

Based on Revised Syllabus (M4-R5.1)

इंटरनेट ऑफ थिंग्स एण्ड इट्स एप्लिकेशंस

(Internet of Things and its Applications)



हिन्दी माध्यम

लेखक

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Preface

आज हमारे जीवन का अधिकतर काम कंप्यूटर, इंटरनेट, मोबाइल और अन्य IoT उपकरणों की मदद से पूरा होता है। आज, आप इन उपकरणों या सेवाओं की मदद से दुनियाँ में कहीं भी आसानी से और जल्दी से सूचनाएं भेज सकते हैं। इसके अलावा, आप इंटरनेट की मदद से किसी भी विषय से सम्बंधित डेटा और सूचना एक्सेस कर सकते हैं। इसके लिए आपको कंप्यूटर, इंटरनेट, इंटरनेट ऑफ थिंग्स उपकरणों और IoT सम्बंधित सेवाओं का ज्ञान होना आवश्यक है। कई सरकारी संगठन इन विषयों का ज्ञान प्रदान करने के लिए कुछ प्रोग्राम चलाते हैं। 'ओ' लेवल भी एक आईटी आधारित प्रोग्राम है, जिसे NIELIT (नेशनल इंस्टीट्यूट ऑफ इलेक्ट्रॉनिक्स एंड इंफॉर्मेशन टेक्नोलॉजी) नई दिल्ली द्वारा चलाया और मैनेज किया जाता है।

यह पुस्तक 'ओ' लेवल प्रोग्राम के चौथे पेपर (M4-R5: Internet of Things and its Applications) के नवीनतम पाठ्यक्रम के आधार पर तैयार की गई है। इस पुस्तक को विशेष रूप से इंटरनेट ऑफ थिंग्स (IoT) और एंबेडेड 'सी भाषा का उपयोग करके IoT एप्लिकेशंस को विकसित करने के लिए डिज़ाइन किया गया है। यह पुस्तक इंटरनेट ऑफ थिंग्स, थिंग्स एंड कनेक्शन, सेंसर, एक्ट्यूएटर, माइक्रोकंट्रोलर, IoT डिवाइसेस के लिए सुरक्षा प्रणाली, IoT डिवाइसेस का भविष्य और सॉफ्ट स्किल्स के साथ व्यक्तित्व विकास का गहन ज्ञान प्रदान करती है।

इस पुस्तक को 6 भागों में विभाजित किया गया है तथा इस पुस्तक के प्रत्येक भाग में एक विशेष विषय का वर्णन किया गया है, जैसे कि IoT का परिचय, थिंग्स एंड कनेक्शंस, सेंसर और माइक्रोकंट्रोलर्स, IoT एप्लिकेशन का निर्माण करना, सुरक्षा और भविष्य का IoT इकोसिस्टम, सॉफ्ट स्किल-पर्सनालिटी डेवलपमेंट। इस पुस्तक का प्रत्येक विषय सिद्धांत, उदाहरण और प्रश्नों के साथ दिया गया है। इंटरनेट ऑफ थिंग्स सम्बंधित कुछ महत्वपूर्ण practical/Case study को इस पुस्तक के अंत में दिया गया है।

यह पुस्तक इस विषय का प्रथम संस्करण है। हमने इस पुस्तक को त्रुटियों या अन्य गलतियों के बिना पुरा करने की कोशिश की है, लेकिन फिर भी कुछ त्रुटियाँ हो सकती हैं। इसके लिए हमें आपके सहयोग की आवश्यकता होगी ताकि अगले संस्करण में इसे सुधारा जा सके। किताब की गुणवत्ता में सुधार करने हेतु आपके बहुमूल्य सुझावों के लिए हम आपके आभारी रहेंगे।

Author

Internet of Things and its Applications

Introduction

The module is designed to equip the students to understand the basics of connected world that is Internet of Things (IoT) and its applications. IoT primarily refers to the connected and smarter world having physical and virtual objects with some unique identities. IoT applications span across domains of industrial control, retail, energy, agriculture, etc.

This module provides the theoretical and practical aspects of interfacing sensors and actuators, making informed world of Things speaking to each other. The different type of communication modes and models are discussed in detail. The in-depth knowledge of software and packages is provided to make applications in IoT paradigm.

