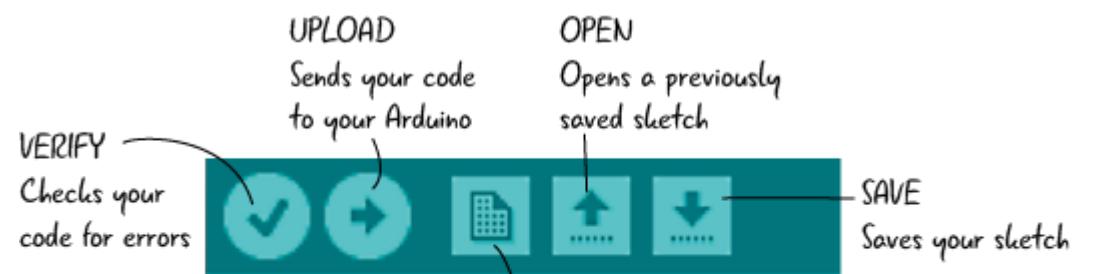
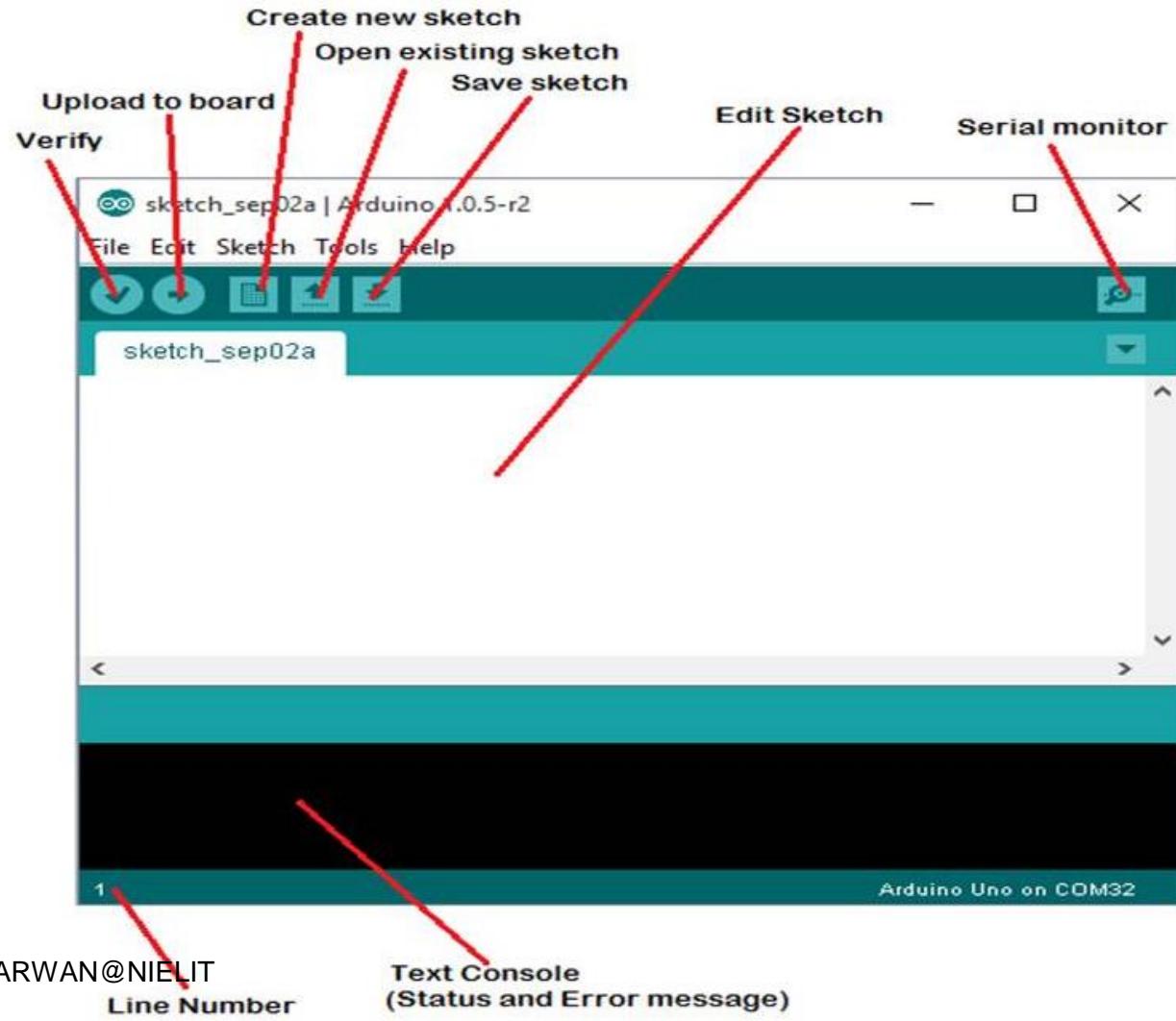
}

