Based on Revised Syllabus (M4-R5.1)

Internet of Things and its Applications

English Medium

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Preface

Today most of our work of life are completed with the help of computer, internet, mobile and others IoT devices. Today, you can sent the information easily and quickly anywhere in the world with the help of these devices or Services. Besides this, you can also access the data and information about any subject with the help of internet. For this, it is necessary, you have the knowledge of computer, Internet of Things and devices and IoT services. Many government organization launches some programs to provides the knowledge of given topics . 'O' Level is also a IT program that is managed and run by NIELIT (National Institute of Electronics and Information Technology) New Delhi.

The book is prepare on the basis of revised syllabus of the fourth paper (M4-R5: Internet of Things and its Applications) of 'O' Level Program. This book is design specially Internet of Things (IoT) and developing IoT applications by using Embedded 'C' Language. This book provides a depth knowledge of IoT, Things and connections, Sensors, actuators, Micro controllers, Security System for IoT Devices, Future of IoT Devices and Soft skills with Personality Development.

This book is divide into 6 parts and each part of this book describe a special topic, such as Introduction to IoT, Things and Connections, Sensors and Microcontrollers, Building of IoT Applications, Security and Future of IoT ecosystem, Soft skills-Personality Development. Each topic of this book has theory, examples and questions. Some important practical/Case study of these topics are given at the end of this book.

We express our sincere thanks to the learns for their valuable suggestions for improving the quality of the book. Suggestions for further improvement of the book will be thankfully received and acknowledged.

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**

INDEXING

1. Introduction to IoT.....1-38

2. Things and Connections.....39-76

3. Sensors, Actuators and Microcontrollers.....77-139

4. Building IoT Applications.....140-255

5. Security and Future of IoT Ecosystem.....256-294

6. Soft skills- Personality Development.....295-344

7. Practical Works.....345-347

8. Sample Paper.....348-358

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 of 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 What is a 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 Actuator
3.5.1 Linear Actuator
3.5.2 Rotary actuator
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 an 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 Laterals

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 The if statement

4.12.2 The if-else statement
4.12.3 The 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 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 Benifits of Personality Development
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 Develope a Positive Personality
6.4.2 Gestures
6.5 Attitude
6.5.1 Components of Attitude
6.5.2 Characteristics of Attitude
6.5.3 Type 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
6.10 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 Commun.
6.12.3 Classification of Commun.
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