

# ZENUS INFOTECH INDIA PVT. LTD.

## CURRICULUM OF IOT

Course Duration: 6-8 Weeks\*

### **INTRODUCTION**

What is IOT- In Depth Explanation

Concepts and Technologies behind Internet of Things (IOT)

The Past, Present, and Future of IOT

Scope of IOT in India

How large is the IOT Market in Different Domain

Different skills required to become an IoT developer

### **IOT ARCHITECTURE**

IOT Network Architecture

IOT Device Architecture

IOT Application Architecture

IOT cloud Architecture

### **IOT DEVICE DESIGN**

Sensors – Classification & selection criteria based on nature, frequency, and amplitude of signal

Embedded Development Boards – Arduino, Raspberry Pi

Interfacing peripherals & Programming GPIOs – Input/output peripherals, Sensor modules

Design Considerations – Cost, Performance & Power Consumption tradeoffs

### **GETTING STARTED WITH RASPBERRY PI**

Introduction to Raspberry pi

Raspberry pi different model comparison

Raspberry Pi operating system choices

Set up your Raspberry pi

Raspbian OS

### **RASPBERRY PI VS ARDUINO**

Introduction To Arduino Platform

Advantages of Raspberry pi over Arduino

### **HANDS ON SESSION ON RASPBERRY PI USING LINUX OS COMMANDS**

Introduction

Linux vs other Operating system

Linux basic commands

Installation of packages

Linux File handling

Software installation on Linux

### **REMOTE ACCESS TO RASPBERRY PI**

Remote Access using SSH

Remote Access using TightVNC

### **PROGRAMMING LANGUAGES**

C/C++

Embedded C

Python

### **PRACTICAL SESSION ON PYTHON PROGRAMMING LANGUAGE**

Program using Loops

Program using function

Python Libraries

Oops concept in Python

Hardware interfacing with python

Exception Handling in Python

Web connectivity with python

Data storage in Python

## **EMBEDDED SYSTEM WITH RASPBERRY PI**

Introduction to Embedded system

Embedded system basic block diagram

Difference between Microprocessor and Microcontroller

Key points for Choosing the Right Microcontroller

Using Raspberry Pi in Embedded System

Raspberry pi GPIO interfacing

Led Interfacing with Raspberry pi using python

Switch counter project using python

DC Motor Interfacing with Relay

H-Bridge Circuit

Working of L293D

PIR sensor interfacing with raspberry pi

DHT22 /11 sensor interfacing with Raspberry pi

## **IOT COMMUNICATION PROTOCOLS**

Wired Communication Protocols – UART, USART

Wireless Communication Protocols – Bluetooth, Wi-Fi

Networking Protocols – OSI Reference Model, TCP/IP, Ethernet

Application Protocols – HTTP, Web sockets, MQTT

## **CLOUD COMPUTING**

Overview of Computing

Different types of computing

Concept of cloud computing

Architecture of Cloud

Description on IaaS , PaaS , SaaS

Top Cloud service providers

Role of Cloud Computing in IOT

Tools, API and Platform for integration of IOT devices with Cloud

Cloud Foundry

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