void loop() {
  // put your main code here, to run repeatedly:

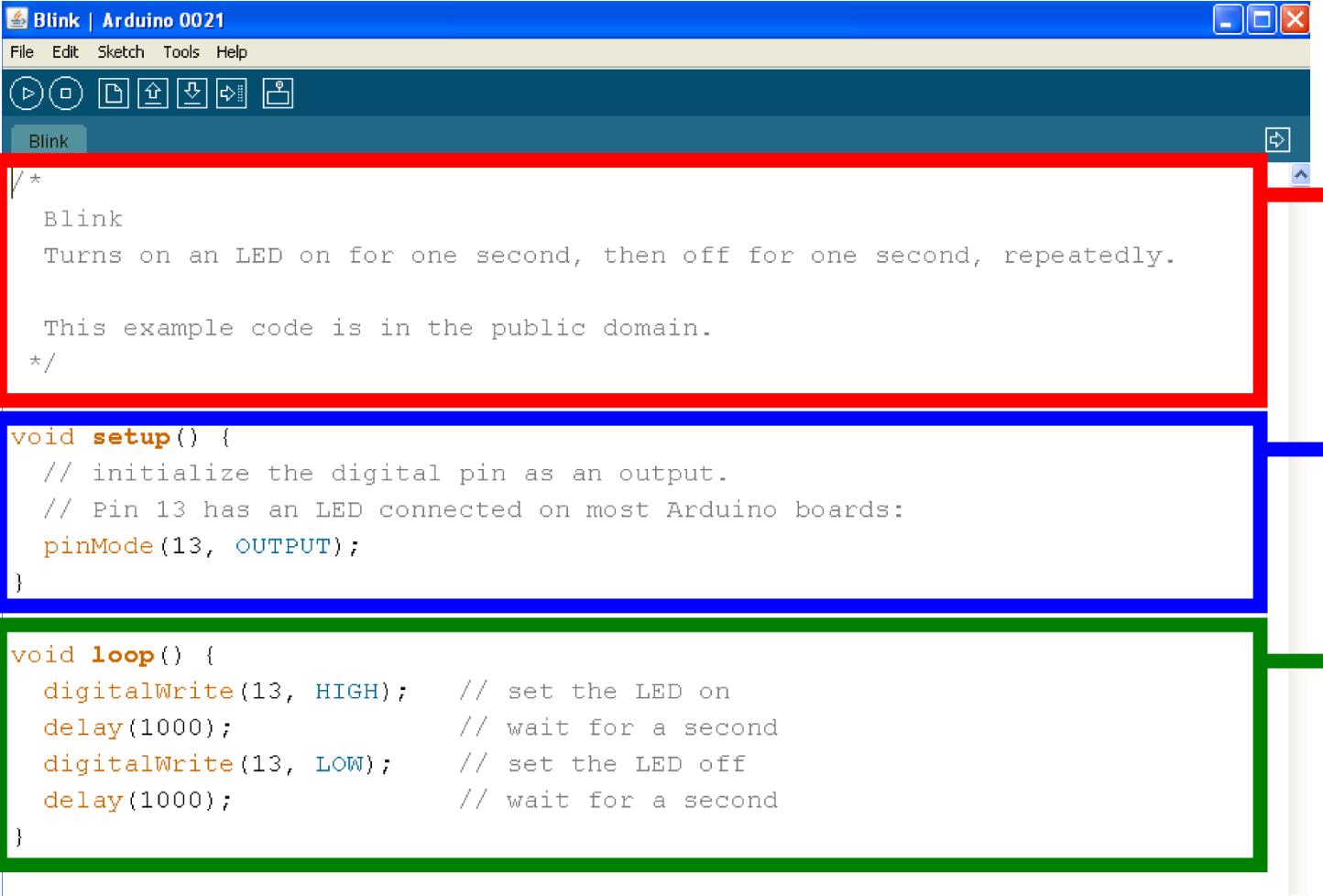
}
```

The status bar at the bottom shows "Arduino/Genuino Uno on COM7".

11



PARTS OF THE SKETCH



