

Arduino Workshop at Kirorimal College, Delhi University

by TI Centre for Embedded Product Design, Netaji Subhas University of Technology, Delhi

28th June - 29th June, 2022

This workshop will be based on the Arduino Nano to introduce students with basics of the Arduino Platform and how to use elementary components for physical computing like LEDs, switches, sensors, buzzers and displays. The students will also learn how to use the serial monitor to debug problems with their circuits.

Project Demonstration

Prof. Dhananjay Gadre will demonstrate various projects made at TI-CEPD, NSUT to showcase the use cases of Arduino and similar platforms (ESP32, MSP430, ATTiny etc.)

Introduction to Micro-controller

We begin with introducing what Arduino is and explaining the difference between a Microcontroller and a Microprocessor and the use of Arduino.

Setup and Installation

Showing students how to install the required software and familiarising students with the UI of the Arduino IDE and the serial monitor.

LED Blinker

Explaining the code structure and showing how to upload with LED Blink example code of the pre-attached LED on the board.

Breadboard

Showing how to use a breadboard and assemble circuits on it.

Digital Output

Explaining what are digital pins and using digitalWrite() to make a text to morse-code convertor while showing how to use an external LED and doing the same with a buzzer.

Digital Input

What is pull-up and pull-down? Physical structure of an Omron Switch. Making an LED memory game with digitalWrite() and digitalRead() function.

Analog Input

What is an ADC? analogRead() function, AREF pin and analogReference() function and how to use sensors with LDR as an example and how to use a Potentiometer.

Analog Output

What is PWM? Using analogWrite() function for fading LED and driving a buzzer.

20x4 LCD Display

Using external libraries, Liquid Crystal Library, 4 pin (D4-D7) and 8 pin (D0-D8) mode and making a Dinosaur Jump game with OmronSwitch, Indicator LED and LCD as a display.