

# CSE423: Embedded System Summer-2020



## Installation of Arduino IDE and Work with very First Code

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**ARDUINO**  
OPEN-SOURCE  
COMMUNITY

# Today's Lecture

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- *Installation of IDE*
- *Power-up the board*
- *Step by step execution of code*



# How to interact with Arduino?

At first we need Arduino IDE (Integrated Development Environment) to interact with the Board which is a cross-platform application (for Windows, macOS, Linux) that is written in functions from C and C++. It is available at:

<https://www.arduino.cc/en/main/software>

Download the Arduino IDE

**ARDUINO 1.8.12**

The open-source Arduino Software (IDE) makes it easy to write code and upload it to the board. It runs on Windows, Mac OS X, and Linux. The environment is written in Java and based on Processing and other open-source software. This software can be used with any Arduino board. Refer to the [Getting Started](#) page for Installation instructions.

**Windows** Installer, for Windows 7 and up  
**Windows** ZIP file for non admin install

**Windows app** Requires Win 8.1 or 10  
**Get**

**Mac OS X** 10.10 or newer

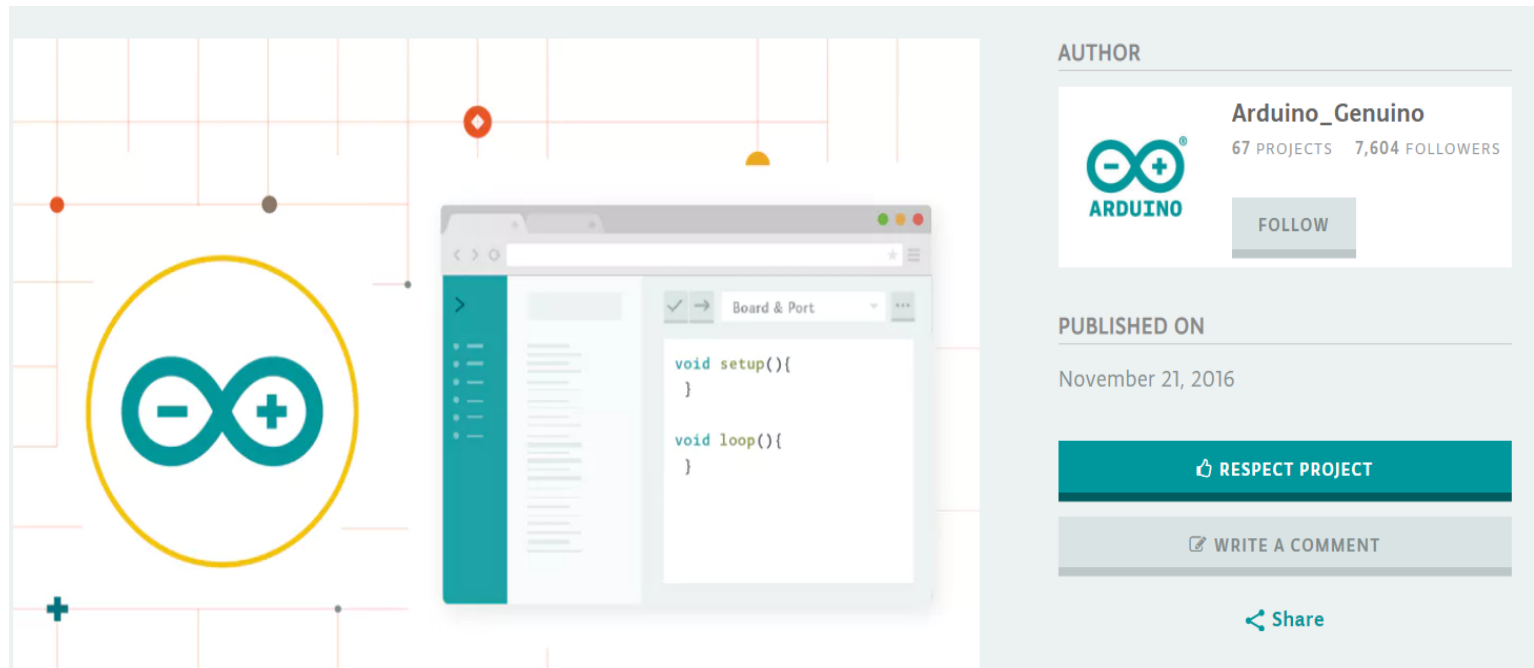
**Linux** 32 bits  
**Linux** 64 bits  
**Linux** ARM 32 bits  
**Linux** ARM 64 bits

