Embedded System
&
Internet of Things

SRINI
Software Training

WWW.SRINISOFTWARETRAINING.COM

MODULE NAME	TOPICS
Embedded System(ES)	Introduction to Embedded System
	Application Areas of ES
	Categories of ES
	Specialities of ES
ES Architectures	ES H/w Architecture
	ES Processors
	Microprocessor vs Microcontroller
	Software Architecture of ES
	Kernel of an OS
	Popular RTOSes
Trends in ES	Trends in ES
	Multicore Processors
	System on Chip(SOC) solutions
	Use of open source Technology
	Hardware in the Loop (HIL) Simulation
	IOT Technologies with focus on IoT data security
	Python as a dominant language
	Machine Learning at the edge
ES Development & Debugging Tools	Need for Embedded Development/Debugging Tools
	Desktop vs Embedded Programming
	H/w Development/Debugging Tools
	Software Development Cycle (SDLC)
	ES debugging Methods
Introduction to IoT	Definition or Goal of IoT
	Convergence of multiple technologies
	Architecture of IoT
	OSI Model
	IoT Ecosystem 5-Layer Architecture
	IoT from an ES perspective
	The THING Architecture
	Sensor Module
	Processor Module
	Target Devices
	IoT Network Architecture
	Protocols for IoT
	Wireless Protocols for IoT
	Gateway General Architecture
	IoT Platforms
	Data Analytics in IoT
	IoT Applications
Python Programming	Features and scope of the python
	Installation of IDLE Tool

	Installation of Pycharm
	Data Types support in python
	Input and output statements in python
	Operators in python
	Control Statements in Python
	Functions in python
	Data Structures in python
	Regular expressions in python
	Exception Handling
	Object Oriented Programming
	Mysql DDL & DML Operations
	MongoDb CRUD operations
	Firebase Cloud Storage
	HTML Fundamentals
Raspberry PI	Introduction of Raspberry Pi controller
	Installation of RPi NOOBS OS
	RPi Board Demonstration
	Components on RPi
	Integration RPi with Internet and other components
Sensors & Actuators	IR Sensor
	• Object Detection status within RPI • Object Detection Status Count • Object Detection status by buzzer • Object Detection status by LED • Object Detection Status in another system using Serial Communication • Object Detection Status in another system using Serial Communication using PUTTY Client app
	PIR Sensor
	DHT/LM35 temperature sensor
	• Acquire Temperature and Humidity at specified location and print on to the System screen • Acquire Temperature and Humidity at specified location and print on to the LCD screen • Acquire Temperature and Humidity at specified location and print on to the LCD screen and Mobile using Bluetooth • Data storage in cloud Thing Speak
	LDR Sensor
	RGB , LED
	• Status of LED • Boolean LEDS • LED With Buzzer • LED With Button • Status of RGB
	Bio-metric sensor
	RFID

	Camera Module
	Gas Sensor
	Sound Sensor
	LCD Display
PROJECTS	Project Implementations using above electronic components