Objectives

After completing the module, the learner will be able to:

- Understand how connected devices work together to update other applications.
- Acquire knowledge to interface sensors and actuators with microcontroller Based Arduino platform.
- Writing C programs in Arduino IDE .
- Understand the Communication between microcontroller and PC .
- Build IoT based applications and understand how data flows between things.
- Understand how electronic devices control electrical appliances working at 220v AC.
- Understand security aspect of IoT devices.
- Enhance skill set towards better personality development.

Duration

120 Hours - (Theory: 48hrs + Practical: 72 hrs)

Sr.	Module Unit or Chapter name	Duration		Marks (Max.)
		Theory	Practical	
1.	Introduction to IoT	4	6	10
2.	Things and Connections	4	6	10
3.	Sensors, Actuators and Microcontrollers	8	12	15
4.	Building IoT Applications	20	30	40
5.	Security and Future of IoT Ecosystem	4	6	05
6.	Soft skills- Personality Development	8	12	20
	Total	48	72	100

विषय-सूची

1. आईओटी का परिचय.....	1-38
(Introduction to IoT)	
2. थिंग्स और कनेक्शन.....	39-76
(Things and Connections)	
3. सेंसर, एक्ट्यूएटर और माइक्रोकंट्रोलर.....	77-139
(Sensors, Actuators and Microcontrollers)	
4. आईओटी एप्लीकेशन बनाना.....	140-255
(Building IoT Applications)	
5. सुरक्षा और आईओटी इकोसिस्टम का भविष्य.....	256-294
(Security and Future of IoT Ecosystem)	
6. सॉफ्ट स्किल्स: व्यक्तित्व विकास.....	295-344
(Soft skills- Personality Development)	
7. अभ्यास कार्य.....	345-347
(Practical Works)	
8. सैंपल पेपर.....	348-358
(Sample Paper)	

Table of Contents

1. Introduction to IoT

1.1 Introduction To IoT

- 1.1.1 How does the IoT work?
- 1.1.2 Machine-to-machine Comm.

1.2 Overview of IoT

- 1.2.1 Characteristics of IoT
- 1.2.2 Advantage of IoT
- 1.2.3 Disadvantage of IoT

1.3 IoT ecosystem

- 1.3.1 Components of IoT ecosystem
- 1.3.2 Applications in IoT ecosystem

1.4 Architecture of IoT

- 1.4.1 Building Blocks of IoT

1.5 IoT Protocols

- 1.5.1 Link Layer
- 1.5.2 Network Layer
- 1.5.3 Transport Layer
- 1.5.4 Application Layer

1.6 IoT Design Methodology

1.7 The Physical and Logical Design of IoT

- 1.7.1 Functional Blocks
- 1.7.2 Communication Model
- 1.7.3 Communication API

1.8 Utilities of IoT

1.9 Development Tools used in IoT

2. Things and Connections

2.1 Control System

2.2 Working of Control Systems

- 2.2.1 Feature of a Control System
- 2.2.2 Types of Control Systems

2.3 Feedback Control System

- 2.3.1 Real-Time System with Feedback
- 2.3.2 Thermostat

2.4 Connectivity Models

- 2.4.1 OSI Model and TCP/IP Model

2.5 OSI Model

- 2.5.1 Functions of the OSI Layers

2.6 TCP/IP Model

- 2.6.1 Layers of TCP/IP Model
- 2.6.2 TCP/IP versus OSI Model

2.7 Transmission Modes

- 2.7.1 Simplex
- 2.7.2 Half Duplex
- 2.7.3 Full Duplex

2.8 Wired and Wireless Methodology

2.9 Transmission Media

2.10 Guided Media

- 2.10.1 Twisted Pair Cable
- 2.10.2 Coaxial Cable
- 2.10.3 Fiber Optics

- 2.11 Unguided Media
 - 2.11.1 Radio Waves
 - 2.11.2 Microwaves
 - 2.11.3 Infrared Waves
- 2.12 Process flow of an IoT application

3. Sensors, Actuators and Microcontrollers

- 3.1 Sensor
 - 3.1.1 Physical Quantities of Sensors
 - 3.1.2 Analog vs Digital
 - 3.1.3 Real Time Application of Sensor
 - 3.1.4 Classification of Sensors

- 3.2 Types of Sensors
 - 3.2.1 Temperature Sensor
 - 3.2.2 IR Sensor (Infrared Sensor)
 - 3.2.3 Ultrasonic Sensor
 - 3.2.4 Touch Sensor
 - 3.2.5 Proximity Sensors
 - 3.2.6 Chemical Sensor
 - 3.2.7 Gas Sensor
 - 3.2.8 Humidity Sensor
 - 3.2.9 Acceleration Sensor
 - 3.2.10 Sound Sensor
 - 3.2.11 Light Sensor
 - 3.2.12 Tactile Sensors

