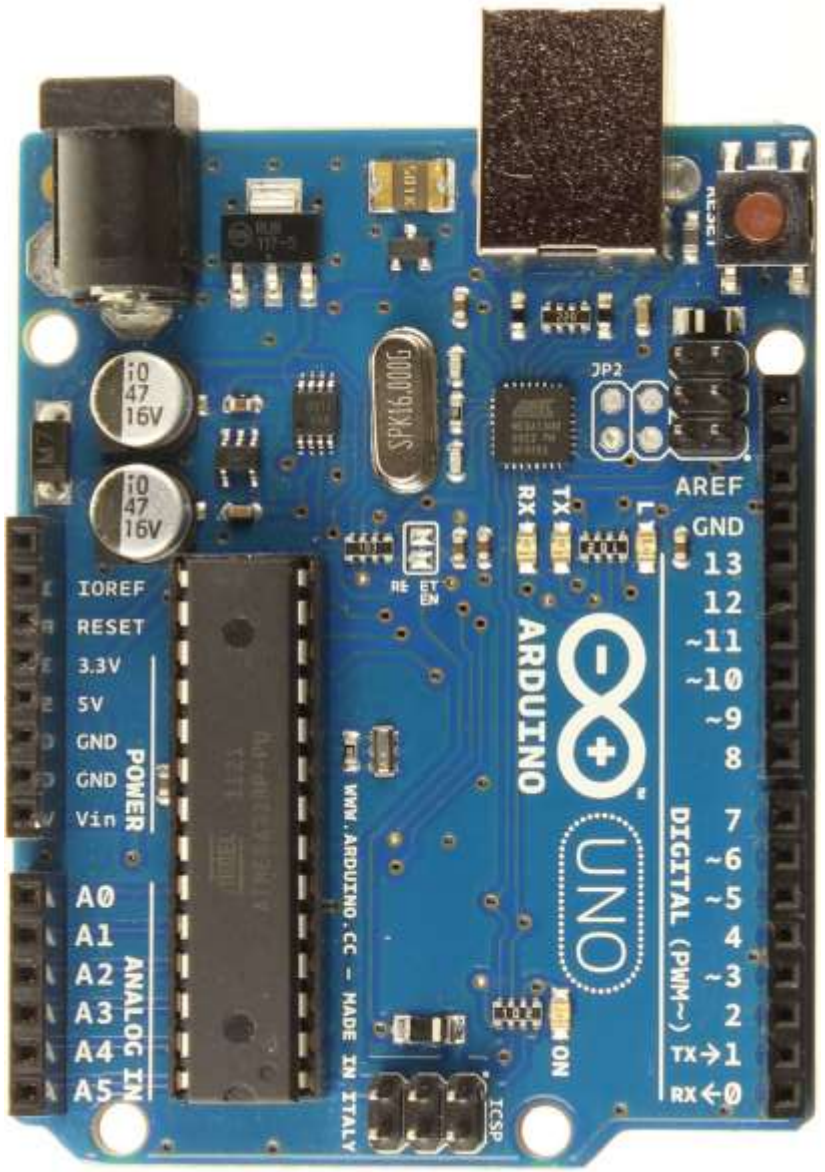
IoT

Arduino

Dr. Sarwan Singh
Deputy Director
NIELIT Chandigarh

What is an Arduino ?

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



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 programing.
- Controller independent programming language.
- One language compatibility with all boards.
- Single software for programming, compiling and burning the code.

Secure | https://www.arduino.cc

HOME BUY SOFTWARE PRODUCTS EDU RESOURCES COMMUNITY HELP SIGN IN

ARDUINO CREATE

Write code, make IoT projects, and access cool tutorials!

