IoT Folks Workshop

Overview

Arduino workshop will focus on getting you up and running with **Arduino** quickly, so that you will understand the basic procedures for working with Arduino and can explore further on your own. An Arduino is a small computer that you can program to control things like lights or motors along with listening to components like motion detection sensors. It can give your project interactivity without needing an expensive and large circuit. Instead, you use a computer to program the Arduino, upload your code to the Arduino, and hook up your circuit.

The duration of this workshop will be two consecutive days with eight hours session each day, in a total of sixteen hours properly divided into theory and hand on practical sessions. At the end of this workshop a competition will be organized among the participating students where each participating student will get Certificate of Participation and the Winners will get Certificate of Merit.

Workshop Level: Intermediate Level

Best Suited For: All B.Tech/B.E./BCA/BSc Students

Workshop Certification: Dreamerz Technologies Pvt. Ltd.

Workshop Training Kit: Arduino Kit

Attractions

- FREE ARDUINO KIT to Individual Group
- Certificate by Dreamerz Technologies Pvt. Ltd.
- Certificate of Participation to all Zonal participants
- Certificate of Merit to all Zonal Winners
- Enhance your Knowledge through various Live Projects
- Attractive On Spot Cash Prizes for all Final Round Winners

Workshop Highlights

- Open Source Platform
- Easy to learn
- Easy to Debug

- Interfacing I/O devices
- Interfacing External Peripherals
- Learn Advance Topics
- Live Projects

Course:

Day 1 (Session 1)

Introduction to Embedded System

- Introduction to Embedded System
- Applications & Scope of Embedded System in various industries

Introduction to Open Source platform

- An Overview of Open Hardware
- Arduino Board Description

Introduction to Microcontroller

This session would deal with the basics of Microcontroller. The focus will be on the AVR Micro controller, which is one of the most powerful and widely used 8 bit microcontroller.

- What is Microcontroller?
- Difference between Microcontroller and Microprocessor
- Microcontroller architecture and Interfacing
- Introduction to Microcontrollers & the Arduino Platform
- How can we use microcontroller in our circuits

Introduction to Programming Language

- Programming Languages- Assembly Vs Embedded 'C'
- Microcontroller Programming using Embedded 'C'

Introduction to software tool chain

- Software Installation
- Getting started with the Arduino IDE to start writing your first program
- Writing your First 'Embedded C' Program

Day 1 (Session 2)

Interfacing of I/O devices

LEDs

- Types of LEDs.
- How LEDs works?
- How LEDs will glow in sequence?
- Interfacing of LED with Arduino

Switch

- Types of switches
- Their Functions
- Interfacing of switch with Arduino

Buzzer

- Types of Buzzer
- Uses of Buzzer in Real Time
- Interfacing of Buzzer with Arduino

Display Devices

- Types of Display Devices
- What is a Seven Segment Display?
- Internal Structure of Seven Segment
- How to glow Seven Segment?
- Interfacing of Seven Segment with Arduino
- Multiplexing

Day 2 (Session 3)

ADC

- What is ADC?
- Use of ADC
- What is Resolution?
- Uses of different ADC Registers
- Interfacing of Analog Devices with Digital World

Serial Communication

- Difference between Parallel and Serial Communication
- USART / UART Protocol
- RS232 Standard
- TTL Converter

- UART Programming

Day 2 (Session 4)

Zonal Competition

After the hand on theory and practical experience from the workshop, Zonal Round Competition will be conducted for the participants.

Certificate Distribution

On behalf of Dreamerz Technologies Pvt. Ltd. Certificate of Merit will be provided to all Zonal Round Winners and Certificate of Participation will be provided to all the Zonal Round Participants (Excluding Merit Participants).

Project

- Blinking LED
- De-bouncing
- Counter using Seven Segment
- Digital Voltage Measurement
- PC-MC Communication

Kit

1x (Arduino Development Board) :

- Programming via boot loading through USB Port or 6-Pin ISP (In System Programming) cable.
- Plug & Play device
- Three ports available for user interface: PORTB, PORTC, PORTD
- External Reset Switch
- On board crystal oscillator of 16 MHz frequency
- Two supply inputs: One through USB and Second through Adapter
- On board 5 volt regulated power supply for the board and external peripherals

1x (Arduino Multi-Functional Shield)

USB Cable (A to B Type)

Other required Tools and accessories etc.