

# DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

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## WORKSHEET 1.1

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**Branch:** CSE

**Section/Group:** 626/B

**Semester:** 5th

**Date of Performance:** 08/08/23

**Subject Name:** IoT

**Subject Code:** 21CSP-344

### **Aim:**

To Assemble Arduino Uno with the system and perform necessary software installation.

### **Objectives:**

1. To study hardware and software related to IoT
2. To understand the function of Arduino Uno and other controllers.

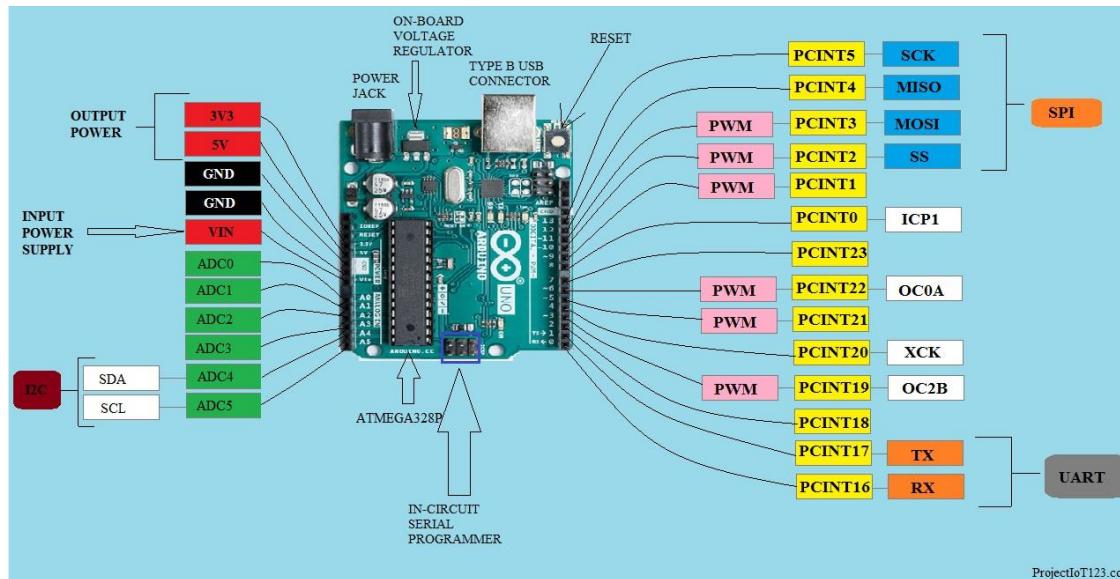
### **Components Required:**

1. Arduino Uno
2. Connecting Cable
3. Arduino IDE

### **Arduino Uno:**

An Arduino is actually a micro controller based kit. It is basically used in communications and in controlling or operating many devices. Arduino UNO board is the most popular board in the Arduino board family. They have digital and analog pins for connecting sensors and devices. It consists of two memories- Program memory and the data memory. The code is stored in the flash program memory, whereas the data is stored in the data memory. Arduino Uno consists of 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.

**Figure: Diagram of Arduino Board**



## Arduino Uno Circuit:

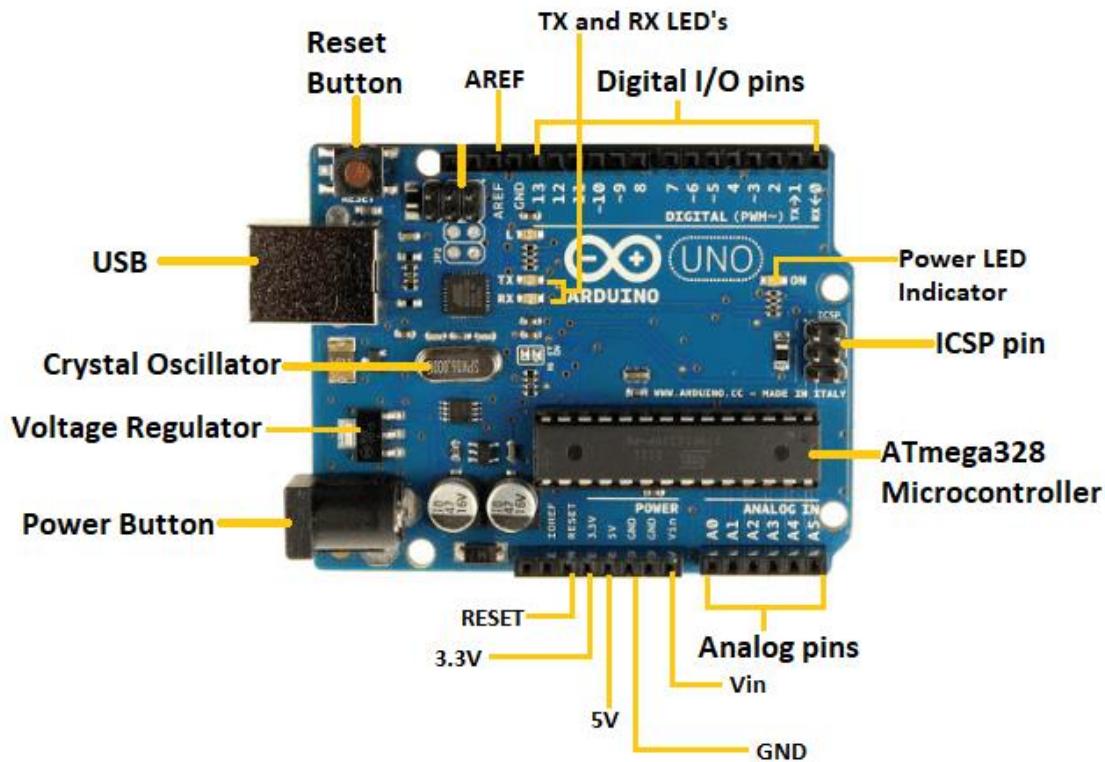
Arduino is a microcontroller-based open source electronic prototyping board which can be programmed with an easy-to-use Arduino IDE.