ARDUINO UNO, THE CLASSIC ARDUINO TO GET STARTED. SHOP NOW

TEST YOUR AIM IN THIS CARNIVAL-STYLE IR TARGET GAME

EDUCATION

Redefining the Learning Experience One Classroom at a Time

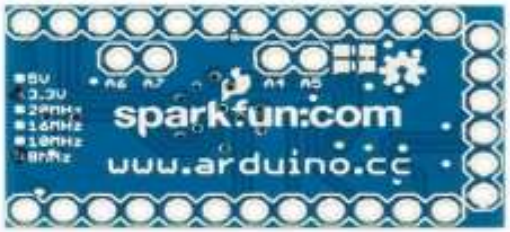
MKR GSM 1400

Different types of Arduinos

Arduino Mega 2560

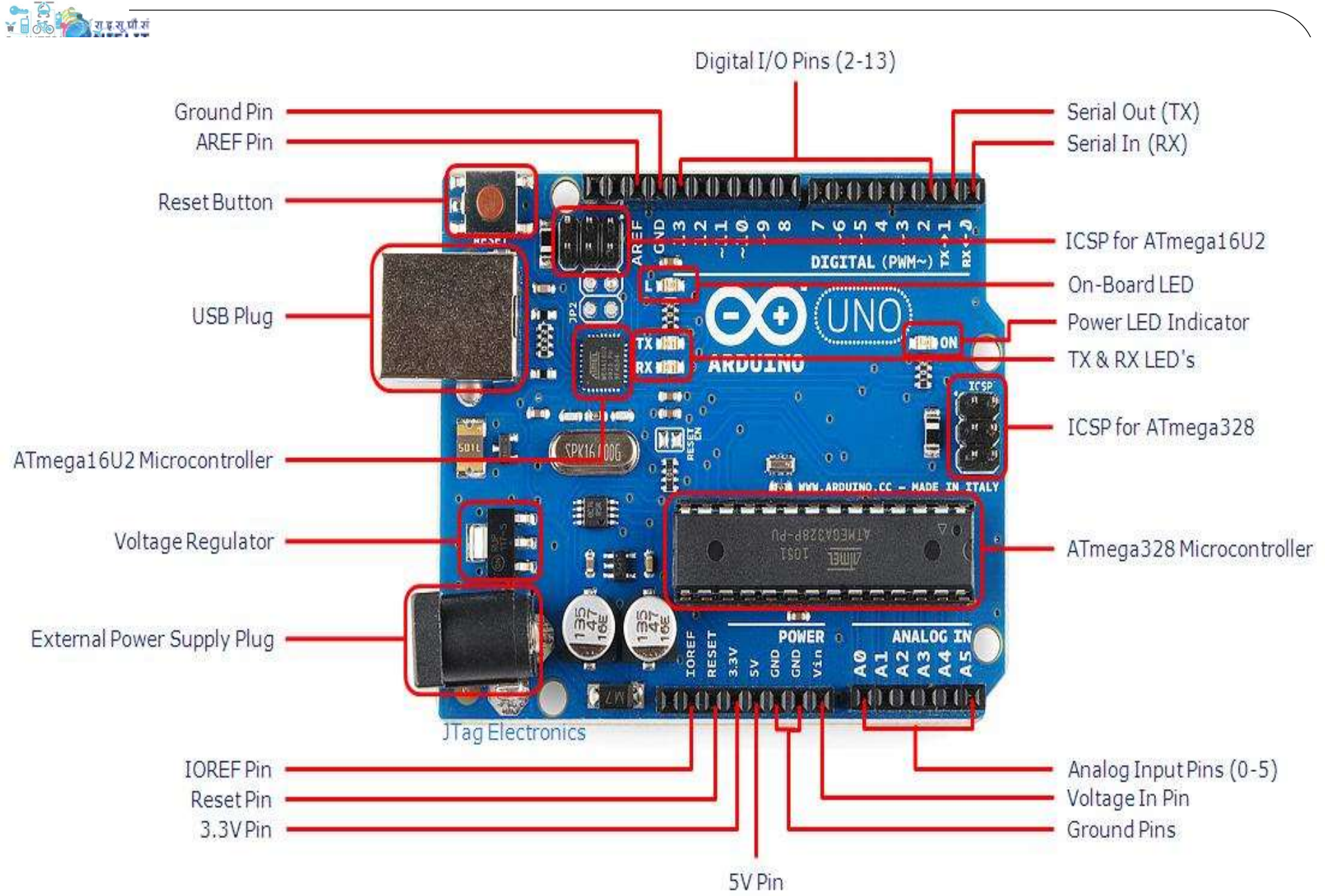
Arduino Uno

Arduino YUN



http://www.arduino.cc/

