Experiment Number 1

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Branch ::	CSE - IoT	Sec/Grp ::	1/A
Semester ::	5th	Date ::	4th Sept, 2021
Subject ::	WSN Lab	CODE ::	CSD-331

1. Aim :

To Study Arduino Uno Board in detail and familiarization to Arduino IDE.

2. Theory :

Arduino Uno:

The Arduino Uno is a microcontroller board based on the ATmega328.

It has 14 digital input/output pins (of which 6 can be used as PWM outputs), 6 analog inputs, a 16 MHz crystal oscillator, a USB connection, a power jack, an ICSP header, and a reset button.

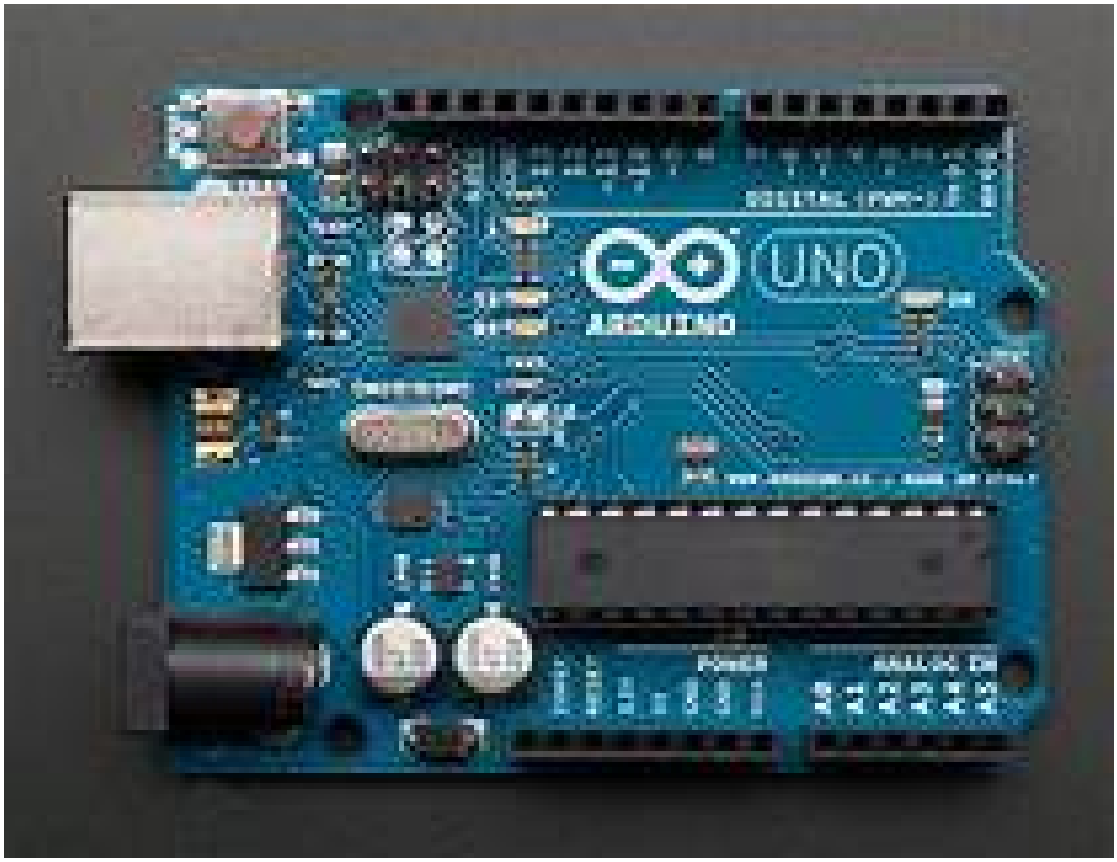
It contains everything needed to support the microcontroller; simply connect it to a computer with a USB cable or power it with a AC-to-DC adapter or battery to get started.