Release Notes  
Source Code  
Checksums (sha512)

# How to interact with Arduino?

- If we want, we can even use the Arduino web editor:

[https://create.arduino.cc/projecthub/Arduino\\_Genuino/getting-started-with-arduino-web-editor-on-various-platforms-4b3e4a?f=1](https://create.arduino.cc/projecthub/Arduino_Genuino/getting-started-with-arduino-web-editor-on-various-platforms-4b3e4a?f=1)



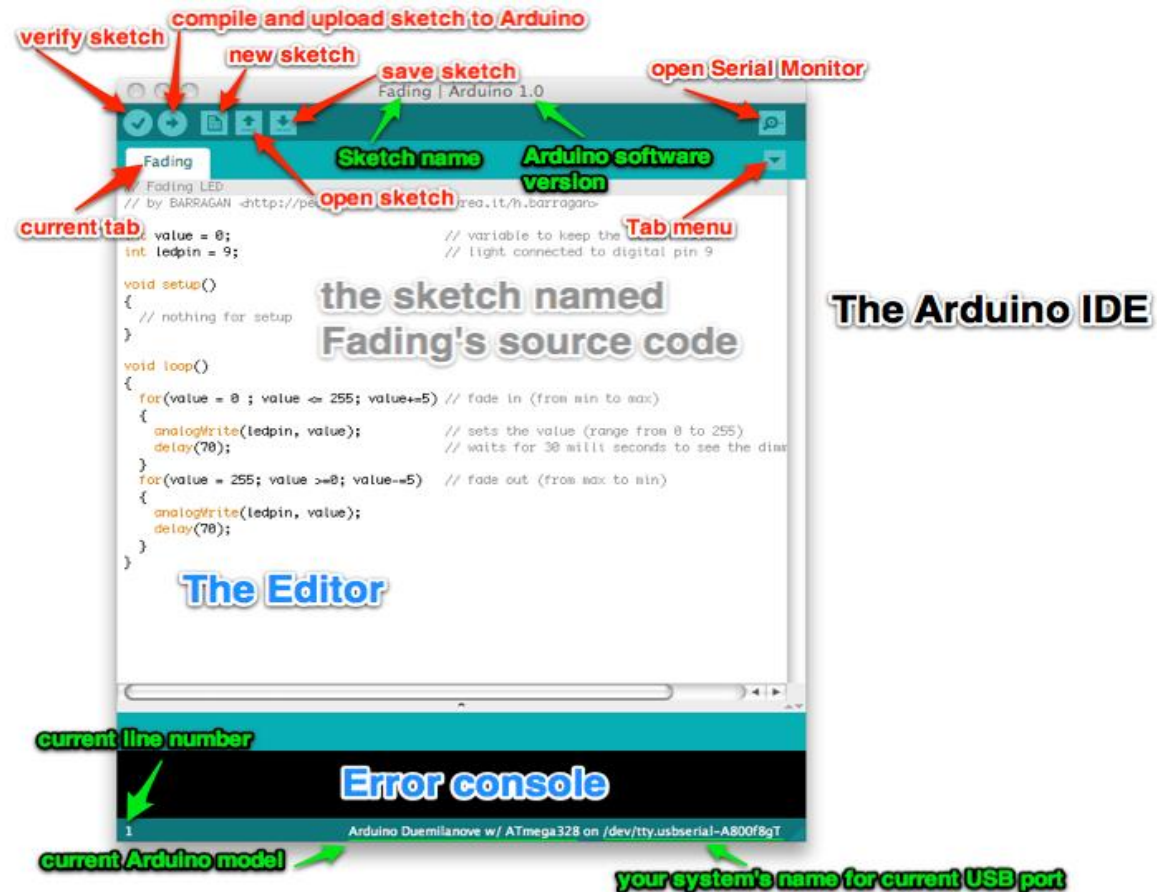
The image displays the Arduino web editor interface. On the left, a breadboard diagram is shown with a large yellow circle containing the Arduino logo (an infinity symbol with a minus sign on the left and a plus sign on the right). In the center, a browser window shows the code editor with the following C++ code:

```
void setup(){  
}  
  
void loop(){  
}
```