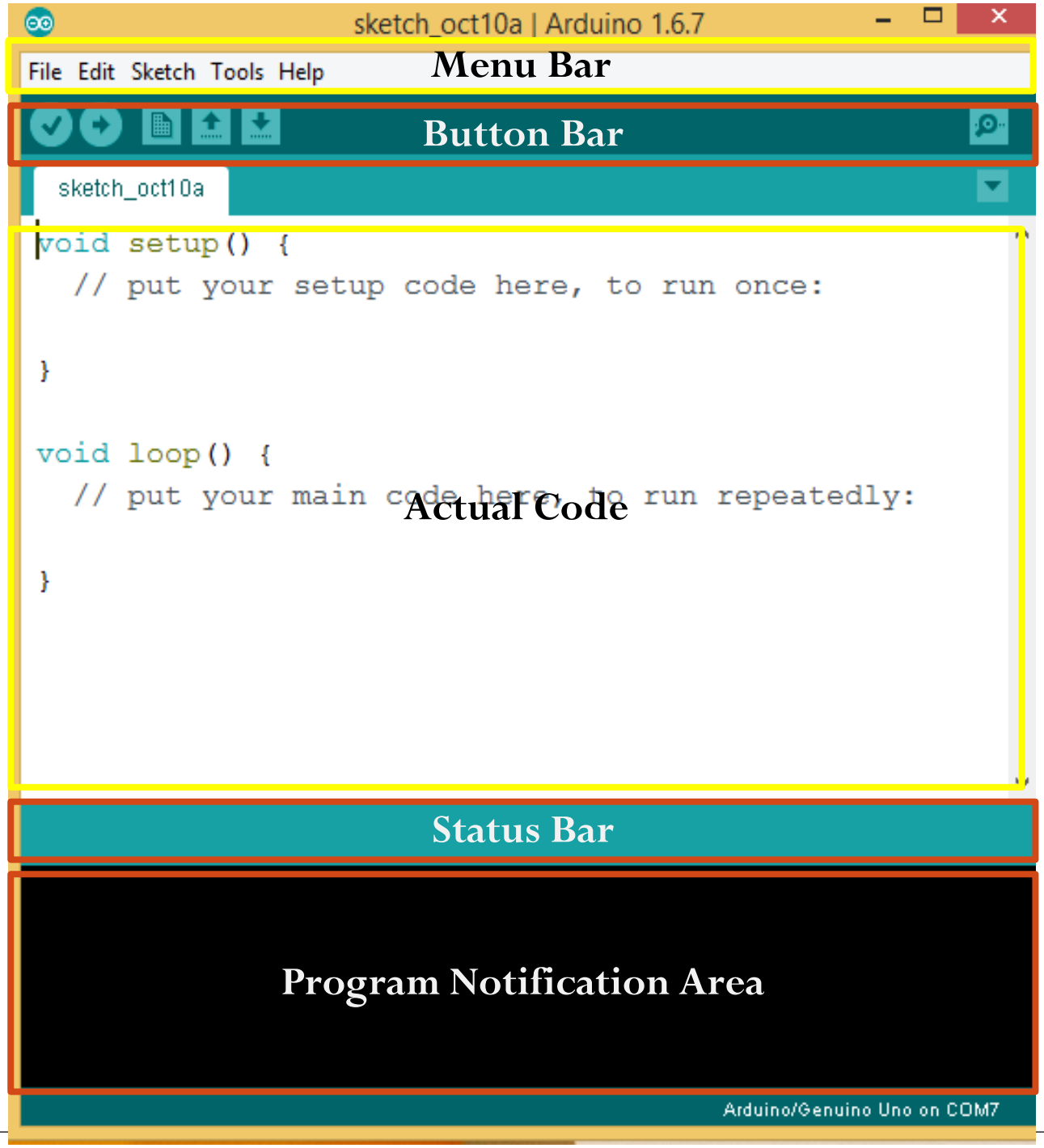
- Arduino is an open-source electronics prototyping platform based on flexible, easy-to-use hardware and software. It's intended for artists, designers, hobbyists, and anyone interested in creating interactive objects or environments.
  - Processor: 16 Mhz ATmega328
  - Flash memory: 32 KB
  - Ram: 2kb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