```
Blink | Arduino 0021
File Edit Sketch Tools Help
Blink
/*
  Blink
  Turns on an LED on for one second, then off for one second, repeatedly.

  This example code is in the public domain.
*/
void setup() {
  // initialize the digital pin as an output.
  // Pin 13 has an LED connected on most Arduino boards:
  pinMode(13, OUTPUT);
}

void loop() {
  digitalWrite(13, HIGH);      // set the LED on
  delay(1000);                // wait for a second
  digitalWrite(13, LOW);       // set the LED off
  delay(1000);                // wait for a second
}
```

SARWAN@NIELIT

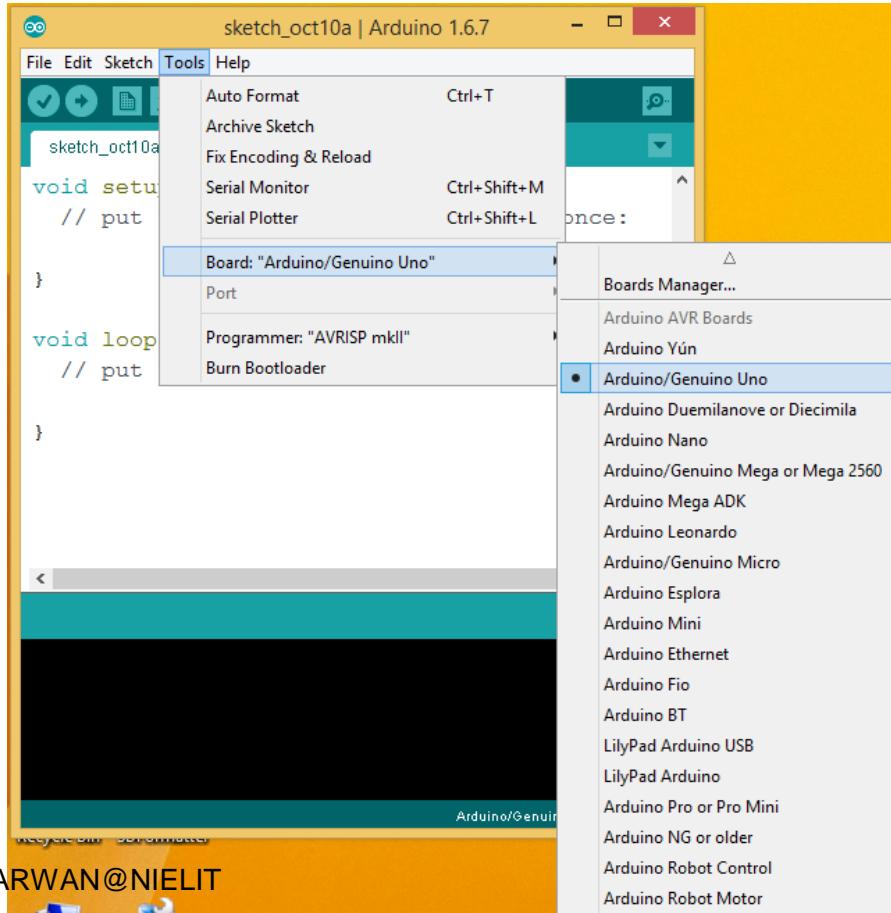
**Comments /
Explaining
the game**

**Setup /
Stretching or
tying shoes**

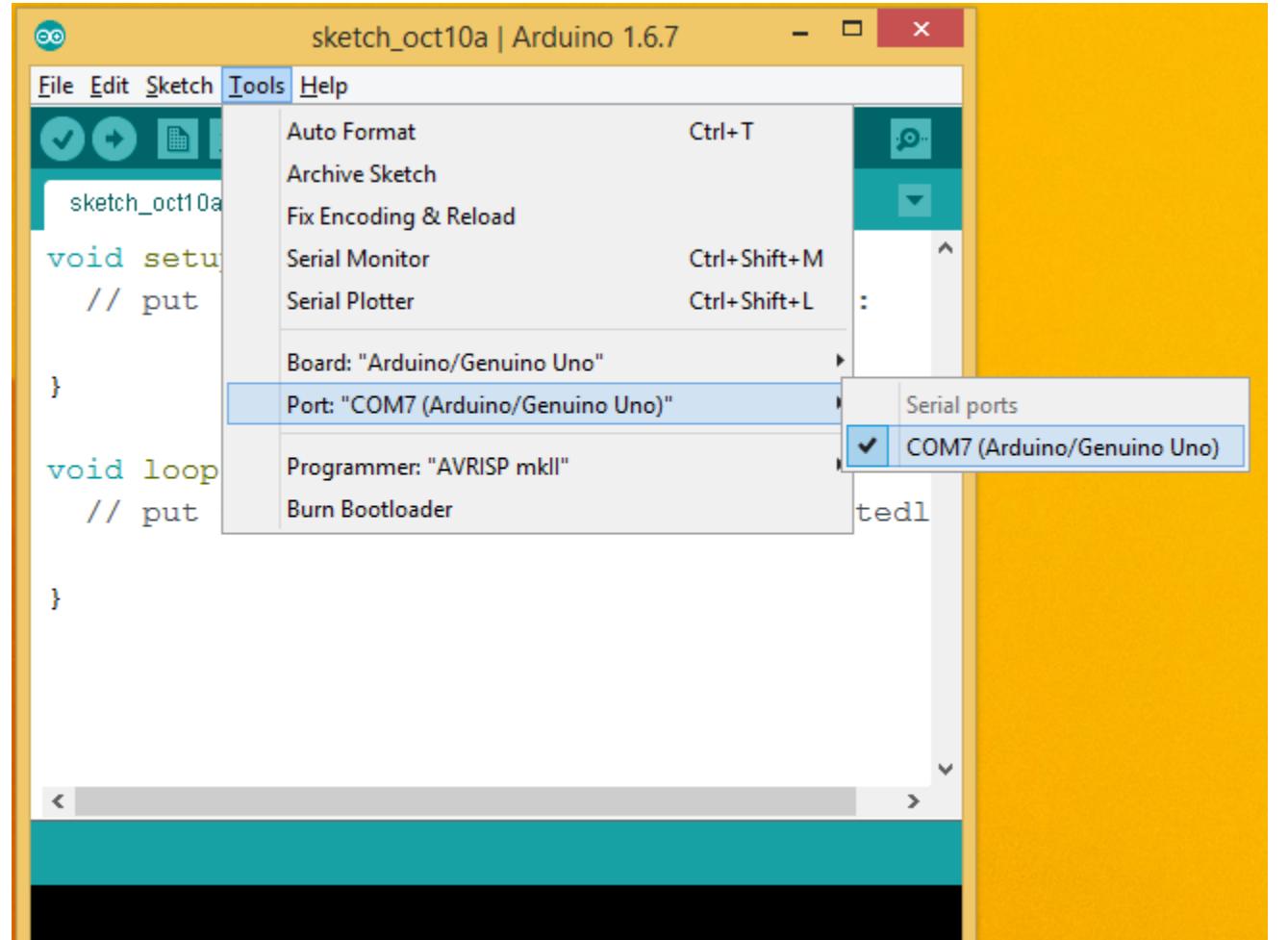
**Loop /
Playing the
game**



SELECT BOARD



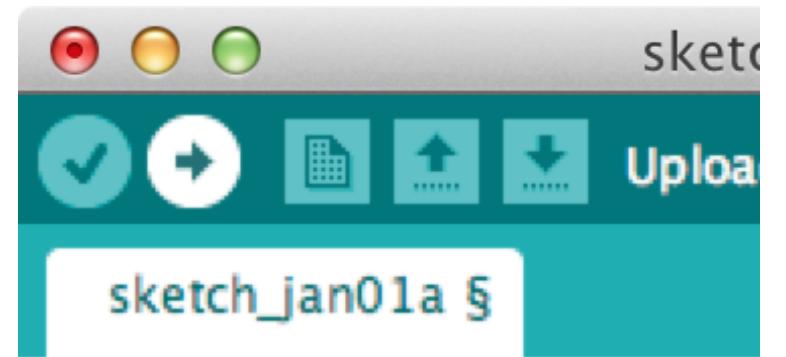
SELECT COM PORT



FIRST PROGRAM

