

Experiment1.1

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Branch: CSE

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Subject Name: IOT Lab

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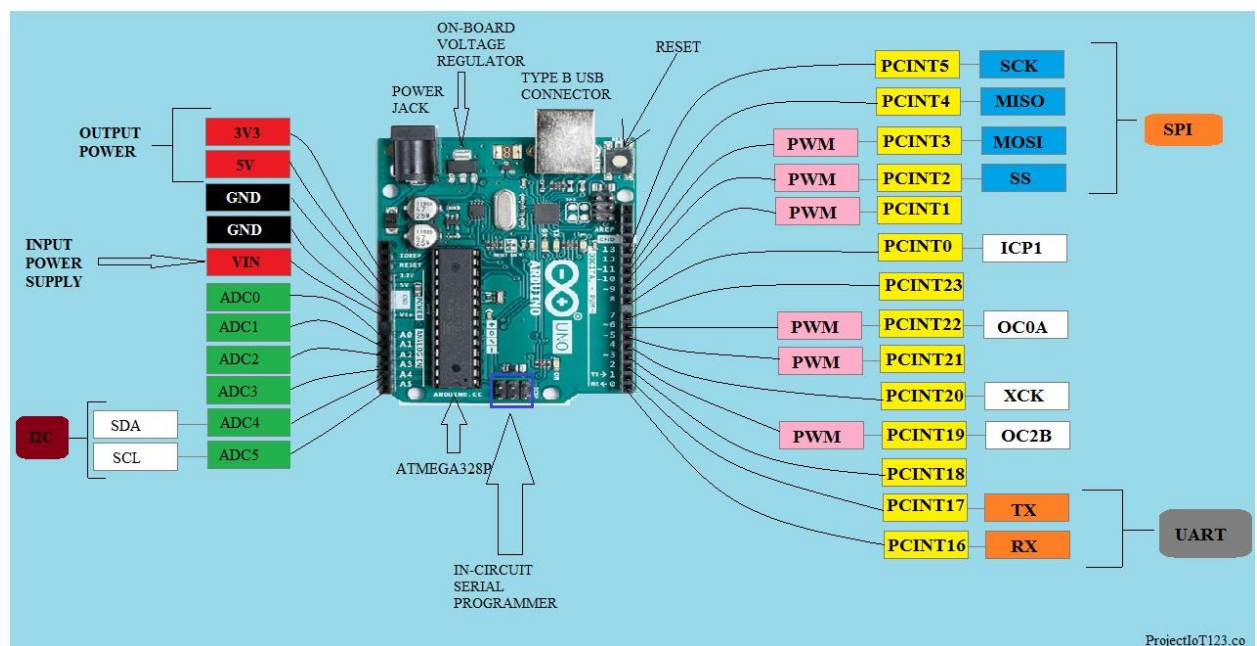
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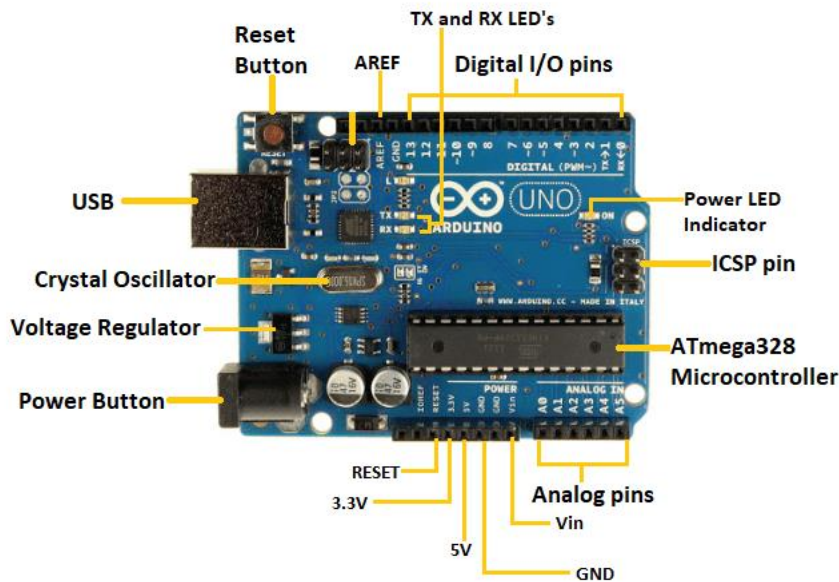
1. Aim: Familiarisation with Arduino/Raspberry Pi hardware and perform necessary software installation.