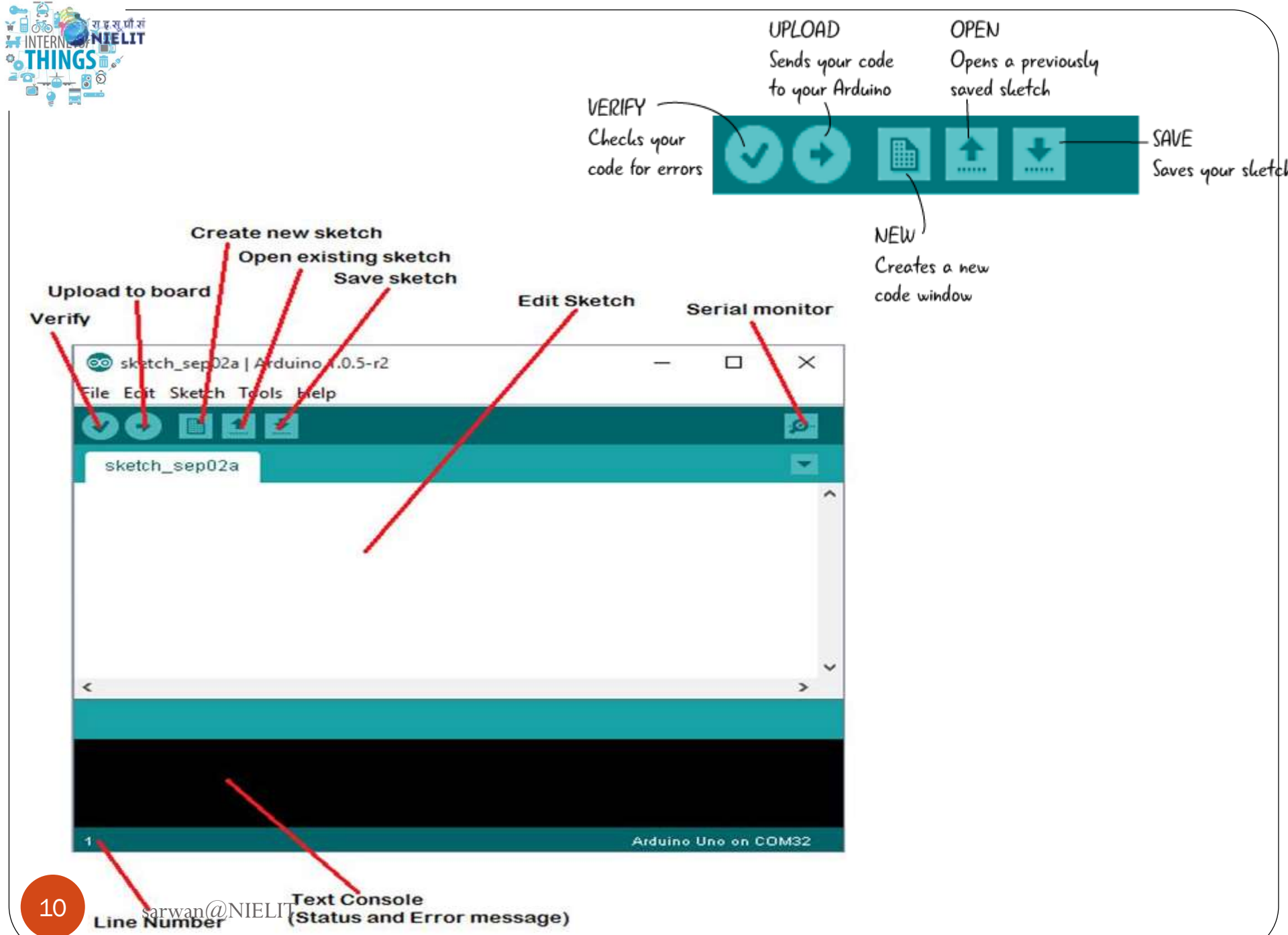

Digital I/O Pins (2-13)
Ground Pin
AREF Pin
Reset Button
USB Plug
ATmega16U2 Microcontroller
Voltage Regulator
External Power Supply Plug
Serial Out (TX)
Serial In (RX)
ICSP for ATmega16U2
On-Board LED
Power LED Indicator
TX & RX LED's
ICSP for ATmega328
ATmega328 Microcontroller
Analog Input Pins (0-5)
Voltage In Pin
Ground Pins
IOREF Pin
Reset Pin
3.3V Pin
5V Pin
JTag Electronics
DIGITAL (PWM~)
POWER
ANALOG IN
UNO
ARDUINO
WWW.ARDUINO.CC – MADE IN ITALY