- 3.3 Sensors in Remote Sensing

- 3.4 Actuator

- 3.4.1 Controlling System of Actuator
 - 3.4.2 Application for Actuators

- 3.5 Types of Actuators

- 3.5.1 Linear Actuators
 - 3.5.2 Rotary actuators
 - 3.5.3 Hydraulic actuator
 - 3.5.4 Pneumatic actuator
 - 3.5.5 Electrical actuators
 - 3.5.6 Mechanical actuator
 - 3.5.7 Magnetic (Thermal) actuator
 - 3.5.8 Electromagnetic Actuators
 - 3.5.9 Electromechanical Actuators

- 3.6 Difference between Sensor and Actuator

- 3.7 Microcontroller

- 3.7.1 Components of a Microcontroller
 - 3.7.2 Classification of Microcontroller

- 3.8 Type of a Microcontroller

- 3.8.1 8051 Microcontroller
 - 3.8.2 PIC Microcontroller
 - 3.8.3 AVR Microcontroller
 - 3.8.4 ARM Microcontroller
 - 3.8.5 RENESAS Microcontroller

- 3.9 Microprocessor

- 3.9.1 Evolution of Microprocessor
 - 3.9.2 Types of Microprocessors

- 3.10 Microcontroller vs Microprocessor

- 3.11 Embedded system

- 3.11.1 How Embedded System Works
 - 3.11.2 Types of embedded systems
 - 3.11.3 Embedded Hardware
 - 3.11.4 Embedded Software

