

Tutorial outline

Overview of the Arduino



What Arduino can be used for

Know the pins of Arduino

Why use Arduino

Circuit and Components



Identification of components and what they used for.

Reading resistor values using color codes

Understanding circuit diagrams

Setting up

Installing required software

Breadboard connection

How the bread is structured

How to use a project board (breadboard)

The Arduino IDE and code template

Installing the Arduino software

How Arduino code is structured and syntax





Digital Input/output operation

Setting a pin to be input or output

Sending digital signal to Arduino pins

Reading digital signals from Arduino pins

Conditional expression (if, else, switch)

Mini project

- *Blink an LED*
- *Read switch states*
- *Design a basic traffic light*
- *Design a door bell notify*
- *Design a sliding window alerts system*



How relay works

Controlling higher volts appliance with Arduino

Serial Communication

Send message from Arduino to computer

Read command/message from Arduino

Data logging

Software serial

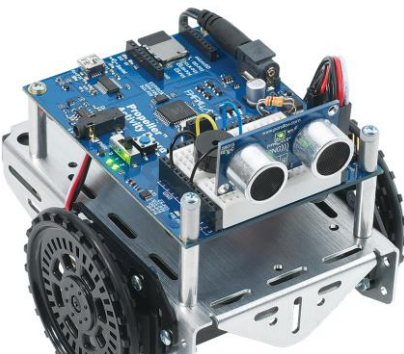
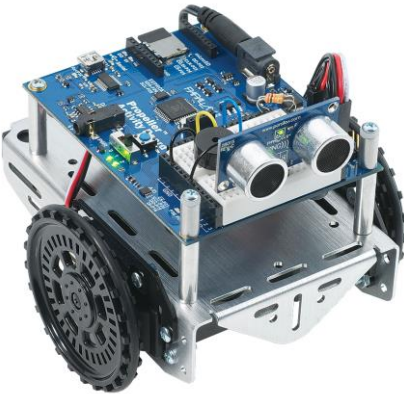
Mini project

- *Build temperature logging system*
- *Control bulb using your computer*
- *Chatting system*

LCD display

How to connect 16x2 LCD to Arduino

How to display messages on the LCD





Mini Project

- *Advertisement board*

Analog to digital converters

How to read analog values

How to do signal conditioning

Connecting analog sensors

Mini Project

- *Build automatic night light*
- *Build a volt meter*
- *Soil moisture sensing*
- *Control fan speed based on how temperature*
- *Build a volt meter*

KEYPAD

Interfacing 4x3 keypad to the Arduino

Mini Project

- *Password protected system*

PWM

About Pulse Width Modulation and what you can use it to do

Know the Pulse Width Modulation pins

How to set duty cycle

Mini Project

- *Light brightness control*
- *motor speed control*





Distance measurement

Measuring distance using ultrasonic sensors

Using the DHT sensors

Measuring humidity and temperature using the DHT sensors.



About Arduino Programming

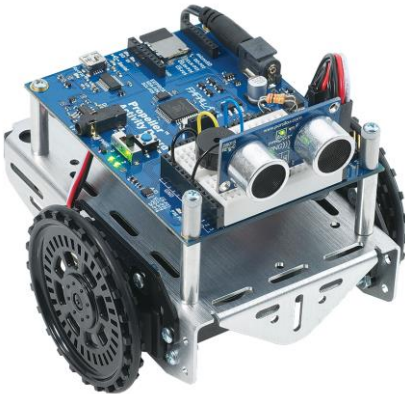
Language Reference: Discover the what each term of the Arduino code language means.

Variables: Understand how to define and use variables in a Sketch.

Functions: Learn how to define and use functions in a Sketch.

Library: Using and installing Arduino Libraries.

Optimization: making your codes smaller and faster



With this you are ready to dive into more advance use of the Arduino (module 2)