Getting Started

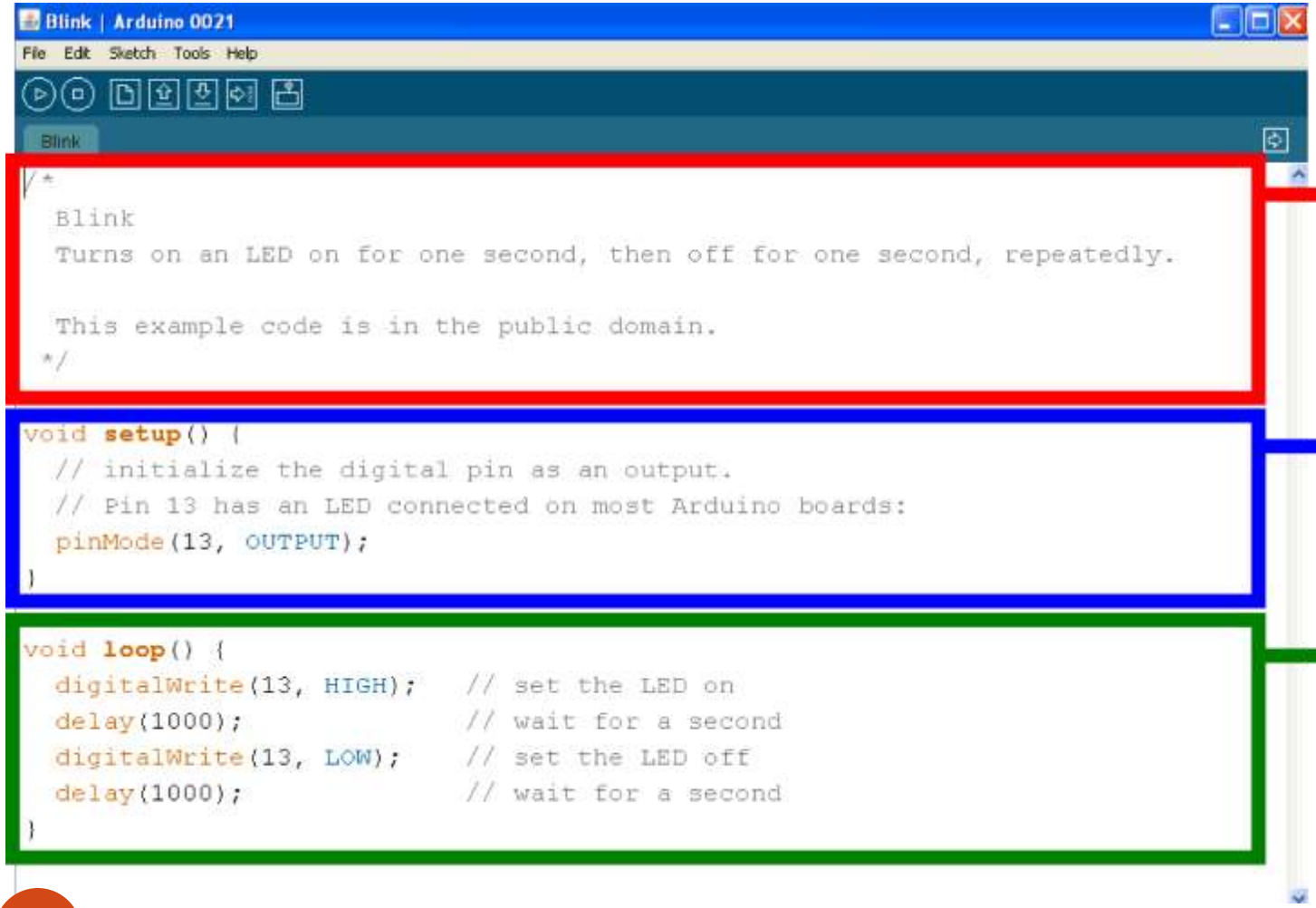
- Check out: http://arduino.cc/en/Guide/HomePage
  1. Download & install the Arduino environment (IDE)
  2. Connect the board to your computer via the USB cable. If needed, install the drivers
  3. Launch the Arduino IDE
  4. Select your board
  5. Select your serial port
  6. Open the blink example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