4. Building IoT Applications

4.1 Introduction to Arduino

4.2 Different Types of Arduino Boards

4.2.1 Arduino Uno (R3)

4.2.2 Arduino Nano

4.2.3 Arduino Micro

4.2.4 Arduino Due

4.2.5 LilyPad Arduino Board

4.2.6 Arduino Bluetooth

4.2.7 Arduino Diecimila

4.2.8 RedBoard Arduino Board

4.2.9 Arduino Mega (R3) Board

4.2.10 Arduino Leonardo Board

4.2.11 Arduino Robot

4.2.12 Arduino Esplora

4.2.13 Arduino Pro Mic

4.2.14 Arduino Ethernet

4.2.15 Arduino Zero

4.2.16 Fastest Arduino Board

4.3 Arduino Boards Comparison

4.4 Introduction to Arduino IDE

4.4.1 Features of Arduino IDE

4.4.2 How Arduino IDE works?

4.4.3 Interface of Arduino IDE

4.4.4 Arduino Libraries

4.4.5 Making Input or Output Pins

4.4.6 How to Select the Board?

4.4.7 Bootloader

4.5 Arduino Programming

4.5.1 Writing/Editing Code in Sketch

4.5.2 Fault Finding

4.5.3 Arduino Sketch Program Flow

4.5.4 Components used for Arduino Programming

4.5.5 Blinking LED

4.6 Introduction to Embedded C Language

4.7 Embedded C Programming Language

4.7.1 Difference between C and Embedded C

4.7.2 Basic Structure of Embedded C Program

4.8 Steps to Build Embedded C Program

4.8.1 Comments

4.8.2 Directives of Processor

4.8.3 Configuration of Port

4.8.4 Global Variables

4.8.5 Core Function/Main Function

4.8.6 Declaration of Variable

4.8.7 Logic of the Program

4.9 Variables and Identifiers

4.9.1 Variable Declaration

4.9.2 Initializing the Variable

4.9.3 Variables Scope

4.9.4 Variables in Hardware

4.10 Constants and Literals

4.10.1 Constants in Embedded C

4.10.2 Keywords in Embedded C

4.11 Data Types in C Language

4.11.1 Data Types in Embedded C

4.12 Conditional Statements

4.12.1 if statement

- 4.12.2 if-else statement
 - 4.12.3 if-else-if statement
 - 4.12.4 switch Case
- 4.13 Loops in Embedded C Language
 - 4.13.1 While Loop
 - 4.13.2 do..while loop
 - 4.13.3 For Loop
 - 4.13.4 Super Loop
- 4.14 Array in C Language
- 4.15 Functions in C Language
 - 4.15.1 Inbuilt Function for Ardino
- 4.16 String in Arduino
 - 4.16.1 String Character Arrays
 - 4.16.2 Functions to Manipulate String Arrays
 - 4.16.3 Arduino String Object
- 4.17 Arduino Sensor;Types & Application
 - 4.17.1 Working Principle
 - 4.17.2 Application of Ardino Sensor
- 4.18 Interfacing Sensor
 - 4.18.1 Digital and Analog pins
 - 4.18.2 Pull-Up & Pull-Down Register
 - 4.18.2.1 Pull up Resistor
 - 4.18.2.2 Pull-down Resistor
 - 4.18.3 Using digital pin as Input
 - 4.18.4 Using digital pin as Output
- 4.19 Arduino built-in Functions
- 4.20 Arduino Interrupts
 - 4.20.1 Types of Interrupts
 - 4.20.2 Interrupts in Arduino
 - 4.20.3 Using Interrupts in Arduino

- 4.21 Interfacing Components With Arduino Board
 - 4.21.1 Interfacing LED with Arduino
 - 4.21.2 Interfacing Push Button
 - 4.21.3 Interfacing DHT Sensor
 - 4.21.4 Interfacing LDR with Arduino
 - 4.21.5 Interfacing MQ135 Gas Sensor
 - 4.21.6 Interfacing IR Sensor
 - 4.21.7 Interfacing LCD with Arduino
 - 4.21.8 Interfacing Sound Sensor
 - 4.21.9 Interfacing Keypad with Arduino
- 4.22 Serial Communication
 - 4.22.1 Interfacing HC-05 Module
 - 4.22.2 Interfacing Relay with Arduino

5. Security and Future of IoT

- 5.1 Introduction of Security
- 5.2 Cyber Security
 - 5.2.1 Cyber Security Threats
 - 5.2.2 Cyber Security Tools
- 5.3 Security in IoT
 - 5.3.1 Needs of Security in IoT
 - 5.3.2 IoT Security Challenges
 - 5.3.3 IoT Security Technologies
- 5.4 Protecting IoT Devices and Systems
- 5.5 Privacy for IoT enabled devices
 - 5.5.1 IoT Security Concerns
- 5.6 Future IoT Ecosystem
- 5.7 Build secure algorithms
 - 5.7.1 Security Algorithm

5.7.2 Popular Encryption Algorithms

5.7.3 Cryptography

5.8 New Trends of IoT

5.8.1 Cloud Computing

5.8.2 Artificial Intelligence

5.8.3 Machine Learning (ML)

5.8.4 Differences between AI and ML

5.8.5 Robotics Process Automation

6. Soft Skills:Personality Development

6.1 Soft Skills

6.2 Personality Development

6.2.1 Characteristics of Personality

6.2.2 Personality Development Tips

6.3 Determinants of Personality

6.3.1 Self-Awareness

6.3.2 Self-Analysis

6.3.3 Self-Discipline

6.4 Building a Positive Personality

6.4.1 Develop a Positive Personality

6.4.2 Gestures

6.5 Attitude

6.5.1 Characteristics of Attitude

6.5.2 Types of Attitude

6.6 Self-Esteem

6.7 Self-efficacy

6.8 Motivation

6.8.1 Types of Motivation

6.8.2 Motivating Factors

6.9 Time Management

6.9.1 Benefit of Time Management

6.10 Stress

6.10.1 Identifying Stress

6.10.2 Causes of Stress

6.10.3 Stress Management

6.11 Etiquettes and Manners

6.11.1 Types of Etiquettes

6.12 Communication Skills

6.12.1 Communication

6.12.2 Characteristic of Comm.

6.12.3 Classification of Comm.

6.12.3.1 Verbal Commun.

6.12.3.2 Non-verbal Comm

6.12.4 Guidelines for Effective Com.

6.13 Writing Skills

6.14 Resume Writing

6.14.1 Covering Letter

6.14.2 Sequence of the Resume

6.15 Letter Writing

6.15.1 Types of Letter

6.15.2 Letter Writing Format

6.16 Report writing

6.16.1 Planning for Report Writing

6.16.2 Types of Report

6.17 Presentation Skills

6.18 Group Discussion

6.19 Interview Skills

6.19.1 Nature of Interviews

6.19.2 Structure of an Interview

6.19.3 Types of Interview

6.19.4 Attending the Interview

6.20 Body language