

Arduino

🕒 Duration: 3 Days

🗣️ Available Languages: English

Audience

The people with minimum or without any experience of Arduino Programming and want to learn Arduino through programming and by doing practically.

Precondition

Interest in programming and software development and willing to learn Arduino programming.

Goals

To teach / train Arduino Programming with practical hands-on.

Contents

- Introduction to Arduino
 - What is Arduino
 - Arduino Hardware - Various types of Arduino boards
 - Arduino Software - IDE and Libraries
 - Micro controller basics
 - Understanding Circuit Diagrams
 - Arduino Uno Board
 - Why Arduino?
- Arduino IDE - Custom board integration
 - Toolchain Support
 - JSON file structure for board specifications
 - Hardware folder structure
 - Architecture configuration files
 - Build process
 - Pre and post build hooks
 - Boards file
 - Platform file
- Arduino IDE - Tools
 - Compiler toolchain
 - Uploader
 - File preprocessor
 - Debugger
 - Program that performs a firmware upgrade
- Arduino Programming - 1
 - Installing Arduino IDE

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- Connecting and powering the Arduino board
- Arduino program structure
- Arduino program example 1: C Program "Hello World" in Arduino environment
- How to program an Arduino microcontroller
- How to properly structure your code
- Debugging Arduino Programs
- Arduino Basic Circuit Design
 - Understanding the Arduino board and its functioning
 - Building circuits using breadboard
 - What are digital and analog pins?
 - Using analog pins - Reading inputs and controlling outputs
 - Using digital pins - Reading inputs and controlling outputs
 - Resistors
 - Communicating via serial port
 - Building a small circuit
- Arduino Programming - 2
 - Using more programming controls (arrays, switch case, operators) into Arduino programs
 - Arduino Program Example 2: Blinking LED
 - Arduino Program Example 3: Calculator
- Arduino Further Topics
 - Including Arduino libraries in project
 - Using Arduino libraries in project
 - Using SPI interface to send-receive data
 - Using I2C interface to send-receive data
 - Using Interrupts
- Arduino - industry applications and usage
 - Arduino and IoT
 - How to interface Arduino with analog and digital sensors (detecting noise, pressure etc.)
 - How to use Arduino software library to control light, sound etc.
 - Arduino and wireless technology
- Showcase Arduino demo project

Booking

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