Arduino IDE


sketch_oct10a | Arduino 1.6.7
File Edit Sketch Tools Help
Menu Bar
Button Bar
sketch_oct10a
void setup() {
// put your setup code here, to run once:
}
void loop() {
// put your main code here, to run repeatedly:
}
Actual Code
Status Bar
Program Notification Area
Arduino/Genuino Uno on COM7


UPLOAD
Sends your code to your Arduino
OPEN
Opens a previously saved sketch
VERIFY
Checks your code for errors
SAVE
Saves your sketch
NEW
Creates a new code window
Create new sketch
Open existing sketch
Save sketch
Upload to board
Verify
Edit Sketch
Serial monitor
sketch_sep02a | Arduino 1.0.5-r2
File Edit Sketch Tools Help
sketch_sep02a
1
Arduino Uno on COM32
Line Number
Text Console
(Status and Error message)

Parts of the Sketch

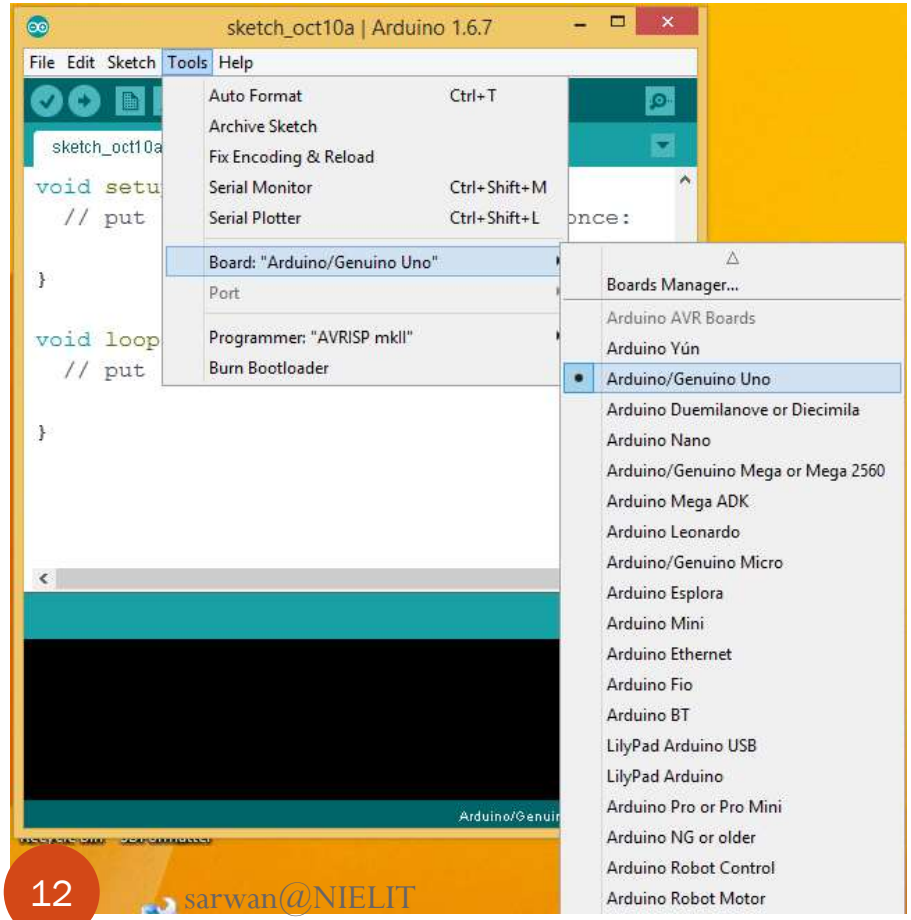


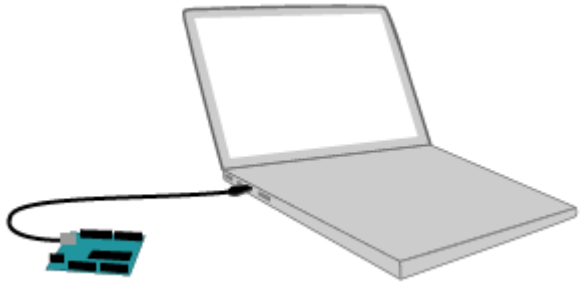