On the right, a sidebar shows the project details for 'Arduino\_Genuino', including the author's profile, the number of projects (67) and followers (7,604), the publication date (November 21, 2016), and buttons for 'RESPECT PROJECT', 'WRITE A COMMENT', and 'Share'.

# Installing Arduino IDE

- After unzipping and running the **arduino.exe** file, the arduino IDE will appear.



# Coding in Arduino IDE

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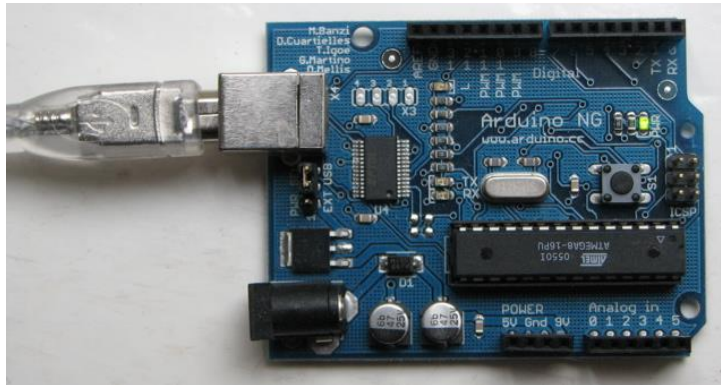


- *Get the Arduino Software and unzip it*
- *Run arduino.exe*
- *Do some setting changes*
- *Write the first sketch (Blinking LED)*
- *Verify the syntax*
- *Board and Serial Port selection*

# Power-up the board

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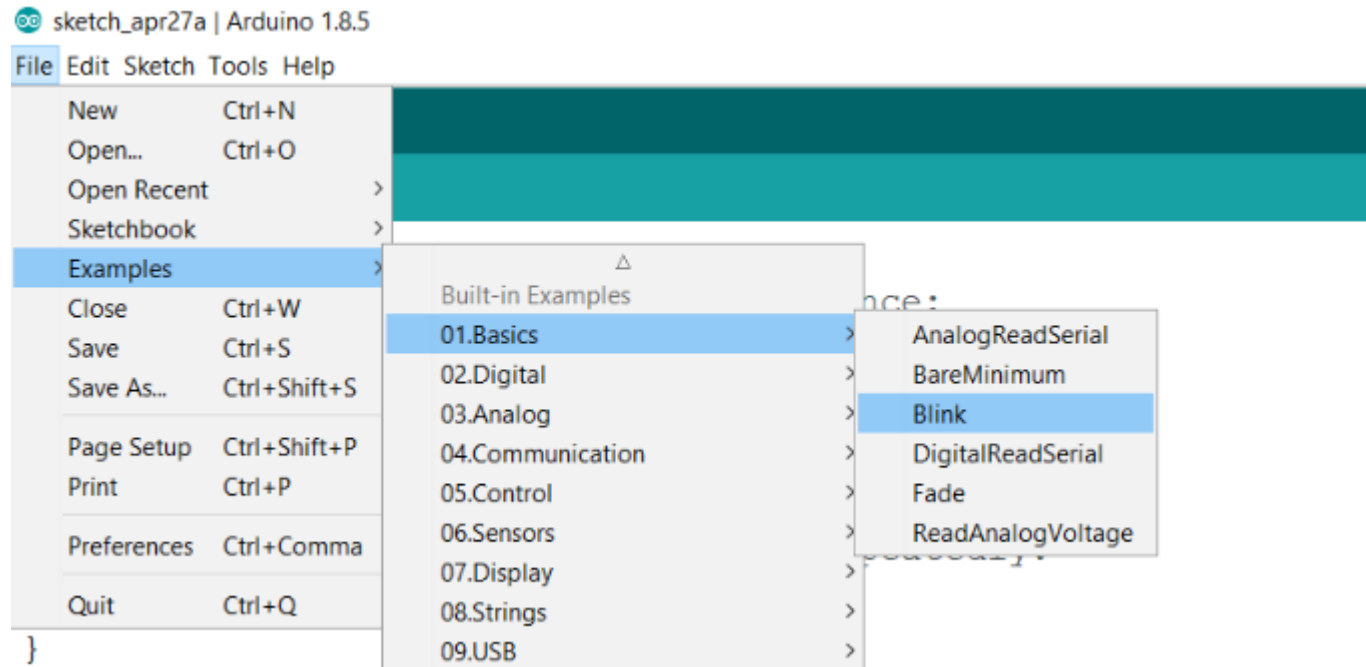
- ❑ Option 1: USB cable
- ❑ Option 2: External adapter