2. Objective: 1. To study hardware and software related to IoT

2. To understand the function of Node MCU, Arduino Uno and Raspberry Pi.

3. Script and Output:



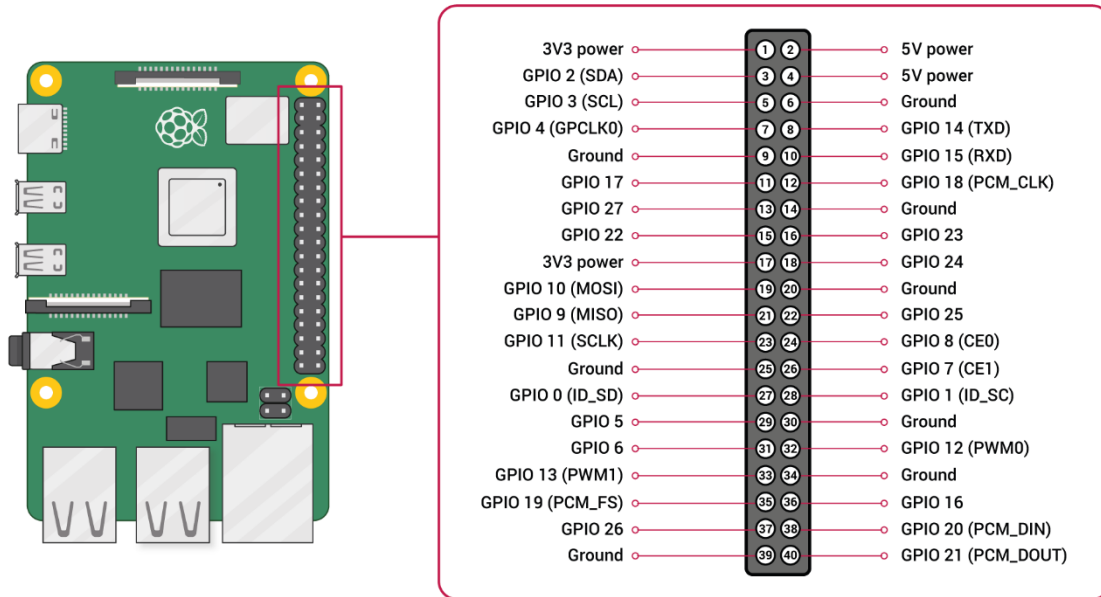


1. Power USB Arduino board can be powered by using the USB cable from your computer. All you need to do is connect the USB cable to the USB connection (1).

2. Power (Barrel Jack) Arduino boards can be powered directly from the AC mains power supply by connecting it to the Barrel Jack (2).

3. Voltage Regulator The function of the voltage regulator is to control the voltage given to the Arduino board and stabilize the DC voltages used by the processor and other elements.

- Most of the components used with Arduino board works fine with 3.3 volt and 5 volt.
- GND (8)(Ground) – There are several GND pins on the Arduino, any of which can be used to ground your circuit.
- Vin (9) – This pin also can be used to power the Arduino board from an external power source, like AC mains power supply.



Raspberry PI Interfaces:

It supports SPI, serial and I2C interfaces for data transfer.

Serial : Serial Interface on Raspberry has receive(Rx) and Transmit(Tx) pins for communication with serial peripherals.

SPI: Serial Peripheral Interface (SPI) is a synchronous serial data protocol used for communicating with one or more peripheral devices. In an SPI connection, there is one master device and one or more peripheral devices.

There are 5 pins Raspberry for SPI interface.

- o MISO(Master In Slave Out): Master line for sending data to the peripherals.
- o MOSI(Master Out Slave In): Slave Line for sending data to the master.
- o SCK(Serial Clock): Clock generated by master to synchronize data transmission.
- o CE0(Chip Enable 0): To enable or disable devices.
- o CE1(Chip Enable 1): To enable or disable devices.

Applications

1. Hobby projects.
2. Low cost PC/tablet/laptop
3. IoT applications
4. Media center
5. Robotics | Industrial/Home automation