```
int ledPin = 13;  
  
void setup()  
{  
    pinMode(ledPin, OUTPUT);  
}  
  
void loop()  
{  
    digitalWrite(ledPin, HIGH);  
    delay(2000);  
    digitalWrite(ledPin, LOW);  
    delay(2000);  
}
```

SARWAN@NIELIT



```
int ledPin = 13;  
  
void setup()  
{  
    pinMode(ledPin, OUTPUT);  
}  
  
void loop()  
{  
    digitalWrite(ledPin, HIGH);  
    delay(2000);  
    digitalWrite(ledPin, LOW);  
    delay(2000);  
}
```

SETUP

```
) {  
PINMODE (13, OUTPUT);
```

```
void setup() {  
  // initialize the digital pin as an output.  
  // Pin 13 has an LED connected on most Arduino boards:  
  pinMode(13, OUTPUT);  
}
```

Outputs are declared in setup, this is done by using the pinMode function

This particular example declares digital pin # 13 as an output, remember to use CAPS

SETUP, INTERNAL PULLUP RESISTORS

) {

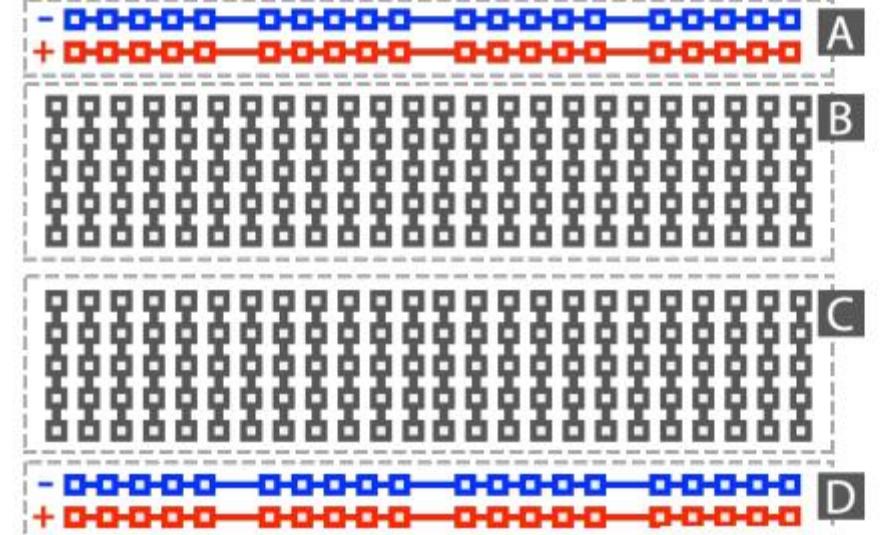
DIGITALWRITE (12, HIGH);

```
void setup() {
    // initialize the digital pin as an output.
    // Pin 13 has an LED connected on most Arduino boards:
    pinMode(13, OUTPUT);
    Serial.begin(9600);
    digitalWrite(12, HIGH);
}
```

You can also create internal pullup resistors in setup, to do so
digitalWrite the pin HIGH

This takes the place of the pullup resistors currently on your circuit
7 buttons

BREAD BOARD



HAPPY CODING

SARWAN@NIELIT