SYBYLLINE ROBOTICS PRIVATE LIMITED
Address: Incubation Centre, IIT Patna
e-mail : info@sybytech.com, sybyllinerobotics@gmail.com
Phone : +91-9113474448, +91-7905224192
Website: www.sybytech.com

# Internet of Things

Internet of things (IoT), take the things to the next level by providing advanced interaction between devices (such as sensors, handheld computers), actuation and automation systems and services. Beyond users and machines, IoT helps devices to receive and share information with applications and software with the help of a variety of telecommunication protocols and technologies. The term, IoT includes the software, hardware and telecommunication options, which can make human activities or public services more efficient.

**Introduction to Embedded System & IoT**
1. Introduction to Embedded System
2. How Embedded System interact with software
3. Industrial role in Embedded System
4. Introduction to IoT
5. IoT in our daily life (with live example)
6. IoT in the field of industry
7. Future with IoT
8. ROBOTRONiX Industrial work in the field of IoT

**Programming Language**
1. Brief intro to Higher & Lower Language
2. Assembly vs C vs Embedded C vs python
3. Embedded C in detail
4. Classes & Functions of Embedded C

**Prerequisite**
1. Kit Introduction
2. How to make power Supply
3. Functioning of Components :
a. Voltage Regulator
b. Breadboard
c. Node MCU & WiFi
d. Ultrasonic, POT
e. Relay, Bulb, Holder
f. Buzzer, connector, screwdriver
g. Switch, led's, resistors etc.

**About Microcontroller & Microprocessor**
1. Introduction to Microcontroller & Microprocessor
2. Microcontroller vs Microprocessor
3. Microcontroller : 8051, Atmega328, Atmega8, Node MCU, PSoC, PIC

About Programming Software
1. Introduction to Editor & IDE (Integrated Development Environment)
2. About Arduino IDE
3. Installation to Arduino
4. How to add another board on IDE Software
5. How to add library (header files ) on IDE
6. ESP8266 Preference link for installation of ESP Board
7. How to operate arduino IDE for Node MCU
8. BuitIn Functions of IDE

**Introduction to Node MCU & Interfacing (Hands on work)**

1. Node MCU GPIO Pin Description
2. Features of Node MCU
3. Program for Square wave Generation & its connection
4. Program for Digital Input & Digital Output
5. Program for PWM (Pulse width modulation)
6. Program for Serial Monitoring
7. Program for Analog Input & Serial Output
8. Program for Analog Input & Digital Output
9. Logic under distance calculation via ultrasonic sensor
10. Programming for Distance measurement via ultrasonic sensor

**Introduction to Server & Clients**

1. What IoT means?
2. Third party server
3. Blynk Interacting with Node MCU
4. 000webhost Interacting with Node MCU
5. ThingSpeak : Plotting Graph for sensor on server

Introduction to WiFi Module & its Connectivity to Server

1. What is ESP8266?
2. How ESP connect with server? (working)
3. Features of ESP8266
4. Program for ESP8266 and http client
5. What is http client?
6. How ESP8266 connect with the third party hosting clients.

**Hands on work on IoT(Internet of Things)**

1. How to operate home appliances using Blynk server.
2. Installation to the blynk server app and get authorization for blynk server hosting.
3. Configuration of Blynk server to the IDE (Integrated Development Environment).
4. How to operate home appliances using 000webhost client.
5. Program and connection for hosting of 000webhost server client.
6. How to fetch the sensor value on the thingspeak server.

**Further Discussion on technologies and Query Session**

1. Discussion about Raspberry pi.
2. Linking of Raspberry pi to IoT.
3. Features of Raspberry Pi.
4. Real time project discussion with candidates

5. Query session for following candidates.