

Experiment: 1.1

Student Name: SANJIV GUPTA UID: 21BCS-3478

Branch: CSE Section/Group: 21BCS-IOT-602B

Semester: 5th **Date:** 17/08/23

Subject Name: IoT Lab 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 Used:

- 1. Arduino Uno
- 2. Connecting Cable
- 3. Arduino Ide

Theory:

Arduino Board

Arduino Board: Arduino boards are open-source microcontrollers used for creating electronic projects. They have digital and analog pins for connecting sensors and devices. You program them using the Arduino IDE and the C++ language

Features:

- Microcontrollers for processing.
- Digital and analog pins for connecting devices.
- *Programmed using Arduino IDE with C++*.
- Supportive community and libraries.
- Various models for different needs.

Pins:

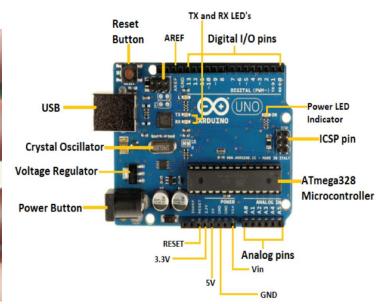
- **Digital Pins:** Input/output for digital signals (0 or 1).
- Analog Pins: Input for analog signals (continuous range of values).
- **Power Pins:** Provide power to the board (5V, 3.3V, GND).
- Communication Pins: Transmit and receive data (UART, SPI, I2C).
- **Special Pins:** PWM (Pulse Width Modulation) for controlling analog-like output and other special functions.

DIGITAL (PM-)

TOTAL ARDUINO

ARBUINO

TOTAL ARBUIN



Basic Adruino functions are:

- digitalRead(pin): Reads the digital value at the given pin.
- digitalWrite(pin, value): Writes the digital value to the given pin.
- *pinMode(pin, mode)*: Sets the pin to input or output mode.
- analogRead(pin): Reads and returns the value.
- analogWrite(pin, value): Writes the value to that pin.
- serial.begin(baud rate): Sets the beginning of serial communication by setting the bit rate.

RASPERRY PI

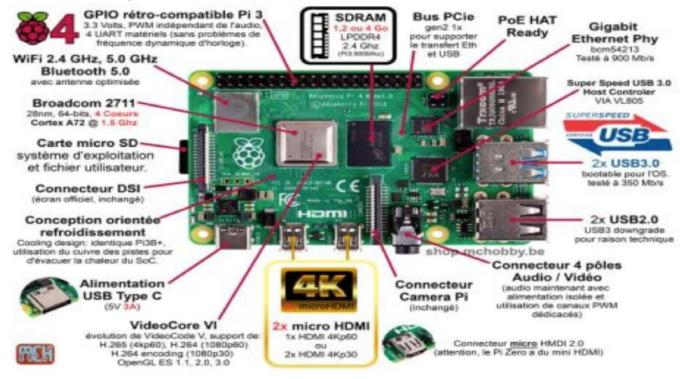
Raspberry Pi is a compact, affordable computer board offering versatile features. It boasts GPIO pins for hardware interfacing, making it suitable for DIY electronics projects. With HDMI output, USB ports, and Wi-Fi capability, it supports coding, browsing, and multimedia tasks. Its low cost and diverse community make it a popular choice for learners and tinkerers.

Features

- Affordable single-board computer.
- HDMI output for connecting to displays.
- USB ports for peripherals like keyboards, mice, and storage.
- Wi-Fi and Ethernet connectivity options.
- Various operating systems, including Raspberry Pi OS (formerly Raspbian).
- Supports programming languages like Python, Scratch, and more.

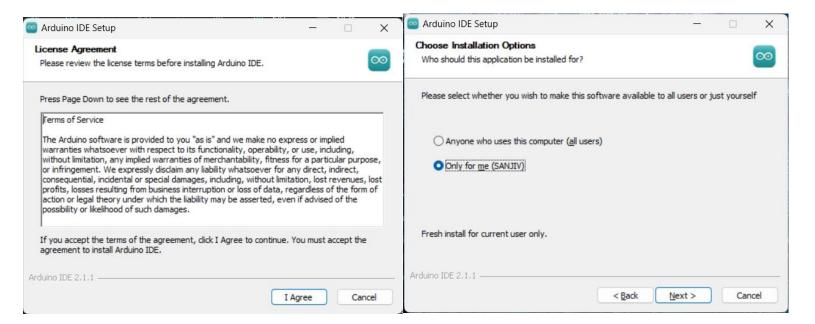
DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

Discover. Learn. Empower.



Steps to install Arduino Ide:

- ✓ Visit Arduino.cc
- ✓ Select the ide and download it
- ✓ After downloading install the ide
- ✓ Now agree the required things which shown below:





DEPARTMENT OF

Installing arduino:avr-gcc@7.3.0-atmel3.6.1-arduino7

COMPUTER SCIENCE & ENGINEERING

Discover. Learn. Empower. Arduino IDE Setup Choose Install Location Arduino IDE Setup Choose the folder in which to install Arduino IDE. Installing Please wait while Arduino IDE is being installed. Setup will install Arduino IDE in the following folder. To install in a different folder, click Browse and select another folder. Click Install to start the installation. Destination Folder C:\Users\SANJIV\AppData\Local\Programs\Arduino IDE Browse... Arduino IDE 2,1,1 -Install < Back Cancel < Back Arduino IDE Setup Completing Arduino IDE Setup Arduino IDE has been installed on your computer. Click Finish to close Setup. Run Arduino IDE < Back Einish sketch_aug10a | Arduino IDE 2.1.1 ·Q. Select Board sketch_aug10a.ino **■** 6 Downloading packages arduino:avr-gcc@7.3.0-atmel3.6.1-arduino7 arduino:avrdude@6.3.0-arduino17 arduino:arduinoOTA@1.3.0 arduino:avr@1.8.6

Ln 1, Col 1 × No board selected ♀ □