

## **Introduction to Embedded System**

- Course Introduction
- Introduction to Embedded Systems
- Embedded System Design Process
- FPGA vs ASIC

## **Memory Management**

- Memory Architecture and Organisation
- Memory Segments 2
- tr , uniq and wc command

## **Arduino Basics**

- Introduction to Arduino Boards\_ Arduino UNO, Breadboard and Simulation using Tinkercad
- Arduino Programming

## **LED Interfacing**

- Interfacing of Single & Multiple LEDs with Arduino
- Interfacing 7-Segment LED Display with Arduino

## **Buzzer Interfacing**

- Buzzer Interfacing with Arduino
- Tone Generation with Arduino

## **Switch Interfacing**

- Introduction to Switches & Interfacing Switches with LEDs to Arduino
- Multiple Switches and LEDs Interfacing

## **Serial Communication**

- Introduction to Serial Communication
- Serial Communication Program
- Device Control Using Serial Communication

## **LCD**

- Liquid Crystal Display (LCD) and Arduino
- Arduino Programming with LCD

## **Keypad**

- Concepts around Keypad
- Keypad Interfacing with Arduino

## **Analog Input and DC Motor Interfacing**

- Introduction to Analog to Digital Converter (ADC) and Digital Voltmeter
- Introduction to DC Motor
- DC Motor with Motor Driver IC L293D Interfacing to Arduino

## **Servo Motor Interfacing**

- Servo Motor and Arduino
- Servo Motor Interfacing and Programming

## **Pulse Width Modulation (PWM)**

- Introduction to Pulse Width Modulation (PWM) and Fading Using PWM

## **Interrupts and Practical Applications**

- Interrupt Logic
- Practical Applications Based on Interrupts

## **Analog Sensors:**

- Temperature Sensor Interfacing with Arduino
- Light Dependent Resistor (Photoresistor) Interfacing with Arduino
- Pressure/Force Sensor Interfacing with Arduino

## **Digital Sensors:**

- IR Sensor Interfacing with Arduino
- Ultrasonic Distance Sensor Interfacing with Arduino
- Gas Sensor Interfacing with Arduino
- Interfacing PIR Sensor with Arduino

## **Arduino UNO Interfacing ES8266 (Wi-Fi) Module**

- Introduction to ESP8266 Module
- Communication of ESP8266 Module with Arduino

## **Digital Logic Design**

- Introduction to RTL & Verilog
- Data Types & Arrays
- Procedural Statements & Flow Control
- Processes
- Classes
- Randomization & Constraint
- SV Assertions

## **Physical Design**

- Synthesis
- Physical Partitioning and Floor-Planning
- Routing & Placement
- Static Time Analysis

## **Capstone Project**

- Password-Based Door Lock System with LCD Display