INSTALLING THE ARDUINO IDE

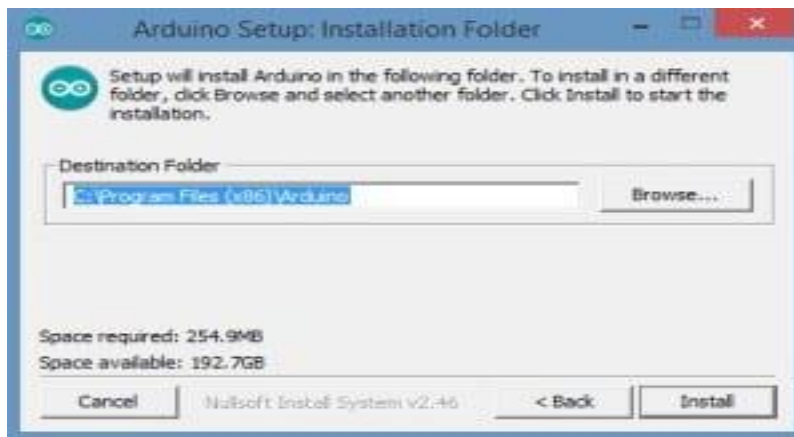
1. Visit <http://www.arduino.cc/en/main/software> to download the latest Arduino IDE version for your computer's operating system. There are versions for Windows, Mac, and Linux systems. At the download page, click on the “Windows Installer” option for the easiest installation.
2. Save the .exe file to your hard drive.
3. Open the .exe file.
4. Click the button to agree to the licensing agreement:



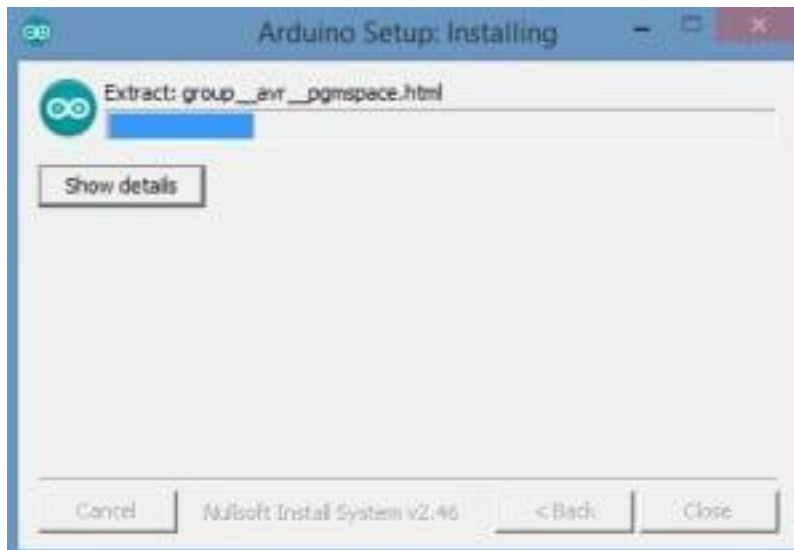
5. Decide which components to install, then click “Next”:



6. Select which folder to install the program to, then click “Install”:



7. Wait for the program to finish installing, then click “Close”:



sketch_jan04a | Arduino 1.0.6

File Edit Sketch Tools Help

sketch_jan04a

1: |

1 Arduino Uno on COM3

The screenshot shows the Arduino IDE interface. The 'Tools' menu is open, and the 'Board' option is selected. A list of available boards is displayed, including:

- Arduino Uno
- Arduino Duemilanove w/ ATmega328
- Arduino Diecimila or Duemilanove w/ ATmega168
- Arduino Nano w/ ATmega328
- Arduino Nano w/ ATmega168
- Arduino Mega 2560 or Mega ADK
- Arduino Mega (ATmega1280)
- Arduino Leonardo
- Arduino Explore
- Arduino Micro
- Arduino Mini w/ ATmega328
- Arduino Mini w/ ATmega168
- Arduino Ethernet
- Arduino Fio
- Arduino BT w/ ATmega328
- Arduino BT w/ ATmega168
- LilyPad Arduino USB
- LilyPad Arduino w/ ATmega328
- LilyPad Arduino w/ ATmega168
- Arduino Pro or Pro Mini (5V, 16 MHz) w/ ATmega328
- Arduino Pro or Pro Mini (5V, 16 MHz) w/ ATmega168
- Arduino Pro or Pro Mini (3.3V, 8 MHz) w/ ATmega328
- Arduino Pro or Pro Mini (3.3V, 8 MHz) w/ ATmega168
- Arduino F0 or older w/ ATmega168
- Arduino NG or older w/ ATmega168

EXPLORING THE ARDUINO IDE

If you want, take a minute to browse through the different menus in the IDE. There is a good variety of example programs that come with the IDE in the “Examples” menu. These will help you get started with your Arduino right away without having to do lots of research:





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Discover. Learn. Empower.

Learning out comes. What I have learnt

1. I have learned about the IOT.
2. I have learned about the components of IOT.
3. I have learned about the processor and the controller.
4. I have learned about the Arduino controller that is used as main component of the IOT
5. I have also learned about the Raspberry Pi hardware and perform necessary software installation.