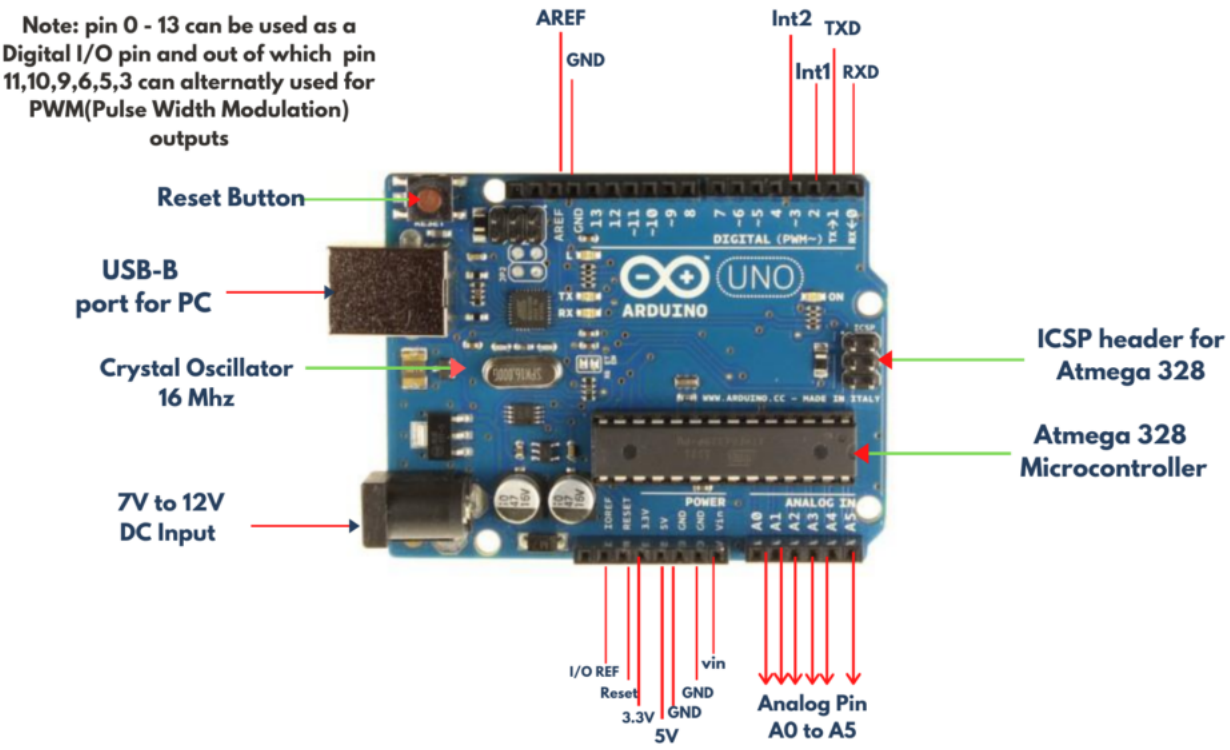
The Uno differs from all preceding boards in that it does not use the FTDI USB-to-serial driver chip.

Instead, it features the Atmega8U2 programmed as a USB-to-serial converter.
”Uno” means ”One” in Italian and is named to mark the upcoming release of Arduino 1.0. The Uno and version 1.0 will be the reference versions of Arduino, moving forward. The Uno is the latest in a series of USB Arduino boards, and the reference model for the Arduino platform.

Technical Specifications

Microcontroller	ATmega328
Operating Voltage	5V
Supply Voltage	7-12V
Maximum supply voltage	20V
Digital I/O Pins	14
Analog Input Pins	6
DC Current per I/O Pin	40 mA
DC Current for 3.3V Pin	50 mA
Flash Memory	32 kB
SRAM	2 kB
EEPROM	1 kB
Clock Speed	16 MHz