UNO is not the only board in the Arduino family. There are other boards like Arduino Lilypad, Arduino Mini, Arduino Mega, and Arduino Nano. However, the Arduino UNO board became more popular than other boards in the family because it has documentation that is much more detailed. This led to its increased adoption for electronic prototyping, creating a vast community of electronic geeks and hobbyists.

The major components of Arduino Uno board :

1. USB connector
2. Power port
3. Microcontroller
4. Analog input pins
5. Digital pins
6. Reset switch
7. Crystal oscillator
8. USB interface chip
9. TX RX LEDs

Figure: Arduino Uno Circuit



### Adruino IDE:

Arduino IDE is the open source software, designed by Arduino.cc and mainly used for writing, compiling and uploading code. It is an official Arduino software, making code compilation too easy. It is available for all operating system i.e. Mac, Linux, Windows and runs on the java platform that comes with inbuilt functions and commands. The main code is known as sketch, created on the IDE platform will ultimately generate a Hex File which is then transferred and uploaded in the controller in the board. The IDE environment contains two basic parts : Editor and compiler

### Steps to install Arduino IDE:

1. Step 1 - First you must have your Arduino board (you can choose your favorite board) and a USB cable. ...

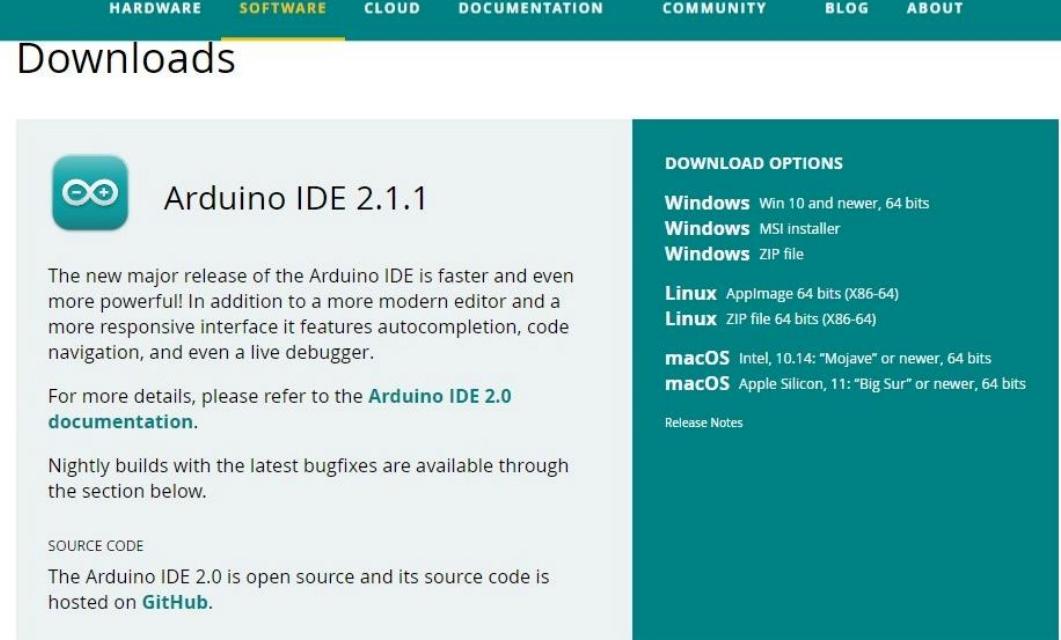


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2. Step 4 - Launch Arduino IDE
3. Step 5 - Open your first project.
4. Step 6 - Select your Arduino board.
5. Step 7 - Select your serial port.
6. Step 8 - Upload the program to your board.

**Figure: Arduino IDE**



The screenshot shows the Arduino IDE 2.1.1 download page. At the top, there is a navigation bar with links for HARDWARE, SOFTWARE (which is highlighted in yellow), CLOUD, DOCUMENTATION, COMMUNITY, BLOG, and ABOUT. Below the navigation bar, the word "Downloads" is displayed. On the left side of the main content area, there is a large image of the Arduino logo (two interlocking circles) next to the text "Arduino IDE 2.1.1". A brief description follows: "The new major release of the Arduino IDE is faster and even more powerful! In addition to a more modern editor and a more responsive interface it features autocompletion, code navigation, and even a live debugger." Below this, a link reads "For more details, please refer to the [Arduino IDE 2.0 documentation](#)". Further down, it says "Nightly builds with the latest bugfixes are available through the section below." To the right of this text, there is a "SOURCE CODE" link and a note that the Arduino IDE 2.0 is open source and its source code is hosted on [GitHub](#). On the far right, under the heading "DOWNLOAD OPTIONS", there are links for Windows (Win 10 and newer, 64 bits), Windows (MSI installer), Windows (ZIP file), Linux (AppImage 64 bits (X86-64)), Linux (ZIP file 64 bits (X86-64)), macOS (Intel, 10.14: "Mojave" or newer, 64 bits), and macOS (Apple Silicon, 11: "Big Sur" or newer, 64 bits). A "Release Notes" link is also present.

## Result:

Installation of Arduino IDE and setup is successfully done.