# How to use example code?

- Step-2: Open the LED blink example sketch: **File > Sketchbook > Examples > led\_blink**





# Writing 1<sup>st</sup> sketch on Arduino IDE



- Now we are good to go for writing a sketch. Write a sketch to blink a LED using pin 13.

A screenshot of the Arduino IDE interface. The window title is "sketch\_oct03a | Arduino 1.0.5". The menu bar includes "File", "Edit", "Sketch", "Tools", and "Help". Below the menu bar is a toolbar with icons for saving, running, and uploading. The main text area contains the following code:

```
sketch_oct03a $  
int led = 13;  
  
void setup() {  
  pinMode(led, OUTPUT);  
}  
  
void loop() {  
  digitalWrite(led, HIGH);  
  delay(1000);  
  digitalWrite(led, LOW);  
  delay(1000);  
}
```

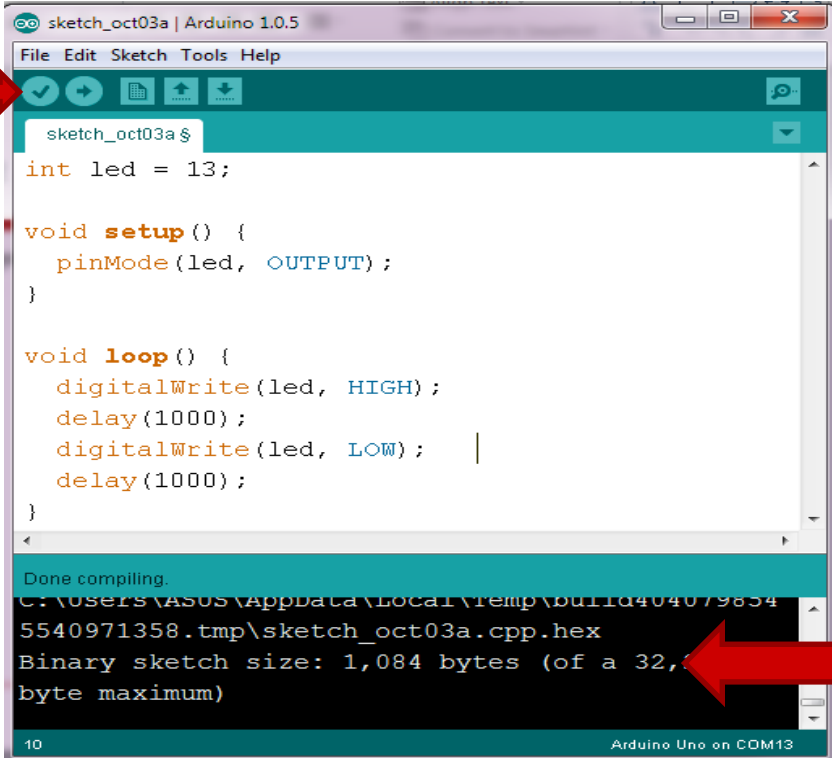
The status bar at the bottom shows "10" on the left and "Arduino Uno on COM13" on the right.