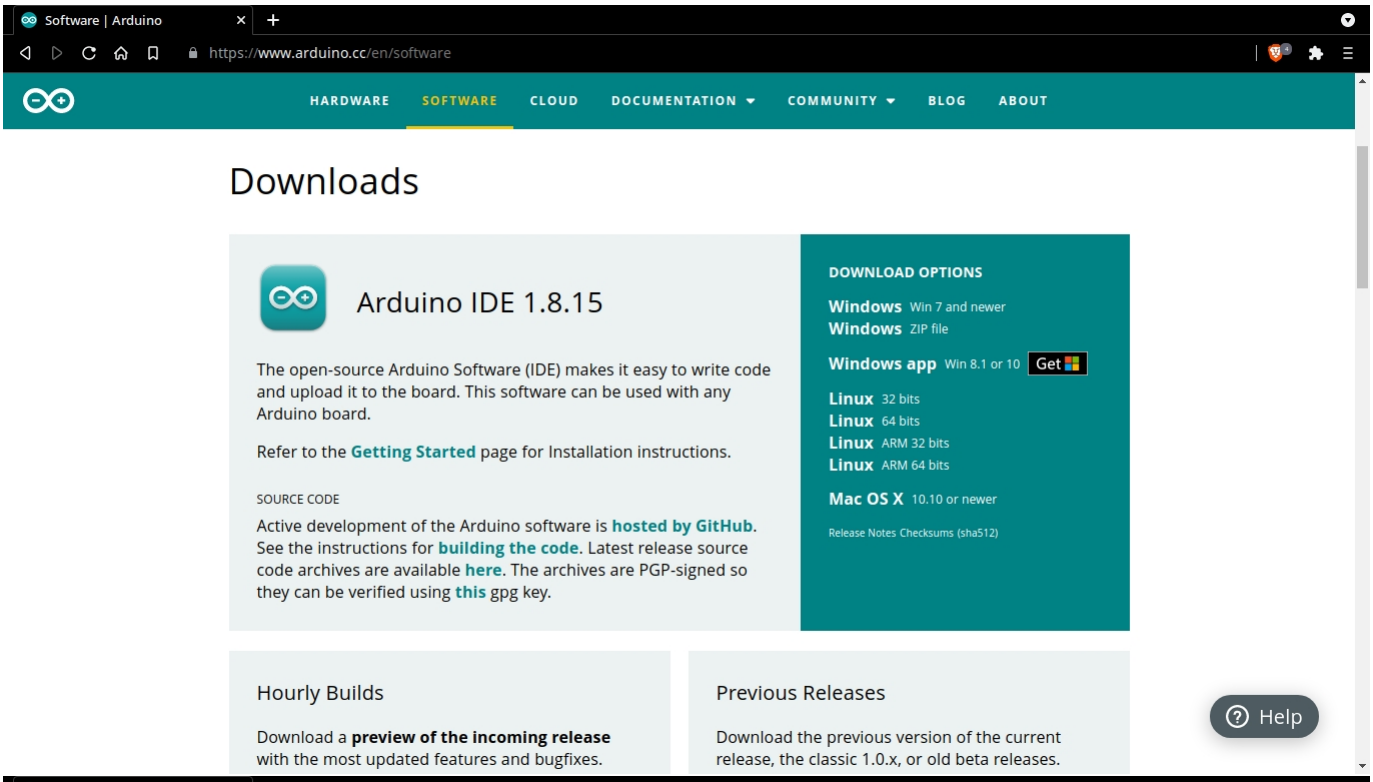


Arduino IDE

The open-source Arduino Software (IDE) makes it easy to write code and upload it to the board. This software can be used with any Arduino board.

Installation Process (Images Below):

