
About Codefrux

While the current trends around the world are based on the internet, mobile and its applications, we try to make the most out of it. As for us, we are a well established IT professionals based in Bangalore, constantly coping up with the extensive advancement and adapting to new Technology.

The vast network of devices connected to the Internet, including smart phones and tablets and almost anything with a sensor on it – cars, machines in production plants, jet engines, oil drills, wearable devices, and more. These “things” collect and exchange data. IoT – and the machine-to-machine (M2M) technology behind it – are bringing a kind of “super visibility” to nearly every industry.

What you will Learn In This Course

- Understand why companies across the globe are investing big in IoT
- Identify essential components and capabilities of IoT products
- How to enable the interconnection and integration of the physical world and the cyber space

Who should take the course

- This IoT course is designed for people who want to get a sense of how product innovation is changing in the Internet of Things industry
- This course is especially pertinent for people associated with business, leadership, design, product development, manufacturing, and computer science

Python, Raspberry PI, MQTT Server & IOT

1. Introduction To Python

1. Knowing Python
2. Python Installation and Environment Setup
3. Defining programming syllabus
4. Know what Python is and what it can do
5. Quiz
6. Summary
7. Hands on

2. Variables & Data Types

1. Variables, Operators and Syntax
2. Python General Syntax - Indentation, Comment etc.
3. Variables and memory structure
4. Operators and operator precedence Keywords in Python
5. Python Data Types
6. Numeric - int, float, long, complex
7. Strings and string formatting
8. Lists, Tuple and list Comprehension Set, Dictionary and Maps
9. Quiz
10. Summary
11. Hands on

3. Data Flow Control

1. Introduction to control flow
2. Conditional statements: if-elif-else
3. Loops: for and while loop
4. break, continue and pass
5. Quiz
6. Summary
7. Hands on

4. Functions, Modules and Packages

1. Introduction to functional programming
2. Function recipe and docstring
3. Function with and without parameters
4. Functions reusability and recursive functions
5. Creating modules and packages
6. dir(), help(), import and from import
7. Quiz
8. Summary
9. Hands on

5. Error and Exception Handling

1. Introduction to errors and exceptions
2. Exception hierarchy
3. try-except block
4. finally and else
5. Debugging - assert and raise
6. Quiz
7. Summary
8. Hands on

6. File Handling

1. Introduction to file I/O
2. File handling permission
3. read(), write() and append operation
4. readline(), seek() and tell()
5. Quiz
6. Summary
7. Hands on
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7. Class and Objects

1. Introduction to OOPS concepts
2. Programming with Classes and Object
3. Inheritance and code reuse
4. Overriding and overloading
5. Information hiding
6. __init__(), self and other class methods
7. Quiz
8. Summary
9. Hands on

8. Regular Expression

1. Introduction to regular expression
2. Pattern making characters
3. match(), search() and findall()
4. Greedy and non-greedy pattern matching
5. Quiz
6. Summary
7. Hands on

9. Introduction to Thread lifecycle

1. Thread vs Process
2. Starting a new thread
3. Threading Modules
4. Introduction to Raspberry Pi
5. Hardware aspects and Board details.

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6. Set-up and operate the Raspberry Pi.
 7. Understand the basics of the Linux OS used on.
 8. Raspberry Pi and Python.
 9. Connecting Internet and installing modules.
 10. Quiz
 11. Summary
 12. Hands on

10. Hardware Interfacing using Python

1. GPIO interfacing through Python.
2. LED, Buzzer, Switch interfacing.
3. Networking in Raspberry Pi.
4. Sensors Interfacing.
5. Serial interfacing using python.
6. additional Hardware interfacing
7. Quiz
8. Summary
9. Hands on

11. MQTT Server Setup, IOT App Interface

IOT Programming & Hardware Interfacing

12. Introduction to IoT

1. What is IoT - In-depth detailed overview
2. IoT Applications in different domain
3. How large is the IoT Market in different domains?
4. Quiz
5. Summary
6. Hands on

13. IoT architecture

1. Architecture
2. Tech Stack
3. Protocols
4. Quiz
5. Summary
6. Hands on

14. IoT World

1. Latest updates in the IoT industry.
2. Available IoT alliances details and the standards that are getting evolved
3. Multiple IoT applications and solutions available in the market
4. Available IoT platforms (hardware) - Ex: ARM Mbed, Intel, Free scale etc..
5. Multiple IoT software and cloud platform, Components of a Platform, Usage, comparison. IoT eco systems build around these platforms
6. Quiz
7. Summary
8. Hands on

15. Sensors

1. What is Sensor & Actuator?
2. What is good sensor?
3. Sensor properties.
4. Types of sensors
5. Sensor Demo - Proximity and IR sensors
6. Quiz
7. Summary
8. Hands on

16. Communication

1. Introduction to communication architecture- Network protocol stack
2. Different protocols
3. RF: ZigBee, Blue Tooth, BLE, Zwave, Mesh network.

4. Communication Channels: GSM/GPRS, 2G, 3G, LTE, WiFi, PLC
5. IoT protocols: MQTT/MQTTS, CoAP, 6LoWPAN, like TCP, UDP, HTTP/S.
6. Comparison of the different IoT protocols.
7. Advantages , Disadvantages and limitations of these IoT protocols.
8. IPv6 for IoT why IPv6?
9. Application issues with RF protocol - power consumption, LOS, reliability. Security aspects.
10. Quiz
11. Summary
12. Hands on

17. Cloud Computing

1. What is cloud? and cloud computing?
2. Benefits of cloud.
3. History of cloud computing.
4. Deployment Models.
5. Top cloud providers.
6. Different Services from Amazon
7. Advantages for different offerings
8. Identify the learn to select the right service provider
9. Quiz
10. Summary
11. Hands on

18. Cloud Computing & Data analysis

1. What are Web Services?
2. Why Web Services.
3. Types of Web Services.
4. RESTful web services.
5. Design Principles
6. Quiz
7. Summary
8. Hands on

19. Design considerations for IoT Solution & Security

1. How secure is IoT?
2. Vulnerabilities in IoT
3. Key aspects for Securing IoT solutions
4. Quiz
5. Summary
6. Hands on

20. End to End IoT Connection Demo

7. H/W nuts n pieces
8. What matters Client, Device, Rule, Alarm, Device Data, Event
9. Sensor data sent to Cloud platform

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10. Viewing in real time
 11. Quiz
 12. Summary
 13. Hands on

21. Building IoT Solutions

1. For Home Automation and Logistics
2. Solve Real Live use cases of Home Automation & Logistics
3. Build solution for both including Hardware and Software
4. Quiz
5. Summary
6. Hands on

22. Design considerations for IoT Solution & Security

1. How secure is IoT?
2. Vulnerabilities in IoT
3. Key aspects for Securing IoT solutions
4. Quiz
5. Summary
6. Hands on

23. Building IoT Solutions

1. For Home Automation and Logistics
2. Solve Real Live use cases of Home Automation & Logistics
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6. Hands on

Project Work

After course completion, students will be assigned to work on live project to polish the technology skills you have acquired with us.