Comments / Explaining the game

Setup / Stretching or tying shoes

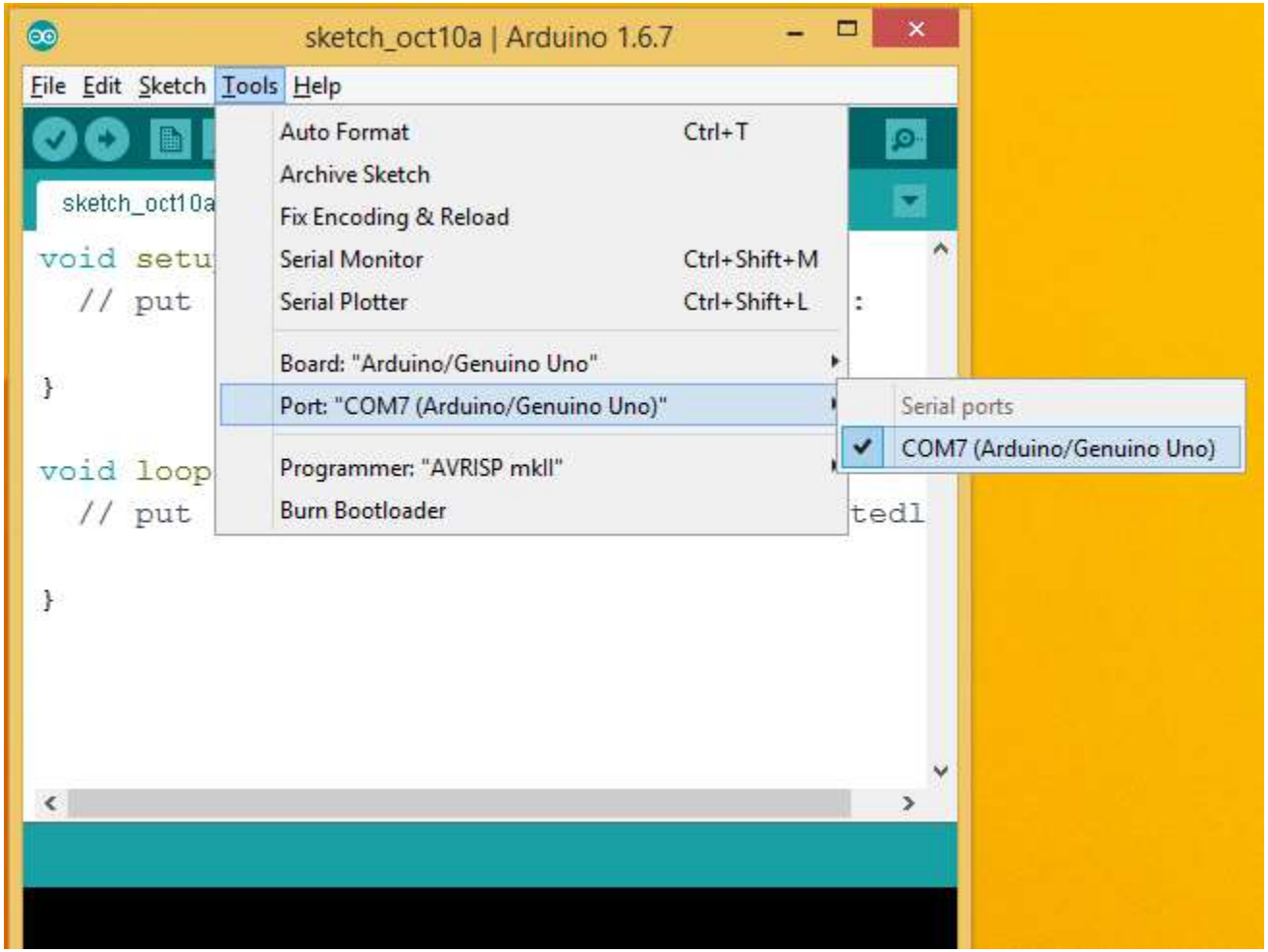
Loop / Playing the game

Select Board



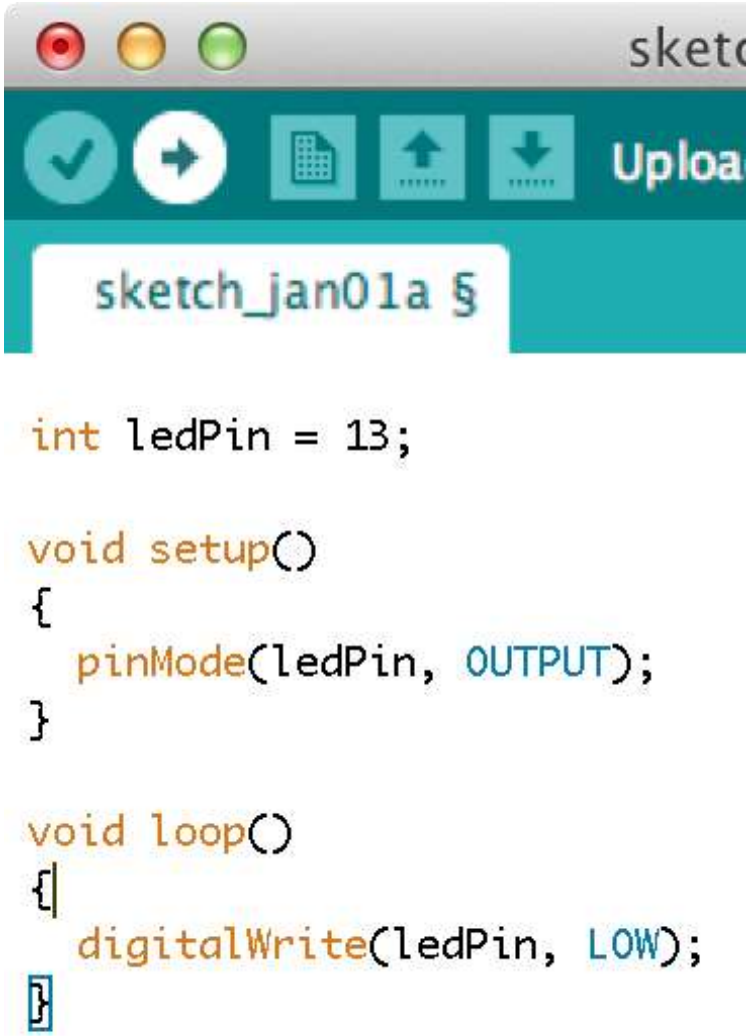


Select com port

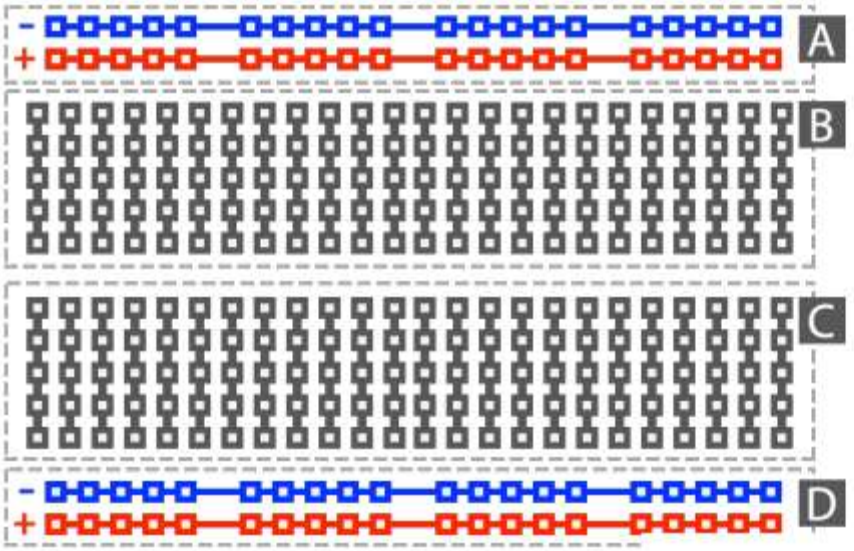


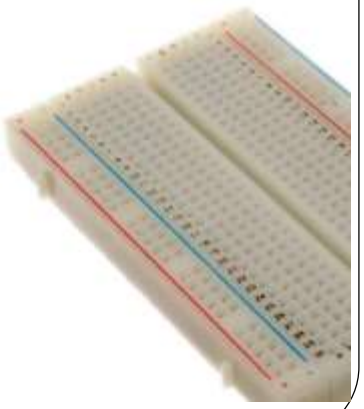
First program

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



Bread Board





Happy Coding

Journey begins from here……