1. Go to https://www.arduino.cc/en/software
2. Selecting your Operating System from side menu
3. Click on just download or donate to the open source project and then download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Arduino IDE 1.8.15
The open-source Arduino Software (IDE) makes it easy to write code and upload it to the board. This software can be used with any Arduino board.
Refer to the Getting Started page for Installation instructions.
SOURCE CODE
Active development of the Arduino software is hosted by GitHub. See the instructions for building the code. Latest release source code archives are available here. The archives are PGP-signed so they can be verified using this gpg key.
DOWNLOAD OPTIONS
Windows Win 7 and newer
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Linux ARM 64 bits
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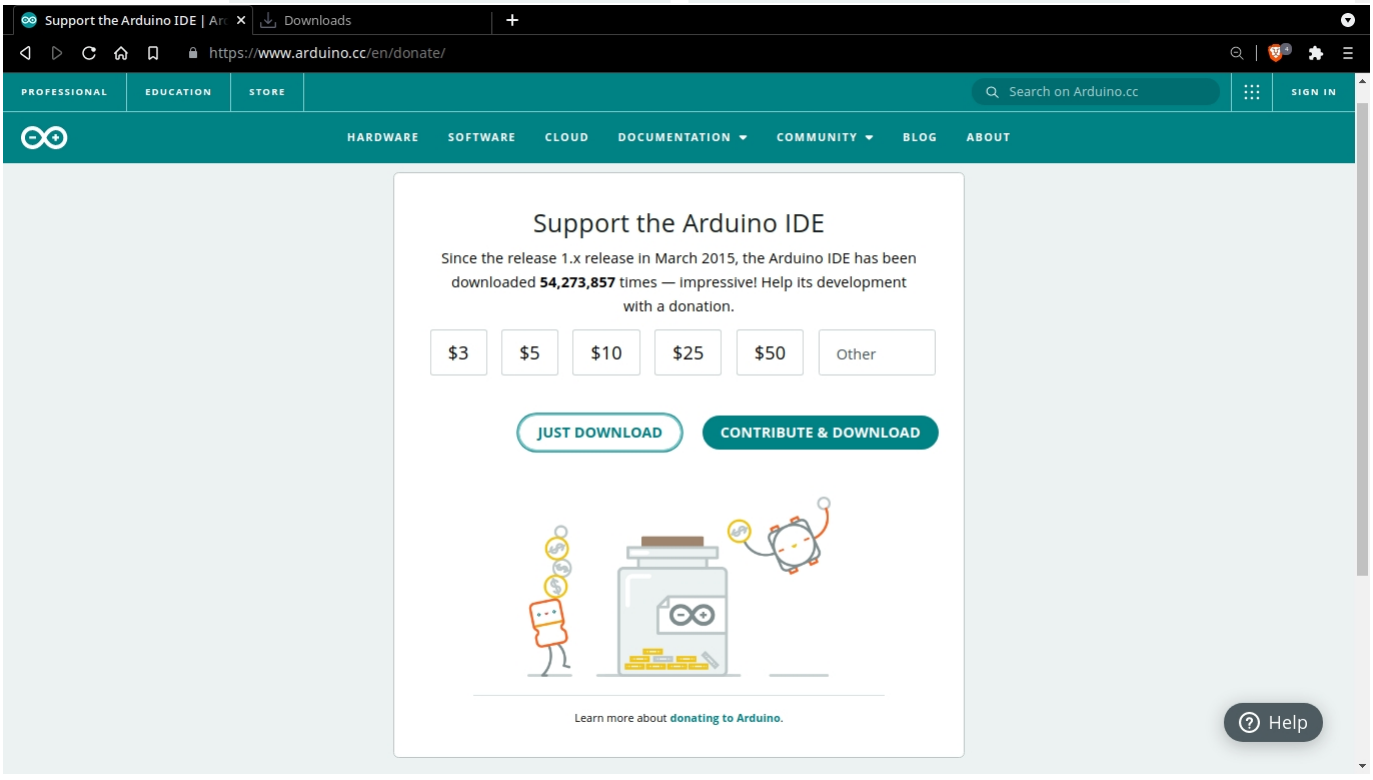
Previous Releases
Download the previous version of the current release, the classic 1.0.x, or old beta releases.
Help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Support the Arduino IDE
Since the release 1.x release in March 2015, the Arduino IDE has been downloaded 54,273,857 times — impressive! Help its development with a donation.
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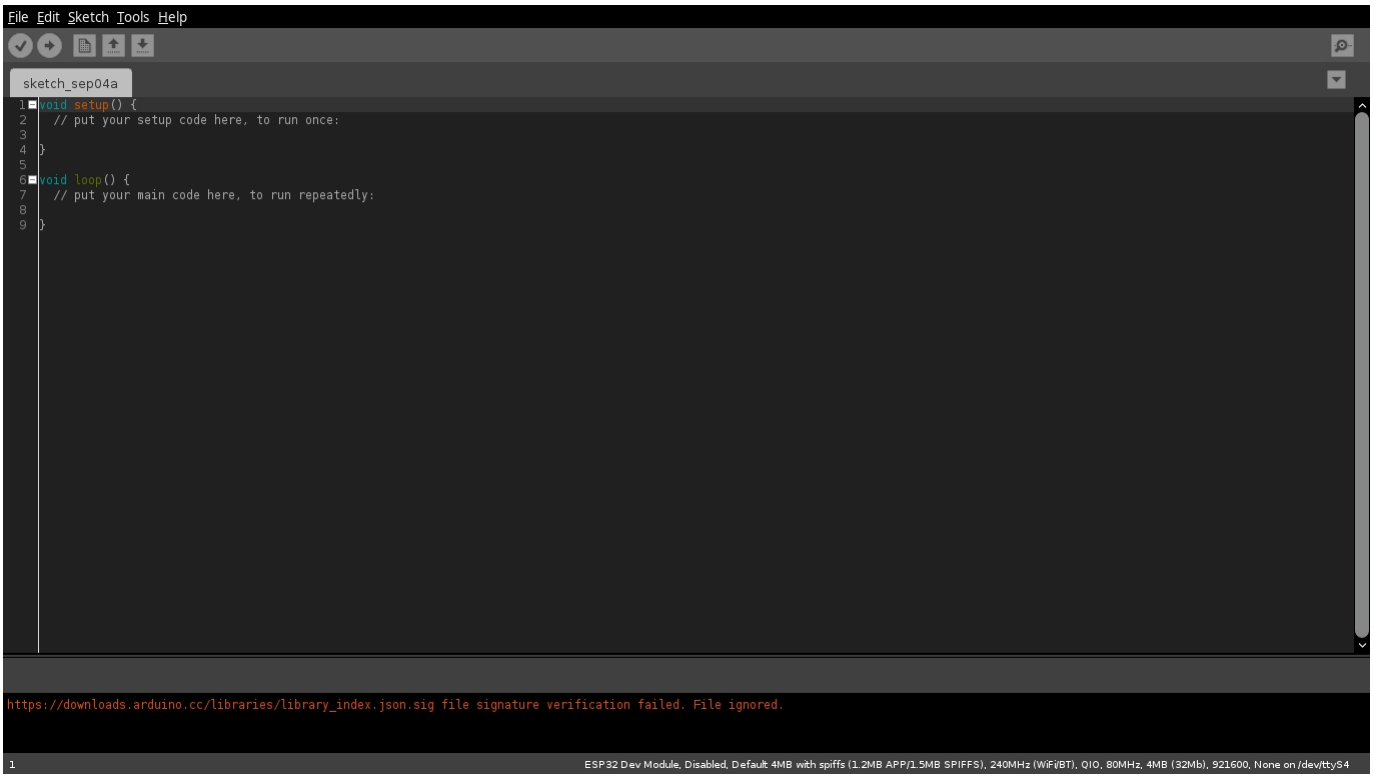
The IDE:



The IDE environment is divided into three sections:

1. Menu Bar
2. Text Editor
3. Output Panel

The bar appearing on the top is called Menu Bar that comes with five different options as follow

- File : You can open a new window for writing the code or open an existing one. Following table shows the number ofifurther subdivisions the file option is categorized into.
- Edit :Used for copying and pasting the code with furtherimodification for font
- Sketch: For compiling and programming

- Tools :Mainly used for testing projects. The Programmer section in this panel is used for burning a bootloader to the new microcontroller.
- Help : In case you are feeling skeptical about software, complete help is available from getting started to troubleshooting.

The Six Buttons appearing under the Menu tab are connected with the running program as follow.

The check mark appearing in the circular button is used to verify the code. Click this once written the code.

The arrow key will upload and transfer the required code to the Arduino board.

A dotted paper s used for creating a new file. The upward arrow is reserved for opening an existing Arduino project. The downward arrow is used to save the current running code.

Learning Outcomes :

- Arduino Uno
- Uno Specifications
- Arduino IDE
- IDE Basics

S. No.	Parameters	Marks Obtained	Maximum Marks
1.			
2.			
3.			