# Writing 1<sup>st</sup> sketch on Arduino IDE



- Now press the **verify** button to compile the sketch. If there is no any syntax error, you will be shown **‘Done Compiling’**. If there exists any error, that error will be shown on the error console window.

**Verify** →



```
sketch_oct03a | Arduino 1.0.5
File Edit Sketch Tools Help
sketch_oct03a $
int led = 13;

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

void loop() {
  digitalWrite(led, HIGH);
  delay(1000);
  digitalWrite(led, LOW);
  delay(1000);
}

Done compiling.
C:\Users\ASUS\AppData\Local\Temp\build404079854
5540971358.tmp\sketch_oct03a.cpp.hex
Binary sketch size: 1,084 bytes (of a 32,
byte maximum)

10 Arduino Uno on COM13
```

**Error console window** ←



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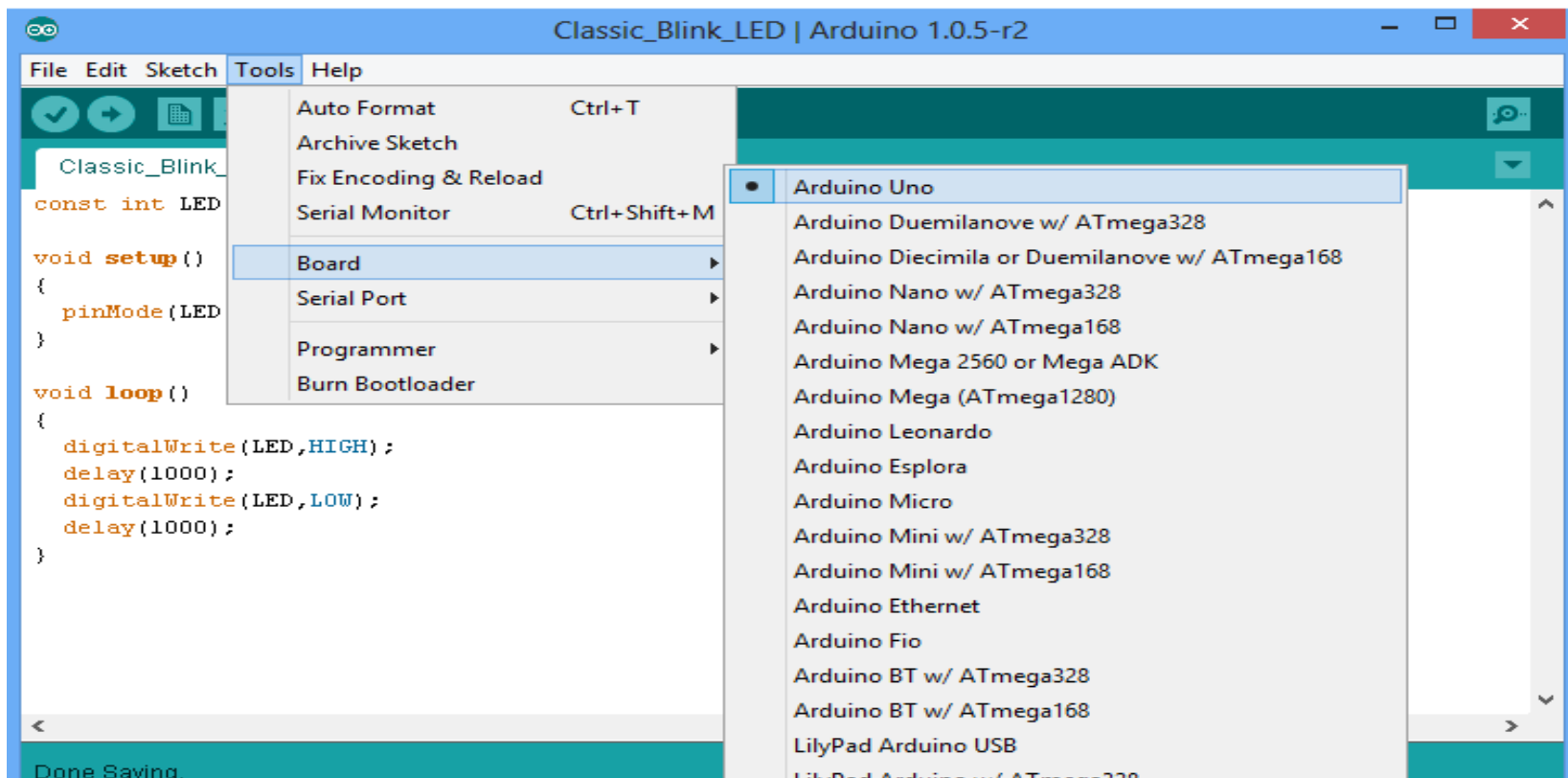
# How to upload a code?

