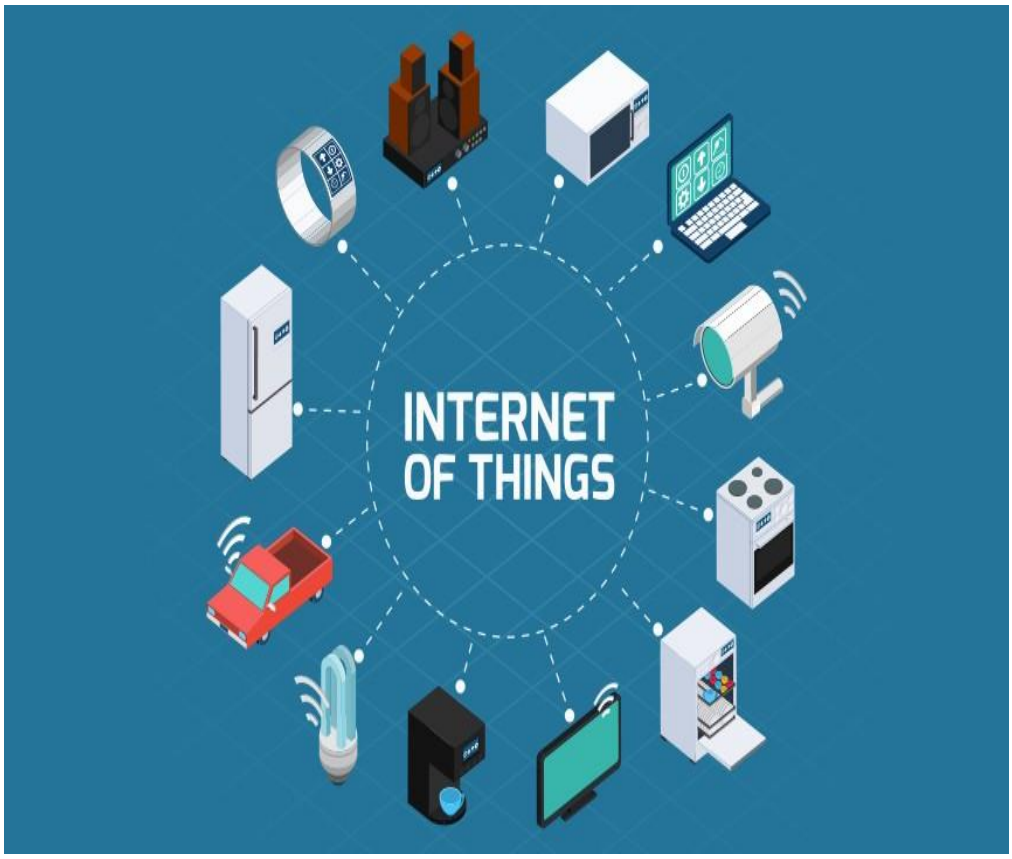
TechyEdz Solutions

Training | Consulting | Developement | Outsourcing



IoT

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IoT

Course Overview:

Internet of Things (IoT) is a system of interrelated computing devices, mechanical and digital machines, objects, or people that are provided with unique identifiers and the ability to transfer data over a network without requiring human-to-human or human-to-computer interaction. Students will learn about IoT introduction, significance, building your own IoT devices, sensors, IoT communication and security. The course introduces advanced concepts and methodologies of IoT to design, build and deploy IoT solutions. It also discusses various technologies and protocols used for communication including new generation IoTfriendly applications and physical layer protocols. Candidates will be able to get a thorough understanding of widely accepted IoT frameworks and standards. The course covers popular, service-rich cloud platforms and focuses on how to build and deploy IoT solutions. Practical use cases and case studies are included to ensure that the candidate develops an ability to work through practical real-life scenarios.

Course Outline:

What is Internet of Things (IoT)?

- What is IoT, how does it work
- Difference between Embedded device and IoT device
- Properties of IoT device
- IoT Ecosystem
- IoT Decision Framework
- IoT Solution Architecture Models
- How IoT is Transforming Businesses
- Major IoT Boards in Market
- Explore Raspberry Pi

Setting up Raspberry Pi and Sensors (HAT Board)

- Setting up Raspberry Pi
- Showing working of Raspberry Pi using SSH Client and Team Viewer
- Understand Sensing actions
- Understand Actuators and MEMS
- Hands On/Demo:
- Programming Sense HAT Board

IoT architecture

- Architecture
- Tech Stack
- Protocols

Creating Solutions with Raspberry Pi

- Build weather station using Sense HAT and Python
- Prepare google spreadsheet for weather data collection
- Understand OpenCV
- Hands On/Demo:
- Build a weather station using Sense HAT and store data in google sheets
- Use OpenCV for face detection, face recognition with webcam

IoT Communication Protocol Types

- Types of wireless communication
- Major wireless Short-range communication devices, properties, comparison of these devices (Bluetooth, WIFI, ZigBee, 6LoWPAN)
- Major wireless Long-range communication devices, properties, comparison of these devices (Cellular IoT, LPWAN)
- Hands On/Demo:
- Using RFID networking
- Using other networks such as WiFi and Bluetooth

Implementing IoT Solution with Azure

- What is Cloud and its Infrastructure
- How IoT and Cloud deployment can create an effective IoT Solution
- Azure IoT Hub components
- Hands On/Demo:
- Create Free Tier Azure Account. Explore Azure IoT hub services and other useful features
- Azure IoT Hub Service API Demo
- Register your Raspberry Pi on Azure IoT Hub
- Send and Receive messages from Raspberry Pi over Azure IoT Hub
- Create Storage account and dock a container
- View Data On-premise with Azure Storage Explorer
- Configure Web App settings for Data Visualization

- Hands On/Demo:
- Create an End-to-End IoT solution using Python Device APIs

Remote Monitoring

- Plan how to customize a solution to meet specific requirements
- Create a service bus namespace and add a queue to it
- Add an endpoint and a routing rule to your IoT hub
- Create, configure, and test a logic app

Edge Computing and Analytics

- Data Analytics
- Edge Computing
- Azure IoT Edge
- Azure IoT Edge Components
- Azure IoT Edge Architecture
- Real-Time Analytics
- Hands On/Demo:
- Deployment of Raspberry Pi as an Edge Device on Azure IoT Edge

Prerequisites:

- Basic programming skills is recommended but not mandatory
- Electronics awareness is recommended but not mandatory

Who Can attend:

- This course is an intermediate course, professionals with minimum background in programming and basic understanding of electionics, will be ideal. Candidates without knowledge can also opt for this course

- Students with a background of BE / B.Tech in ECE / CSE / ISE / Electrical & Electronics / Biomedical / Instrumentation / Msc Electronics and any other relevant streams

- IOT Training is suitable for engineering students who are from electronics, computers or mechanical domain can find an opportunity in IOT Embedded Systems Development Industries. There is a growing demand for IOT developers / Software Engineers, Data Scientists and Product Managers in the Industry.

- **Number of Hours: 40hrs**
- **Certification: Certified IoT Professional**
- **Key Features:**

- One to One Training
- Online Training
- Fastrack & Normal Track
- Resume Modification
- Mock Interviews
- Video Tutorials
- Materials
- Real Time Projects
- Virtual Live Experience
- Preparing for Certification