



# INTERNET OF THINGS (IOT)

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# **Internet of Things (IoT)**

First Edition

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## Preface

The Internet of Things (IoT) is a mind-boggling idea comprised of numerous PCs and numerous correspondence ways. Some IoT gadgets are associated with the Internet and some are definitely not. Some IoT gadgets structure swarms that convey among themselves. Some are intended for a solitary reason, while some are more broadly useful PCs. This book is intended to show you the IoT from the back to front. By building IoT gadgets, the reader will comprehend the fundamental ideas and will have the option to advance utilizing the nuts and bolts to make their own IoT applications.

These included tasks will tell the reader the best way to manufacture their own IoT projects and to develop the models appeared. The significance of Computer Security in IoT gadgets is additionally examined and different procedures for protecting the IoT from unapproved clients or programmers. The main take away from this book is in building the undertakings yourself.

In this book, we have constructively raised the fundamentals of IoT with all the necessary concepts with respect to building an IoT application.

In Chapter 1, the essential fundamentals of IoT are explained in basic terms, and you will learn which tools are needed to start prototyping your own IoT devices which includes Smart and Hyper connected devices as well.

In Chapter 2, you'll learn role of controlled system in IoT in how to sense the environment with thermostats, it's working in building Smart homes and that even the behavior of WyzBee.

In Chapter 3, introduces important concepts about the importance of using Sensors Actuators and Microcontrollers, in IoT based applications.

In Chapter 4, introduces an open-source prototype platform called as Arduino. Will discuss in detail the architecture of Arduino board and its installation as a software for developing various IoT Applications.

In Chapter 5, you'll learn the extension of tradition C Language i.e Embedded C Language, its syntax and semantics. You will also learn in detail how to use this language for programming in Embedded systems and also how it is different from its traditional counterpart.

In Chapter 6, we will understand the decision-making process, its structure specifically for the programmer. We will also learn the types of relational operators and using it for conditional statements and loops in IoT.

In Chapter 7, introduces the use of arrays in C programming for IoT applications, which plays a vital role in handling memory locations. We will cover initializing of an Array various types and array of pointers.

In Chapter 8, we will understand how to simplify the interface of IoT to improve the reliability and functionality of IoT systems. We will also see the Interfacing Buttons in Arduino, and how to interface LED, LDR, and LCD etc with IoT systems.

In Chapter 9, introduces some aspects of Internet of Things (IoT) Security concerns and the security and privacy risks related to IoT enabled devices.

In Chapter 10, introduces various latest IoT application trends including Machine learning, Artificial intelligence and Blockchain with IoT. It also discusses tools to build IoT Applications and IoT Application development principles.

## **Acknowledgement**

A good book requires a lot of efforts and knowledge. Knowledge comes only from prolonged reading, subject expertise, and most importantly, from teaching that subject. The coordination among authors while self-reviewing was also important in writing this book because constructive criticism is must for a successful team. This book could not be completed without the regular feedback, suggestions, and motivation by my colleagues, professors, friend's etc.

We would like to thank to my parents, Mr.T.D Upreti (Father) and Mrs. Dharma Upreti (Mother) for their motivational and inspirational support to complete every task of my life. Last but not the least, Mr. Binu Vargis as a milestone who gave the valuable time and shared his knowledge in writing a book with us which emerged as “facts.”

We are thankful to subscribers of our Online and Offline paltforms because their positive comments were being a sort of suggestions for us. Our family and friends are also part of this because their continuous support and encouragement always motivated us for hard work. Finally, I am deeply grateful to INSC International Publishers for prompt and efficient processing of the work and made this book possible.

**Dr. Kamal Upreti**

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