- ❑ First select the **Board**
- ❑ Then select the **Port** (in new IDE port is automatically selected if there only one board connected)

# Upload a Code



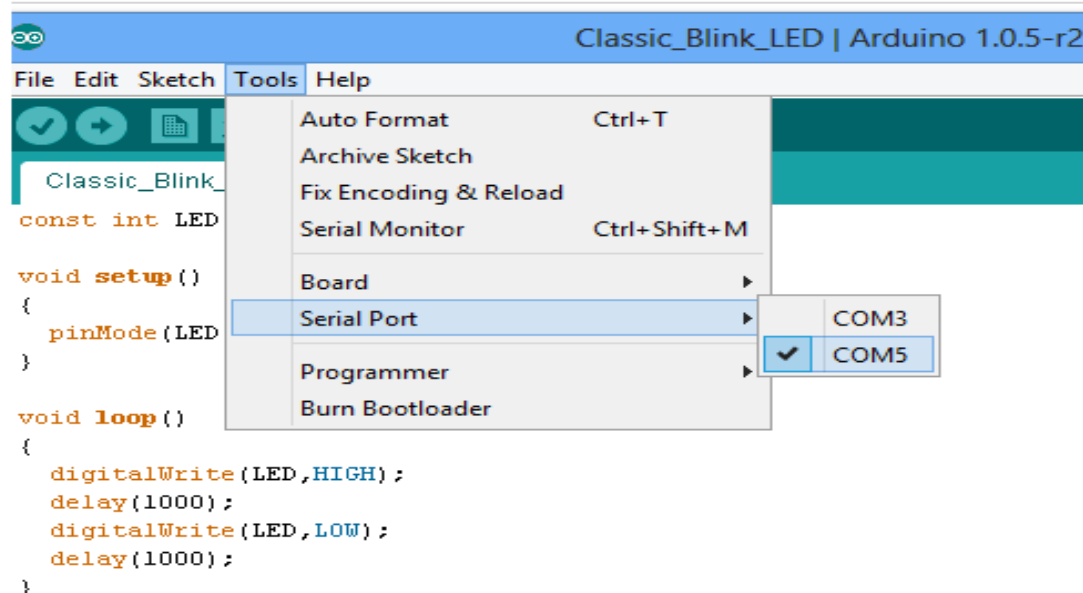
- Go to **Tools > Board** and select the appropriate arduino model on which the sketch is going to be uploaded. For our case, select Arduino Uno.



# Upload a Code



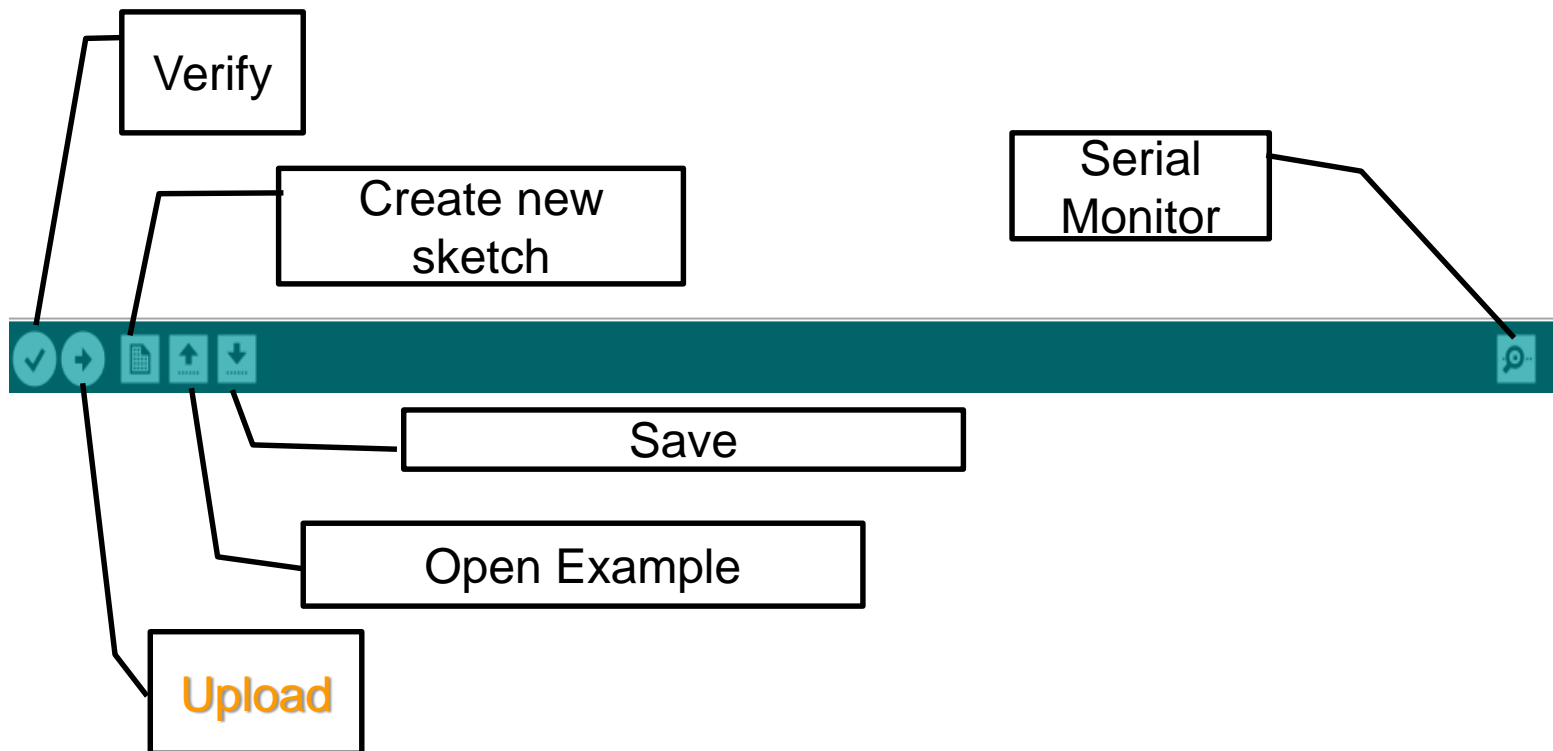
- Go to **Tools > Serial Port** and select the appropriate port on which the hardware Arduino Uno is connected to your PC/Laptop.
- Usually the highest number of port
- Port selection is not required for simulation.



# How to upload a code?

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- Step-4: Finally upload the code by clicking **upload** button





# Outcome:

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- Once the code is successfully uploaded, there is a built-in led with the pin# 13 which will be **Turned ON**.

# Task

- Do the same task with external bread board and LED by following the connection diagram:

